



PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

R E P O R T

together with

MINUTES OF EVIDENCE

relating to the proposed

EXTENSIONS TO THE SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE,
SYDNEY.

For Senator Lamp :

I bring up the Report of the Parliamentary Standing Committee on Public Works, together with Minutes of Evidence, relating to the proposed Extensions to the School of Public Health and Tropical Medicine, Sydney.

1945.

THE PARLIAMENT OF THE COMMONWEALTH
OF AUSTRALIA.

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EXTENSIONS TO THE SCHOOL OF PUBLIC HEALTH AND TROPICAL
MEDICINE. SYDNEY.

MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE ON
PUBLIC WORKS.
(Eleventh Committee)

ROWLAND JAMES, ESQUIRE, M.P. (Chairman).

Senate.

House of Representatives.

Senator WILLIAM EDWARD AYLETT. WILLIAM PATRICK CONELAN, Esquire, M.P.

Senator CHARLES HENRY BRAND. HONORABLE ERIC JOHN HARRISON, M.P.

Senator CHARLES ADCOCK LAMP. DANIEL MULCAHY, ESQUIRE, M.P.

GEORGE JAMES RANKIN, Esquire, M.P.

Honorable SIR FREDERICK HAROLD STEWART, M.P.

EXTRACT FROM THE VOTES AND PROCEEDINGS OF THE HOUSE OF REPRESENTATIVES,
NO. 15, DATED 19th September, 1944.

5. PUBLIC WORKS COMMITTEE - REFERENCE OF WORK - EXTENSIONS TO THE SCHOOL
OF PUBLIC HEALTH AND TROPICAL MEDICINE.- Mr. Holloway (Minister
representing the Minister for Health) moved, by leave, That, in
accordance with the provisions of the Commonwealth Public Works
Committee Act 1913-1936, the following proposed work be referred
to the Parliamentary Standing Committee on Public Works for
investigation and report : - Extensions to the School of Public
Health and Tropical Medicine.

Mr. Holloway having laid on the Table plans in connexion with the
proposed work -
Question - put and passed.

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EXTENSIONS TO THE SCHOOL OF PUBLIC HEALTH AND
TROPICAL MEDICINE, SYDNEY.

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 Extensions to the School of Public Health and Tropical Medicine, Sydney, has the honour to report as follows:-

INTRODUCTORY.

The Original Building.

1. In 1928 the Parliamentary Standing Committee on Public Works presented to Parliament its Report recommending the erection of a School of Public Health, Sydney, and the School was built on land set apart by the Sydney University under conditions laid down in an Agreement between the Commonwealth of Australia and the Sydney University.

The Agreement.

2. The Agreement, a complete copy of which was published in the Committee's Report on the original building, dated 6th June, 1928, was signed on 15th November, 1927, and prescribes the conditions under which the School is administered. The terms of it provide, amongst other things, the following salient points:-

The University shall set aside the necessary land without charge for rental;

The Commonwealth shall supply and maintain the buildings and equipment, and shall pay the staff and other expenses;

Any revenue shall be the property of the Commonwealth, but fees of students and gifts received by the University shall be the property of the University;

All equipment remains the property of the Commonwealth, but the buildings become the property of the University at the conclusion of the agreement;

Staff shall be appointed by the Commonwealth, subject to the approval of the University Senate;

Instruction at the School shall be under the control of the University Senate and supervised by the Faculty of Medicine;

The Minister shall appoint an Advisory Council composed of the Director-General of Health, two members nominated by the Minister, and two members nominated by the University; and

The Agreement, subject to earlier determination, shall remain in force for 25 years.

Reasons for the Original Reference.

3. The reasons advanced in 1928 as making the establishment of the School an urgent necessity were:-

- (a) the rapid development in the field of public health;
- (b) the fact that it was necessary for graduates to proceed abroad to obtain proper training in public health; and
- (c) the very great importance of a proper scientific centre in Australia for tropical medicine, and the growing importance of this in association with Australia's tropical possessions.

4. The estimated cost of the original building was £30,000 and the annual maintenance was expected to cost approximately £9,000 per annum.

S E C T I O N I.

THE PRESENT PROPOSAL.

Reasons for the Extensions.

5. The reasons put forward in Parliament when the proposal was referred by the House of Representatives to the Committee were that considerable training of military personnel and extensive research associated with the war had been carried out at the School. This had been done under conditions of extreme difficulty owing to the limited space available. When the war is over the Commonwealth will have to face modern hygiene and medical services, as well as research over a wide area of the Pacific, and more space will be absolutely necessary.

Estimated Cost.

6. The estimated cost of the proposed extensions, as set down in the reference by Parliament, was £111,130, but a revised estimate, submitted by the Works Director at the commencement of the Committee's investigations, was £73,570, made up of £69,300 for the additions to the main building and £4,270 for additions to the existing animal house, including all subsidiary services.

Description of the Building.

The Main Building.

7. The extensions are a continuation of the original architectural design, and are arranged to form a quadrangle with a frontage of 75 feet 9 inches facing east, 154 feet northern frontage, and 93 feet facing west, leaving a courtyard in the centre of 69 feet by 50 feet. An additional storey is also shown to the southern

wing of 111 feet 6 inches by 45 feet. The approximate space of the new extensions is 36,000 square feet, and represents one and a half times the original space provided in 1928.

The ceiling heights of the original building have been maintained. On the extension facing east the heights between floors are 12 feet lower ground floor, 12 feet upper ground floor, and 11 feet on the top floor. On the wing facing north the floor heights vary from those given above to 14 feet 6 inches, 14 feet 6 inches, and 11 feet respectively, so as to correspond with the heights of the tee-legged portion of the existing building, and to utilise the extra height provided by the fall of the ground. Advantage has been taken of these extra heights to plan, where they occur, the larger rooms such as the Physiological chemistry laboratory and lecture room.

The proposed building is not in harmony with others of the Gothic type within the University group, but it is in harmony with the physics building hearby. It will be in a hollow, and later will be masked from the road by another building to be erected in front of it.

The Animal House.

8. Close to the southern end of the building, and associated with the School of Tropical Medicine is the animal house. The present plan proposes to add a new storey over the whole of the existing building, 98 feet in length by 35 feet on the eastern end and 22 feet on the western end.

SECTION II.

COMMITTEE'S INVESTIGATIONS.

Scope of the Inquiries.

9. The Committee visited Sydney, inspected the present School of Public Health and Tropical Medicine, and carefully examined the plans of the proposed extensions. Evidence was taken from the present Director of the School, the Vice-Chancellor of the University, and others connected with the operation of the School within the University area. The Director-General of Health for the Commonwealth, the Director-General of Health for the States of Victoria, New South Wales and Queensland, and other witnesses with interest in the School.

and experience of its work were called to give evidence with a view to ascertaining to what extent the School is likely to grow or maintain its vigour after the war, and to what extent additional activities at the School would affect the other States.

Particular attention was given to the work done at the School during the war, and an effort was made to determine the extent to which the facilities of the institution would be required after the war for tuition and research connected with the Services. A visit was paid to the Military Tropical Training School at Clovelly, and evidence was taken from officers in charge of medical training in the Army, Navy and Air Force.

Necessity for Extensions.

General Expansion.

10. In stressing the necessity for extensions to the building it was pointed out to the Committee, in evidence, that the School has long out-grown the original building. In 1938 the accommodation was unduly cramped, the library being the worst example of lack of space. The museum, which is invaluable for teaching purposes, is too small; the animal house is totally inadequate, and the laboratories are too limited in size.

Expansion during the War.

11. Like many other similar institutions, the School of Public Health and Tropical Medicine has concentrated its efforts largely towards assistance in the war effort, and evidence taken from the responsible officers in the Services has shown that considerable use has been made of the facilities at the School, and of the teaching staff, in preparing personnel of the Forces for their work in the tropical areas, both in the treatment of disease, and in general hygiene and prevention methods. Instruction in various grades has been given to doctors, officers and other ranks.

Every year, in the second term, there is a course of 30 lectures on tropical medicine and hygiene which is attended by missionaries, nurses, anthropological students, administrative cadets, planters, engineering students and others. The course is designed for ordinarily intelligent persons; it is not highly technical, but is sufficient to enable white persons living in the tropics to look after themselves and the natives under their charge.

Altogether 77 diplomas have been issued during the fourteen years the School has been in existence, and during the war years 1,250 officers and men and 135 junior officers have attended the School to learn about tropical hygiene. Under the general direction of Brigadier Fairley, eighteen courses have been completed by the School, and in these courses approximately 500 doctors, including about 200 American officers, have undertaken a special fortnight's course.

Expansion after the War.

12. The Committee gave special attention to the possible position after the war, and evidence was sought with a view to estimating whether the increase in the demand for tropical training during the war would be maintained in times of peace. The question is a difficult one to determine with any degree of accuracy, but evidence given to the Committee indicated a confident opinion that the number of persons who will pass through the School will increase considerably in the future. The opinion is based on the large number of inquiries being received from medical officers now in the Forces, and upon the general belief that the Army is almost certain to provide opportunities for post-graduate work in tropical medicine and hygiene. There is also a general opinion that Australia will have to do something after the war to improve the health of the inhabitants of its tropical territories. This will probably mean the establishment of a corps of medical officers in charge of a number of native "boys" who will have to be trained for the purpose.

Extension of Tropical Research.

13. From the research point of view there is no doubt that extensive fields are open, and rapidly developing, in which experienced men will be urgently demanded, both in Australia and in the neighbouring countries where disease is rife.

Ample evidence is available which points to the urgent necessity for extending our research into the causes and methods of prevention of tropical diseases which exist in neighbouring countries. Those with experience of the multitude of diseases in nearby tropical lands point out the danger of such maladies being transmitted to Australia by soldiers and others returning to their homes after the war. It is stressed that research in this field is essential, and

it is far preferable to concentrate on the prevention of the diseases than to wait until they are introduced into Australia to cure them.

Local Health Problems.

14. Although emphasis is apparently focused on the tropical side of the work of the School, it is very important that the local health aspect should not become under-developed. Most of the research work done in connection with local health and industrial health problems is done by the State Health Departments, but a certain amount of research is carried out at the School where co-operation and assistance are given when desired in specific cases. The necessity for further assistance in this direction is becoming more urgent as the introduction of new industries and the extensive mechanisation of old ones provide ever increasing problems in Industrial Hygiene. It is anticipated that the section in the proposed building to be devoted to this class of research will be required for active operation as soon as it is available.

The Committee is therefore convinced that extensions to the buildings are necessary and should be proceeded with when men and materials are available.

Site.

15. Information was given to the Committee, in evidence, that the site presents no difficulties and has good bearing qualities for foundations. Tests have been made which indicate that there is no danger to be apprehended from the fact that the site was formerly a swamp, and there is still a good fall beyond the building to provide drainage. Some opposition was expressed to the present proposal on the ground that the extra storey would mask, to some extent, the Physics Building at the rear, and an alternative scheme was suggested which would place the extensions on the southern instead of the northern end of the present building. This scheme appeared to have a good deal in its favour and the Committee sought further information in regard to the desirability of adopting it. However, the Committee found that there were a number of obstacles which became apparent on closer investigation.

It was found that only the northern end of the Physics building would be masked by the proposed extensions; difficulties would be experienced on the southern side by the building covering the main sewers; extensions to the south would require more land than is covered by the present agreement; the new building would extend too near to the bank of the oval, and a number of other minor obstacles were shown to exist. The Committee therefore is of opinion that the site suggested is the most suitable under the circumstances.

16. While investigating the question of the site for the extensions the Committee was shown various other buildings in the University area and saw something of the magnitude of the work being carried on at the University. It was impressed with the large number of students whose education is being provided for in the University and with the difficulties of over-crowding which are being experienced by the authorities in their work. It appeared obvious that, not only in the sphere of public health and tropical medicine, but also in most other sections of University life, additional money is urgently needed to cope with the rapidly growing demands of this type of education.

17. Some concern was expressed to the Committee, in evidence, with regard to the future lay-out of buildings to be erected in the University area. It was stated that a new Chemistry building is likely to be constructed in a position which will adversely affect the Commonwealth owned buildings alongside it. Although the placing of University buildings within the grounds of that institution is not within the province of this Committee, it is hoped that ample consideration will be given by the University Grounds Committee to this aspect before it agrees to sites for new buildings to be erected in the future.

Architecture.

18. The necessity for maintaining in the extensions the same type of architecture which is used in the present building is apparent to the Committee, though it was struck with the disparity between the architectural styles of some of the surrounding buildings. The School of Public Health and Tropical Medicine and the adjoining Physics building are of the same architectural type, and the Committee is convinced that, if future buildings to be erected near this group

are designed in a similar style, the surrounding Gothic buildings will emphasize the difference in type without creating the appearance of a medley of architecture.

When viewed from the front of the building the tower presents an unbalanced aspect, and this will be increased with the proposed additions. The Committee is of opinion, therefore, that a slight break of a few inches should be made in the new building in order to place the tower in the centre of the projecting portion. If the roof is also broken at this point, leaving a hip to correspond with the hip on the left of the facade, the additions will then have the appearance of a subsidiary wing, with the symmetry of the building unimpaired.

Details of Construction.

General Interior.

19. The plans of the proposed extensions were studied in detail from the point of view of the future work and also having in mind the interests of the research workers, students and others likely to use the building. The Committee was informed that the plans had been drawn by the architects in close co-operation with those at present using the School, and provision has been made for work likely to be undertaken for some years to come. With the exception of a few specific points the Committee is of opinion that the plans will be suitable for the building required.

Lifts.

20. Consideration was given to the fact that, although the building has three floors, there is no provision in the building for lifts. Inquiries were made by the Committee regarding the desirability of installing lifts, and an estimate of the additional cost likely to be involved was prepared.

It was explained to the Committee that, although the building is of three floors - Lower Ground Floor, Upper Ground Floor and First Floor - the main entrance at the front of the School is made from the road which is at the level of the middle or Upper Ground Floor. The chief activities of the School, including the Lecture Room, Library, Museum, and main office, are on this floor and it is stated, therefore, that passenger lifts are not necessary for

the majority of people using the building.

It was pointed out, however, that those using the laboratories, and particularly workers at the rear of the building whose activities require the transportation of animals and apparatus from the lower ground floor to the first floor, would need to traverse three floors and would regard a lift as a necessity.

The cost of installing a lift to serve the three floors is estimated to be £3,240, and the Committee recommends that such a lift, suitable for both passenger and goods services, should be included in the proposal.

Toilet Accommodation.

21. The present plans make no provision for additional lavatory accommodation, notwithstanding that the extensions to the building provide an area one and a half times the size of the original building. Although it was informed, in evidence, that the present lavatory accommodation is sufficient to comply with the regulations governing the matter, the Committee made inquiries regarding the necessity for toilet rooms for the large number of students and others using the building, and it is convinced that a great deal of inconvenience will result if additional lavatory accommodation is not included in the plans.

An estimate was accordingly sought, and it is stated that the cost of providing an additional toilet room on each of the three floors will be £1,071. The Committee therefore considers that the provision of such additional accommodation is essential.

Air Conditioning.

22. The question of the provision of air conditioning, at least in the lecture room which is on the sunny side of the building, was investigated. The estimated cost of air-conditioning the new building only was stated to be £14,900, while an expenditure of £25,840 would be required to treat the whole establishment. Evidence was given to the Committee which indicated that the lecture room is used mostly in the mornings, and, having in mind the climate of Sydney throughout the whole year, and the expenditure which would be necessary, it is not recommended that the building should be air-conditioned.

Locker Rooms.

23. It was suggested that additional locker accommodation should be installed for the use of students attending the School, but as the plans already provide lockers for the anticipated number of students who will spend the whole day in the building, it is considered unnecessary to allow for those who spend only a short time there before leaving again to continue studies in other sections of the University where lockers are available.

Parking Area.

24. It is proposed, in the plans submitted to the Committee, that space should be provided in the quadrangle for the parking of cars, but some opposition was expressed to this course. It was considered more desirable, from an aesthetic point of view, to make that area as attractive as possible by establishing gardens and lawns, and to make arrangements for a parking space at the rear of the building. On investigating the matter, it was found that it would be necessary to remove part of the high bank, and also that the area would extend beyond the School boundary, making it essential to secure an additional grant of land from the University for the purpose. The Committee therefore considers that the provision of parking space in the quadrangle, as originally proposed, will suit the purpose.

Animal House.

25. As a result of its inspection the Committee is convinced that the Animal House at present in use at the School is quite inadequate. In order to carry out the research work of the School it is necessary at present to make use of the old air raid shelter nearby, though it is unsuitable for such work. The proposed additions to the Animal House will provide space and modern equipment which will overcome the difficulties at present being experienced by the research workers, and the Committee recommends the adoption of the proposed plans for this part of the scheme.

Revised Estimate of Cost.

26. The Committee was very concerned at the difference which exists between the amount of the original estimate of £111,130 and that submitted by the Works Director at the commencement of the inquiry, viz. £73,570 - and investigation was made into the cause of the disparity.

It was represented to the Committee that the original estimate was an approximation, made for the purpose of the post-war reconstruction programme, based on the cubic foot measurement; that allowance had been made for the work to be carried out under Civil Construction Corps conditions which necessitate higher payments under awards than are required under the tender system; and that all "A" class men were liable to be sent north so that the work would have to be done by "B" class men, resulting in a higher cost for labour.

As the difference in the estimates was more than the total amount estimated for labour, it appeared evident to the Committee that a considerable portion of the surplus estimate was attributable to the approximate nature of the method of calculation used in the first instance.

The Committee is assured that the amended estimate is a reliable one, based upon plans carried to a more advanced stage than the original ones, and the Committee's investigation of the proposal has been carried out on the basis of the revised estimate.

It is realised that in the rush to prepare large numbers of extensive schemes at short notice for post-war reconstruction plans, at a time when shortages of staff present grave difficulties, some form of approximation would be necessary, but considerable misgiving is felt that the estimate for a large work should have been prepared, even for approximate post-war reconstruction purposes, on a basis which allows room for a discrepancy so great as to represent 50 per cent. of the final figure. Emphasis is laid on the fact that if similar projects included in the post-war plans are subject to the same variation in estimates, a grave danger exists that at least some of them may be passed to completion without adequate revision of the estimated costs. The Committee recommends that all major works in the post-war reconstruction schemes, if not referred to the Public Works Committee should be reviewed with this example in mind.

Administration.

27. Although the Committee elicited the information, in evidence, that the work of the School had proceeded satisfactorily under the present administrative arrangements, and the facts and figures produced indicated good results in the past, a good deal of criticism was levelled at the School from persons in a position to

judge it from outside, particularly from other States. The feeling exists that the main emphasis in the past has been on the tuition side, with too little attention given to the research work considered necessary in such an institution. This feeling may have been caused partly because lack of large amounts of money prevented the prosecution of extensive research, or partly through the impossibility of gauging the intangible results of the research which has been carried on at the School. In spite of the adverse criticism the Committee realises that much good work has been done in the past with the space and facilities available, and provision has already been made in the present plans for much of the expansion suggested by the critics. Its influence during the war has been demonstrated by the achievements of service personnel whose experience had been gained at the School.

28. Evidence in very strong terms was given by several witnesses, indicating their considered opinion that the School should be taken from the control of the Health Department and placed under the control of either the University or a body like the National Health and Medical Research Council, in order to minimise the effect of ponderous Departmental procedure.

Careful consideration was given to this aspect of the question by the Committee as it realised that upon the vigour and activity of the School's work depends the necessity or otherwise of the extensions now proposed.

29. At the inception of the School of Public Health and Tropical Medicine it was generally conceded that Sydney was the most suitable place for the establishment, particularly from the teaching aspect, but it was also recognised that to remain alive and active it was essential to have a vigorous research side to the work. That opinion is now stressed in evidence before the Committee, and it is asserted that it is impossible to deal adequately with tropical research without subsidiary stations in tropical climates, and without frequent visits to them by the personnel engaged on tropical work. The Committee is informed that development of such tropical stations is part of the projected programme for the School.

30. It is the opinion of the Committee that it is not necessary to transfer the Administration from the Department of Health. With suitable personnel experienced in the work the School can function satisfactorily under the present scheme of management, provided sufficient weight is given to research work, and routine public service requirements likely to impede progress are reduced to a minimum. The Committee accordingly considers that the proposed extensions, while providing sufficient accommodation for increased tuition as well as ample laboratory space for research work, should be adequate for the purpose of moulding the whole institution into a most valuable scientific organisation.

Extension of Agreement.

31. The terms of the Agreement, between the Commonwealth and the University of Sydney, under which the School of Public Health and Tropical Medicine is at present working were examined by the Committee, and evidence showed that the provisions laid down in 1927 appear to have worked satisfactorily. It is realised, however, that the period of 25 years specified in the Agreement will expire in 1952 - seven years from now - and the Committee was not informed of any proposed renewal. When the Agreement expires all buildings on the land become the property of the University, and it is therefore recommended that, before buildings are commenced which will involve the expenditure of many thousands of pounds, an extension of the Agreement should be made to safeguard the interests concerned.

Urgency of the Work.

The Committee was informed that this work was put forward as a post-war project, and evidence was sought in order to determine the extent to which the project should receive priority. It is apparent that there is a pressing need for additional accommodation at the School to cope with the rising number of students to be taught, and also that there are fields of research demanding urgent attention. The Committee is of opinion that this project should be proceeded with as a work of high priority.

SECTION III.

FUTURE ACTIVITIES.

General Scope of Work.

33. While the responsibility for the organisation of the School's activities rests with the Director, and the future organisation will depend upon the person to be appointed to that position, the Committee feels that, amongst the evidence given in connection with the inquiry, some very valuable suggestions have been evinced. While some of these suggestions may be outside the terms of reference to this Committee the following points are presented as advice which may be considered at the appropriate time.

Retirement of Director.

34. Whilst giving evidence before the Committee the Director of the School intimated that he is shortly to retire, and he put forward the present proposals with the greatest of enthusiasm, in the hope that his successor would be able to work under less cramped conditions and with everything to help him to forward the objects of the institution.

The Committee feels that the success of the future work, and even the necessity for the extensions, might depend largely upon the person appointed as the future director of the School, and evidence supporting this view was given by several influential witnesses, who stressed the importance of securing a highly qualified person with vision, experience and drive. It appears, therefore, of the utmost importance to the School, and to the cause of science as a whole, that no time should be lost in taking the initial steps to secure the most suitable man for the direction of this work. To this end a suggestion has been put forward that applications should be called from scientists all over the world and, at the appropriate time, the most suitable man chosen by a special committee selected for the task. At the same time it is desirable that, in such an appointment, qualifications being equal, preference should be given to an Australian applicant.

With this suggestion the Committee agrees and it hopes to see such a course adopted.

Research at Out-stations.

35. It is agreed by all that the teaching side of the School's work will become of negative importance if it is not animated with practical research work. It is also held that research work in the sphere of tropical disease must include contact by the worker with tropical conditions at frequent intervals. The Committee was informed that future plans include provision for field laboratories connected with the School, and some of the evidence in regard to their use will no doubt be helpful.

Pacific Areas.

36. The position of Australia after the war will be affected by contact with the islands to the North and in the Pacific, and it has been suggested that Australia should set up a Tropical Islands Medical Service to keep in touch with the progress against disease in those lands and to safeguard our own population.

Co-ordination of Efforts.

37. Evidence given to the Committee has indicated that, although there is a certain amount of co-operation between the School and other related organisations in New South Wales, the effect of the work of the School does not appear to have made a deep impression on those in charge of work in similar spheres in other States. No doubt when man-power difficulties can be overcome and the extensions to the building are accomplished it will be possible to collaborate much more completely with the Universities, Departments of Health, and the various other bodies engaged in scientific programmes.

Dissemination of Information.

38. The use being made of the information available at the School has been necessarily limited during the war, though the Committee understands that a microfilm service is in existence and is being used by the Services. Overseas institutions similar to the Sydney School are used extensively for the collection and distribution of scientific knowledge, and it is suggested that this School could become the centre to which those seeking information on health subjects could turn with confidence, and an establishment from which details of scientific progress could be distributed to those who could use and build upon such knowledge. It was also stated to be essential,

if enthusiastic work is to be encouraged, that the School should have power to publish books and papers directly and under its own name.

Exchange of Personnel.

39. A suggestion was put forward for the provision of travelling scholarships through which experience could be obtained in overseas countries. The Committee was very concerned with the apparent drift of brilliant scientific men away from Australia, and was favourably impressed with the suggestion for the provision of such travelling scholarships for promising young students. It was also suggested that an attempt to create conditions in Australia, which would give a fascinating interest and attraction to the work, would encourage the best men available to carry out their life's work here. It was pointed out that the organisation of fields of activity in important research spheres will do more to encourage competent workers than the provision of higher salaries. The provision of ample facilities at the School and the planning of its future active role in the scientific world will do much to supply the required incentive.

SECTION IV.

SUMMARY OF CONCLUSIONS.

- (1) Extensions to the building are necessary and should be made when men and materials are available. The estimated cost as referred to the Committee was £111,130. The revised figure submitted by the Works Director was £73,570, and, with the additional items to cost £4,311, the total estimated cost of the building recommended by the Committee is £77,881 (paragraph 14).
- (2) The suggested site is the most suitable under the circumstances (paragraph 15).
- (3) A slight break should be made in the facade of the new wing to enhance the symmetry of the building (paragraph 18).
- (4) The Committee recommends the addition of a lift, costing £3,240 to serve the three floors for passenger and goods services (paragraph 20).
- (5) Additional toilet accommodation is regarded as essential. The estimated additional cost is £1,071 (paragraph 21).
- (6) The suggested addition of air conditioning is not recommended (paragraph 22).
- (7) In view of the difference shown between the original estimate referred to the Committee and the revised estimate, the Committee recommends that all major works in the post-war plans, if not referred to this Committee, should be reviewed with this example in mind (paragraph 26).

- (8) It is the opinion of the Committee that it is not advisable to transfer the administration of the School from the Department of Health to an independent Committee. With suitable personnel experienced in the work the School can function well under the present administration, but the evidence of contemporary scientists is offered as an important contribution to the future organisation of the work (paragraph 30).
- (9) The present Agreement between the University and the Commonwealth Government should be extended before extensive additions to the present buildings are erected (paragraph 31).
- (10) When future buildings in the University area are being contemplated careful consideration should be given to their relation to Commonwealth-owned buildings, which might be adversely affected (paragraph 17).
- (11) The Committee is of opinion that this project should be proceeded with as a work of high priority (paragraph 32).

Rowland James

CHAIRMAN.

Parliament House,
CANBERRA. A.C.T.

1st August, 1945.

1945.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.

PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS.

EXTENSIONS TO THE SCHOOL OF PUBLIC
HEALTH AND TROPICAL MEDICINE,
SYDNEY.

MINUTES OF EVIDENCE.

By Authority:

L. F. JOHNSTON, Commonwealth Government Printer, Canberra.
(Printed in Australia.)

EXTENSIONS TO THE SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE, SYDNEY.

(Taken at Sydney.)

WEDNESDAY, 11TH OCTOBER, 1944.

(Sectional Committee.)

Present:

Mr. JAMES (Chairman).

| | |
|---------------|------------------------|
| Mr. Harrison. | Sir Frederick Stewart. |
| Mr. Mulcahy. | |

Robert Strachan Wallace, Vice-Chancellor, University
of Sydney, sworn and examined.

3. *To Mr. Mulcahy.*—It is the view of the University authorities that in making appointments professional knowledge should be taken into consideration.

4. *To the Chairman.*—I would not say that in regard to research in the field of tropical medicine Australia lags behind other countries. I am not a medical man. I have, however, examined the schools of tropical medicine in London and Liverpool and I know that the school here is on the same footing. It is a matter for an expert to say whether or not we lag behind other countries. I know that there is still plenty of research to be undertaken.

5. *To Mr. Harrison.*—I agree that greater advantage should be taken of our position in the tropics to undertake research work in this field; the tropics are at our door. Although active research is going on, the work could be greatly extended, and in view of the problems which will have to be faced in the near future such work would be well worth while. I do not know whether there is any school of tropical medicine in the Netherlands East Indies or other countries adjacent to Australia.

6. *To the Chairman.*—Persons undertaking the course of public health and tropical medicine pay fees to the University. There is no co-operation with the Council for Scientific and Industrial Research in research and teaching in relation to tropical medicine. The Council for Scientific and Industrial Research does not operate in the field of medicine. Townsville is still regarded as an isolated place for research. The school must be where the students are. I do not think that there is any necessity for the Committee to visit Townsville. That is not the proper place for a school of tropical medicine; it is too isolated. A better case could be put forward for a school at Brisbane, because of the existence of hospitals and a greater number of likely pupils. Tropical medicine is a part of the general medical course. It would be a great mistake to re-establish the school at Townsville. I do not recommend that the tropical part of the work be carried out there. That would be like taking the mountain to Mahomet. In my opinion the proposed building will be adequate for teaching and research purposes for some time to come. It will not provide any beds. Research and teaching are inter-related. Wherever there is teaching, there ought to be research. It is a great mistake to think that a man can go on repeating lectures unless active work is going on at the same time. That applies to all university subjects. Where there is no research, the professors tend to become slack and to repeat the same things over and over again to the detriment of the students. Teaching and research must go together if the teaching is to be kept up to date. The public health side of the work is receiving adequate attention. Teaching in this subject is given to all medical students. They take it in the fifth year. It is a compulsory subject for undergraduates. The diploma in public health is a post-graduate course. I do not know whether sufficient persons are being trained in public health matters. Many of the men who pass through this school go to other States as public health officers, but whether their numbers are adequate I cannot

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say. I do not know whether the health of Australian aborigines comes within the scope of the school, but I should say that men would be in training for that purpose. We have a School of Anthropology in connexion with the University which is closely connected with the aborigine, and we have had "boys" from New Guinea here for training in public health matters.

7. *To Mr. Harrison.*—I should say that the aboriginal compound at La Perouse would be under the control of the health officer of the district. Our anthropologists work in Central Australia, but I do not know much about the medical side of the work.

8. *To the Chairman.*—I am unable to say whether Europeans are more susceptible to tropical diseases than are the natives of tropical areas. That is a matter for the Statistician.

9. *To Mr. Harrison.*—I have seen the plans of the proposed building and I think that they will meet the needs of the school, although I did not notice any provision for an animal house. I have no suggestions to offer regarding the exterior appearance of the building. So long as it conforms to the plan in regard to windows, &c., and general exterior appearance, it will be in harmony with the Physics School, and should be satisfactory. The equipment of the school is provided by the Commonwealth Government. The University has no say in that matter. The equipment to be installed in the proposed new building will be provided by the Commonwealth Government and is no concern of the University. I should say that the Director-General of Health will be responsible for it. I am not acquainted with the details of the course, but I know that the University generally has been short of equipment. It cannot be obtained at the moment. We are at our wits end to find accommodation for students and to obtain equipment. Air-conditioning is necessary in some scientific departments of the University as, for instance, the physics laboratory, and it may be necessary in this school.

10. *To Mr. Mulcahy.*—The proposed building is to be erected on University land. It is a block which has been set aside by the University Senate for the purpose under an agreement which will operate for 25 years. The University is authorized under the agreement to set apart the land described in the schedule and the Commonwealth Government is authorized to erect thereon certain buildings. The University shall not be entitled to demand from the Commonwealth any payment whatever for such land or buildings, whether by way of rent or otherwise. The site of the present school was previously a swamp. A lot of filling was required to make it suitable for building purposes. The present building occupies the greater portion of the land referred to in the agreement and the new proposal will extend a bit beyond the boundaries set out.

11. *To Mr. Harrison.*—The proposal for the new building will have to be agreed to by the University Senate, but so long as the plan is adhered to I do not anticipate any objection.

12. *To the Chairman.*—Eventually, the plans will have to come before the Senate. When the proposals come before us officially, they will be considered.

13. *To Sir Frederick Stewart.*—I am aware that a good deal of research in tropical medicine is carried out by the Rockefeller Foundation. There is collaboration between our school and that Foundation. Our new medical school was a gift of the Rockefeller Foundation. When full-time chairs in medicine and surgery were established here the Rockefeller people became interested. When we told them that, under the

Bosch bequest, we were prepared to establish full-time chairs, they said that they would provide the building. They provided £125,000 for the purpose. A modern medical school must be close to a hospital. We obtain from the Rockefeller Foundation various documents and publications, and from time to time the Foundation has sent men here. Tropical medicine is not a part of the general medical course, but is a post-graduate course. Public health is a part of the general course. On two occasions medical men in New Guinea have brought a number of native "boys" to us for training as village practitioners in a limited field. That training work could be developed because of its great value to the native population of the tropics. It could also be extended to cover our own aborigines. The New Guinea "boys" who come here are quite capable of understanding the course. Missionaries from tropical districts come here mostly to study anthropology, but while they are here Profes- sor Harvey Sutton takes the opportunity to give to them some training in tropical medicine.

14. *To the Chairman.*—The school has worked extremely well and the general arrangement is quite satisfactory. I think that it would be wise if the University authorities had some voice in the appointment of the director of the school, as he may become one of our professors. The Advisory Council meets about once a year.

The witness withdrew.

Harvey Sutton, Director of the School of Public Health and Tropical Medicine, and Professor of Preventive Medicine, University of Sydney, sworn and examined.

15. *To the Chairman.*—As Director of the school I am a member of the Commonwealth Public Service. All expenses in connexion with the building, including salaries, are paid by the Commonwealth Government. I am aware that the Committee is investigating a proposal to extend the School of Public Health and Tropical Medicine, Sydney. The school has long outgrown the original building. In 1933 the accommodation was unduly cramped. The library is the worst example of lack of space. In the new building provision is made for four times the present library space. The museum, which is invaluable for teaching purposes and for administration needs, is also too small. The animal house is totally inadequate, and our teaching laboratories are too limited in size.

Our main activity is in connexion with tropical medicine and hygiene. During the war the military authorities have made use of our facilities to teach technicians of various kinds, including nurses and officers and men in matters affecting hygiene. During the war years 1,250 officers and men and 135 junior officers have attended the school to learn about tropical hygiene. In addition, under the general direction of Brigadier Fairley, we have held eighteen courses, in which about 500 doctors have undertaken a special fortnight's course. That number includes about 200 American officers. They are drawn chiefly from the Army and the Air Force. The school issues a diploma in tropical medicine and hygiene. The course is recognized by the Colonial Office in Great Britain. Only three other Universities in the British Empire, namely, those at London, Liverpool and Edinburgh, are so recognized.

When the school was situated at Townsville four persons gained diplomas. Altogether 77 diplomas have been issued during the fourteen years that the school has been in existence. I am confident that the number of persons who will pass through the school will increase considerably in the

future. I base that opinion on the frequent inquiries received from medical officers now with the forces about the diploma, and because the Army is almost certain to provide opportunities for post-graduate work in tropical medicine and hygiene. I have no doubt that such a course will be availed of by many men now with the forces, particularly as there is a general belief that Australia will do something after the war to improve the health of the inhabitants of its tropical territories. So far no opposition has been raised to such a proposal. That will mean the establishment of a corps of medical officers in charge of a number of native "boys". In order to deal with the native population of Papua and New Guinea, numbering about 750,000, at least 75 trained medical officers will be necessary. I am confident that we can expect more students than we have provision for. That is why in the plans of the proposed building provision is made for laboratories, lecture room and other necessary accommodation. The same remarks apply also to training in public health matters. Many men with experience in the field in the tropics will wish to gain the diploma in tropical medicine and hygiene. So far as I know, this is the only school which has continued to give diplomas during the war. That is because the services have asked for it to be done. Twelve selected medical officers gained diplomas this year.

16. *To Sir Frederick Stewart.*—They undertook a specially compressed course covering a period of 15 weeks. The usual period here is 26 weeks; in London the course takes 20 weeks. The men were particularly smart. The military authorities think highly of the school's diploma. There has been an increasing demand for diplomas in public health. About 50 medical officers, now serving with the forces, have sought information about the course. Many of them will no doubt undertake such a course after the war. With our existing facilities we could not deal with them. This is an urgent need which ought to be met. There is also a strong belief that a considerable revision of the medical course will take place after the war. The Royal College of Physicians has issued a report on certain phases of the medical course, particularly in relation to the teaching of social medicine. The report refers not only to preventive medicine but also to various aspects of social life. In future students may be linked with various social activities and will see something of the homes of the people. In that way they will gain invaluable experience. We should enter for a similar service here. I do not know whether the proposed building will meet that need. After the war the medical course is likely to attract a greater number of students. My class now consists of 166 students, although there is accommodation for only 120. Should they all attend at the same time, there would not be sufficient accommodation for them. That is the reason why I have asked for a larger lecture room. Numbers of men in the army went there straight from school and some of them will want to undertake a medical course when they are discharged. Such men will not be subject to any quota; the University will accept them. The University now accepts about 250 medical students a year, and by the time they reach me the number has failed to about 160. We cannot cope with that number. This is a serious matter. We are supposed to maintain our teaching up to University standards, and if that is to be done we must expand. Our existence as a school is subject to the University authorities being satisfied with our achievements.

Research is an essential background to good teaching. A teacher does much better if he can pass on the results of his own research rather than something

which he has learned from the experiments of others. We have tried to do that, and accordingly members of the staff are given opportunities to engage in research work. Most of them spend half their time on research work; others even more than that. To enable this work to be done sufficient room and good equipment must be provided. I have no doubt that after the war a move will be made to establish a laboratory at the capital of New Guinea. That will be our tropical out-station and will enable us to keep in constant touch with tropical conditions. The details can be worked out here. I suggest that the out-station should be established at the capital of New Guinea, wherever that may be. Every year, in the second term, there is a course of 30 lectures on tropical medicine and hygiene, which is attended by missionaries, nurses, anthropological students, administrative cadets, planters, engineering students and so on, numbering between 60 and 70. The course is designed for ordinary intelligent citizens, it is not highly technical, but it is sufficient to enable white persons living in the tropics to look after themselves and also any natives under their charge. This is the only school of tropical medicine in Australia. There is a course in public health at the Melbourne University, but I think that it has turned out only one graduate in the last ten years, compared with 30 from this school. Students take the public health diploma course in two parts, the scientific aspects can be dealt with in, say, Melbourne or Brisbane, and the second part here. Only in a limited degree is any of our work duplicated in the other universities of Australia. That applies to the basic sciences such as physics and chemistry.

17. *To the Chairman.*—An agreement between the State and Commonwealth Governments regarding the land on which the proposed building is to be erected is a matter for the University authorities. They agreed to provide land for the school. Under the agreement, the Commonwealth Government may take away the equipment, including books, at the expiration of the term of the agreement, but the buildings would remain. The land and the buildings thereon belong to the University. There is a 25 years lease of the land, with an option to continue the period. No payment is to be made by way of rent. The Vice-Chancellor of the University is satisfied that the land could be put to no better use. The term of the agreement is for 25 years from 1929 or 1930 so that already fourteen or fifteen years of the term have elapsed. I have seen the plans of the proposed building and generally am satisfied with the lighting arrangements.

18. *To Mr. Harrison.*—The Commonwealth is entitled to make use of the buildings so long as certain conditions are complied with. The chief of those conditions is that the teaching must be up to University standard. In return, the University will make the land available rent free, and will recognise me and my chief assistants as an integral part of the medical faculty with the same rights and privileges as apply to other departments of the University. A Chair of Tropical Medicine would be an advantage, and I think that the time has come for its establishment. There is already a Chair of Preventive Medicine. As time goes on, more persons will wish to gain the diploma in tropical medicine. The present method of control works well and is probably the best possible. The simplest method would be for the University to take over the school, but I do not think that the University has sufficient funds to do that. In various ways the school can be of assistance to State and Commonwealth departments of health. We train

many of their officers, we act as a link with their laboratories, and we can supply substitute doctors in an emergency.

The school does not share any grant made to the University. There is such confidence in the school that most matters are easily arranged. The University has no control over me in research matters. The University authorities may discuss matters affecting the school with the Director-General of Health, who is entirely in sympathy with the aims and work of the school. Unless the University had sufficient money to meet the needs of the school, I think that the present arrangement is the best. So far as the Department of Health is concerned things are better under the present arrangement than they would be in any other way. The National Health and Medical Research Council has power to make grants. It did so in connexion with the Commonwealth Nutrition Inquiry. The school was the centre of that inquiry and a special grant was made for the purpose. The grant was not made to the school. The present system is a good one; it maintains satisfactory control.

19. *To the Chairman.*—Before the school was established here, its location at Townsville was discussed. Students would not go to Townsville. During the eighteen years that the school was established there, only four diplomas were issued, compared with 77 issued from the school site it was established in Sydney fourteen years ago. Another point is that Sydney is Australia's chief point of contact with the Pacific. Most of the steamer routes radiate from there. I am convinced that Sydney is the best place for the school, but I think that an out-station in Papua would be valuable. The subjects of public health and of tropical medicine are not treated in different buildings. The basic sciences are often the same. For instance, students of public health and of tropical medicine study entomology and protozoology. Other phases of the subjects, such as study of epidemics and vital statistics, are common to the tropical hygiene diploma course and the public health course. The tropical hygiene diploma is really a diploma of public health for the tropics. In the public health course, students do no clinical work, but a man who has to practise in the tropics must do such a course. At least one half of the subjects are common to both courses. The public health course includes study in chemistry, particularly in relation to food and water whereas only a little of that kind of work comes into the tropical hygiene course. Sanitary engineering is more a master of public health as such. Normally about six people take the diploma course in tropical medicine each year, and three the diploma of public health course. This is about the number which the population can absorb. There is a general impression that after the war something more will be done for the native peoples, and that has stimulated interest in tropical medicine. I shall be astonished if we have less than twenty students at a time after the war.

20. *To Mr. Mulcahy.*—Australia's territories in the tropics will probably carry a greater white population in the future.

21. *To the Chairman.*—A considerable number of medical missionaries take the diploma in tropical medicine. Others, particularly nurses, who are associated with various missions, take the civilian course. Almost every man in the New South Wales Department of Health passes through this school at some time or other, and the time will come when a man will not be accepted for a public health department job unless he possess the school's diploma. At present

many public health officers attend the school after their appointments. We have had students from Queensland and Victoria studying public health. Commonwealth officers from all the States come here. I am responsible for the activities of the school. I am under an Advisory Council which meets about once a year. On that body are two representatives of the University, two persons appointed by the Minister for Health, with the Director-General of Health as chairman. I present to the Advisory Council a report for the previous year and proposals for the next year.

We do not undertake research in connexion with cancer. The tendency is to allow such organizations as desire to investigate a special subject to go ahead. For instance, Doctor Burnet, of Melbourne, deals specially with virus diseases, and therefore we do not conduct research in them to any great degree. Similarly research in connexion with cancer is left to a special institute, although we undertake investigation in individual cases. In connexion with each disease, certain equipment and technique are required. Our school is not adapted to undertake research in connexion with cancer. Our work is in connexion with preventive medicine, rather than with the curative aspects of medicine. Australia is very free from tropical diseases, largely because the Australian aborigines were free from disease. Unfortunately, they have suffered from contact with the white population. Hook-worm is found in portions of Queensland; it occurs amongst prospectors and others. Dengue fever is practically the only disease of a tropical nature which attacks large numbers of people in Australia. Sand-fly fever is not an important disease; yaws is confined to the aborigines; leprosy is not dangerous to white people. In Papua the position is different, as white people there are subject to many diseases. Hydatidosis has been prevalent, and Professor Drew has written a book on the subject. He is stationed at this University. The "pink-disease" found among children was so named by a South Australian doctor. However, Australia is relatively free from all these diseases. The diseases seen in the museum are peculiar to the natives in the tropics; they are seldom found among white people. No white person would allow things to get to such a stage before seeking medical advice and attention. Malaria is the chief tropical disease with which we are concerned, although scrub-typusis is not to be despised. Dysentery is another which deserves attention. Sprue is another trouble which occurs. It is difficult to say whether all general practitioners in the tropical areas of Queensland receive special training in tropical diseases. I know that Sir Raphael Chenco gives a good deal of attention to such subjects in his teaching, but doctors from other medical schools also work in tropical parts of Australia. I give to students a good deal of teaching in connexion with tropical diseases, particularly in connexion with malaria.

22. *To Sir Frederick Stewart.*—Such teaching is not a compulsory part of the curriculum. Tropical medicine is a post-graduate study.

23. *To the Chairman.*—The coastal regions are the most troublesome areas. For instance, there is no malaria in the ranges which form the backbone of New Guinea. White people are more susceptible to malaria than are the natives. Possibly the reason is that many native children die from malaria and those who live to adult age become relatively immune. Attribut has been an outstanding success. In the last war deaths from malaria were much more numerous than during this war. It is difficult to say whether the standards of research in Australia compare favor-

ably with those in other countries, because countries with a bigger population provide a bigger field for research. We have a liaison with other schools, but it is not such as I would like it to be.

Before the war an association which dealt specially with tropical medicine met from time to time in south-eastern Asia, and to its meetings Australia sent representatives. The Pacific Health Conference met in Australia in 1929 and 1935 when most of the nations whose territories border the Pacific Ocean, with the exception of a number of South American republics, were represented. In addition, men from Australia have gone abroad for study purposes. We endeavour to keep in touch with developments in other countries, both personally and through literature. Research, however, is largely individual. A man may carry on experiments for twenty years without making any great discovery, and then suddenly he may come across something of great value. Sir Howard Florey, one of the discoverers of penicillin, is an Australian.

Under the agreement entered into between the Commonwealth and the University authorities, all fees are paid to the University. Consequently, our practice is not to require fees from qualified doctors who take a course in tropical medicine. The University charges a fee of £5 to cover the examination and the diploma. As most of the people who undertake the course are keen students, we think that the system is satisfactory. The fee in England is about £50. The only condition that we impose is that students must be prepared to work hard. In ordinary times we keep in personal touch with cases in local hospitals. The diagnosis of tropical diseases is linked with ordinary medicine. In recent years certain diseases of the blood and of certain glands have been given more prominence. We have an arrangement with the Sydney hospitals. It was hoped that when the Prince Henry Hospital was established a special ward would be provided, but that has not been done. Dr. Baldwin, who is mainly responsible for teaching tropical medicine, was appointed consultant there and also at the Prince Alfred Hospital. Students also see any cases at the Leper Settlement at Little Bay. At the 113th Australian General Hospital lectures are given and special cases are observed. There is very little malaria outside the war areas. The increase of air transport may increase the danger of disease being brought to this country. The position is being watched carefully. One advantage is that travellers by air can be forced to be immunized; moreover, people who travel by air are usually people with a definite objective who do not wish to get sick. They are in a different category from tourists who travel by ship. The school carries out research work in connexion with special health problems. So far, no special training of government industrial inspectors has been undertaken, but in the proposed new building provision is made to deal with industrial hygiene. Matters were well in hand when Dr. Robertson died, but things then fell through. We have undertaken investigations in the Postal Department in connexion with ventilation and with carbon-monoxide poisoning. Further developments along these lines will have to be undertaken, and provision is made in the new building for that to be done. During recent years there has been a stir in the medical world in regard to industrial medicine. Research in connexion with silicosis is dealt with by the Board of Health. Dr. Badham had access to all the material available and he did some fine work, but we did not get the material. There is an un-written rule that the result of research into particular problems shall be passed on to others who are interested. Only occasionally do two or more people

carry out the same class of work in the same neighbourhood. Only rarely does the Arbitration Court refer cases to us, and then only indirectly. The State Health Department enters for that class of work. In the national house we keep as our normal population, guinea pigs, rats, rabbits and mice. Occasionally we have foxes and monkeys. We use these animals for demonstration work as well as for research. One of the best ways to teach the value of certain foods is by means of a demonstration showing the effects of lack of certain properties in foods. I have been greatly hampered in my teaching by the death of animals.

24. *To Mr. Harrison.*—I use Health Department officials for all my outside work. For instance, Dr. Graham Drew will do, say, 10 excursions and another doctor may do six excursions. We regard them as a part of our staff. We would not deal with silicosis because others are doing that work and we know what they are doing. It can be said that I am responsible for these plans, but I point out that a man engaged on research cannot be told what he must do. At times a co-ordinated research is undertaken. In such cases the Director-General of Health makes the final decision, but in practice I really decide whether such action is necessary. The plans do not provide for all that I would like, but I have had in mind the minimum that should be provided. It can be said that the plans will provide that minimum. I shall leave the service early in 1947 so that I shall not benefit greatly by what is done, but I wish my successor to have the best equipment that I think can be provided. I have to take into account not only what is desirable, but also what is possible or likely to be provided. I can say that everything provided for in the plans is really necessary and that no extravagance is proposed. I should like to go further, but I have stuck to what I believe is really necessary. If air-conditioning of the whole building were provided for, the cost would be increased. If air-conditioning could be added it would be an advantage, but I would rather have what has been planned for than have less equipment in order to provide air-conditioning. My successor will need all that the plans provide for. If the work of the enlarged school is successful, and should the needs of the Pacific justify an expansion, more could be done later. The establishment of a school of tropical medicine at Canberra is worth considering, but it is desirable that it should be close to a medical school.

25. *To Sir Frederick Stewart.*—The diploma of public health is available only to qualified medical men. No provision is made for the training of lay public officers, such as municipal health inspectors. Their training is undertaken by technical colleges, which issue health inspector's certificates. I had hoped that it would be possible to have a degree of Bachelor of Science of Public Health for persons who have not graduated in medicine but are responsible for such things as ventilation of factories, but I cannot tell the University that it should provide for it. So far, there does not seem to be any demand for such a course, but the time may come when there will be a demand. We cannot proceed too far in advance of public opinion.

26. *To Mr. Harrison.*—I recommend the equipment that I think is necessary for the school, and so far I have no complaint against the treatment that has been given to me. I ask only for essential equipment. And I have never spent the whole of my wage. Every request that I have submitted has been granted. It is difficult to obtain adequate staff, but that is no fault of the department.

The witness withdrew

(Taken at Sydney).

MONDAY, 1st NOVEMBER, 1944.
(Sectional Committee.)

Present:

Mr. JAMES (Chairman).

Mr. Conclan. Sir Frederick Stewart.
Mr. Mulcahy.

George Sydney Cook, Works Director, Allied Works Council, Department of the Interior, sworn and examined.

27. *To the Chairman.*—I am aware that the Public Works Committee is considering a proposal for the extension of the building for the School of Tropical Medicine attached to the Sydney University. The proposal for the erection of the building and the establishment of this school within the University of Sydney was approved in 1928 at an estimated cost of £30,000. The original sketch plans were prepared by Professor Wilkinson, the university's architect. The present proposal is for the extension of the building and its facilities. The plans indicate the extensions, which are a continuation of the original architectural design. The extensions are arranged to form a quadrangle with a frontage of 75 feet 9 inches facing the east, 154 feet northern frontage, and 93 feet facing west, leaving a courtyard in the centre of 69 feet by 50 feet. An additional storey is also shown to the southern wing of 121 feet 6 inches by 45 feet. The approximate new space of the extensions is 36,000 sq. feet and represents one and a half times the original space provided in 1928. Close handy on the southern end of the building and associated with the School of Tropical Medicine is an animal house. This proposal provides for a new storey over the whole of the existing building, 98 feet in length by 35 feet on the eastern end and 22 feet on the western end. The estimated cost of the extensions to the larger building is £69,300, and to the animal house £4,270, making a total estimate of £73,570, including all subsidiary services. The ceiling heights of the original building have been maintained. On the extension facing east, the heights between floors are 12 feet lower ground floor, 12 feet upper ground floor and 11 feet on the top floor. On the wing facing north the floor heights vary from those given above to 14 feet 6 inches, 14 feet 6 inches and 14 feet so as to correspond with the heights of the tee-legged portion of the existing building, and to utilise the extra height provided by the fall of the ground. Advantage has been taken of these extra heights to plan where they occur the larger rooms such as the physiological chemistry laboratory and lecture room. The site presents no difficulties, and has good bearing qualities for foundations. The proposed building is not in harmony with others of the Gothic type within the university group, but it is in harmony with the physics building nearby. It will be in a hollow, and will later be masked by another building to be erected in front of it. The windows are designed to give the greatest possible amount of light to the laboratories, but they are not so big as to constitute an architectural defect. The Fire Brigades Board was asked to review the plans, and members expressed themselves as satisfied with the arrangements that had been made for fire protection. Hydrants and hoses will be provided so that every part of the building may be covered. Apart from that, the building itself, while not absolutely fire proof, would certainly be fire resisting. When required, the floors will be designed to resist acid, as will also the laboratory benches. Professor Harvey Sutton and his assistants have been in constant touch with the architects on my staff regarding the design

of the building. Sometimes they have sent prints to us indicating the position of various items of equipment. I understand that the Grounds Committee of the university will raise no objection to the proposed building. There has been full consultation with the university authorities, with Professor Harvey Sutton and with Dr. Cumpston. In my opinion, the plans provide for the most economical use of space. I do not think that any space has been wasted by not providing for the installation of library cases in the halls and on the stairways. Provision has been made in the wing adjoining the library for bookcases, and in the library itself bookcases with moveable shelves are to be installed. Our investigations lead us to believe that the site is quite suitable for building purposes. Tests have been made which indicate that there is no danger to be apprehended from the fact that the site was formerly a swamp. There is still a good fall beyond the building to provide drainage. I believe that the equipment proposed is the most modern available. We have been in touch with the professors on this point, and they seem to be quite satisfied. The present foundations are strong enough to take the proposed additions to the building. I do not think that the extra support columns provided for will be unsightly. They are necessary in order to take the weight of the extra floor which is to be erected over the tee-legged portion of the existing building. Ventilating pipes will go through the roof, some as vents for sewerage and some for ventilating the rooms. They will front the courtyard, and I do not think that they will be an eyesore. They will not interfere with the view from the top of the building. It is proposed to insert asphaltoid or bituminous felt between the lintels and the brick work where concrete rests on that brick work. Provision has been made for the installation of a projector to throw on to a screen any details which the lecturer may require. Light-proof blinds have also been provided.

28. *To Mr. Mulcahy.*—No provision has been made for central heating in the building; it is not necessary. Only in the lecture room has any provision been made for heating, and that will not be central heating. We shall probably arrange some electric coils within the ventilating system allowed for the lecture room. There is to be a certain amount of air conditioning and control of humidity confined to the insectarium. The matter has been discussed with Professor Harvey Sutton, and consideration was given to the fact that the lecture rooms and laboratories are not likely to be occupied continuously throughout the day. The students from various classes will attend for two or perhaps three hours at a time, and will then go off to some other part of the university for other subjects. I agree that in very cold weather it is better for the students that provision should be made for heating. I cannot say what would be the extra cost involved in installing a system of central heating, but it would certainly be considerable. Extra accommodation would have to be provided for the heating plant, and pipes would have to be introduced, not only in the new building, but also in the old portion. No provision has been made for installing lifts in the building. I hardly think that they are necessary in view of the fact that some of the entrances to the building will be from the higher level so that the greatest amount of climbing would be up one story or down one. In other parts of the building the climb would be from the lower ground floor to the upper ground floor and then to the first floor. There are to be four concrete stairways so that ample provision is to be made for exit in the case of fire.

I do not think that there will be very much traffic between the various floors so that the absence of lifts is not a serious disadvantage.

29. *To Mr. Conclan.*—Provision has been made for non-slip treads on the concrete stairways. There is lavatory accommodation in the old building, but no such provision has been made in the new building. In this respect the accommodation is in accordance with the regulations. As I pointed out before, the same students will not be occupying the building continuously. Any given class will be there for only a limited period. I recognise that a possible objection lies in the fact that lavatory accommodation is not provided nearer to the lecture rooms. There is to be a boiler in the animal house which will provide steam for sterilisers. There are also heating coils in various parts for the animals, and elaborate precautions are to be taken in respect of the insectarium. However, there will not be central heating even in the animal house. For research work on insects it is necessary that certain conditions of heat and humidity should be maintained. If it were essentially an office building I should certainly advocate air conditioning.

30. *To Mr. Mulcahy.*—I have not discussed the matter of air conditioning with Professor Harvey Sutton, but the professor is in full accord with the design for the new building.

31. *To Sir Frederick Stewart.*—The lecture hall is on the western side of the building which, of course, will be the hot side during the summer. However, it would require a considerable amount of re-designing to put it anywhere else. Placed where it is, it has the advantage of a 14 feet 6 inches ceiling as against a ceiling of 12 feet 6 inches in other parts of the building. This greater height is possible because advantage has been taken of the slope of the ground.

32. *To the Chairman.*—I am aware that the original estimate for this work was £125,000, while the latest estimate is £73,570. There is, admittedly, a considerable discrepancy, but I point out that the original estimate was made when it was believed that the work was to be part of the post-war reconstruction programme. The estimate was made on the cubic foot basis and in the belief that the work would be done under Civil Constructional Corps conditions. The cubic foot method of estimating is always a little unreliable. Since the original estimate was made it has been decided that the work will be done under the tender system. That, in itself, will make for some reduction of cost. Moreover, at the time of the original estimate nearly all the "A" class men in the Civil Constructional Corps were liable to be sent north, and it was believed that any work here would have to be done by "B" class men, which would make it more costly. No one knows when the post-war reconstruction programme will be put into effect. It may be in one year or in two or in three years' time, and the costs of material and labour are increasing all the time. Allowance had to be made for this when it was believed that this work was to be part of the post-war programme. It now appears that, instead of being left to the post-war period, the work is to be gone on with very soon. This justifies a reduction in the original estimate.

33. *To Sir Frederick Stewart.*—The original idea was that the building would be erected by the Civil Constructional Corps on the cost-plus system. I agree that that fact does not fully explain the discrepancy of £41,000 between the first estimate and the second. The principal reason for the discrepancy is the fact that the first estimate was made on the cubic foot system whereas the second was based upon detailed calculations. For some kinds of construction, such as

butments and open sheds, upon which we have been chiefly engaged during the war, the cubic foot system of calculation is fairly accurate, but it is not entirely suitable for buildings of the kind under discussion. We employ quantity surveyors to estimate costs. The original estimate was made in January of this year, and the revised estimate was made at my instigation within the last three weeks.

34. *To the Chairman.*—Prices of materials have increased considerably since 1939. For instance, costs for warmth boards have increased by 85 per cent up to the 1st July of this year.

35. *To Mr. Conclan.*—Work done by the Civil Constructional Corps is only because the award conditions for the Civil Constructional Corps are higher than those provided by the Building Trade Division Award or by the State award for the building trade. The Civil Constructional Corps award also provides for sick pay and for annual leave, and for payment in wet weather.

36. *To Sir Frederick Stewart.*—You may take it that about 40 per cent. of the cost of the building would be for labour and the remainder for material. In the revised estimate the cost of labour would be about £30,000.

37. *To the Chairman.*—The plan has not been altered since the original estimate was made, and there has been no reduction of the proposed accommodation. The fact is that the original estimate was too high.

38. *To Mr. Conclan.*—The same people took out both estimates. The quantity surveyor would be responsible, but it may be that the first estimate was made out by different men in his section from those who made out the revised estimate.

39. *To Sir Frederick Stewart.*—I emphasize the point out that the cubic foot method of estimating is unreliable except when you are putting up a number of similar buildings. In my opinion, we should not have taken out the estimate on a cubic foot basis. It was done because we were preparing such a big programme for post-war reconstruction that it would have taken a long time to make a detailed estimate.

40. *To the Chairman.*—The plans upon which the original estimate was made had not been carried to the same advanced stage as those upon which the later estimate was made. That would account in part for the discrepancy.

41. *To Sir Frederick Stewart.*—I have no reason to doubt the accuracy of the later estimate. I believe it to be correct as far as is possible. In considering the discrepancy between the first and the second estimate it must in fairness be remembered that estimates by well-known contractors vary very greatly in respect of the same job. It is quite common to get a variation of 30 per cent., and sometimes the variation is as great as 75 per cent. I recognize, of course, that those estimates are made by different people. We, in preparing plans for various departments, have made a rough and ready estimate of costs on the cubic foot system so as to give the department some idea of the approximate cost. We cannot get enough quantity surveyors to make detailed estimates of all the work going through our hands.

42. *To Mr. Mulcahy.*—It may be that the wide variation of estimates made by contractors for the same job can be attributed in some instances to the fact that some of the contractors do not want the work, and put in a high tender to make sure that they don't get it. However, I do not think that that applies in most cases. The contractors really want

the job, but their estimates vary very widely, nevertheless. After all, an estimate really represents the opinion of a particular man. We nearly always accept the lowest tender for a job provided we can satisfy ourselves as to the tenderer's financial stability and his ability to pay wages and buy materials.

The witness withdrew.

Dr. Emanuel Sidney Morris, Director-General of Public Health of New South Wales, sworn and examined.

43. *To the Chairman.*—I am aware that the Public Works Committee is investigating a proposal for the extension of the School of Tropical Medicine at the University. Personally, I do not come into touch with the activities of the school in regard to tropical medicine. I am more concerned with the work which it does in the training of my medical officers who wish to take a post-graduate course in public health in order to get a diploma. The course for a diploma of public health takes twelve months, and a further twelve months is required for the diploma in tropical medicine. As there are practically no tropical diseases in New South Wales our men do not go in much for that side of the work. I recognise that tropical diseases will probably be introduced into the State with the return of soldiers from service in tropical areas. Every doctor knows of the danger from malaria, smallpox, yellow fever, &c, but the course in tropical medicine goes beyond those things. There is fairly complete co-operation at the present time in health matters between the State and Federal authorities. For instance, we have an arrangement with the School of Public Health and Tropical Medicine whereby we borrow the services of the entomologist, Mr. Taylor, who is doing a survey of mosquitoes in the northern areas and in the Murrumbidgee irrigation area. It is desirable to know where malaria-carrying mosquitoes are to be found so that precautions may be taken against them. In my department individual officers receive recognition by having the results of their researches published under their own names. Articles published in the *Medical Journal* are available to all members of the profession, and I should say that publication in the journal is sufficient to make known the result of any investigation. All the facilities of the school are available to our officers, though I do not know whether there is any formal arrangement to that effect. My department does not control the work of factory inspectors in New South Wales. They are under the control of the Department of Labour and Industry. However, we investigate medical problems for them. Then we make recommendations from a health point of view, and the factory authorities put them into operation. Just recently there has been a move in the direction of giving factory inspectors training in health matters. I believe that the present trend is in the direction of closer co-operation between the Commonwealth and the States. The National Health and Medical Research Council meets regularly, and is attended by representatives of the State and Commonwealth, a representative of the British Medical Association, a member of the Royal College of Surgeons, a physician and two laymen. At these meetings which occur every six months or so, all the latest information is pooled. This is an example of co-operation. It must also be remembered that the Commonwealth Government is moving in the direction of instituting a national medical service, and when this is done it may be said to be the direct outcome of the work of the National Health and Medical Research Council.

I have seen the plans of the proposed new building at the University, and I am not able to suggest anything that would make for their improvement. I have not discussed with public health officers in other States the matter of their using the facilities of the school in Sydney, but I know that they are well aware of the existence of those facilities. I believe that public opinion has been aroused to the need for taking measures to control tropical diseases, and after the war there will be an extension of work in this field. Therefore, I do not think it would go amiss for the Commonwealth to spend £75,000 on the extension of this school. The training of graduates in the school would be of advantage to my work. I hope to use such graduates much more in the future than has been done in the past. The State Government has accepted the principle that there should be many more medical officers of health in New South Wales and all of these officers would have to be trained at this school in order to fit them for their duties. So far as I can judge, the proposed building should be erected. Certainly, the work should not be hampered for lack of space.

44. *To Mr. Mulcahy.*—Air conditioning of the class rooms would certainly make for comfort, but I do not know that it is essential. At the present time, we tend to regard air conditioning as a luxury; perhaps, in another twenty years, we may look upon it as a necessity.

45. *To Mr. Conlan.*—Students from other States do attend the school in Sydney, but I cannot say in what numbers. I do not think that there are many of them, but it must be remembered that the study of public health is only in its infancy. I believe that there ought to be lifts in the new building. It is very uncomfortable to have to walk up and down stairs in a three-story building, and the extra cost of installing lifts ought not to be great.

46. *To the Chairman.*—I believe that the degree of co-operation between the Commonwealth and the States in regard to public health is satisfactory, and has improved over recent years.

The witness withdrew.

(*Taken at Sydney.*)

TUESDAY, 2ND NOVEMBER, 1944.

(Sectional Committee.)

Present:

Mr. JAMES (Chairman).

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| Mr. Conlan. | Mr. Mulcahy. | Sir Frederick Stewart. |
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Doctor Edward Thomas Brennan, medical practitioner, sworn and examined.

47. *To the Chairman.*—I am a member of the Advisory Council of the School of Public Health and Tropical Medicine at the Sydney University, having been appointed to that body in 1937. Three members are appointed by the Commonwealth, and three by the University. I am one of those appointed by the Commonwealth. I do not think that existing arrangements at the school are adequate for study and research. For some time I have been honorary lecturer at the school on diseases of natives. I was formerly Director of Public Health at Rabaul. I believe that the work of the school is applied in an efficient manner to public health problems. Improvements could be effected mainly by increasing the capacity of the school to do the work for which it was intended. Accommodation is very cramped.

I am acquainted only with the tropical medicine side of the school's activities, and that is a north-east Australian and island concern. The public health side is also a local and southern Australian concern, and with that I am not so well acquainted. The school is used as a central bureau to which the results of research in various fields are sent, and from which they are distributed to quarters to which they might be of value. I have seen the plans of the proposed additions to the school, and I believe that they make adequate provision for many years to come. They have been very carefully thought out. The work of the school will increase greatly after the war because of the number of men who will return from service suffering from tropical diseases. For every case of the kind with which we had to deal before the war we will have 200 or more in the future. On that ground alone the proposed extensions to the school are justified.

I have had very little experience in research work into silicosis. The only time we were concerned with it was during the two eruptions at Rabaul when some people were affected by volcanic dust. I agree that the problem of silicosis should be investigated, but that is chiefly a public health matter.

I believe that graduates from the school receive adequate practical experience on cases in the local hospitals. I have visited the schools of tropical medicine in London and Edinburgh and the Sydney school compares favourably with them. Only those students who intend to practice in the tropics would benefit from a visit to New Guinea for the sake of experience. My medical officers in New Guinea were all sent down to Sydney for a course in tropical medicine.

I went to New Guinea in July of 1923, and I came out of Rabaul just three weeks before the Japanese got there. I had been transferred to the Army. All the time I was in New Guinea I was in contact with tropical diseases. As far as the suggestion that this Committee might visit New Guinea to inform its mind on the subject of tropical diseases, I point out that Rabaul is still in possession of the Japanese, and Moresby, being in the dry belt, does not provide the humid conditions suitable for the development of all the true tropical diseases. There are cases of elephantiasis in New Guinea, but they are not so frequent as in the Polynesian Islands to the east. Elephantiasis is a condition which produces grotesque swelling on the body and is associated with the disease of filaria, though it does not develop in all cases of filaria. Dr. Bancroft, of Brisbane, was the first to make successful researches into this disease. The present trend in Australia seems to be in the direction of the nationalisation of medicine. Therefore, medical training in public health matters is to be greatly extended in the future.

48. *To Mr. Conlan.*—The present lecture room at the school is very small and increased accommodation is necessary. Students do a course in public health in their fifth year, but tropical medicine is not included in the present course. They take some lectures in tropical medicine so that if they decide to take it up later they will know in which direction to direct their minds. I believe that the plans for the school have been very well thought out. Consideration was at first given to the idea of having separate buildings for the public health school and for the school of tropical medicine. However, it was eventually decided that as the work of both was in some measure interlocked, and as the services of entomologists and pathologists were required for both, it

would be more convenient to house them in the same building. I should say that there is practically no danger of the students catching diseases from the animals which will be kept in the vicinity of the school. The actual research workers may run some risk, but not the students. Missionaries and anthropologists from New Guinea take courses in tropical medicine at the school, and this fact has been taken into consideration in preparing the plan. I agree that it would be an advantage if the building were air-conditioned.

49. *To Mr. Mulcahy.*—As to whether Sydney is a suitable place for a school of tropical medicine, I point out that there ought to be one central school on the mainland for the teaching of this subject, and it must be attached to a university. The average medical man knows practically nothing at all about tropical medicine, and those who wish to study the subject must take a post-graduate course. That is the practice all over the world. There are schools of tropical medicine in London and in Edinburgh, and there is also one in Calcutta. The idea is that the school must come to where the students are. During the war research work at the Tropical School has been limited, but one of the objects of the school is to conduct research, and this will be prosecuted more vigorously after the war. It would be possible to conduct research in the tropics, but the training of students must be associated with a university. I do not think it would be suitable to attach the school to the university in Brisbane. It should be in a more central position. The original school was in Townsville, and it granted a certificate after a three months' course. Then it was decided that there should be a university diploma associated with the course, and the school was shifted to Sydney. In New Guinea very few white people develop filaria, but in the Cook Islands and in Rarotonga white people are frequently attacked by this disease. There the disease takes a somewhat different form from the filaria which we know in New Guinea, and it is more commonly accompanied by elephantiasis.

50. *To Sir Frederick Stewart.*—Doctors who have to treat cases of tropical disease in Sydney frequently communicate with the School of Tropical Medicine, and the services of a specialist are placed at their disposal. After the war there will be thousands of sufferers from tropical diseases, and it is therefore desirable that the resources of the school should be extended.

51. *To Mr. Mulcahy.*—I do not think that better results would be achieved by subsidising State schools of tropical medicine than by concentrating on the Commonwealth school. In any school of tropical medicine there must be one man to study insects, another to study malaria and others to study other forms of tropical disease. This work can all be done quite well in a central institution. If it were left to the States each would have to build up its own organization, and this would lead to duplication. It might later be necessary to establish a branch institution of the school in the tropics to carry on research work there and to collect specimens.

52. *To the Chairman.*—My idea is that there should be established a small branch of this school in the tropics—in New Guinea perhaps—to carry on research work only, it would not be for the treatment of disease. Before the war we had only 25 doctors in the whole of New Guinea, including Papua, and a number of trained medical orderlies who worked among the natives. After the war, the number of doctors will have to be increased, and

they will have to be trained at the School of Tropical Medicine. In addition to this, many military doctors who have served in tropical areas will have developed an interest in tropical diseases and will desire to take post-graduate courses at the school. The experiment of bringing New Guinea natives down here to be trained in medicine did not prove successful. Doctor Strong sent down a batch of twelve natives who had been trained by himself as medical orderlies. They did fairly well, but the next batch of twelve were less successful, and after that the system fell into abeyance. At one stage we thought of sending natives to the tropical school at Singapore to learn medicine, but the school there required a fairly high standard of general education for entrance, something approximating the Intermediate certificate, and hardly any of our natives have reached that standard. To make the scheme successful, it would be necessary to train a large number of natives up to the necessary educational standard, and then to choose the brightest of them for medical training. I know that in Fiji the scheme for training the natives in medicine has been successful, but our New Guinea natives, for the most part, are not of the same mental standard as are the natives of Fiji and Polynesia generally. Many of them are very bright up to the age of fourteen or fifteen, but they do not develop beyond that. We used to send our own qualified doctors down to the school here to get their diplomas in tropical medicine, and after their return they did their own research work. The Commonwealth Government did not provide any facilities in New Guinea for research work. This was provided by the Territory Public Health Department, and I think it would be an advantage if a research laboratory were to be established in the North. Such an institution could also be used as a medical school for the training of natives as is done in Fiji.

53. *To Sir Frederick Stewart.*—At the medical school in Suva special emphasis is laid upon tropical medicine. The native boys are taken when they are quite young and given a five years' course. Some of them are very bright indeed.

54. *To Mr. Mulcahy.*—In New Guinea, malaria has had the effect of reducing the population a good deal. It is estimated that infantile mortality among natives in New Guinea is as high as 25 per cent., and nearly 20 per cent. die of malaria. It is possible to clear certain specified areas of the malaria-bearing mosquito, but what has been done in this direction has had little effect upon the population as a whole. For instance, Rabaul itself was cleared of malaria for ten years before the war so that one could sleep there without a net, but half a mile outside the town it would have been impossible to do so without risk of contracting malaria.

55. *To Mr. Conelan.*—Something has been done in New Guinea to educate the natives to the dangers of malaria. For instance, if a village happens to be in a particularly unfavourable situation, we advise the natives to remove it elsewhere. However, the only place in the North where the problem has been attacked on a large scale is Malaya, where, before the war, some of the large plantations had been completely cleared of malaria by the laying of sub-soil drains so that no surface water was allowed to lie anywhere. The cost of such measures is very high. In New Guinea, as much as 20 per cent. of the revenue was allocated for medical work, and at the outbreak of war the amount actually expended had reached a total of £50,000 a year, but that is a mere nothing when it comes to clearing so large an area of malaria.

56. *To the Chairman.*—I was in New Guinea practically from the time the mandate was granted until

just before the outbreak of the present war. The natives in the Mandated Area received more medical attention than did the natives of almost any other part of the tropics, except, perhaps, those in the neighbourhood of Singapore. Favourable mention was made in the League of Nations reports of the work which was being done.

The witness withdrew.

Herbert H. Schlink, chairman of the Royal Prince Alfred Hospital, called and examined.

57. *To the Chairman.*—Up to the present there has been very little co-operation between our hospital and the School of Public Health and Tropical Medicine other than that we have appointed one of its staff as our consultant on tropical diseases. At one time I proposed to the Commonwealth authorities that we should allot the school ten beds, but the idea fell through because we could not agree who was to pay for their upkeep. At the present time, cases of tropical disease are spread over the medical wards in the hospital and in the isolation blocks. There are 800 beds in one of the big military hospitals in Sydney for tropical diseases. We are now getting all sorts of infectious diseases from the tropics that we never had before. I certainly think that it is necessary for the teaching of tropical medicine that the students should have a number of beds to work on. The school can teach the academic side of the subject, but just as the general medical school must have access to the hospitals so that the students may gain practical experience, so the School of Tropical Medicine should have at its disposal beds for the treatment of tropical diseases. In the plans which we have made for the development of a Prince Alfred Hospital provision has been made for about 100 beds for this purpose. I believe that a whole pavilion for tropical diseases should be set aside for the benefit of the school. In Liverpool, there is a tropical school of medicine with a hospital attached.

58. *To Sir Frederick Stewart.*—It may be that not enough cases of the kind would ordinarily develop in Sydney itself, but patients are always being brought here from the Islands. At the present time, patients brought here from the Islands are sent to any hospital where beds are available.

59. *To Mr. Mulcahy.*—The Government should establish, in connexion with this school, a pavilion for tropical diseases. In normal times twenty beds would be enough, but because of the number of patients coming back from the war perhaps as many as 100 beds would now be needed.

60. *To the Chairman.*—For research work it is desirable that each worker should be provided with a separate room. The staff at my hospital occasionally use the facilities at the School of Tropical Medicine, though this does not occur frequently. In my opinion, tropical medicine is essentially the concern of the Commonwealth Government, and therefore I favour the extension and improvement of the present school in preference to the giving of assistance to the State authorities. Tropical medicine is concerned with shipping and with our external territories, activities which are Commonwealth in their nature rather than the concern of the State. For that matter, I believe that capital expenditure on hospitals generally is a matter for the Commonwealth, whereas running costs and maintenance should be the responsibility of the State. The Commonwealth

is the only authority with sufficient money at its disposal for the large capital expenditure required for hospitalization generally, and it applies with even greater force to the School of Tropical Medicine.

61. *To Mr. Conelan.*—I believe that research and teaching in connexion with tropical medicine should be concentrated in one institution instead of being spread over a number of schools in the various States. Not many men have the necessary qualifications for research work, and it is desirable that the few available should be brought together to work in one central institution. The school should also be situated at a port visited by ships from the Islands. This reduces the choice to Sydney, Brisbane, or perhaps, Townsville.

62. *To Sir Frederick Stewart.*—It is better to bring all the students to one centre for training than to have four or five institutions scattered throughout the Commonwealth. For one thing, it is very difficult to get good medical teachers. A great many men will not be bothered with teaching. We have now committed ourselves to a school at Sydney, and it is better to develop and improve the existing school than to disperse our activities over the States.

63. *To the Chairman.*—You suggest that it might be an advantage to establish a branch of the school in New Guinea. As I have already pointed out I believe that any school of tropical medicine should be in Sydney, in Brisbane, or in Townsville.

64. *To Mr. Mulcahy.*—I would not say that our medical school in Sydney is as good as those in England and Scotland, but we have, nevertheless, established a good institution here. I believe, however, that we tend to admit students when they are too young. Sometimes they are only fifteen when they come to us, which is too young for them to absorb the information placed before them. They should be at least seventeen years old when they enter. Rather than admit them too young, it would be better to have a three years' pre-medical course for brilliant youths.

I have here a plan for the development of a medical centre in Sydney in four sections, each covering a five-year period. The whole scheme is grouped around the University as a centre. Wards will be established for the treatment of various kinds of diseases so that, when a professor has been lecturing on a particular disease, he may take his class to see actual cases under treatment without this involving any undue delay. It is our desire to establish a village of hospitals in close proximity to the medical school and to the research laboratories of the university. The whole scheme is estimated to cost £2,632,000. The hospital village would be surrounded by parks and open spaces, and one of the pavilions would be devoted to the treatment of tropical diseases.

If the Commonwealth Government were to make money available we already have the space at our hospital for beds for the treatment of tropical diseases, but we would require a subsidy of about £1,000 a year for their maintenance.

65. *To Sir Frederick Stewart.*—After the war most of the tropical disease cases will be associated with the Repatriation Department hospitals. In Sydney, for instance, most of such cases will be at the 113 A.M.C. hospital at Yaralla, Concord, but there will always be a percentage of cases which will require very close investigation, and they should be brought closer to the medical school.

The witness withdrew.

(Taken at Sydney.)

WEDNESDAY, 3rd NOVEMBER, 1944.

(Sectional Committee.)

Present:

Mr. JAMES (Chairman)

Mr. Conelan.

Sir Frederick Stewart.

Mr. Mulcahy.

Percy James Gordon, President of the New South Wales Chapter of the Institute of Architects, sworn and examined.

66. *To the Chairman.*—I have seen the plans of the proposed extension to the School of Public Health and Tropical Medicine at the Sydney University, and I have inspected the present building, which it is proposed to enlarge. The extension, if carried out according to the present plans, will destroy the symmetry of the present building because the tower will no longer be in the centre, but will be much to one side. However, this defect can be remedied by a very simple alteration of the design. I suggest that the new building be set back about nine inches so as to break the line of the facade, leaving the tower approximately in the middle of the forward or projecting part. The roof would also be broken at this point leaving a cavity to correspond with the hip on the left of the facade. The additions would then have the appearance of a subsidiary wing, and would not have the effect of destroying the symmetry of the existing structure. I do not think it would be practicable to move the tower. The amount of space lost by setting the additions back 9 inches would be negligible. However, if it were desired to retain the present dimensions allowance could be made by setting the building back a corresponding distance into the courtyard. Synthetic stone or even real stone could be used as a facing to the building in order to make it more neatly match the colouring of the Gothic buildings in the University group, but if that were done the building would then be out of harmony with the physics building nearby. The present building is on a stone base with stone cornices at the angle and stucco on the upper structure. It would be necessary to alter the design to Gothic in order to make it harmonise with the older part of the University.

The floors of the laboratories should be given some consideration. Apparently, only two of them are likely to be brought into contact with acids. At present, two of the floors are covered with bitumen which resists everything except oil. They look very rough and do not convey the impression of being hygienic. The other floors are covered with magnesite, a substance which breaks up very quickly when attacked by acid, but it looks well. One of the best acid resisting substances for flooring is a red tile which we used to import from England, but they have not been available for some years. At one time it was the custom to cover the floors of laboratories with lead, but this substance has the disadvantages of hills in patches, it is subject to wear, and it looks dirty. In my opinion the estimated cost of £75,000 for the additions is reasonable. I should have thought, from looking at the plan, that the cost would be more. My experience has been that the contract system, if properly handled, is by far the best for the erection of buildings.

I see no reason why it should not be possible to eliminate altogether the steel columns which it is proposed to insert to carry the top floor. Columns are at all times an obstruction in a building, and

with a little adjustment of the design these could be done without. The plan provides that the steel supporting columns are to go right down to the lower ground floor. There is a large open space in the middle of the first floor, which means that the ceiling has to carry, not only its own weight of concrete but also the dividing walls of the story above. There are many dividing walls on the existing lower ground floor. I suggest that advantage could be taken of those walls to carry the dividing walls of the story above them, thus eliminating the need for steel supporting columns. I discussed this matter with Professor Harvey Sutton, and he was in agreement with me. If my proposal were adopted it would then be possible to transfer the open space to the upper floor and cover it with a light roof. The professor sees no reason why the accommodation on the upper ground floor should not be transferred to the first floor and vice versa. The university people themselves do not like the idea of having steel columns coming through existing rooms.

The problem of preventing cracking around the joints has not yet been solved. At one period slender concrete lintels were used, but they were a failure, and we now use blue metal concrete. The difficulty can be overcome to some extent by using a veneer of brick, and then running the wet rendering over the two materials. Even with this system, however, there is danger of cracking because the brick is more absorbent than the other materials. Another way is to carry the windows on steel flanges but, unfortunately, there is a shortage of steel at the present time. The plan provides for cavity walls on the outside, and if they are properly constructed they should be waterproof.

Consideration should be given to improving the acoustics of the long lecture room, in particular. The rear wall should be treated with acoustic plaster which would absorb sound rather than reflect it. The ceiling might also be treated with suitable materials to prevent echoing. The Amalgamated Wireless (Australia) Limited building has been treated in this way with an imported material for which that company is the agent.

67. *To Mr. Conelan.*—The lecture room is on the western side of the building, which will be the hot side in the summer. In the Amalgamated Wireless (Australia) Limited building we found it necessary to fit louvres over the windows, on the western side in order to make the rooms useable in the hot weather. The louvres are of metal, and can be adjusted to any desired angle. Recently, we designed a school building with a westerly aspect, and in order to protect the classrooms from the strong afternoon sun we put a corridor next the outside wall, and the classrooms have windows looking on to this corridor. When I discussed the matter with Professor Harvey Sutton he said that the lecture room facing the west was hardly ever occupied in the afternoon. Another way to treat windows with a westerly aspect is to fit them with non-reflective glass, but I do not know whether this material is procurable at present.

There is much to be said in favour of air conditioning and much to be said against it. People in Australia are not yet educated to its dangers. People in America know that when they leave a heated building they must put a coat on, but here they do not, with the result that a great many who use air conditioned buildings here suffer from colds in the winter time. I am not in favour of air conditioning for a building of

this kind. As for the lecture room, the students will probably be there for only an hour or so at a time.

I was astonished to note the absence of lavatory accommodation in the plan. In designing factories we are compelled to provide one lavatory and one wash basin for every fifteen persons, but nothing like that accommodation has been provided in the new building here. I suggest that a lavatory block should be provided on the north-west side of the quadrangle on the centre floor. There ought to be three pens and three basins in each section, male and female. There should also be showers in each section for the convenience of students who may desire to change and go out after lectures. I do not know what the cost would be, but it ought not to exceed £500.

In my opinion a lift is not necessary in a building of this kind. The students are all young, and are well able to climb stairs. In the old part of the building rain sometimes drives in under the steel window frames, but I do not know of any steel frames that are weather proof.

I can understand the discrepancy of £41,000 between the first and second estimates for the building if the first estimate was based on Civil Constructional Corps labour. I agree, of course, that the blame cannot be wholly placed upon the labour because the total labour cost would not amount to as much as £41,000. Perhaps there was also some mistake in calculation. There are various ways of taking out a rough estimate. It can be done on a cubic foot basis or a per square foot basis. Tentative quantities would be taken out for brickwork, roofing and timber work. For an alteration job of this kind it would not be safe to risk the square cubic foot method. If the estimate is made by experts there ought not to be a variation of more than ten per cent. between them. I agree that £41,000 is a big discrepancy.

Provision should be made for locker rooms where those who work in the laboratories could change their clothes.

68. *To Mr. Mulcahy.*—No matter how much care has been devoted to the preparation of a plan it is always possible for another man to come along and criticize the design. I recognize that the plan before us represents many days of study and hard work, and I am putting it to pieces in five minutes. Nevertheless, my criticism indicates that, in my opinion, the design could have received more careful study, and could have been handled more successfully.

69. *To the Chairman.*—A modern building should be fitted with moveable steel lockers. Wooden lockers tend to crack and they harbour vermin. It would be an advantage if some of the corridors were continued to meet an outside wall so as to give natural ventilation and lighting. Some of the corridors are already dark, yet it is proposed to extend them. I suggest that in those rooms which it is proposed to use as offices the concrete floors should be covered with wood which would make the rooms warmer.

It is proposed that the quadrangle should be used for the parking of motor cars. I picture a university quadrangle as something for the students to enjoy and visitors to admire. I do not like the idea of having the noise and fumes from a car park drifting through the windows into the building. The quadrangle should be laid out as a garden and thus made attractive in appearance. There is plenty of other space available for parking

cars. They could be driven between the physics building and the proposed new building, and park ed behind the animal house.

Difficulty is being experienced at present in providing space for books in the building. The stair landings are generous, and I suggest that extra accommodation could be provided by installing mezzanine platforms to carry bookcases.

Concrete stairways tend to become slippery with use. They should be treated with some non-slip material, such as emburundum.

Sufficient attention has not been paid to the appearance of the rear of the proposed building. The doorway as at present designed is just a plain factory opening. I suggest that it be decorated with stonework, while a keystone, carrying perhaps the college shield, should be fitted above the doorway.

In our climate there is a good deal of expansion of brickwork. This building is bordering on the size which would justify the use of an expansion joint in the brickwork such as is used in large factory buildings. This is a point which might be brought to the attention of the architect.

The witness withdrew.

(Taken at Melbourne.)

TUESDAY, 7th NOVEMBER, 1944.

Present:

Mr. JAMES (Chairman)

Senator Aylett.

Senator Brand.

Senator Lamp.

Mr. Conelan.

Mr. Mulcahy.

Esmond Venner Keogh, Colonel, Director of Hygiene, L.H.Q., Australian Commonwealth Military Forces, sworn and examined.

70. *To the Chairman.*—I am aware that this Committee is inquiring into the proposed extension of the School of Public Health and Tropical Medicine of Sydney, and I have seen the plans. The Army is making use of the School of Public Health and Tropical Medicine. We have continuously some 60 officers undergoing training in hygiene. They are nearly all newly commissioned combatant officers whom we train in tropical medicine. They come in at the rate of twenty a fortnight and the course lasts six weeks. We have our own school of hygiene at Clovelly. We use the facilities and staff at the School of Public Health and Tropical Medicine to help in the instruction of those officers. In addition to this course, we run a variety of special courses in tropical medicine and hygiene for newly commissioned medical officers. We have trained about 150 in the last six months. We also run a more advanced course for senior medical officers. We do other training on occasions. For example, we put through about twenty ratings of the Royal Australian Navy two or three months ago. I should think the training will continue as long as we are waging war in tropical areas but I cannot tell how long that will be.

I think that the moving of troops to and from Australia decidedly involves a risk to the health of the public. Troops entering Australia from abroad are subject to examination by public health officers, that is, the normal quarantine requirements are satisfied.

The Clovelly school has a very intimate connexion with the School of Public Health and Tropical Medicine. We use the premises and equipment of the school and also get assistance from the staff. In other words, there is co-operation between the different schools. There are no similar Army training establishments in other States. We have one central school and, although we have other instruction, it is not on a State basis but on the basis of the formation. With each corps, we have a mobile training establishment; but it is not confined to one State. Training at the Land Headquarters School of Hygiene is more or less on a standard basis, except that new advances are included. But we do run special research organizations in addition to the school of hygiene at Clovelly.

We endeavour to co-operate with local health authorities, whether State or municipal, and I should not think that the presence of army camps in various areas would interfere with local health systems.

I should think, from my observations, that the average young man entering the army does improve in physique and nutrition as the result of army diet and training, but I do not know that I could relate that to the depression years in particular. It is very hard to say whether men born in more recent years are in a better physical condition than those reared during the depression years. You ask me whether I think an efficient public health programme could have prevented the lowering of physical condition during the depression years. I should say that an efficient public health programme, if it provided for such economic necessities as adequate and proper food for everyone, would succeed, but whether administrative measures would succeed I am doubtful.

The army hygiene service is necessarily expanding because the problem of looking after not only army personnel but also the natives in reconquered territories is increasing. The A.N.G.A.U. has developed a large service in hygiene and research in New Guinea. I assume that those services will not be allowed to discontinue, but will be taken over by the civil administration which replaces A.N.G.A.U. A.N.G.A.U. in New Guinea has a large medical section. We selected as the senior medical officer an officer experienced with natives. He had a course with the School of Public Health and Tropical Medicine and got two diplomas in tropical medicine and hygiene. He has built up a large hygiene staff. My former assistant is looking after hygiene. He has quite a large staff. The senior medical officer also established pathological services for investigation, and we have put some of our best people into there. Native epidemics are well controlled. The army is showing the greatest interest in the health and well-being of the natives, particularly for selfish reasons, because the health of the natives must affect the health of the troops. Very large advances are being made. There is room for extension of the health operations in New Guinea.

You ask me whether I think that the committee would become better informed about tropical diseases if the members went to New Guinea. Our people are very proud of their medical services for the natives. They are desirous of expanding. They are looking to the post-war period. I am sure that they would be glad to show the committee what they are doing and what they have to do.

Elephantiasis is a disease transmitted by mosquitoes. The larva is a worm which is injected into the blood vessels or the lymph by the mosquito. It is satisfied.

causes a blockage and a subsequent swelling. Filariasis is much more common in New Caledonia than New Guinea. American soldiers at New Caledonia have caught the disease, but so far, none of our soldiers have been affected. We have not diagnosed one case of elephantiasis in the Australian forces.

If a large amount of money is to be expended, as I agree it should be, on enlarging the School of Public and Tropical Medicine, it should be made a show place. Looking at the plans, I was struck by two shortcomings. One is that the lavatory and sanitary arrangements are very small compared with the size of the building. The other is that one of the big developments in northern Australia is going to be air conditioning. I think that the new building should be air conditioned. Visitors from overseas will be going to the school, and we should have something of which we can be proud. I suggest that Lt.-Col. Mackerron, formerly an officer of the Council for Scientific and Industrial Research, who is now in Melbourne and has just returned from a seven months' tour of England and America on tropical diseases, should be called by the Committee to give advice on the technical aspects, because he has been to all of the American and English institutes.

71. *To Senator Brand.*—After the war the School of Public Health and Tropical Medicine will be used, as it was before the war, to train in tropical medicine and hygiene the civil administrative staff at New Guinea. Before the war native medical orderlies were trained at the school. That training will be continued. I agree that money spent on the extension of the school will be well spent.

72. *To Mr. Colengen.*—The main army research on malaria is done at Cairns. We also have special units to handle mosquitoes. They are known as malaria control units. We have some 30 of those, and I suppose they average from fifteen to twenty men in each unit. They supervise the work of native labourers in spraying and draining. Malaria is being successfully combated. To-day we have sixteen or twenty cases a week compared with 1,000 cases a week six months ago. The only way to prevent the spread of malaria and filaria is by getting rid of mosquitoes. There is no certain cure for filaria, but lately some drugs tried in America have shown promise. We are just starting to use D.D.T. The factory here is just coming into production. We have relied on pilot plant production. D.D.T. will help to control the mosquitoes. That will be its main use to the army.

In considering whether Sydney is the right place for the School of Public Health and Tropical Medicine one has to consider two things. For one thing, the school is already established in Sydney. The other is that the school works in this way: Laboratory and library facilities are available. Students go on field excursions during the vacations. I feel that the school will eventually have branches in New Guinea, but the main school should be in a large centre.

Tropical diseases among troops are treated where they occur. We do have a large number of cases of tropical disease among troops who have returned to the mainland. All troops coming from abroad will have to go through quarantine. Troops returning from abroad after the war will be in the same position as immigrants at present. They will be subjected to health inspection on arrival, but will not be supervised afterwards. I do not think the risk of returning troops spreading disease will be great.

because it is in the army's own interest to cure a man of his disease as quickly as possible so that he shall be able to get back to work. I do not think any new disease is likely to be introduced. The army will take all precautions, as it did after the last war, when it took precautions against the introduction of bilharzia, a disease spread by snails. It is common in Egypt. We were afraid that snails in Australia might become infected, but the situation was closely watched and the precautions taken prevented the spread of the disease. The army will do the same this time.

I sincerely think that it is necessary and advisable to proceed with the proposed building.

73. *To Senator Lamp.*—At Cairns we have a unit to investigate the new drugs for the treatment of malaria. At one time, we were getting, as everyone knows, a large number of cases of malaria. We wanted to determine the best drugs to use and the best dosage. We decided to establish this unit at Cairns. We needed volunteers. Mosquitoes were brought down from New Guinea and the volunteers were infected. They were treated with various drugs. We know now that atebirin is effective in suppressing and curing malaria. That is why malaria is much less prominent. There are two kinds of malaria. Benign tertian malaria is temporarily suppressed, but not cured, by atebirin. Malignant tertian malaria is cured. Our research is directed to finding a drug which will cure both kinds. The set-up at Cairns is unique in the world. The Americans have enormous arrangements for discovering new drugs, but they have no adequate means of testing them. Every new chemical is tried for malaria. We try the drugs out at Cairns on volunteers. We do not conduct any research into leprosy because in the Army, we have to stick to our own job. We have never had a case of leprosy so it is not a problem. Malaria is known on the mainland but, of course, it is very much worse in New Guinea than it is in Darwin. We have kept it completely under control in both Queensland and Darwin during the war period. There may have been 20 cases of locally contracted malaria during the war, but I do not think that there have been more. I think the proposed extensions would make the school big enough to meet the needs of the Northern Territory because it will work as a control school with, I take it, field extensions and perhaps smaller units. Sydney is suitable for the headquarters of such a school. They get our results from Cairns. We work closely with them. Malaria is transmitted from the natives to the white people. Most tropical diseases are transmitted from natives to whites. All the natives have malaria. They have a very heavy mortality in childhood. Those who do not die become immune and so it does not show such a big effect. The greatest proportion of child mortality among the natives is due to malaria.

74. *To Senator Aylett.*—A large number of doctors will be specially interested in tropical diseases and medicine after the war and this school will be most useful to men who are working for their diplomas.

75. *To Mr. Mulcahy.*—In a building of three stories such as is proposed an elevator would be of tremendous advantage. If experiments are to be carried out on the top floor and animals have to be taken up there the advantages of a lift would be very great. I have not been in the exhibits room of the school for a long time but there should be a large museum. I anticipate that there will be an influx of white people to the islands after the war.

That would be a reasonable anticipation. I consider that the erection of this school in Sydney should provide ample accommodation for training. It would be difficult to have separate institutions in New Guinea. If such schools were to be located there I am not sure where they should be placed. I am not well enough acquainted with civil life conditions in New Guinea to express an opinion on that subject.

76. *To Mr. Conelan.*—The Commonwealth has a Health Laboratory at Darwin which serves present purposes. I cannot give you any information about its work.

77. *To Mr. Mulcahy.*—All the tropical cases now are divided among the hospitals in Sydney. There is no concentration of tropical cases anywhere. In view of the proximity of the Prince Alfred Hospital to the Sydney University I think special cases could be located there. It would be of great assistance to the school if that could be done. It would be helpful to students to have access to tropical cases as well as to receive instruction in the theory. To have the cases right at hand would be a big help in teaching.

78. *To Senator Lamp.*—Our effort to control the mosquito in New Guinea we have special units working and these are directed to instruct the troops and, as a matter of fact, the mosquitoes have had a bad time. I have not been to Milne Bay.

79. *To the Chairman.*—Mosquitoes were bad at Milne Bay but they have been practically eliminated. The ratio fell 100 times in the space of three months. Our method of dealing with the situation includes several activities. The first thing is to get at the water where the mosquitoes breed. We spray wherever possible, putting a film of oil on the water where it cannot be drained away. An arsenical dust is also used. The most important thing is to get rid of the water where the insects breed.

80. *To Mr. Conelan.*—Mostly the mosquitoes breed in clean water, but different varieties breed under different conditions. Some breed in brackish water and some in shady pools.

81. *To Mr. Mulcahy.*—Usually we consider it safe to be about 1 mile away from the breeding areas, although the mosquitoes fly for longer distances. Military orders provide that troops shall not camp within 2 miles of a native village. We think 2 miles is quite safe.

82. *To Senator Brand.*—I have seen the "Hexham Greys" at Newcastle; they are not carriers. The malarial mosquito is grey, but it does not buzz and the bite does not hurt much. Most people are inoculated before they go to New Guinea, but there is no inoculation against malaria.

83. *To Mr. Conelan.*—We have had a lot of scrub typhus but we have practically none now. It is spread by the molkka mite which lives in the soil. We are using a repellent which the troops rub into their clothing. Whereas last December we were getting 300 cases a month we are now getting only seven or eight.

84. *To Mr. Mulcahy.*—There is no smallpox in New Guinea though there is some further north among the Filipinos. Fortunately, the Dutch vacinate the natives. I do not think there will be much trouble from smallpox.

85. *To the Chairman.*—The Milne Bay experiences indicate that there is a big job to be done in trying to eliminate swamp areas. The Army and the New Guinea administration is doing a big job in teaching service personnel and also the natives to

drain swamp areas. The New Guinea native is very good at receiving instruction and is very intelligent. We are mostly concerned with areas within 2 miles of camps. If there are discoveries of gold or oil it would be necessary to do everything possible to meet the mosquito trouble in a big way. I am glad to say that the natives are keeping up with the latrine instruction they have been given. In the Mount Hagen area we sent men to every native village to give instruction as to how to combat disease. When our men have gone back months afterwards they have found that the natives are still using the latrines in the way they were told to do. Our people have a high opinion of the natives.

86. *To Mr. Conelan.*—We hope that the work which has been done will have good results when peace time comes. If we can keep down the rate of disease we would be more than compensated for the money that has been spent. There is some tuberculosis among the natives.

87. *To the Chairman.*—The supply of gauge wire for hospitals has been kept up very well. We were short at one time but supplies are coming forward very well now.

The witness withdrew.

(Taken at Melbourne.)

WEDNESDAY, 8TH NOVEMBER, 1944.

Present:

| | |
|-----------------------|--------------|
| Mr. JAMES (Chairman). | Mr. Conelan. |
| Senator Aylett. | Mr. Mulcahy. |
| Senator Brand. | |
| Senator Lamp. | |

Alee Hutcheson Baldwin, Group Captain, Director of Hygiene and Tropical Medicine, R.A.A.F., sword and examined.

88. *To the Chairman.*—I am aware that this Committee is inquiring into the proposed extension of the School of Public Health and Tropical Medicine, Sydney.

For instruction in public health or tropical disease, the R.A.A.F. makes use of service schools and certain schools outside the services. Of those outside the services, the two main ones are the School of Public Health and Tropical Medicine, which does the major share of outside tuition, and a small school, run by the Queensland University, at which our personnel receive training in mosquito control and mosquito knowledge generally. Entomology, The Queensland school is not connected with the School of Public Health and Tropical Medicine, and I do not think it would be of any advantage to have it so connected. The work is being very well done at present.

Air Force personnel entering Australia by plane are subjected to quarantine examination. When personnel are posted either to or from Australia they undergo medical examination. The examination would be carried out in New Guinea in the case of a man being posted from New Guinea to Australia and would be repeated when he got back to the personnel depot here. All persons returning to Australia are passed through personnel depots before going on leave. All airmen returning to Australia must pass through the personnel depot. Orders are being drafted now so that all personnel the moment they touch down on a strip from overseas will be examined on the spot. The risk of infectious diseases being introduced in Australia was not so very great before, but now that we are opening up areas in the Netherlands East Indies, the risk is so much

greater. When an aeroplane touches down from overseas at a strip controlled by ourselves and at which there is no quarantine officer, it will be sprayed for the destruction of insects, and the passengers, whether they are air force personnel or civilians, will be examined. We have the power to examine civilians, because Royal Australian Air Force medical officers have been gazetted as quarantine officers. One of the clauses in the proposed new orders provides that the civil health authorities shall be informed promptly of any infectious case discovered by the Royal Australian Air Force medical service.

After the war I should say that in the North there will be a considerable number of air force squadrons the medical officers of which, even before the ordinary quarantine officials, will be the first barrier against the introduction of diseases. It will be necessary for those officers to have a thorough training in tropical medicine. The School of Public Health and Tropical Medicine will provide that training. I believe that the school will also provide the field service and equipment in New Guinea, if after the war it possesses an out-station there, because that would be beyond the capacity of the Air Force.

Very little work has been done on the subject of whether prolonged activity in the air renders airmen specially subject to some diseases. After having suffered certain tropical diseases, particularly dengue, aircrew members are likely to suffer the effects of altitude whereas previously they might not have suffered them. We have definitely proved by experience that flying operations in those protected by atebirin do not render men more susceptible to an attack of malaria or anything of that sort. At present, in the Air Force, we have what are called Flying Personnel Research Units centred in the different States to investigate such problems. Recently, at the Melbourne University, we investigated whether atebirin or quinine is the better suppressive drug for malaria for aircrew. We also investigated the question whether conditions of flight, such as altitude without oxygen, are likely to induce an attack of malaria in a person who has latent malaria. Most people coming back from New Guinea, even if they do not show it, have malaria parasites in their blood. We found that altitude without oxygen does not induce an attack if the person has taken atebirin.

I have prepared the following statement for submission to the Committee:—

SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE—SERVICES TO ROYAL AUSTRALIAN AIR FORCE AS AT 8th NOVEMBER, 1944.

1. Up to the present the school has provided during the war the following:—

- (a) Short courses for medical officers in tropical medicine.
- (b) Longer courses for medical officers (D.T.M. and D.T.M. & H.).
- (c) Certain special courses of instruction, e.g., bacteriology and pathology.
- (d) The school sends out from time to time extracts on recent research in tropical medicine which it considers may be of interest or value, and, this service has proved to be valuable to the Royal Australian Air Force.

It is hoped that the School of Public Health and Tropical Medicine will continue to provide this instruction. In addition, in the near future, it is hoped to ask the school to collaborate in certain research work on tropical typhus to be carried out in New Guinea.

2. As regards post-war help which might be offered by the school to the Royal Australian Air Force, the following comments are offered:—

Australia's future is largely connected with the area of the South-West Pacific. This involves international relationship and trade with Oriental nations to a much

greater extent than has occurred in the past. This, together with air transport, involves greater health hazards than have previously existed. The main barriers to the entry of disease must be situated in our more thinly populated areas like the north of the tropics, and this is the rational site for future development. This war has indicated that too little time was devoted to the teaching of tropical medicine considering that $\frac{1}{3}$ of Australia lay within the tropics. It is to be recommended that in the post-war period, in addition to defence against disease our tropics are also our main line of defence against armed invasion, and it is reasonable to suppose that our post-war commitments in the tropics by the defence services and, in particular, the Royal Australian Air Force and Navy, will be much greater than in pre-war times.

Considering the length of the present medical course even supposing it were to be wise to have instruction in tropical medicine could be continuous. It is felt that sufficient tuition could be given in this subject to satisfy the needs of service personnel except by post-graduate study. Such study in Australia is provided by the School of Public Health and Tropical Medicine.

Post-war services provided by the School of Public Health and Tropical Medicine might therefore include the following:—

- (a) There will be need for the training of Royal Australian Air Force medical officers in tropical medicine and disease control.
- (b) The Royal Australian Air Force may in the course of its normal operations in tropical areas encounter problems calling for research and investigation beyond the scope of its own organization and equipment. The school would be the rational body to co-operate in the solution of these problems.
- (c) Post-war health care. The extent to which use might be made of this depends on the forward planning in the Royal Australian Air Force, but some medical officers would undoubtedly need training from time to time.

As regards those of non-commissioned rank, it would seem fairly certain that a considerable proportion of our services may be based on malarious areas or visiting such areas. It would also seem certain that the period of tropical service necessary for individuals in such areas will have to be longer than that now existing under wartime conditions.

To prevent malaria and other tropical diseases rendering such service impossible, three lines of action suggest themselves:—

- (1) Mosquito control work in areas concerned so as to completely eradicate malaria mosquitoes, which is a practical impossibility.
- (2) High antiseptic discipline with atebirin or other drugs for prolonged periods. This is unwise.
- (3) A combination of (1) and (2).

This will entail the provision of mosquito control personnel on each unit and also of a malnourishment party for the base itself. These men will need to be well trained for such work.

In addition hygiene personnel will also need to be attached to each unit and to the base.

It is recommended that the School of Public Health and Tropical Medicine could best undertake the training for this work both at the school and any outstation it might possess in New Guinea.

Summary of the services supplied by the school to the Royal Australian Air Force as at 8th November, 1944:

| | Officers. | Average Time. |
|---|-----------|------------------|
| Officers who have done short courses in tropical medicine | 62 | 12-13 days |
| D.T.M. & H. | 4 | 3 months |
| D.T.M. and H. | 4 | 4-6 months |
| Courses in bacteriology and pathology | 3 | 3 weeks |

The above service would amount to approximately 1,700 tuition days.

89. To Senator Lamp.—I think the planned extensions to the School of Public Health and Tropical Medicine ought to be adequate. The only suggestion I have to offer is that provision should be made for

an elevator, but it is questionable whether one would be worthwhile in a three-story building. Otherwise, it seems to me that very careful consideration has been given to the plans.

So far as the introduction of tropical diseases into Australia from countries to the north is concerned it is obvious that the landing grounds, air force or civil, would be the places through which they would be introduced. On the air force landing grounds the discipline will, I think, be sufficient to protect Australia against the danger of infection being spread by returning air crew members. In respect of civil aerodromes, it must be remembered that Australia is a signatory to the International Sanitary Convention of 1926, under which aerodromes and the surrounding areas must be made mosquito-proof. That also applies to service aerodromes.

You ask me whether after the war in the Northern Territory the Air Force will maintain its own medical service apart from the civil medical service. I think it will have to maintain a separate service, because air force medical work is highly specialized and is really a branch of medicine. You cannot take any doctor and make him medical officer of an air force squadron, but an air force medical officer can be made a quarantine officer. I think, however, that there will be the closest co-operation between the various medical services whether they be military or civil. We visualise using the Commonwealth laboratories in that connection. Air force squadrons should be placed in areas where the Commonwealth Health Department should provide health services. The fact that air force medical officers carry out the duties of quarantine officers shows how much co-operation already exists. I should think that that co-operation will continue when the war ends.

I would pick New Guinea rather than Darwin as the site for an out-station of the School of Public Health and Tropical Medicine. The problem in Darwin is to keep disease out, and you cannot study disease so well there as in New Guinea where it is prevalent. Darwin is relatively free from tropical disease. There is a little malaria, considerable dengue and a certain amount of skin disease, but, apart from that, there is not much disease in Darwin. In New Guinea, however, there is scrub typhus, malaria, dysentery, and dengue, and, if you wanted to make an investigation of those diseases at first hand it would be the best place.

I am well acquainted with the present school because I lecture there for the service schools. It is tremendously congested, particularly in regard to the laboratory and teaching space. The library is overflowing. For the work that is being done, the facilities at present provided are inadequate. The lecture hall is too small. It would be a splendid second lecture room. Lectures are now delayed because lecturers cannot find room in which to lecture. Moving picture equipment is required. I do not think the entire building needs to be air-conditioned if it is properly built, but there should be an air-conditioned room in a school of that sort for experimentation. In an air-conditioned room a research worker can vary the heat or humidity or both according to his requirements for the particular experiment he is carrying out. Most schools of tropical medicine are so equipped. Even the school at Calcutta has an air-conditioned room. The basis of research work is ability to vary one factor and keep the others constant. That can only be done in an artificially conditioned room.

In each State tropical diseases should be treated in the one hospital. That would be of benefit not only to the patients but also to medical students and

research workers. That has been the practice in countries like England. All cases of tropical disease are treated in the one hospital in London because it is more convenient. Nurses are specially trained for the work. Specialists, instead of having to go to half-a-dozen hospitals, go only to the one. It would be a good idea if we were able to induce the various shipping companies to send their cases of tropical disease to the one institution.

It would be a great advantage to establish one or two out-stations of the school in New Guinea. Nearly all tropical medicine schools have such out-stations. It is difficult to establish your tropical medicine school in the tropics, but you must maintain contact with tropical diseases in the field. It is strange, but tropical disease is better seen at ports than in the tropics. Manson, the father of tropical medicine, said that the best school of tropical medicine would be a ship in which the students could visit the various places where particular tropical diseases manifested themselves. That cannot be done, of course, but at the ports, like Sydney and Melbourne, cases of various tropical illness can be seen when ships arrive from tropical areas. It is better, therefore, to have your school in a place like Sydney but it is essential to have out-stations for field research.

So far we have had no cases of elephantiasis, but I understand that we shall have cases on our hands after the war when it will be a question for the Department of Reparation. If you keep cases below a certain parallel of latitude, they cease to be a danger to themselves or their families.

90. To Senator Brand.—I consider the extensions now proposed will meet the needs for the immediate future. It is difficult to visualize what library extensions may be needed in the future for it depends upon how long the school will continue in existence. If it goes as long as schools at Oxford and Cambridge the library will burst its walls in time, of course; but we must take a reasonable view and I think that the extensions will be sufficient for a considerable time and that a very satisfactory arrangement is being made. Brigadier Fairley and I have co-operated a great deal in work of the kind that is being done at Cairns. The "human guinea pigs" are mostly from the Army. Army personnel was flown down to Melbourne and after the experiments was flown back again. Both the Army and ourselves are interested in air problems—the Army because it has troops transported by the big Douglas's and ourselves because of air crew. In addition the Army and ourselves are co-operating in the discharge of chemicals from the air with a view to the killing of mosquitoes and flies. When a landing is taken over from the Japanese there are mosquitoes which cause malaria and flies which cause dysentery, and both have to be dealt with. If we can kill the insects by discharge from the air the Army is reasonably safe until a more rigid sanitary system can be installed. At present we are co-operating at Cairns.

91. To Mr. Conelan.—We do not use the school at Clevally; we have our own school at Pusston where our people live under field conditions. The huts and other accommodation has been constructed largely out of salvage and I do not think that the establishment has cost much more than £100. They get the water from the Plenty River and if they get a stomach-ache from it they know what to do. Clevally would be too far from us. All the medical men dig trenches and go through the service procedure, so that when, later on, they have to tell men what

to do they know exactly how to do it. The nursing sisters go through practically the same course as the medical personnel. I doubt whether it would be any advantage to have the teaching done at Townsville instead of here, for man-power shortages and transport difficulties would be hard to overcome. Our problems are somewhat different from those of the Army for we have an abundance of waste oil from aeroplanes whereas the Army has none of that to cite only one item.

Then the Army live under somewhat more primitive conditions than we do in the early days of a campaign. Our conditions are a bit more stable as a rule. As a preventive drug atebiran has advantages over quinine. I consider the use of both is necessary in dealing with malaria. Seeing that the plan of the new building provides for an extension equal to about two thirds the size of the present building I consider that additional lavatory accommodation is necessary. The number of both staff and students will doubtless be increased with the larger building. I do not think that much inconvenience will be caused by the sun coming in to the lecture room on the western side. It would be possible to get special glass to counteract the heat, but it should not be necessary to do so. In these days the lantern, or a projector of some sort, is used in lecturing and that means that light has to be excluded. In peace time five-sixths of the lectures would be illustrated.

92. *To the Chairman.*—I was in Milne Bay in 1942 and I have been there since then. The malaria rate has been got down to 1.100th of what it was previously, which is a very great improvement. This has been achieved by better malarial discipline in relation to the individual, by the use of mosquito nets, repellents, and so on, and by better drainage of malarial units.

93. *To Mr. Conclan.*—I do not think that expenditure has had much to do with it for what has been done has not cost very much. The work has been done largely with the assistance of natives. Angau has provided natives, for the work has had a distinct economic value. We have had a man there who was formerly an entomologist and he has had a lot to do with pasture work. He says that drainage may be too great as well as too limited. If just the right degree of drainage is done, herbage suitable for cattle can be grown successfully; if too much drainage is done the growth becomes coarse; and if too little is done the growth is of a marshy type. If the Health Department works in close co-operation with the Commonwealth authorities the value of the work that is being done will be conserving and in that way valuable economic results will follow.

94. *To the Chairman.*—The repellent we use is diethyl phthalate. The name indicates chemical content which would be immediately recognised by an organic chemist.

95. *To Senator Brand.*—The New Guinea Health authority is distinct from that of the Commonwealth. It was under the control of the Principal Medical Officer, Colonel Tom Brennan, before the war. The Papuan service is also distinct. It would be much better if the services were combined. The pathologist in the Mandated Territory was Dr. Backhouse. He was the only one and it was difficult for him to get relief because there was no one to take his place. If the Papuan and New Guinea services were combined relief for officers would be easier.

96. *To the Chairman.*—The Board of Health was controlled by the Commonwealth because it had to make a report to the League of Nations. The use of aeroplanes and spraying and the use of DDT has possibilities commercially but it must be remembered that the DDT kills useful as well as dangerous insects. Some insects are required to pollinate crops and if they are killed off in a general spraying the results would be most harmful. The problem is one for an entomologist to deal with. The medical committee that used to meet at Moresby to provide information for the Allied Forces had no facilities to do special work. Its function was chiefly to gather information, to arrange military discipline, decide how much spray was to be issued and what areas was to be covered, and so on. I am doubtful whether the committee is operating these days, and in any case, activities have moved further off. It was more of an administrative than a research committee. I am not at all sure of the wisdom of bringing natives to Sydney for training. I would prefer them to be trained in New Guinea. The contacts they make in Australia with white people are not at all helpful to them sometimes. The white people tend to make a fuss of them for a time and then to drop them and the natives do not know where they stand. I have read the article "Opera glasses to be used in lecture rooms" which appeared in the Melbourne *Herald* on the 23rd October last. The use of projectors in lecture rooms is practically a necessity. In this school more than one would be needed. The impression that visual education makes on some people is extraordinary. I doubt whether the Committee would receive much advantage from a visit to New Guinea for there is not much to see in the work that is going on, with the exception that at Milne Bay the work being done for the control of malaria could be observed, and perhaps it may not be there to be seen much longer for operations are moving away from that area. What is being done there, however, is a very good object lesson. I cannot say whether a big naval base is being constructed there but there has been a large naval station there. The Americans, however, are moving further north.

The witness withdrew.

Arthur Basis Corkill, M.B., D.Sc., F.R.A.C.P., Director of the Baker Institute of Medical Research, sworn and examined.

97. *To the Chairman.*—I am aware that this Committee is inquiring into the proposed extension of the School of Public Health and Tropical Medicine, Sydney.

At the moment, none of the research carried out in our institute has special relation to public health problems. We do not give special study to tropical complaints. Our work is not at all co-ordinated with that of the School of Public Health and Tropical Medicine. Our institute possesses a qualified medical staff. The chief bacteriologist was professor of bacteriology at Prague. He was head of the public health department there. With public health, you have the administrative side. There are other problems which crop up, however, in which research workers could co-operate.

Civil hospitals in Melbourne do not experience a large number of cases of tropical disease. I consider that Sydney is the best place for the training of students in tropical medicine. The only alternative would be to go farther north. Then you would need to have a medical school in the same locality. You must have your school of public health and tropical medicine in close touch with a university and medical school. The Commonwealth Government is justified in expending £75,000 on extending the present School of Public Health and Tropical Medicine. Students from Melbourne do not have any difficulty of which I know in entering the school in Sydney. Any public health position would be suitable for a graduate from the school. The possession of a diploma from the school should entitle a man to qualify for a higher position. I certainly think all public health officers should receive instruction in public health at the school. After the war we are going to have repercussions from tropical diseases with which servicemen have been infected. We do not know what is going to happen. It is essential to have a team of competent men to look after the situation. I have never seen the plans of the proposed extensions.

98. *To Senator Lamp.*—Whether a person in New Guinea will be infected with malaria depends on chance not on the length of stay.

99. *To Senator Aylett.*—I think the public health course in Sydney is better than at the Melbourne University. It is more comprehensive, and Sydney also gives training in tropical medicine.

It would be a distinct advantage if there were a lift in the proposed new building. A lift is essential for the carrying of incubators and other heavy equipment.

100. *To Mr. Mulcahy.*—I certainly do think it necessary to treat tropical diseases near the medical school of the University. The ideal is to have the teaching school, the research laboratories and the cases all together. The best teaching school in the world is the London School of Tropical Disease because London is the port of the world. The same can be said of Hamburg Ships from all over the world discharge and pick up cargoes there. Consequently cases of tropical disease are common. From Sydney you can send out patrols to establish field units. From the clinical point of view, you can learn more from an examination of a case of tropical disease than from all the textbooks.

The Waite Institute teaches students. Demonstrations are given. Once a week cases are selected from the wards. The surgeon or physician gives the clinical history of the case and I tackle it from the laboratory standpoint. That is how we teach. We publish an annual report showing the results of our research.

I have no experience in tropical disease and I have not seen the Townsville school of tropical medicine. I have not been to New Guinea.

101. *To Senator Brand.*—It would be extremely important for the School of Public Health and Tropical Medicine to have an animal house.

102. *To the Chairman.*—I am of the opinion that after the war there is likely to be an increase of

tropical diseases on the Australian mainland. I would favour the establishment of a research station to chase the diseases out. I would take it that in conjunction with your main school you will have field units to carry out special work.

The witness withdrew.

(Taken at Melbourne.)

THURSDAY, 9th NOVEMBER, 1944.

Mr. JAMES (Chairman).

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|----------------|--------------|
| Senator Aylett | Mr. Conelan. |
| Senator Brand. | Mr. Mulcahy. |
| Senator Lamp. | Mr. Rankin. |

Harold Addison Woodruff, Professor of Bacteriology, University of Melbourne, sworn and examined.

103. *To the Chairman.*—I am aware that this Committee is inquiring into the proposed extension to the School of Public Health and Tropical Medicine, Sydney. There is a course for post graduates in public health in the University of Melbourne. There is, of course, instruction of undergraduates, but it is only a part of the course in ordinary medical training. The diploma of public health is a post graduate course. Bacteriology occupies 180 hours in the final year in the diploma of public health course. I would not say that students carry out any research work of a serious nature, but students in the higher degrees of M.Sc. and M.D. do serious work of that character. The amount of research in industrial hygiene is very small. Tropical diseases are not featured very much with us. There are lectures, and practical work is given in parasitology, worms of various kinds and that kind of thing. Work in connexion with protozoology is not as well done as it might be because we have not the materials. We give some attention to malaria, tick fever and so on, but we are a long way from the tick areas in Queensland, and we have no serious malaria except in the case of a few returned soldiers. We do not see the beginning of malaria here.

I would not say that at present there are more students available than we can accommodate. A son of mine who has recently returned from New Guinea where he was serving in the Army went to Sydney for a course in tropical medicine. He got his diploma three months ago. There is something of an emergency at the moment owing to the occurrence of tropical diseases in the Army, but in normal times there is no encouragement given to men to take up the course for the diploma of public health. Public Health is not a specialist course of any attraction. Apart from government officers I do not think there are more than three full-time positions available in Victoria. The Melbourne City Council is the only municipality that employs a full-time medical officer of health.

Undoubtedly we shall have to be very vigilant after the war to see that tropical diseases are not introduced into this country as the men return here. We had some carriers after the last war as Mr. Rankin knows. Bilharzai, or Nile disease, was brought in by one man. Some fellows have brought back diseases from the tropics because all the natives have diseases. They are able to stand up to them, but the diseases are new to our fellows and

they become victims rather easily in some instances. It was true that the Sydney school was at present inadequate and I think it should be strengthened in every way possible, but it should have a Commonwealth rather than a local function. You are asking a Professor of the Melbourne University to boost a school in the Sydney University. I suggest that its functions should be made Australia-wide. Let me illustrate the kind of work that should be done.

Some time ago I wrote to Professor Harvey Sutton for some material that I could not lay my hands on. If the Sydney school could supply such material to scientific establishments which may need it it would be a good thing. There is a national collection of type cultures and bacteriology in London from which information and materials are available for all parts of the Empire. It would be a good thing if there were a central authority in Australia which could act in that way. The Commonwealth Serum Laboratories are doing something of that kind at present. The Sydney School could probably do excellent work in supplementing present activities of that kind. If it had a Commonwealth wide function to supply laboratories in other parts of the country it would be a fine thing. I am familiar with the Sydney School but I would not care to set up as a kind of architectural Dobell prize authority and express opinions on the exterior appearance of the buildings. The men who have to deal with problems of medicine and the like are generally realistic in their outlook and are more concerned about materials and equipment than they are about exterior and aesthetics. If the Sydney school had adequate staff and materials, and if a satisfactory liaison could be established with similar institutions in England, the United States of America and other countries, and it became a thorough going school of tropical medicine we would be pleased. The school in Liverpool is one of the best in the Empire.

Scientific men are never really satisfied with the equipment of their institutions. There is always something better that can be installed. To say what equipment should be installed one would need to make a survey of equipment that is already available in some similar institutions, for there is no need unnecessarily to duplicate. There are two big laboratories not far from the school in Sydney, and there is also the Veterinary School. I understand that the Council for Scientific and Industrial Research laboratories are getting out some equipment which would not need to be duplicated. A most modern microscope equipment, the electron microscope, is being obtained I believe. Only one would be necessary here. It will enable things to be seen which have never been seen here. If the Council for Scientific and Industrial Research are not getting this equipment it should be obtained.

I am not particularly familiar with the present working of the Sydney school. I have not been there for three or four years, but I know from students who have gone there what is being done. One of our difficulties is that some of the specimens of things we would like to see we do not care to take the risk of introducing here for quarantine reasons. There are living specimens of various bacteria and some viruses which can be seen in London, for instance, which I would be chary about bringing here. Possibly this school could handle such matters in co-operation with the Commonwealth Serum Laboratories. The main thing is that we should have a

place to which we could go, from all parts of Australia, for materials, advice, literature, methods of copying, and so on. The copying of newspaper articles, articles in scientific journals, and pages from authoritative books by photostat and the like is most important. Such services are available in England and in the United States of America and it would be most advantageous if they were available in Australia.

I have no criticism to offer of the Sydney school. I believe I gave evidence before a Committee such as this sometime before the Sydney school was first established.

104. *To Senator Lamp.*—As to whether the organization of the school is adequate I do not know any university man anywhere who would say that scientific equipment is adequate. Like Oliver Twist, we always want more. It is certainly not adequate in view of the danger that faces the country of tropical diseases being introduced when the men return from their overseas service. One thing I do not like particularly is that this school of tropical medicine is not situated in the tropics where the diseases are endemic, though I know of course that the schools of tropical medicine in London and Liverpool are also not in the tropics and yet are doing splendid work.

105. *To Mr. Conelan.*—The tropics present all the incentive that disease needs to develop. I know it is said sometimes that the disease develops after men return from the tropics, but I think that is usually due to the fact that the men cease taking their medicine regularly. While a medical officer whom I know well was in Sydney, after service in New Guinea, for a three months' course, he took his atebuin regularly, but when he came home for a short leave he was not so regular. Two days before he was due to go back to his work he whispered to me one night that he had had a bit of a shiver. The next day he was in bed and he spent a fortnight at Heidelberg afterwards. If he had continued taking his atebuin he would have been quite all right.

106. *To the Chairman.*—I do not think that there is any doubt that after the war the universities will be inundated with students. We may have to face double-banked classes. At present activities are limited by the Universities Commission. If the study of public health is encouraged by the Commonwealth and the States students may give more attention to it. There is no encouragement given in Victoria at present, and I think that is probably true of other places. Very few full-time jobs are available.

I do not think that there is very much substance in the Melbourne *Herald* article regarding the use of opera glasses in the lecture room. My experience is always with the senior students. I give four year training in medicine. We have a laboratory which caters for 120 students at the outside. Therefore the quota which is accepted in the University is so arranged as to give us the 120 students when they reach that stage. The limiting factors in the medical school are first the number of bodies available for dissection, and, secondly, the number of cases available at the women's hospital for midwifery training. The matter in regard to midwifery is governed by the number of babies. There are not nearly as many babies as there were fifteen years ago. No doctor in training gets as many cases now as he did fifteen years ago. Nurses are also in

the same difficulty in their training. Another difficulty in training is the limit of laboratory space. Our capacity is 120 students. Sometimes we get 105, sometimes 110, and sometimes more. In earlier years we had 400 students in chemistry, though not all of them took medicine, I do not think that the article need be taken seriously.

It is only surmise, but I do not think that after the war there will be more than enough students in tropical medicine for more than one school, which I think, properly equipped, can do the job. I do not believe that at present you can get sufficient staff and materials for more than one school. I should say that any proper expenditure on extension of this school is well justified.

107. *To Senator Brand.*—The school was established on the recommendation of the royal commission presided over by Sir George Syme about fourteen years ago. The teaching staff consists of professors and lecturers at Sydney University. They are subsidised by the Commonwealth. A lot of the equipment is provided by the Commonwealth. The Commonwealth took over the assets of the Townsville school. I should say that the school is a joint organization. Professor Harvey Sutton is not a Commonwealth servant. He is a professor on the staff of the University of Sydney. He is not paid by the Commonwealth and is not entirely a Commonwealth officer. I do not know how much it is proposed to expend on the extension of the school, but any expenditure which will make it function properly is very well justified as a health insurance. I do not think there is any question that in the post-war period it will provide a very essential service.

108. *To Mr. Conelan.*—I do not find that the floors of laboratories are affected by acids. The amount of acid used in a place like ours does not compare with that used in a chemical laboratory. A number of small rooms is needed for research work. In my own department I have a room that was built for the dissection of rats when a plague was feared. The floor was treated with sheet lead and all kinds of protective arrangements were made. Hundreds of rats off ships were caught and dissected. A number of small research laboratories is needed to cover different experiments that are being made by students and research workers. I have not seen the plan for the proposed extensions in Sydney, but I think there should be provision for the housing of animals for experimental purposes. Animal accommodation is a very important item in modern research, especially for disease work. Investigation of the various substitutes for quinine involves working out the effect of the drugs on malarial birds. So a lot of accommodation is needed for small birds of the various kinds. Many separate cages are needed. Accommodation like that is absolutely necessary. At Heidelberg Hospital there is a first-class animal house. That is an important part of the equipment of a research laboratory. Just outside London, the Medical Research Council have a farm where they breed their own animals. It is vital that animals used in experiments shall be free from disease except that with which they are purposely infected for the purposes of the experiment. The only way to ensure that is by breeding your own animals from clean stock. It is also necessary to grow your own forage to ensure that it shall be free of disease.

109. *To Senator Lamp.*—The School of Public Health and Tropical Medicine will grow parallel with the number of students and the number of

students will grow parallel with the demand for specialists in tropical medicine. The school should be a good school I have not seen the plans and it is difficult to talk about adequacy in a school which you do not know adequately. The director and the staff at the school are the people to decide whether what is proposed is adequate. We are a long way from tropical medicine schools in other parts of the world, and the Sydney school should be self-contained and efficient. I would not worry about spending a few thousand pounds in order to make it efficient. What I want to stress is that it should be a Commonwealth school, not just a Sydney school.

110. *To Mr. Rankin.*—I would prefer equipment and staff to spending money on buildings. The best school of bacteriology is the London School of Hygiene and Tropical Medicine. The Rockefeller Institute made a bargain with the British Government, saying "We will build the school if you staff and equip it." A very large building was erected and the British Government is under a moral contract to staff and equip that school. That is the kind of modern school with which the Australian school should have a thorough liaison. Another one is the Liverpool school. It is a very fine school because of the big Liverpool shipping interests with West Africa. I think that our school ought to compare well with those schools. It should be independent and self-reliant in the matter of equipment and staff.

111. *To Mr. Mulcahy.*—I think that it is probably desirable that for the convenience of teaching staff and students, the tropical disease census in Sydney should all be treated at, say, the Prince Alfred Hospital, which is adjacent to the Sydney University. The London school is only about half a mile away from the most recent Dreadnought Hospital. It was a ship at one time. It was at Greenwich. But now it is in Endsleigh Gardens not very far from the Tropical Medicine School. The cases are picked up from the London docks. At present all hospitals, particularly the military hospitals, have cases of tropical disease, but it would be much better to have all the cases concentrated. You cannot teach in a vacuum. You must teach students by what they can see, by demonstrations. I have seen the present lecture room at the Sydney school, but I do not think that the lecture room matters very much. Lectures are rather a spent force these days. Most of the information that students need can be got from books. Real knowledge is gained in the laboratory by experimental work or in the hospitals where students see and handle patients. Moving picture equipment is very important. There is a great advantage in having one or two out-stations to the main school, because a man who has gained all the knowledge he can get in Sydney will still lack patients on whom to try his hand. He has seen a few patients in hospital, but has not tackled the problem on the spot where it has to be tackled. I think that the Commonwealth Health Department should think about that.

112. *To Senator Aylett.*—We have no trouble in getting the animals we need for experimental purposes. We would not need to bring animals from the Sydney school if that school bred them. I consider that a service lift, but not necessarily a passenger lift, is needed in the proposed new building.

113. *To Senator Brand.*—I have not been to the Sydney school for four years. When I was there I paid more attention to special departments like

Professor Ward's department where they do bacteriology. I was not surveying the school to see how it was equipped, but Professor Ward's equipment is as good as you would get anywhere. I am not sure what they have in the other departments. They ought to be well equipped. Equipment is the more important than the outside of a building. You ask me whether we are as up-to-date in Australia as we can be. We are never up-to-date. We are always trying to catch up. Our war experience will be helpful in post-war times. In research it is often found that the best work is done with improvised equipment made by the men conducting the experiments.

114. *To the Chairman.*—When I gave evidence before the royal commission, I said that I favoured a school for the Commonwealth in Sydney. Then there were three schools, one in Melbourne, one in Sydney and one in Adelaide. I do not think the tropical medicine school should be multiplied.

One important provision in a school of that kind is for one or two travelling scholarships or fellowships to one or another of the tropical medicine schools, London or Liverpool, and some of the American schools, which are outstanding. That is a very important thing. You want a blue ribbon for the man who has done the best course to let him travel and come back equipped with new knowledge.

I think it is necessary that the Commonwealth Government should set up schools to give the natives of New Guinea instruction in the rudiments of treatment of tropical diseases. Forty or fifty years ago Pasteur institutes were set up in India, French Indo-China, Cochinchina and other areas where hydrophobia is prevalent. You want out-stations in the tropics controlled by the Commonwealth Government. I have not been to New Guinea and I know nothing about the magnitude of the proposition that the whole of the settled areas of New Guinea should be treated the same way as Milne Bay has been treated and drained for the elimination of the mosquito menace. That it could be done is obvious. The best example in the world is provided by the Panama Canal. Doctors made it possible. They discovered that yellow fever and malaria were mosquito-borne. They were the two things which hitherto prevented the canal from being constructed. Doctors and engineers went in and drained the locality and removed the mosquito menace, enabling the building of the canal.

115. *To Mr. Rankin.*—I do not think the possibility of the introduction of amebic dysentery presents any grave dangers to Australia. There are much greater dangers. Pandemic influenza would walk through the whole country. Dysentery is a disease which must always be watched, but its spread is unlikely.

The witness withdrew.

William James Carr, C.B.E., Surgeon Captain, Royal Australian Navy, sworn and examined:

116. *To the Chairman.*—I am aware that the Committee is inquiring into the proposal to make extensions to the School of Tropical Medicine, Sydney. I am not familiar with the work being done at the school though I know in a general way of its activities. I have never been at the school. Naval personnel receive instruction there. We sent six of our medical officers there for a short course. One officer took the long course and obtained his diploma in

tropical medicine. The Navy makes provision for the instruction of its staff in regard to tropical medicine. Recruits who enter the Navy receive general instruction on health and tropical diseases in groups of between ten and twenty. Later those who are drafted to tropical districts receive special lectures on the diseases prevalent in the area to which they are going. In addition we intend issuing to every man in the Navy a copy of the booklet which I now hand to you, Mr. Chairman. It sets out in simple language precautions which should be taken in the tropics. We believe the instruction is so simple that any one could understand it. What I have said relates to the men. I have already stated that six of our officers went to the school in Sydney. In peace time all naval medical officers were sent to England after nine years to take a special course which included tropical medicine. Probably the course could be taken after the war at the Sydney school. At any rate a preliminary course could be taken there.

Special precautions are taken to prevent the introduction of disease through the Navy. We are subject to the quarantining regulations although a degree of latitude is allowed to the Navy. We have a little more freedom than is given to merchant ships. If the medical officer of one of our ships declares that he has no disease on board his word is accepted. He would examine every man and if there were disease he would declare it. Malaria is hardly a notifiable disease, not like smallpox, chickenpox and scarlet. Every man is examined before going ashore on arrival of the ship from a place where quarantinable disease exists. Perhaps a man might get away with it and avoid detection on occasions.

I do not think that there are any diseases that the members of the Navy are specially liable to in the tropics. They would be liable to malaria, and dengue, and we have had two cases of scrub typhus. We take special steps to insure that necessary preventive measures are applied. Medical officers take a short course in tropical medicine when we know they are going to the tropics. Then we have specially trained hygiene squads. These are trained at the Army school at Clovelly. We have sent twenty men there plus an officer who before he joined the Navy was in the Government health service. They are in New Guinea now and doing very good work. They deal with such matters as malarial prevention, sterilising water, directing latrine construction and the like.

I think that all Navy medical officers should go through the school, and also medical warrant officers. We have not a very big permanent medical service in the Navy. It numbers between 20 and 30 officers. The naval medical officers co-operate with the Army in solving health problems. Most of the pioneering work in New Guinea in this direction was done by the Army. We do not communicate our results to the Health Department or to the School of Tropical Medicine. That is, we do not correspond direct but a services committee on which our Navy, Army and Air Force and the American Army and Navy are represented meets monthly to deal with matters relating to tropical medicine. It was established by General MacArthur I think, and it meets in Brisbane. All our results are communicated to it and probably it makes its information available to the Health Department and to the School of Tropical Medicine.

I am aware that malaria has been practically eradicated from the troops in the Milne Bay area. I have not been to Milne Bay, but I receive information in regard to it. The following tables give the details of the incidence of malaria and other diseases in the Navy:—

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MALARIA FORM I.

1. PRIMARY CLASS (FIRST ATTACKS).

Period four weeks ended 9th September, 1944.

| Area. | Number of cases diagnosed on clinical symptoms only. | Number of cases diagnosed on smears. | | | | | Total. | Grand Total. | Rate per 1,000 for four weekly period. |
|-------------------------|--|--------------------------------------|------|----|--------|---------------|--------|--------------|--|
| | | B.T. | M.T. | Q. | Mixed. | Undetermined. | | | |
| "Rushcutter", Sydney | 1 | 1 | .. | .. | .. | .. | 1 | 1 | .. |
| "Leeuwin", Fremantle | .. | .. | .. | .. | .. | .. | 1 | 1 | .. |
| "Cannington", Sydney | 3 | 2 | .. | .. | .. | .. | 5 | 5 | .. |
| "Penguin", Sydney | 1 | 2 | .. | .. | .. | .. | 2 | 2 | .. |
| "Torrens", Pt. Adelaide | 3 | 6 | .. | .. | .. | .. | 3 | 3 | .. |
| "Ladava", Milne Bay | 6 | 4 | .. | .. | .. | .. | 12 | 12 | .. |
| "Moreton", Brisbane | .. | 1 | .. | .. | .. | .. | 1 | 1 | .. |
| | | | | | | | 24 | 43 | |

MALARIA—FORM II.

2. ATTACKS OTHER THAN FIRST ATTACKS.

Period four weeks ended 9th September, 1944.

| Area. | Number of cases diagnosed on clinical symptoms only. | Number of cases diagnosed on smears. | | | | | Total. | Grand Total. | Rate per 1,000 for four weekly period. |
|----------------------------|--|--------------------------------------|------|----|--------|---------------|--------|--------------|--|
| | | B.T. | M.T. | Q. | Mixed. | Undetermined. | | | |
| "Melville" | .. | .. | 1 | .. | .. | .. | 1 | 1 | .. |
| "Rushcutter" | 2 | 1 | .. | .. | .. | .. | 2 | 2 | .. |
| "Leeuwin" | .. | 2 | .. | .. | .. | .. | 2 | 2 | .. |
| "Cannington" | .. | 2 | .. | .. | .. | .. | 2 | 2 | .. |
| "O'Farrell", Sydney | .. | 2 | 1 | .. | .. | .. | 3 | 3 | .. |
| "Lonsdale", Port Melbourne | .. | 2 | .. | .. | .. | .. | 2 | 2 | .. |
| "Ladava" | 1 | .. | .. | .. | .. | .. | 1 | 1 | .. |
| "Moreton" | .. | 3 | .. | .. | .. | .. | 3 | 3 | .. |
| | | | | | | | 16 | 428 | |

MALARIA—FORM III.

3. TOTAL CASES (FIRST ATTACKS AND LATER ATTACKS).

Period four weeks ended 9th September, 1944.

| Area. | Number of cases diagnosed on clinical symptoms only. | Number of cases diagnosed on smears. | | | | | Total. | Grand Total. | Rate per 1,000 for four weekly period. |
|----------------------|--|--------------------------------------|------|----|--------|---------------|--------|--------------|--|
| | | B.T. | M.T. | Q. | Mixed. | Undetermined. | | | |
| "Rushcutter" | 3 | .. | .. | .. | .. | .. | 3 | 3 | .. |
| "Leeuwin" | .. | 3 | .. | .. | .. | .. | 3 | 3 | .. |
| "Cannington" | 5 | .. | .. | .. | .. | .. | 5 | 5 | .. |
| "Penguin" | 2 | .. | .. | .. | .. | .. | 2 | 2 | .. |
| "Torrens" | 3 | .. | .. | .. | .. | .. | 3 | 3 | .. |
| "Ladava" | 7 | 4 | .. | .. | .. | .. | 13 | 13 | .. |
| "Moreton" | 4 | .. | .. | .. | .. | .. | 4 | 4 | .. |
| "Melville", Darwin | 1 | .. | .. | .. | .. | .. | 1 | 2 | .. |
| "Lonsdale", All | 2 | .. | .. | .. | .. | .. | 2 | 2 | .. |
| "Corberus", Victoria | 2 | 1 | .. | .. | .. | .. | 3 | 3 | .. |
| | | | | | | | 40 | 1,071 | |

MALARIA—FORM IV.

DEATHS AND CASE MORTALITY RATES (FOR ALL AREAS COMBINED).

Period four weeks ended 8th September, 1914.

| Period four weeks ended 6 September, 1923. | | Number of deaths. | Case Mortality rate. |
|---|----------|-------------------|----------------------|
| Malaria unassociated with other disease or injury | | NIL | NIL |
| Malaria associated with other disease | | | |

NOTE. -Case mortality rate to be taken as the number of deaths notified during the four weekly period per 1,000 cases of malaria reported from all areas during the four weekly period.

F.U.O. AND P.U.O.—FORM V.

| Area. | Number of races. | Rate per 1,000 for the four weekly period. |
|-------------------------|---------------------|---|
| "Kuranda", Cairns | 1 | .. |
| "Basilik", Port Moresby | 12 | .. |
| "Penguin" | 3 | .. |
| "Ladava" | 3 | .. |
| | 19 | .500 |

DIARRHOEAL DISEASES—FORM VI.
Period four weeks ended 9th September, 1944.

| Area. | Number treated in quarters or months. | Number admitted to nursing units. | Total cases. | Rate per 1000 of the four weekly period. |
|-----------------------|--|--|-----------------|---|
| "" <i>Marlville</i> " | .. | 8 | 8 | .. |
| "" <i>Basilek</i> " | .. | 4 | 4 | .. |
| "" <i>Ladava</i> " | 17 | 4 | 21 | .. |
| | | | 33 | .884 |

DYSENTERY—FORM VIA.

CASES ADMITTED TO MEDICAL UNITS.

Period four weeks ended 9th September, 1944.

| Area | Number of cases admitted to medical units | | | Total | Rate per 1000 for the four weeks period. |
|--------------|---|-------------|--|-------|--|
| | Unifrac E | Bacillary F | Anthrax including meningitis, septicemia and liver abscess G | | |
| " Melville " | 1 | 3 | .. | 3 | .. |
| " Leeuwin " | .. | 1 | 1 | 2 | .. |
| " Ladava " | 1 | 3 | .. | 4 | .. |
| | | | | 9 | 241 |

DYSENTERY—FORM VI.B.

DEATHS AND CASE MORTALITY RATE (FOR ALL AREAS COMBINED).

Period four weeks ended 9th September, 1944.

| Type of disease | Area | Number of deaths ^a | Cave mortality rate (deaths per 1,000 cases) |
|---------------------|---------------|-------------------------------|--|
| Clinical Dysentery | Aust. N.G. | NIL | NIL |
| Bacillary Dysentery | Aust. N.G. | NIL | NIL |
| Amoebic Dysentery | Aust. N.G. | NIL | NIL |

tropical medicine. I would not say that the school in Sydney was not sufficiently advanced, but we had to send them to Great Britain for other courses and it was thought to be just as well that they take the course of tropical medicine in London too. It would be feasible and advisable to take the course in Sydney. We have at the present time just over 100 permanent and temporary medical officers. The number is slowly increasing. I do not suppose we shall need more than a dozen more doctors this year. It would probably be an advantage to have field and experimental laboratories of the School of Public Health and Tropical Medicine in New Guinea. I should imagine that research workers will be sent to the tropics.

120. *To the Chairman.*—There is a lot of co-operation between the American medical services and our own. The committee of which I spoke sits regularly in Brisbane. All knowledge is put into a common pool and is distributed to the various services, including Australia. Most of the results of American research are sent to us for information. I do not think that there are any American officers in Melbourne at present whom you could contact in respect of tropical diseases.

Travelling scholarships from the school would be most valuable. They would enable the students awarded these scholarships to pick up the best ideas of the world's tropical medicine schools. Such scholarships would be of great advantage to Australia.

The witness withdrew.

(Taken at Melbourne.)

FRIDAY, 10TH NOVEMBER, 1944.

Present:

Mr. JAMES (Chairman).

Senator Lamp. Mr. Connett.
Henry Newark Featony, Chief Health Officer of Victoria and Chairman of the Public Health Commission, sworn and examined.

121. *To the Chairman.*—I am aware that this Commission is inquiring into the necessity for extensions to the School of Tropical Medicine, Sydney. We have a course for the diploma of public health in

Victoria but we have no special buildings or special lecturers or special provisions for students. The students have to fit into other times. Only two persons have sat for the examinations for the diploma since 1936, and since April 1922 only nineteen doctors have sat for a post-graduate course for the diploma of public health. In our own department there are several vacancies. We have one pensioner employed and there will be four vacancies in the next three years. The appointees will need special qualifications and will need a better course than is being provided in Melbourne. In fact there is need for proper lecturers and proper equipment. In our own department three out of seven of us went abroad to get our degrees because the provision here was so poor. The Health Act of Victoria requires that our appointees must be experts in sanitary science which means that they need the diploma of public health. That requires a special post-graduate course lasting about a year. Industrial inspectors in Victoria have to have instruction in dangerous trades which are registered with the Health Department. They are controlled by the Department of

will without doubt be interested in this subject. Sydney is the only place where an attempt has been made to engage in work of this kind. Melbourne has a grievance in this connexion as it has no proper school of public health and there is no professor of social medicine here. They have one now at Oxford. Preventive medicine is largely social medicine. A doctor who is expert in preventive medicine needs to know a lot about housing, diet, social conditions and their relation to poverty and disease and the like. The University of Melbourne and Medical School is the oldest in Australia and obviously some attention to preventive medicine is necessary there, but we have been pushed right off the face of the earth. We regard our University as being equal to any other. The prevention of disease is the new idea of disease. Modern thought in regard to medicine has gone beyond the curing and even beyond prevention. We are not merely satisfied because people are not ill. The phrase "positive health" has been coined and it has application to people who are healthy and hearty. The phrase expresses more than mere absence of disease.

I cannot offer any alternative suggestion to the proposal to extend the school in Sydney. It does not seem to be practicable to establish a school of that kind in Melbourne. We have no tropical diseases here. I know that there are schools of tropical medicine in London and Liverpool. They are two very big ports and what may be called the raw material of the schools is provided by sailors who enter the ports. Sydney is a big port and it is more likely to provide necessary raw material of that kind than Melbourne. The facilities there are such that there could be a wider range of lecturers who would have appropriate equipment. I do not think that Melbourne can very well enter the field of tropical diseases. Of course some of the men who are coming back from the war are bringing tropical diseases with them. We are getting about twelve cases a week of malaria, and some other diseases are coming to our notice. Our doctors would have had very little knowledge of these diseases if they had not been abroad with the troops, but while they have been abroad they have learnt something about tropical medicine. Without such knowledge it would be impossible properly to fight disease casualties of this kind.

We all know that disease causes greater casualties than bullets. If the northern areas of Australia are to be properly developed after the war we will need a highly efficient medical service. The health problems in the north will be greater than those we have here. Townsville had a tropical disease institute long ago. Then, I think, work that was being done in Queensland was transferred to Sydney. It seems to me that any institution properly equipped and staffed would be sufficient to meet the needs of Australia in this regard. I would consider that the diploma of tropical medicine would be essential for anyone holding a public health appointment in Queensland but we would not require it here, though we require the diploma of public health. Any subsidiary organizations that might be established in New Guinea should be linked with the school in Sydney. I am aware that natives have been brought from the Islands to Sydney for some time and of course training is given in Fiji on tropical medicine. We should have a place in Australia where medical men could obtain post-graduate instruction. There is room for only one such institution of this kind in Australia and it is in Sydney. At such a school there could be lecturers in bacteriology and other

specialized subjects. This is necessary in post-graduate work. A lot of our men become rusty and they want a bit of brushing up. It would be a good thing for them if they could go to a school like the one in Sydney. The alternative, of course, is to go abroad and that costs money.

As to whether it would be desirable for the Commonwealth to establish travelling scholarships for the encouragement of the study of tropical medicine, I would say that men who are subsidized in this way should be required to guarantee that they would give so much public service. I have known men who have been subsidized and after their return to Australia have ceased to give any kind of public service in relation to their studies. They have retired into private practice. Any money that is expended in this way should be used to encourage younger men. It would be of no use to the public to send a man of my age abroad for special study. Students who show special aptitude could be helped with satisfactory results to the public. Men who are required for high teaching positions and for important administrative work could also travel with advantage. There is no doubt that travelling is a good thing.

122. *To Mr. Mulcahy.*—Men who are sent abroad and who afterwards return to private practice might not be altogether lost in relation to public service but I consider that it is desirable to devote attention to men who will hold official and academic positions. I have known men in the engineering and architectural positions who have been assisted and who have afterwards been lost to the public to a large degree. Travelling gives an excellent grounding. If men are sent abroad for special study in tropical diseases and public health I think they should be under some obligation to give public service afterwards.

123. *To Mr. Rankin.*—I think that such men should be required to serve in some teaching office or to give services administratively.

124. *To the Chairman.*—In such circumstances I would favour the expending of Commonwealth money in this way.

125. *To Senator Lampert.*—It is not necessary for inspectors of the Department of Labour to hold the diploma of public health. That is a medical degree. In the Health Department we require our inspectors to be highly trained and they are expected to hold the certificate of the Royal Sanitary Institute or some similar qualification. The inspectors of the Department of Labour have some training but the inspectors of the Department of Health must hold a certificate of the kind I have mentioned. We help the Department of Labour wherever possible.

126. *To Senator Brand.*—If the expenditure of £75,000 on the school in Sydney is designed to cover not only bricks and mortar but also essential equipment in order to improve the training of medical men I consider it well justified. The only possible places for such a school are Melbourne and Sydney and in view of the fact that we have only one or two students a year and that those who want special training in bacteriology and the like in our university are regarded as a bit of a nuisance because they interfere with routine work, I consider it would be better for them to do what preliminary work they can here and then go to the Sydney school for special study. The medical men who come back from the war will without doubt want training of that kind.

Persons arriving in Melbourne from overseas who are suffering the quarantinable diseases of plague, cholera and small pox are treated in quarantine, but tropical diseases which are not quarantinable, such as

malaria, are treated in general hospitals where there are medical officers who know a fair amount about tropical diseases.

The Public Health Commission acts in a supervisory and advisory capacity. Health regulations require municipalities to employ municipal health officers and health inspectors. If a municipality neglects to do so, we compel it. The real work is done by the councils. We only supervise and advise. We subsidize the Melbourne University to do the bacteriological work for the councils.

127. *To Mr. Mulcahy.*—The rewards for preventive medicine are not regarded as great prizes in the medical world. The course of public health takes nine months and is hard work. There are few openings for graduates in public health. There are few openings and poor opportunities for training. The salaries of professors are little more than they were 40 years ago. The professors represent the cream of us all and in the medical field the professor's student is earning within eight or nine years of graduation more than he earns.

I think experience has been that private endowments are more easily got for the cure of disease or some visible sign of what has been done, a building for instance, than for scholarships. It is easier to get money to establish a cancer institute than to send some out of the ordinary man abroad for research into the prevention of cancer. I think the same principle would apply to the private endowment of travelling scholarships for the study of tropical medicine. Preventive medicine is not spectacular. The heart is deeply touched of every one, even the most toughened medical man, who goes through the hospital for crippled children at Frankston, but if you tried to get money to send someone away to study the prevention of the cause you would have great difficulty. We are not sufficiently imaginative in that way.

The type of man who would want to take a travelling scholarship from which he would get only a living allowance would be more interested in work than in making money. Even on his return to Australia, he would not be one of those making a big income. The pure research workers and the clergy are two classes who can be exempted from the charge of being mercenary.

We visualize that with the increase of social services there will be more scope for people trained in public health. In Victoria we have 194 municipalities, many of them very small. Some have amalgamated to appoint one health inspector to serve the lot. Every one, except Melbourne, which has a full-time officer, has a part-time medical officer, a general practitioner. Division of the States into areas big enough to employ a specially qualified man full time is what we envisage. He would not be in private practice and therefore would be perfectly independent as regards the removal of nuisances. He would have no fear of offending a patient by reporting, say, a business man for allowing effluent to discharge into a stream. We visualize the time when in such divisions, which will embrace a number of municipalities, there will be a public health officer paid to devote his whole time to such matters as tuberculosis, venereal disease, infant welfare, school medical inspection and so on. Unless we have a good training school, the men who occupy those posts will be untrained or not well trained, or we shall have to go abroad to get staff.

The men who wanted to undergo training in public health would not have had any trouble in obtaining admission to the Sydney school, but they could not afford it. They wanted to practise and study at the same time. Three of us men in our department did their course that way.

128. *To Mr. Mulcahy.* We do not carry out investigations ourselves, but subdivide the university £3,500 a year to do all our bacteriological investigation. The diploma of the Sydney school is recognized throughout the world, so is the Melbourne diploma.

129. *To the Chairman.*—I have studied the plans of the proposed extension. A lift is essential.

130. *To Senator Aggett.* If the Committee went to New Guinea, it would be able to see the effects of tropical disease, such as yaws on the natives.

131. *To the Chairman.* The National Health and Medical Research Council receives confidential reports from the Committee on Tropical Disease at Brisbane. Dr. Holmes, one of the senior medical officers of the Commonwealth Department of Health, is secretary of that committee, which is presided over by Dr. Fairley. We get information regarding the incidence of malaria, and other information, but it is always marked "secret." The medical unit of the Army is represented in Army Intelligence. Information about what the Japanese are doing is gained that way. We have a direct liaison through the Commonwealth Health Department with research work done in the Army. One of my officers is in the hygiene section of the Army Medical Corps. He has been to New Guinea.

The witness withdrew.

John Dale, Medical Officer of Health to the City of Melbourne, sworn and examined.

132. *To the Chairman.* I am aware that this Committee is inquiring into the proposed extension of the School of Public Health and Tropical Medicine in Sydney. The public health course at the Melbourne University has been mostly in abeyance during the war. The course is the standard course. It is based on the customary practice in British universities. The course varies very little as between different universities. Each school tries to have a course from which can be given a diploma, the holders of which will be recognized by the General Medical Council. So the course is generally more or less standardized by the requirements of the Medical Council. It must be six or seven years since anyone took the diploma course at the Melbourne University. Since 1930, not more than a dozen students have been enrolled for the diploma course. Apart from the diploma, there is no State provision for special instruction of government officials carrying out public health duties, but I daresay that if any medical man required a special course, it would be arranged. The university endeavours to provide special instruction if required. For non-medical personnel, there is a sanitary course. I certainly think that full-time medical health officers should be required to undergo a course of training, and I consider that full-time officers are desirable. It is a general requirement that the occupant of any full-time public health position shall have the diploma of public health. I lecture in public health matters at the University of Melbourne, but there is no professorship. Preventive medicine is becoming more and more a matter of personal health, particularly of children. So investigations in almost every branch of medicine may have a direct bearing on public health. When I did my medical course preventive medicine was largely a matter of drains, sewerage

and nuisances. One almost felt that one had to be a man who knew more about engineering than an engineer and more about plumbing than a plumber, whereas what was really wanted was a man who knew more about medicine than the average doctor. Nowadays we leave engineering matters connected with public health to engineers. All such things as sewage disposal, water supply, housing and town planning largely have their own specialists. I feel that what you most want in public health from the medical standpoint is a qualified medical officer who is fully awake to advances in medicine. No recommendations are made for the selection of persons to undergo training at the School of Public Health and Tropical Medicine, Sydney. It is left to the individual. He chooses his own school. There are no bursaries or scholarships. I would say that the course at the Sydney school would fit medical men for public health posts throughout the country. I am not so much concerned with the apparent threat of the spread of infectious disease by returning soldiers, as with the general progress of our civilization, particularly the care of our children to ensure that they shall not suffer deficiency diseases. I want to ensure that they shall be supplied with what they need, and that they shall be educated to make the most of their capacities, particularly their mental capacities. The most important measure in public health is the improvement of general education. Research into tropical diseases is not carried out to any extent in Melbourne. As to whether the School of Public Health and Tropical Medicine in Sydney should be extended, or whether it would be preferable by subsidy or some other method to provide additional facilities in the other States, I would say that the organization of health work needs revising in a good many ways. I am more or less familiar with local government organization in this regard, and I consider that it is desirable that there should be less part-time work and more full-time work by medical officers in this regard. A great deal of assistance could be given by part-time officers in child welfare work, immunisation, and the like. I am aware that in England there is still a good deal of part-time work in public health matters by medical practitioners. The whole set-up is in such a state of flux at present that it is difficult to say definitely what the main trends are. I am convinced, however, that the public health service of Victoria should be reorganized and that in such reorganization there should be room for the employment on full time of many more specialists in public health. I consider that it is a good thing that a specialist school has been established in Sydney, and I agree wholeheartedly to the proposal for enlarging it. In a school of that kind there is room for specialised teaching in the laboratories, and also for definite research activities. This must be a good thing for Australia. I would say that we cannot go wrong in equipping the school in Sydney to meet all the demands that may be made upon it. It would not be a waste of money to establish a good school of tropical medicine there. I consider, however, that the University of Melbourne should have associated with its large medical school a professorship in preventive medicine. This would be an excellent thing for the sake of the graduates. The teaching staff at the university could deal with general public health matters, for the bio-chemical school, the bacteriological school, and other schools there all offer facilities for practical teaching in public health. I would say that the Sydney school should concentrate on tropical medicine. We could carry on our work in regard to public health generally. Quite a number of men have taken their Diploma of Public Health

course at Melbourne, and there is no reason why men should not continue to do so. Under existing conditions students are able to do part-time work and complete their course in their spare time. It is possible, of course, that they could do the same thing if they went to Sydney, but men naturally have some reluctance to breaking up their homes and associations unless it is necessary to do so. The course has been arranged so that it may be completed by men doing part-time work. It is a very good thing for a big medical school to teach preventive medicine in every possible way. As the facilities to do so are available to some degree, at any rate, at the Melbourne University, they should be used. That would not by any means exclude the Sydney school from specialising in tropical medicine. I am not familiar with the Sydney school, so I cannot say very much about it in detail.

133. *To Mr. Mulcahy.*—Probably the Sydney course would be a little better than the Melbourne course, but in basic matters any good medical school would teach what is necessary in regard to public health.

134. *To the Chairman.*—In our work, we like to manage our own affairs as far as practicable, and the students pay their way. It might be desirable to help students of outstanding ability to pursue their studies in tropical medicine by the aid of Government grants of some kind. I have in mind particularly in this regard studies in tropical medicine. I do not think it should be necessary for the Commonwealth Government to establish subsidiary schools in other States to deal with public health matters. One school of tropical medicine should be enough for Australia, and as one is already established in Sydney, I would say that Sydney is lucky. Nevertheless, the universities in the other States could continue their courses for the Diploma of Public Health, just as they continue courses for diplomas in gynaecology, radiology, and the like.

135. *To Mr. Mulcahy.*—The reason why more men do not take the Diploma of Public Health course is that it is relatively unattractive, few posts are available, and salaries are poor. It is partly for this reason that I say that the local government organization should be overhauled in a good many particulars.

136. *To the Chairman.*—I have not seen the plan of the proposed extension, so I cannot comment on it with any knowledge. I consider that the school may become a kind of Mecca for medical students who are interested in tropical diseases. As it is a building of three storeys, a lift should be provided. I am surprised that one was not included in the architectural plans. As to whether there should be branches of the school in New Guinea, I would say that the big hospital that is at present being constructed in New Guinea will no doubt have a pathological department, in which special facilities will be provided for research work. The information gained there would doubtless be made available to the Sydney school. I believe there was a school of tropical medicine at one time at Townsville.

137. *To Senator Brand.*—I consider that any money expended in providing up-to-date research equipment and proper quarters for the conduct of research work at the Sydney school would be wisely used, particularly if the school concentrates on work in relation to tropical diseases. I am very glad indeed that provision is being made for the extension of the school, and I would like to see it maintained at the highest practical standard. As medical officer for health in Melbourne, I am under the control of the City Council, but I am generally subject to super-

vision by the State Health Department, and Dr. Fentonby and I work most amicably together. I am the only full-time medical officer employed by a municipal authority in Victoria, but I suppose 50 or 60 medical practitioners are employed on part-time. I did a special course in public health, but not in tropical medicine. I know the schools of tropical medicine at London, Liverpool and Hamburg. In view of probable developments in New Guinea and in other more or less adjacent Pacific islands, I believe that money spent in equipping the school in Sydney with the best possible services would be a justifiable expense. The only thing that occurs to me is that the school may be a little bit too far south. It might have been a good thing if it were in Brisbane, but as it is already in Sydney it is all right.

138. *To Mr. Mulcahy.*—I do not come into contact with tropical diseases, apart from those from which members of the forces may be suffering. As you know, some men came back after the last war suffering from bilharzia and other tropical diseases. With the almost certain development of air travel in the days following the war, there is a likelihood that tropical diseases will be introduced to both Sydney and Melbourne. I am not closely acquainted with the Sydney University; I have only visited Sydney two or three times. The offer of Dr. Schlink, resident medical officer of the big hospital near the Sydney University, to make ten or twenty beds available for tropical cases in the hospital is a good one, for, of course, it is of advantage to students to have the subject of the disease under inspection. I believe that any well-ordered hospital close to a university would adopt the same attitude, so that students could have patients easily accessible for examination from time to time. I consider that it would be a good thing for brilliant students to be helped in order to travel throughout the Commonwealth and even abroad, under a system of annual bursaries or subsidies. At present, students could certainly get a more complete course in tropical medicine at Sydney University than they could at Melbourne University.

139. *To Mr. Rankin.*—With the added interest that governments are now taking in social services and public health, the prospect of vacancies becoming available for full-time service by practitioners holding the Diploma of Public Health will be much brighter than it has been in the past. For that reason, I consider that each university medical school should maintain its own Diploma of Public Health course. The Sydney school could also concentrate on tropical medicine.

140. *To Senator Lamp.*—The public health organization in Australia could be better than it is. Of course, everything could be better than it is. The main need of the medical schools, however, is to provide better teaching for medical students. If doctors are trained thoroughly in preventive medicine in relation to children as well as adults, they will be better qualified to deal with public health matters generally. The tendency in these days is definitely and continually to emphasize the importance of preventive medicine. Preventive medicine and positive health are new conceptions. The tendency to regard preventive medicine as a specialized branch is important, but preventive medicine should be part of the training of every doctor. Its importance should be emphasized throughout the whole course. The more a medical practitioner knows about preventive medicine, the better qualified he is to do his work. I do not consider that it should be a separate subject, though of course the technical side, such as the law of public health, engineering services touching

sewerage and water supply, and municipal services generally require special teaching, and are most important, but the quality of the service which the medical practitioner can give, generally speaking, depends upon the quality of the teaching he receives throughout his course in the medical school. Teachers should constantly emphasize the importance of preventive medicine, whether men are considering children's diseases, surgery or gynaecology.

141. *To the Chairman.*—I am not alarmed by the danger of the introduction of tropical diseases into Australia. The world has become so small. Within a relatively few hours we can hear of the discoveries of scientists and research workers in America and elsewhere, and I think we shall be able to keep on top of ordinary infections. I am aware that malaria has been decreased very greatly in the Miln Bay area because of drainage work and the use of sprays. The degree to which such work could be carried on in other parts of New Guinea would depend upon the economic use to which various areas are likely to be put. Of course we all know that it is commonly said that the scientists built the Suez Canal. In other words, they dealt with malaria and other tropical diseases in the area. That also is true of Panama. I am much more concerned personally with the care of children and public health generally than with the treatment of tropical diseases.

The witness withdrew.

(Taken at Melbourne.)

SATURDAY, 11th NOVEMBER, 1944.

Present:

Mr. JAMES (Chairman).

| | |
|-----------------|---------------|
| Senator Aylett. | Senator Lamp. |
| Senator Brand. | Mr. Mulcahy. |
| Mr. Conelan. | Mr. Rankin. |

Frank MacFarlane Burnett, Director of the Walter & Eliza Hall Institute of Research and Professor of Experimental Medicine at the University of Melbourne, sworn and examined.

142. *To the Chairman.* I am aware that the Government has asked this Committee to make inquiries as to the necessity for making additions to the School of Public Health and Tropical Medicine, Sydney. I am only moderately familiar with the work carried out at that school. I assisted there on one day in some of the Army courses. I have not seen very much beyond what I know of the Army educational work in the school. I know the association generally in respect of the school between the University of Sydney and the Commonwealth Department of Health. I saw the plans of the proposed extensions for a brief period this morning.

My chief interest in this matter is in the question of the association of research with the teaching work in public health control. I think that is absolutely essential. The only way in which I feel that I may be of some use in this inquiry is in suggesting some of the lines on which research must be associated with teaching. I have not seen enough of what is intended to know what extent research is going to function in the school. I was very much impressed on my visit to America with the major public health schools there, particularly the Johns Hopkins School at Baltimore and the school at the Michigan University. Research is closely co-ordinated with the work of the public health department and of the teaching schools. That,

I feel, should be the major function of the Sydney school. The extension should provide adequate facilities for research.

To show the importance of providing adequate facilities for investigation and field work in a school of public health:-

- (a) Good post-graduate teaching is only possible in an atmosphere of research.
- (b) Every practical public health problem is in some respect unique—the good public health worker must have an appreciation of and some flair for investigation.
- (c) To carry through any practical policy in public health, e.g., elimination of tuberculosis, prevention of dental caries, immunization against diphtheria, facilities for field surveys, laboratory work and statistical analysis are required and of course men adequately trained to make use of them.
- (d) The example set by state activities in public health in the United States of America, e.g., Michigan.

The new school of public health at Ann Arbor is particularly well equipped for study of virus diseases, especially influenza and infantile paralysis. As a wartime measure much work on malaria is in progress and there is a large section being developed in the problems of industrial medicine. At Lansing, the state laboratories, in addition to providing serums and other biologicals free on demand to doctors, have an active investigational programme on poliomyelitis and on immunization against whooping cough. Probably the best work on whooping cough in the world is being done at Grand Rapids, Michigan.

With regard to the range of laboratory accommodation required for a school of public health to cover Commonwealth requirements:-

- (a) A school at Sydney should be regarded only as the first step toward modernizing public health teaching and practice in Australia.
- (b) If the ideal, now almost universal in America, of requiring a full-time health officer in every considerable community with professional training of the Diploma of Public Health standard is accepted in the future, the Melbourne course must also be revived and the possibility of a subsidiary tropical school in Papua kept in mind.
- (c) The full requirements for the Commonwealth could not be usefully concentrated at one centre only. Opportunities for specialized investigations under the aegis of the school should also be utilized elsewhere, e.g., my own laboratory would willingly co-operate in any work requiring the specialized techniques of virus investigation.
- (d) The main fields in which laboratory investigations will be called for are—

1. *Infectious Disease*.—In addition to general bacteriological laboratories specially equipped departments are needed for insect borne disease of special importance in the tropics and virus disease (measles, influenza, dengue, &c.).

(2) *Industrial Hygiene and Disease*.

—In a central school, investigational work would probably be largely confined to physiological studies on conditions of work in varying environments, to preliminary studies of chemical hazards and to the elaboration of methods for the study of particular conditions as they arise. Specific problems will need to be investigated as a rule in temporary laboratories close to the industry involved. Permanent laboratories will be needed for—

- (a) Chemical work.
- (b) Pharmacological studies of the action of industrial poisons on animals.
- (c) Effect of heat, humidity, &c.
- (d) If aviation medicine is taken as part of public health, extensive pressure chamber equipment will be required.
- (e) Sight and hearing have great industrial importance and appropriately equipped laboratories may be called for.

3. *Nutrition*.—Biochemical laboratories with for some problems extensive and rather specialized facilities for animal experiment.

4. Other fields which might require study, e.g.—

- Antenatal hygiene
- Dental hygiene
- could be best catered for at other institutions.

(e) *Child Health as the Central Theme of Public Health*.—Much of both practical and laboratory activity in public health work must necessarily be concerned with problems of childhood, especially infectious disease and nutrition.

I should strongly advocate that in each university city there should be an Institute of Child Health which in Sydney should be an integral part of the school. Its function should be primarily to obtain facts as to the actual state of child health in the community to recognise the existence of problems, to pass these for study to the organization or individuals most fitted to deal with them and to provide access for the investigators to the child communities in which the problem exists. Its staff would be concerned mainly with social and medical surveys and statistical work.

A public health school without facilities for investigation of these varied types might turn out some useful graduates but experience everywhere is unanimous that real progress in public health requires that both teaching and practice be directed and enlivened by an association with active research on the current health problems of the community.

I entirely agree that the Commonwealth Government would be justified in spending money on additions to the School of Public Health and Tropical Medicine but I do not think that the risk of the introduction of tropical diseases into Australia is very great. There will undoubtedly be some, but I think it highly unlikely that any disease not now in Australia will be introduced in a permanent form. I am more concerned with the everyday problems

of public health, particularly in tropical dependancies and in the general health of the public in the city, particularly the health of children. I feel that the School of Public Health must be the centre for the initiation of state action on any kind of public health, the study of the conditions providing the public health problem and the action which has to be taken to deal with it. Nearly always there is something unique which requires real investigation. It cannot be dealt with only on the basis of what is known from other countries. That is why the school must be run on lines of a research institute, to some extent at least. I could not say that the proposed extensions are adequate for some years to come without a great deal more study than I have had time to give to the plans, but public health is a continually expanding problem and it can never be completely dealt with. The size of the school will depend very much on what policy is adopted by the State Governments in regard to the requirements of graduates with diplomas of public health for public health positions. If there is a demand that every large community shall have a fully qualified full-time health officer, the demand for the Diploma of Public Health will increase.

143. *To Senator Lamp*.—The only public health school activity at the moment is the Sydney school. The Melbourne University has on its calendar a diploma of public health course. To undergo the diploma course you must initially have a medical degree. At present it is unnecessary for a general practitioner to have the specialised training given at a school of public health but it is essential that a man in a public health position should have that training.

144. *To the Chairman*.—The special equipment that should be provided at the school depends very largely on what fields are to be covered. For instance, I am not aware how far questions of industrial hygiene are being studied at the school. For that work quite elaborate apparatus may be necessary to simulate the conditions in different industries, such as rooms with varying temperatures and humidities. Aviation medicine may become a public health as well as a military problem. It requires special equipment such as positive and negative pressure chambers and so forth. Malaria will be a problem for some years. Its study requires special means to maintain mosquitoes. The equipment is not very elaborate.

I do not believe that the Sydney school should concentrate on tropical disease and leave the question of general public health to the States. I strongly hold that the public health of the States should be associated with educational and research activity. The three should go together—public health activity, research and education. That is the only safe way and it is the generally accepted way in the up-to-date schools in America. I would regard the Sydney school as only one of these schools required in the final set-up of public health education in Australia. We should develop along the lines of the more advanced American States. There should be public health officers in each major community, one to every 100,000 inhabitants. That will require at least the Sydney school, a revived Melbourne school of public health and a subsidiary laboratory in Papua or some other part of the tropical dependancies. That is required for study in tropical regions.

145. *To Mr. Conelau*.—Sydney is better than Townsville as the site for a school of tropical medicine. If there is to be a subsidiary school it should be in one of the places where there is tropical disease.

There is little tropical disease in the neighbourhood of Townsville. Rabaul or Port Moresby would be better.

146. *To Mr. Mulcahy*.—I think the reason for the fewness of students enrolling for the public health diploma at the Melbourne University is that there is no opening which the possession of the diploma helps people to obtain. There are very few positions which require the diploma of public health in Victoria. I understand that there have been hardly any requests for it in the last ten or twenty years.

147. *To Senator Lamp*.—Public health work does require special training. A general practitioner can be useful in public health work but he cannot spare the time to study the position and find out what is happening among people who are not his patients.

148. *To Mr. Mulcahy*.—As regards travelling scholarships in public health, I think it is absolutely necessary for first-rate men to have overseas experience. However, I think tropical public health work in Australia will be wholly done by Government servants, and it would be the responsibility of the Commonwealth Health Department to ensure that the men taken into the service as juniors should have the opportunity to spend a year in some of the better schools of tropical medicine or centres of research. I do not think scholarships to those who wanted them would be of much value.

149. *To the Chairman*.—I could not say whether the course available at Sydney is more complete than that available at the Melbourne University, because the Melbourne course has not been functioning since I have been in any way associated with the University.

I am impressed by the potentiality of the film and that type of teaching. Public health classes are small because few people go for the diploma. The size of the lecture room needed would depend on the number of students enrolled. We do not regularly use films for teaching at the Melbourne University, but occasionally someone goes to the trouble of having a film made of certain work, and it adds enormously to the value of the instruction given.

150. *To Mr. Rankin*.—I would not like to say that smaller universities at Brisbane and Adelaide should provide public health training, but I certainly think that such training should be provided at the Melbourne University as well as at Sydney. The demand for properly trained public health officers, which is entirely a matter of state policy, would determine the amount of teaching facilities available. The numbers of graduates in public health will however never be very large. I do not think they can ever be more than 40 a year and that number could be dealt with at one school. As regards the danger that after graduating in medicine people from other States would be disinclined to go to Sydney for the post-graduate course in public health, I think that most would take their diploma course immediately after graduation.

151. *To Senator Lamp*.—Anybody studying tropical medicine must have a sound basis of normal public health education applicable to any type of community, and it would be more economical to combine the teaching of public health and tropical medicine rather than to separate them.

The State Department of Health does no research work to speak of except a little *ad hoc* in epidemics. The department has neither facilities nor staff for research work. I should like to see the Sydney school have some association with public health problems in Victoria and Queensland. I do not know whether

there are facilities at the school for the training of factory inspectors, but I think that the training of non-medical personnel is necessary in certain lines, such as factory inspectors, health inspectors, sanitary inspectors and so forth. I do not know what training such people undergo in Victoria. I have no contact with that side.

152. *To the Chairman.*—I could not say whether provision is made in Victoria for factory inspectors to take any course at all, but undoubtedly they should have a certain background. There is a lot of activity in respect of the health of munition workers and so forth. There are many people who would know what is required in that line, but it is outside my field.

153. *To Senator Brand.*—A certain amount of research work is done at the Sydney school. Before the war there was a good deal. They sent two or three expeditions to New Guinea. Professor Harvey Sutton's work on child welfare and so forth is important.

Salaries for research workers take up a very much larger part of the budget than materials, we find. Doctor Dale is the only permanent health officer in the State employed by a municipality. The State has its own officers of course. On current American policy, such cities as Bendigo, Geelong and Ballarat should employ permanent health officers. The few openings rather than the remuneration is the main reason why there are few public health students. After the war the number of people who have experienced hygiene and bacteriological work in the forces will want to take that work up as a career.

154. *To the Chairman.*—If a laboratory were set up in Papua or New Guinea it would require, as a start, a more or less standard bacteriological unit, such as a clinical establishment should have. If an outbreak of malaria should occur at Moresby or in New Guinea such a unit would need to undertake some intensive work in regard to mosquitoes and their habits, and a laboratory of some kind would be essential. I think you could reasonably ask for a standard bacteriological and bio-chemical laboratory with provision for extensions. That would make a satisfactory subsidiary unit to the proposed school.

The drainage of swamps and the use of chemical sprays offer tremendous possibilities for the elimination for malarial mosquitoes when the amount of money available is more or less unlimited, but what could be done in peace time would depend largely on economic considerations. In view of the post-war developmental possibilities it might be advisable for the Government to spend some money to eliminate mosquitoes but, again, this would depend upon economic intentions.

155. *To Mr. Mulcahy.*—I think it highly improbable that there will be much trouble through the introduction of tropical diseases. As a rule, such diseases require certain definite conditions which allow insects to spread, but it is unlikely that those conditions will arise in Australia even if isolated cases of disease should be introduced here. The situation will need to be watched carefully and unexpected things may happen, but, frankly, I do not think that there is any likelihood of trouble except from some malaria in Townsville and Cairns region.

156. *To the Chairman.*—Students in tropical medicine should have access to clinical material and Dr. Schlink's offer to set aside so many beds in his hospital near the Sydney University is a valuable one.

The witness withdrew.

(*Taken at Sydney.*)
THURSDAY, 25TH JANUARY, 1945.

Present:

MR. JAMES (Chairman).

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|---------------|------------------------|
| Senator Lamp. | Mr. Mulcahy. |
| Mr. Conelan. | Mr. Frederick Stewart. |
| Mr. Harrison. | Mr. Rankin. |

Frank William Fowler, Fellow of the University Senate, and medical student, fifth year, sworn and examined.

157. *To the Chairman.*—I am aware of the proposal to extend the School of Public Health and Tropical Medicine at Sydney. I have been elected by the student body to the Senate of the University. With respect to the faculty of medicine an average of about 170 students would be using the premises in part of their fifth year of the course. There are also students who are taking the diploma of education course in the School of Tropical Medicine. These students formerly numbered 140 but there have not been more than 40 or 50 for the last four years. Otherwise this school is mostly used in connexion with the post-graduate course for medical practitioners.

I do not know of any proposed changes in the faculty of medicine which would imply that after the war the course at the School of Tropical Medicine will be more extensive. The view of the students is that it should be. At present it is not regarded as a significant part of the course. The existing practice is for medical students to take three lectures a week at the School of Tropical Medicine. I understand that no practical work is carried out there, although the students are expected to spend a reasonable amount of time in the demonstration room, which consists of exhibits of tropical skin diseases and the like. The library, which is a fairly good one, is made use of with respect to both the work in the School of Tropical Medicine and the other medical work.

The main complaint of the students is the lack of spaciousness. The seating accommodation is for 126 students, and the enrolment in fifth year medicine this year is 176. If everybody wished to attend they could not possibly get into the lecture room. The ante-room, where there are exhibits, provides no facilities for other than an inspectional interest in the exhibits. If the classes should be small there should be a large number of small rooms, but taking the whole year I do not think too large a class room could be built. In the new School of Medicine the seating accommodation, both in the laboratory and in the lecture rooms, is already inadequate.

158. *To Mr. Harrison.*—As to the facilities in the ante-room, the students think it would not be desirable to provide seating or desk accommodation near the exhibits, but they contend that at reasonable intervals around the walls or alcoves there should be benches with microscopes. One cannot take notes conveniently under present conditions.

Lockers are most desirable for the changing of clothes when using the laboratories. In the new Medical School there seems to be only a minimum of accommodation. Clothes have to be bundled up and put into small lockers. The students advocate iron cupboards built into the walls. The cupboards should be wide enough to take a coat. I realize that a large concentration of lockers would be required if 200 students were to have a locker each in one place, but the students think that adequate facilities should be provided.

The floors in some of the present offices on the ground floor are made of concrete. I should say they would be more comfortable if they were constructed of wood, but wood is certainly not the best floor for a laboratory.

159. *To the Chairman.*—The students complain of excessive heat in summer owing to the lecture room being on the sunny side of the premises. The ceiling of the lecture room is very close to the students in the back row. They have always complained about the heat in the School of Tropical Medicine.

The laboratory accommodation is so inadequate that it cannot be used for the medical students. It is only sufficient for 30 persons. As to whether it would be preferable to have several small laboratories rather than one large one, the main difficulty there is that of providing staff. Every additional laboratory would involve duplication of staff, but from the students' point of view it would be excellent. We see no objection to a class of 200 hearing a lecture, but there would be very great difficulty with regard to practical work.

The question whether students are exposed to infection from animals used in experiments has been raised in connexion with bacteriology. No definite infection, however, has ever been attributed to that cause. It is the common view that the surface of the desks must be fairly well contaminated. As a general precaution no very contagious disease is dealt with as far as our course is concerned. For example, we never deal with anthrax.

160. *To Mr. Conelan.*—Whether the students have difficulty in hearing depends on the voice of the lecturer. If a large lecture room were contemplated I should advocate the use of a microphone and amplifiers.

The students have access to all library facilities. The main call is with respect to post-graduate courses, specially since the war, when the investigation of malaria and similar diseases tends to be emphasized. Tropical medicine as such does not come into the medical course, but preventive medicine does and that is taken at the School of Tropical Medicine.

Lavatories should be provided on each floor because of the shortness of the intervals between lectures. There should also be hand-washing facilities.

161. *To Senator Lamp.*—The view of the students is that too little time is given at present to tropical medicine. Attempts are being made to make good by extending post-graduate work. I cannot see any chance for a great number of years of lengthening the medical course.

Our interest in the Pacific theatre must increase, and we must take increased interest in the study of tropical diseases. Emphasizing how far this school might be a centre in New South Wales for research in tropical medicine, I should say that in addition to general laboratories certain facilities should be provided where practising doctors could work in small laboratories. Research facilities are practically non-existent at the Sydney University, and I think some beginning in that direction would be appreciated. It would probably stimulate a great deal of valuable work.

162. *To Mr. Harrison.*—If the school were established at Townsville a better opportunity would be provided for observing cases of tropical disease, but that has not been found practicable.

163. *To Mr. Rankin.*—There has been an increase in the last few years of the number of cases of tropical diseases in Sydney for observation by students. Before the war, however, very few such

cases were to be seen in Prince Alfred Hospital. Research work cannot be done satisfactorily in a general hospital.

164. *To Mr. Mulcahy.*—A person would not be sufficiently advanced at the student stage to profit from research, but in the post-graduate work travelling scholarships might be valuable in stimulating interest in tropical medicine. If a person knew there were excellent facilities for research I do not think a scholarship would be the foremost consideration.

I do not advocate a passenger lift. There would be an exodus of 200 students at one time. A service lift, however, is essential.

The witness withdrew.

Leslie Wilkinson, Professor of Architecture, University of Sydney, sworn and examined.

165. *To the Chairman.*—I have had an opportunity of studying the plans of the proposed additions. I acted as consulting architect with regard to the plans of the existing building and I prepared the sketch plans. As far as I know the present building has proved all that was expected of it when I last gave evidence regarding it. I have not heard of any stormwater or drainage troubles.

Generally speaking, steel windows are not found satisfactory in the University buildings. We have had a lot of trouble with them in the New Medical School. That is why I advocated wooden windows as provided in the physics wing. As to the amount of light, I think the present building is overlighted. I made a sketch plan showing what I thought was an adequate number of windows but that number was doubled. Most of the windows are now screened with blinds. On the whole the light of Sydney is much brighter than that of Melbourne.

166. *To Mr. Harrison.*—Owing to the sea air steel windows tend to rust. The casement type is not so handy as the box-frame type of window. If you try to put a steel window into a masonry building there always seems to be some trouble. If the frames could be of a non-ferrous metal the trouble might be overcome; but wooden windows are the most satisfactory.

As far as I know, no action was taken to divert the sewers when the old building was erected. I favour the provision of separate laboratories, &c., for research workers. The more undisturbed they are the better.

You ask me whether, when the proposed extensions are completed, the present tower will appear unbalanced. It is not balanced at present, but I do not think that would be a serious defect. When it was built the present structure, with its stucco finish, harmonized with the surrounding buildings, but since then the Commonwealth Government has erected the standards building, which is of another type and of another material. I do not consider that the present building has a dilapidated appearance. I offer no suggestion for its improvement. I rather like it. It followed on the type of structure adopted for the physics building. The University Senate first decided to have either stone or stucco with stone dressings. Since then they have departed from that and other types have been adopted.

The sum of £73,570, the estimated cost of the proposed additions, is large, but the work will probably cost that. As far as I can recollect the original building cost over £25,000. My estimate was under, and Mr. Murdoch estimated over that sum, and that is why the matter came before the Works Committee for inquiry.

167. *To Sir Frederick Stewart.*—With the proposed additions I believe that the building will be more than twice its original size.

168. *To the Chairman.*—Taking the University buildings as a whole, if the extensions are made as proposed we shall not make the best use of the ground. The area proposed to be built on is well planted at present with lawns, trees and shrubs. It is also below the road. On the south side, where the animal house is, there is an area of unkept ground. I should put this addition on the south side and should not build over the top of the present two-story block. If you take that roof off in order to put on a concrete floor you will cause a good deal of destruction. Instead of hiding the present front I should leave it as it is and get the same accommodation on the south. The proposed additions would entirely blanket the end of the physics building. Taking a broad view of the University building and grounds as a whole I do not consider that the present proposal offers the best solution of the problem. In view of the pleasant treatment of the grounds to the north of the present building with lawns, trees and shrubs, I should retain these. This would be made possible by building the extensions to the south of the present structure instead of to the north. At the same time this would leave the north-south arm of the present building, as it is, of two stories, building the three sides of the future court on the south of the present building, all of three stories. In this way, the same accommodation could be obtained on land which at present is untidy and ill-used.

As far as the convenience of planning is concerned I have no doubt that exactly the same accommodation could be easily provided in the block plan which I am describing. Such a scheme would avoid the necessity for a good deal of demolition and interference with the use of the existing building during the extensions. This would certainly interfere with the present animal house, but as it is proposed to add one story it will mean that the present building will be, to a certain extent, demolished. I would suggest that the new animal house be provided on the top story of the south range of the additions. It is common practice in medical schools to put animals on flat roofs. The addition which I suggest would have the same alignment as the existing building as far as the road is concerned. The south end is now almost in line with the north end of the standards building. It would not mask the latter building to any serious extent.

Having regard to the large number of medical students attending the University I should think that the lecture room is too small, but I should say that it should not seat more than 150 students. I do not think I could see an ordinary diagram from the back of a room of the length of the proposed theatre. A larger room would increase the present difficulty. There is a great future for motion pictures as an aid to study. Theoretically I should not favour increasing the size of the lecture room, but it may be necessary to do so.

I should prefer to cover the proposed concrete floors shown in the offices with linoleum. Wood is not necessary. It is often risky to use wood over new concrete. Good structural practice certainly calls for the provision of expansion joints in a building of this size.

169. *To Mr. Mulcahy.*—The main entrance is on the middle floor. A passenger lift is unnecessary in a three-story building of this kind.

170. *To Mr. Rankin.*—I agree that a service lift is desirable. I think the proposed building will be large enough to provide for post-graduate work. There will be a large number of small laboratories.

171. *To Mr. Harrison.*—The suggested treatment will harmonize with the existing building. Although you remark that the back of the building seems entirely unrelieved, it is tucked down in a hollow and if trees and shrubs were planted around it I see no necessity for extra expenditure. I do not consider that the proposed support columns will prevent the full use of the rooms or be unsightly. I shall provide the Committee with a small sketch plan of what I have in mind. At present there is no locality plan. I think that lavatory accommodation on each floor is desirable rather than have one large lavatory block.

172. *To Mr. Conelan.*—Every student should have suitable locker space. Apart from scientific laboratories the building need not be air conditioned. That is desirable where the elimination of noise is an important factor, but you can get satisfactory results with fans and save much expense.

173. *To Mr. Harrison.*—At present there is a car park in the quadrangle in front of the standards building, but there is still room for parking cars in the shade. If the quadrangle is to be used as a car park as provided on the plan it will be quite satisfactory.

174. *To Sir Frederick Stewart.*—I suggested that the extension should be of three stories, but that the present two stories should remain. That would avoid destroying the present harmony and 60 per cent. of the present two-story block, and I do not think there would be any increased cost. It might even save a little expenditure. The court which I suggested would be bigger than the proposed court.

175. *To Mr. Mulcahy.*—The width of the corridors is 6 feet and they are adequately lighted.

The witness withdrew.

(Taken at Sydney.)

FRIDAY, 26TH JANUARY, 1945.

Present:

MR. JAMES (Chairman).

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| Senator Lamp. | Mr. Mulcahy. |
| Mr. Conelan. | Sir Frederick Stewart. |
| Mr. Harrison. | |

Christopher Clarke, architect, Department of the Interior, sworn and examined.

176. *To the Chairman.*—I took part in the preparation of the plans, but not of the estimates, for the proposed additions to the School of Public Health and Tropical Medicine, Sydney. I think the Committee would be justified in regarding the present estimate of £73,570 as reliable.

According to the staff figures given to me, there will be sufficient lavatory accommodation according to the requirements of the law. A staff of 60 males and 10 females is anticipated when the additions are made, and at the most only 16 students will be using the premises for the whole day. All the rest will be there for periods of only half-an-hour to an hour and they will have their own lavatory accommodation elsewhere. I have prepared plans for additional accommodation on each floor and the estimated total cost is £1,071.

Personally I do not consider that lifts should be included in the additions. Service lifts would not be required, because all main supplies would go to the lower ground floor where the store is, and from there they would be taken to the various laboratories which are situated mainly on the lower floors. We had an estimate taken out for the installation of a passenger lift for three floors and the amount was £3,240.

177. *To Mr. Harrison.*—The lecture room is on the ground floor. The top floor contains some of the administrative offices and certain laboratories. The three main rooms are on the ground floor and are approached from the main entrance. Although you point out that limbless ex-service men may seek instruction at the University and would need to use the laboratories, I still think that the stairs would be satisfactory, as the proportion of men so afflicted would be too small to justify the installation of a lift. Most of the work would be done on the floor on which people enter the building.

178. *To the Chairman.*—I do not think it would be advantageous to set the new building back about 9 inches or more, so as to break the line of the facade, leaving the tower approximately in the centre of the forward or projecting part. The tower is not in the centre of the existing building and is purely for ornamentation. It would be very difficult to have the quadrangle laid out as a garden, using another space such as that behind the animal house for parking cars. Although a garden area is to be sacrificed I think it is better to leave the parking area in the centre of the building as shown.

179. *To Mr. Conelan.*—If you put the new wing on the southern side you do away with the animal house for a start. It is not considered satisfactory to house the animals on the roof. At present it is intended to put wire enclosures around the area and provide runways for the animals to get out on the grass. It would be very expensive to make similar provision on the roof.

180. *To Mr. Harrison.*—Only the end of the physics building would be obscured by the additions as now proposed. At present we have another entrance giving access to the library and also the lecture room which is to be eliminated. There is also the fire risk and we now have a ready get away in case of fire.

181. *To the Chairman.*—I could obtain for the Committee an estimate of the cost of making a garden of the quadrangle and making provision for parking space for cars near the animal house. The estimate of £73,570 covers the whole of the equipment, including all benches, sinks, electric points, cupboards, lockers, chairs, &c.

182. *To Mr. Conelan.*—We have provided sufficient locker accommodation for the anticipated number of students who will be on the premises for a whole day at a time, but we do not consider that students attending for a lecture for a period of from half-an-hour to an hour require lockers, as they could leave all their equipment in the faculty in which they were studying.

In each teaching laboratory the number working at one time is twenty. I am doubtful whether they would all wish to change their clothing. I should imagine that the students going into that particular area would be medical students who would come over from the medical school in their smocks and section gowns, and would not require to change their clothes. I do not think any of the work would necessitate experimentation on contagious material.

183. *To Mr. Harrison.*—There would be no difficulty in providing any number of lockers within reason. If there are twenty lockers there is space available for another twenty.

I cannot say whether the old sewer main was removed before the original building was completed, as recommended by the Works Committee in 1928, but we have checked all the sewer mains with the Water Board, and we have no difficulty in putting in the necessary drains.

I am satisfied with the treatment of the exterior of the building. It is not any plainer than the physics building next door to it. I do not think that there is anything disagreeable about it. The reason we have kept the building plain is that there is nothing to warrant drawing attention to it. As it is finished by the physics building we thought the plainer the better. I do not think it is advisable to draw attention to it in any way. I do not think the steel stanchions are likely to be an eyesore. From the point of view of utility I think they will be warranted.

As to the acoustic properties of the lecture room the shape of the room is very suitable for lecturing purposes and we do not think that any special treatment is warranted. There is no need for acoustic plaster or any ceiling treatment.

The opening to the existing court on the main stair landings provides the light required for the stairs. It is not desirable to use space on mezzanine landings for book shelves. We have already provided sufficient library space.

184. *To Senator Lamp.*—The position of the lecture room has been carefully chosen because the professors like the students to utilize the museum as much as possible and they can readily go into the museum from the lecture room. As far as heat is concerned I think we can get over that difficulty by means of electric fans. A certain quantity of non-activie glass is available at present but I do not think its use throughout the whole of the building is warranted. The stairs will be grooved and non-slipping. No provision is made for a service lift but it could be installed in the well of the main staircase. A passenger lift or a service lift could be put there.

185. *To Mr. Mulcahy.*—The corridors will get plenty of natural light, as we have provided glass panels above the doors which will have an opening for ventilation and there will be glass panels in some of the doors. The proposed steel windows are quite satisfactory. In the early stages they were not very good, but now they are equal to box-frame windows from the point of view of being weatherproof. If they are painted every three or four years their life is much longer than that of a box frame window.

186. *To Mr. Conelan.*—The lecture room would be ventilated by means of an electrically operated plant which would force air in, and heating coils would be provided so that the incoming air could be warmed in winter. Provision would be made for students who desire to take notes at the desks in the museum. In view of the twenty years' programme ahead I see nothing wasteful about the proposed accommodation.

187. *To Mr. Harrison.*—The present building was cooler yesterday than another building which is air conditioned. The following estimate has been prepared of the cost of air conditioning the whole of the existing building and also the proposed new building, in accordance with Drawings, Nos. N.S.W. Miscellaneous 17987-17992 and 18768—

| | | |
|---|---|--------|
| (a) Existing only | £ | 12,000 |
| (b) New only | £ | 14,900 |
| (c) Existing and new together | £ | 25,840 |

(Taken at Canberra.)

TUESDAY, 15th MARCH, 1945.

Present:

Mr. JAMES (Chairman).

| | |
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| Mr. Conelan. | Sir Frederick Stewart. |
| Mr. Harrison. | Mr. Rankin. |

Dr. John Howard Lidgett Cumpston, Commonwealth Director-General of Health, sworn and examined.

183. To the Chairman.—I am aware of the proposal to extend the School of Public Health and Tropical Medicine in Sydney. In order to explain the administration system of the school, I shall briefly outline its history. When it was decided that such a school was necessary, the most suitable place at which to establish it seemed to be the University of Sydney.

The university granted the land and the Commonwealth Government provided the funds for the building and has since provided the whole of the maintenance expenses, including the salaries of the staff. The university reserved the right to approve of the teaching staff and the course of training as a condition of granting diplomas in public health and tropical medicine. The school is managed by a joint committee consisting of equal numbers of university and government representatives. The management has from the beginning been harmonious; the Department of Health deals with all administrative matters and the university has control of training and examinations. The space available for the school in the proposed additions is not so great as I should like, but it is big enough for immediate purposes and for a considerable time to come. It must be borne in mind that a good deal of research is being, and will continue to be, carried out in the branch establishments, of which the department has four in Queensland and, in normal times, one at Rabaul. In fact, when war broke out, it was considering the establishment of one at Port Moresby; it has plans ready for that branch to be started as soon as conditions permit. There is no establishment doing work similar to that of the school anywhere else in Australia. The establishments that exist are all controlled by the Commonwealth. Those on the mainland are under the control of the Department of Health and the one at Rabaul is under the control of the local administration, with which the department works in close association. As an illustration of co-operation with local authorities I refer to an occasion some years ago when it was considered advisable by the school in Sydney to obtain information regarding diseases and conditions of natives on the Hagen Plateau in New Guinea. An officer of the Sydney school went there with assistants and, after some months, brought back valuable information. Recently, when men were returning from New Guinea with malaria and there was a considerable extension of malaria amongst the population of Cairns, we did not know which type of mosquito was carrying the disease. So a member of the staff of the Sydney school, accompanied by assistants, went to Cairns and in three or four weeks he had determined the issue. Thereafter, the preventive measures were intelligent, because we knew which mosquito we had to guard against. No money is made available by any of the States for the maintenance of the school. The Queensland Government recently announced its intention of establishing a research laboratory in Brisbane. That is a natural extension of its present activities. Queensland has a pathologist, but its laboratory has always been a reproach to the administration. That laboratory is

altogether too small, and so the Queensland Government has decided to erect a building which will be used for the most part for routine work and also for some research work.

184. To Mr. Harrison.—I have had plans prepared for the proposed laboratory at Port Moresby, which will be established as soon as possible. It will be used for research work and for routine work. In any laboratory there is always a great deal of routine work which ties up very closely with research. For example, if we are dealing with a number of tropical ulcer cases we have to make an examination in order to determine what organisms are associated with them. In the course of that routine work, we accumulate knowledge until we can draw general deductions and then commence a specific inquiry in order to clear up the points which have arisen from the routine work.

185. To the Chairman.—The station at Townsville is one of a chain of twelve laboratories that have been established throughout Australia. Their principal function is to carry out routine work for hospitals and medical practitioners, but they also do a certain amount of research. A tropical institute was established at Townsville in 1909, but after an investigation had been made by the then Public Works Committee into the establishment of the Sydney school, it was decided to remove the principal functions from Townsville to Sydney. The Townsville laboratory is now on the same plane as all other establishments of that kind, with the exception that during the war we have had to appoint extra staff there because of the great pressure of work associated with the congregation of troops in northern Queensland. My last report indicates that that volume of work is decreasing very rapidly and probably it will be possible to remove the extra staff soon. There is another laboratory at Darwin at which a great deal of research work has been done.

186. To Mr. Conelan.—The twelve branch laboratories that I mentioned previously are at Darwin, Cairns, Townsville, Rockhampton, Toowoomba, Lismore, Bendigo, Port Pirie, Kalgoorlie, Broome, Hobart, and Launceston.

187. To the Chairman.—State universities often seek assistance from the school at Sydney, and it provides them with advice and supplies. There has never been any question about complying with such requests. The staff of the school has met every demand made upon it up to the present. There is no other institution in Australia where a man may obtain a diploma in public health or in tropical medicine. The Diploma of Public Health involves a one-year course, and the Diploma of Tropical Medicine involves approximately a nine-months' course. An electron microscope is not available at the school and it would be difficult to obtain one at present. It would be desirable to have one for the use of research workers. The lecture-room at Sydney is used by classes at the school in the mornings, and is sometimes used in the afternoons for military courses. Since the beginning of the war, the school has been giving short courses to all Australian-military medical officers as well as to Dutch and American officers. I believe that the lecture-room is not always used in the afternoons. I shall ascertain the cost per annum of maintaining the school and supply the information to the Committee.

I have not heard of any important developments in the United States of America in respect of immunizing against malaria. There have been important developments in respect of chemical treatment of malaria, and attempts have been made at immunization, but I am not aware that any progress of value has been made. The staff at the school could handle that subject in more detail. I placed the proposal to extend the school

on the list of post-war works because I had no hope that it would be proceeded with immediately, but it should be proceeded with as soon as possible. During the war we have been just able to meet the demands made upon our accommodation and staff. Even before Japan entered the war we had requests from the Army, Navy and Air Force to train their medical staffs for the conditions that they could expect to meet in any theatre of war. We have maintained that steady course of instruction without interruption. We have also been under considerable difficulty in meeting demands for the solution of various other problems. Frequently, because of the great pressure on the teaching staff and the accommodation at the school, we have been embarrassed by our inability to satisfy all of the urgent requests which come before us. One problem upon which the school should be working at present is the practical use of the new method known as DDT in the control of malaria and scrub typhus. One of the apparently minor, but actually important, problems was to get DDT into a condition of solution which would permit it to be used as a fine spray. I obtained the answer to that problem in India, where I found that the military laboratory had devised a simple method of using the chemical as a spray. Over and over again we have received requests from the services to deal with problems of a similar important nature. For instance, recently I was asked to evolve a method for controlling the rats which we are interfering with stores in New Guinea. There is a preparation colloquially known as 109, and we have done considerable work on this substance which apparently is a very effective poison for rats. All through the war, the school has been seriously handicapped by not having adequate accommodation or staff to deal with urgent matters of this nature. As soon as the war ends the Commonwealth will have to take the responsibility for its tropical possessions, and this fact is weighing on my mind. Australia has undertaken, in a contract with New Zealand, to play its part in the solution of problems affecting the whole of the Pacific area. New Zealand is establishing a small laboratory at Fiji, and it is looking to Australia to help it in this work. Nothing would please me more than to see work on the proposed extension to the school commence immediately. The need is great.

The agreement between the University of Sydney and the Commonwealth, which sets out conditions regarding the use of the land and the administration of the school, will expire in 1952. It has proved quite satisfactory. No great difficulty has ever arisen in negotiations between the university representatives and my department. I cannot say whether the agreement will be renewed, but the Chancellor of the University, Sir Robert Wallace, has made it clear to me that the university authorities are willing to have the extensions made, and I know of no reason why the agreement should not be renewed. There are a number of establishments at which animals are housed on the roofs of buildings. I do not like the practice, and at the school in Sydney it is done only because there is not sufficient room to put the animals elsewhere. There is one exception to my general objection to the housing of animals in that way, and that is when certain animals under experiment must be kept indoors and in a reasonably uniform temperature. Animals bred at the school are supplied only to the department's own laboratories, and are never sold. The object of the school, among other things, is to train men for public health jobs requiring special qualifications. The school gives two kinds of diplomas, one in public health and one in tropical medicine. Men who secure the Diploma of Public Health usually take positions in the Commonwealth or State public services. All of the junior

men on the staff of my department are given an opportunity to do that course in official time and take a diploma. That is to the advantage of the department. Furthermore, some medical men consider that the knowledge they acquire in doing the courses at the school, especially the tropical medicine course, will be of value to them in private practice.

188. To Mr. Harrison.—Medical men who have had service abroad, particularly in New Guinea, now have knowledge obtained in the hard school, and they will have considerable experience of the diseases which they will be called upon to treat in returned servicemen after the war. Therefore, I do not consider that there will be a large demand for the course in tropical medicine at the school in Sydney. However, I believe that a small number of men will want to go on to the diploma standard.

189. To the Chairman.—Men who have taken the diplomas receive good salaries in Commonwealth or State positions. In the Commonwealth Department of Health, the commencing salary for medical men at present is £760 per annum rising to £1,40 per annum. Salaries paid by the States are not quite so good, but they attract good men. Students from other States are encouraged to train at the school. There is no limit as to who may apply for training, but candidates must be medical graduates of two years' standing. Every year, the Department of Health publishes notices in the *Medical Journal* inviting enrolment at the school. The school has never enrolled students up to its full capacity.

190. To Sir Frederick Stewart.—The capacity of the school is limited by building space, which in turn is limited by building space. There are about twenty buildings available for the study of tropical medicine. There is no limit to the number of students who can enrol for the public health course. Referring to the Brisbane laboratory, there is no suggestion of conflict between that Government and the Commonwealth. It has long been recognized that the Brisbane laboratory has been lagging far behind laboratories in other capital cities. Queensland must have teaching space for its university students and room in which to settle its own local health problems. At present Dr. Derrick, a very competent man, is working under highly adverse conditions in Brisbane.

In discussing the plans for the proposed extensions to the school in Sydney with Professor Sutton, I kept in mind the probable requirements of the next 25 years. I consider that the proposed increased accommodation will more than meet the requirements during that period. The school obtains the animals which it requires for experiment from various sources. It may buy from dealers or from small boys who breed guinea pigs. Sometimes the institute breeds animals and that is the most satisfactory method. A number of considerations were involved when Sydney was selected for the establishment of an institution for tropical medical research. The determining factor was that Sydney is the gateway to the Pacific, and all of the Pacific island traffic comes to Sydney. We visualized the association between Sydney and the Pacific which has now come into being as the result of the Commonwealth's agreement with New Zealand. I consider that it was a wise choice.

191. To Mr. Mulcahy.—There are facilities in Sydney hospitals for students to gain practical experience in tropical medicine, but they are not so great as I should like. We have an arrangement with hospital staffs whereby, whenever they receive patients suffering from tropical diseases, the staff of the school is called into consultation. The staff ensures that the students see these cases. That is the best that can be

done in Australia. The same thing is done in London, where there are no home-bred tropical diseases. We sometimes send members of the staff to New Guinea or other tropical areas, but we cannot do that with students. It would be advantageous if provision were made at the Prince Alfred Hospital adjacent to the University of Sydney for the accommodation of up to twenty tropical cases. We endeavoured to make such an arrangement some time ago.

In Great Britain and the United States of America it is possible to obtain micro-film records of articles on relevant subjects for reference purposes. Arrangements were being made for such a service in Australia at the outbreak of war, and I believe that the Commonwealth National Library can now provide such a service. The preparation was as follows: 109 which I mentioned earlier would not be available to the civil population. It is manufactured in small quantities, and I am doubtful of the wisdom of making it available to the public at this stage. Although it has been proved to be non-poisonous to the higher animals, we are not certain of the extent to which it is successful except under close control. The investigation at Cairns into the spread of malaria, which I mentioned earlier, was a matter of economics. As an illustration take the case of yellow fever, which is carried by a mosquito which breeds in fresh water, chiefly in tanks in air houses. If this were not known, we might waste millions of pounds in draining salt water swamps if we ever had to combat yellow fever in Australia. With a limited supply of man-power, the most practical counter measure against tropical diseases is to isolate the carriers, find where they breed and then destroy their breeding places.

197. *To Mr. Conelan.*—Yellow fever is not prevalent in Australia because it has never been introduced. The Australian method of controlling malaria is the most efficient in the world. The Malaria Institute in India sent a representative to Australia in order to learn our methods. He told me afterwards how deeply impressed he was with the work that the Australian Army Medical Corps had done.

198. *To Mr. Mulcahy.*—It would be desirable to have an elevator in the school at Sydney.

199. *To Mr. Conelan.*—I have looked at the plans of the proposed extension and I am satisfied that they provide for a workable institution as far ahead in the future as I can foresee. The school and its branch laboratories have been doing nothing but local health work, if you regard New Guinea as being a local area. Health problems are brought to the school almost invariably through the branch laboratories, which handle immediate local problems. When the laboratories reach a point at which some special research work is needed, they communicate with the school. If the staff of the school is not sure about a problem, and if a life depends upon a solution being found, it can call in an outside pathologist for consultation. It is difficult to say how the course provided by the school is regarded in other countries. However, I know that it is regarded very highly in India. From what I saw in India myself, although some of the institutions there are larger in bulk, the standard of the work is not better than ours, and in some respects is not so good. In the last five years, four members of my staff have visited England and the United States of America. Two of them have just returned. At least four other medical men who have visited England and the United States of America in the last year are working in close association with the staff of the school. It is important that there should be regular personal contact between Australia and other countries. In wartime we have had the opportunity to maintain close contact with developments in other countries, and it is important that we should do so in peace-time.

I shall obtain the estimated cost of the proposed establishment at Port Moresby and supply the information to the Committee. This establishment will not interfere with the work of the laboratories at Townsville and Cairns. It will deal with local problems and will handle specimens from the whole of the Port Moresby area. The nature of the school's work varies from place to place. For instance, malaria is a local disease. The type of malaria and the mosquito which carries it vary in each locality. When an outbreak of dysentery occurs in any district we have to find which of the half-dozen organisms which cause dysentery is responsible for the outbreak. That investigation must be made locally. The problem of nutrition is an important one which must be dealt with on the spot in New Guinea after the war. This will involve close local study. Although the more delicate chemical experiments will be carried out at the school in Sydney, the initial investigations must be made where the trouble lies.

It is probable that shipping companies might be persuaded to sponsor travelling scholarships in tropical medicine. The proposal has never been made previously. However, they might not do so if they knew that the School of Tropical Medicine was supported by the Commonwealth Government and was not merely a university institution.

200. *To Mr. Rankin.*—Before the outbreak of war there was an arrangement for the exchange of specimens and information between Australia and other countries on diseases and ailments which might be imported to Australia. The Department of Health was involved in a great deal of exchange work, but that has been suspended since the outbreak of war. As things stand at present, it is difficult to secure transport even for such important materials as those required for the manufacture of penicillin. This is an important matter and a resumption of such exchanges should be made as soon as possible.

The witness withdrew.

(Taken at Brisbane.)

TUESDAY, 3RD APRIL, 1945.

(Sectional Committee.)

Present:

MR. JAMES (Chairman).

MR. CONELAN. | MR. MULCAHY.

Dr. Edward Holbrook Dorrick, Director of the Laboratory of the State Health Department, Queensland, sworn and examined.

201. *To the Chairman.*—I am aware that this Committee is inquiring into the proposed extensions to the School of Public Health and Tropical Medicine in Sydney. The State Department of Health concerns itself with the problem of tropical diseases insofar as that can be done from Brisbane. We carried out research until the outbreak of war, but since the war commenced we have done very little research. To-day our work with respect to tropical diseases is mostly routine. One reason why we have not been able to continue research is because some of our staff are now engaged on war service. Since the outbreak of war some diseases have increased, whilst others have not. Owing to the return of so many soldiers from tropical areas, including the islands to the north, there will be a danger of tropical diseases spreading in Australia after the war. At present we are short of men. We should now be carrying out a great deal of research work.

There is great scope for research work here, but we are unable to undertake it at present. The Sydney School of Health is always willing to assist us, but, actually, it has not been able to be of much assistance to us. The Sydney school should be carrying out extensive research into tropical diseases. It should do that work not only at the school in Sydney, but it should also have a branch school in New Guinea, because it is impossible to carry out research into tropical diseases without tropical material. I understand that the Liverpool School of Tropical Medicine has a permanent branch in West Africa, and, in addition, sends out expeditions periodically to different parts of the world. The Sydney School should have a permanent branch in New Guinea, and, in addition, should send out expeditions periodically to all parts of North Australia and the islands in the Pacific. I heard that one batch of students, including natives from New Guinea, were undertaking a course at the Sydney school, but I understood that the practice was not continued owing to certain difficulties. When I speak of a branch of the school at New Guinea I have in mind a research station and not a teaching station. It is essential to have a branch in New Guinea to supply the material for research. There are very few prospects in Queensland in relation to either salary or work for men holding the diploma of public health. There should be more appointments of trained medical officers of health in Queensland, but at present, apart from the Director-General and the Deputy Director-General, there is only one man in our department who holds the diploma of public health. There are not sufficient openings at present to encourage men to specialize in this work.

202. *To Mr. Mulcahy.*—Health inspectors of local government bodies do not possess the diploma of public health. They hold the health inspector's certificate; but medical officers of health in the larger cities in this State should have the diploma.

203. *To the Chairman.*—There is a connexion between our laboratory work and that of the University of Queensland. Generally, our laboratory work does not cover any part of Queensland in which native populations are settled, but, occasionally, members of the staff of the laboratory visit native settlements. The natives present special problems of public health. In several settlements, particularly in the north, leprosy is prevalent. We have had cases of leprosy from native settlements at Cherbourg and at Mona Mono near Cairns. There is probably hookworm among them, and in the far north, probably malaria is prevalent. As I have not made direct contact with the native populations I cannot say whether steps have been taken to train the natives to help themselves in health matters, or whether certain natives are taught to undertake such work in the native settlements.

204. *To Mr. Conelan.*—A medical officer visits the Cherbourg settlement regularly and there is a resident medical officer on Palm Island. I am unable to speak about the other settlements. There should be more visits by medical officers to native settlements. Frequent visits are made by medical officers to the Cherbourg settlement, but so far as I know such visits to other stations are made only at long intervals.

205. *To the Chairman.*—At present we are not making any special survey with respect to cancer. Probably there is more skin cancer in Queensland than in any other part of the world. It should be the subject of special investigation. I say definitely that the Commonwealth Government would be well advised to establish a research school in New Guinea in respect of tropical diseases as a branch of the Sydney school. You say that I am the first witness to appear before the Committee to favour the establishment of a branch

of the Sydney school in New Guinea. Let us take scrub typhus, for example. It would be impossible to do any research with respect to that disease unless the research workers had specimens of scrub typhus, and he would never be in a case of scrub typhus in Sydney because there is none out of Mackay. The same observation applies to all other tropical diseases. Research workers cannot conduct work on them unless they see actual cases. They can teach about them provided material is sent down to the Sydney school, which is the best place to teach medical officers, but there must be some work to be done if there are actually being run. I estimate the cost of operating a research laboratory in New Guinea at approximately £6,000 a year. I have not found senior workers that is, four scientists. That laboratory would be for research and study only, and not the control of disease, which is another matter.

206. *To Mr. Mulcahy.*—You ask me whether the demands for tuition and research work after the war would justify the expenditure of £73,577 on the proposed extension to the Sydney school. An immense amount in research work should be done that is being done at present. Australia is very badly staffed for medical research. From what I have learned through contact with American medical officers, I should say that Australia is a giant, behind that country in medical research. Apart from the fact that this work is generously subsidized by prominent business firms and individuals in America, the American public as a whole is much more research minded. It is reasonable to expect companies with trading interests in the islands adjacent to Australia to interest themselves in medical research so far as it deals with public health in those areas, because one result of such work would be to safeguard the health of their employees, thus making them more efficient. One sad aspect of medical research in Australia is that so many of our best medical research brains have gone overseas, because they had no opportunity to carry out research in this country. They have gone to America and England.

207. *To Mr. Conelan.*—In Queensland at present only two men are doing medical research apart from the Army, whereas there should be positions for a large number of medical men to engage in research particularly in Queensland where we have most of the tropical diseases.

208. *To Mr. Mulcahy.*—The State Government and the local government authorities would be the authorities to stipulate that public health officers should possess the diploma of public health. The medical officers of health are appointed by the local government authorities, but the State Government supervises such appointments. You ask me what are the main diseases which I think will require investigation when the war is over and sufficient men are available for such work. First, there are the fevers both in south and north Queensland which have not been identified and the cause of which has not yet been found. That is one big field. There are quite a number of fevers such as "Q" fever, leptospirosis of which there are five types including Weil's disease; then there is scrub typhus and several fevers still unidentified. There is one big group of viral diseases, a number of which have not been identified. For instance, I see from time to time cases of infant and young children who die suddenly of inflammation of the brain, known as encephalitis. These deaths are probably due to new diseases which have not been identified. Thirdly, there is the problem connected with lead poisoning which calls for considerable investigation. Very small amounts of lead are damaging to human tissue. Lead is used in such a large number of industries that I think there is a much more widespread risk of damage

from lead than is realized. The investigation of lead poisoning is difficult and calls for research. In addition, there is a great deal of chronic kidney diseases in young people in Queensland, more so than in any other State. That, I think, is connected with lead poisoning in infancy. There are many problems in that field which require clarifying. Then there is the great group of fungus diseases, for example, ringworm, surfer's itch, and diabolie's itch. But apart from those well-known diseases, there are quite a lot of other diseases, especially in north Queensland due to fungi, which grow well in a warm, moist climate. No investigation has been carried out on that group. Of the diseases which have increased most, there is general disease which, of course, is not a tropical disease, and which, I understand, is now under control; and there is also a great increase in malaria in Queensland. There have been a few cases of malaria contracted in south Queensland because the victim has lived in the same house as a returned soldier who carried the disease. That would be contracted from a mosquito. We have in south Queensland a type of mosquito which transmits malaria. There are plenty of those mosquitoes, but there have not been sufficient malaria cases to allow them to become infected. The hospitals in Townsville, Cairns and Unistat, particularly, get a large number of cases of tropical diseases, whilst there are some cases in Brisbane. One reason why I think Sydney is the best place for the expenditure of money at present for research work is because the school is already established there. We are nearer the tropics than Sydney, but regard must be given to the fact that the school is already established in Sydney. It is not very big at present, but it is the most central spot for medical officers to come to. Travelling scholarships abroad should be provided for young doctors who want to specialize in tropical medicine.

209. *To Mr. Conelan.*—Our laboratory does not now carry out work for the defence services, but we did quite a lot of work of that kind in the past. I am not in close touch with the medical work being carried out in respect of native settlements. There is no diploma of tropical medicine, as such, issued here, but the students are given special instruction. Sir Raphael Cilento got his diploma in London. I think that eventually there will be a course in tropical medicine in Brisbane, but at present one course would be sufficient. At one time there was a tropical institute in Townsville. It was moved from Townsville to Sydney because no students would go to Townsville for the course. Sydney was found to be a better place for the teaching. We need a laboratory in the tropics as well as the school in Sydney. The Army authorities have a tropical research school at Cairns. The research work should be done in the tropics. Some of the money should be expended in New Guinea. Teaching and research are two distinct things. The research should be carried out in New Guinea, and the teaching in Sydney. Malaria was prevalent in Brisbane 40 years ago, but is not prevalent here now. It is prevalent in Townsville and Cairns, and there are now cases at the Goodna Mental Hospital. Insane patients are not very careful about personal cleanliness. Furthermore, patients have come to Goodna from north Queensland, bringing the infection with them. There are also a large number of mosquitoes at Goodna. The local government authorities are always engaged on the eradication of mosquitoes. I do not think there is much risk of malaria being contracted in Brisbane. The possibility is greater in country areas. I have in mind a case which came from Cunungra. It was a school-boy who had a relative who had just come back from New Guinea. Both of them had a holiday at Cunungra, and the boy became infected in that way.

I cannot form any opinion as to the amount of expenditure which should be incurred in extensions to the school at Sydney, but I think that a lot more research should be done at the Sydney school. When the School of Medicine attached to the University of Queensland gets on its feet it should provide a course in tropical medicine, but it is not yet on its feet. At present it is carrying on a budget of £5,000 a year and that is not adequate for the proper teaching of the ordinary medical courses.

210. *To Mr. Mulcahy.*—There are a lot of cases of filariasis in Townsville and Cairns. Some years ago I made a survey of white patients in the Townsville Hospital and found in three people out of 100 had filaria in the blood. They were local residents. To find three of 100 ordinary people infected was high. They were sick people, and, of course, the percentage would not be so great among the general public. The disease is due to a worm which is transmitted by a mosquito. Many people who have the worm inside them do not get the symptoms. We do not know why some people get the swollen legs and others do not. There is no cure for the disease. The mosquito is the main consideration.

211. *To Mr. Conelan.*—Dengue is found as far south as Newcastle, whereas filariasis has been found as far south as Grafton.

212. *To the Chairman.*—I lived in north Queensland for a considerable period, but I have not visited the islands, or New Guinea. I have spoken to medical colleagues who have come in contact with natives suffering from tropical diseases. Filariasis is spread by a mosquito. It is not contagious. I should think that it would be very helpful to the Committee if it could investigate conditions in New Guinea, particularly with respect to the establishment of a research station there.

213. *To Mr. Conelan.*—You ask me whether in preparation for the return of tons of thousands of men from the islands when the war ceases it would not be advisable for the Queensland Government to send medical officers to those areas in order to investigate the position with a view to preventing the introduction of tropical diseases to Australia. Filariasis is spread by a mosquito. It is not contagious. I do not think that that would be necessary. Sir Raphael Cilento has been in the islands and in Malaya and is acquainted with all the possibilities.

214. *To the Chairman.*—Each disease has its own mosquito. One group of mosquitoes spreads malaria; another group spreads filariasis, and another group spreads dengue. Assuming that some of our soldiers contract some of these diseases, our common mosquito, coming into contact with them, could spread certain diseases by biting other persons. Cases of that kind have occurred in southern Queensland.

215. *To Mr. Mulcahy.*—It is always possible to render a small locality malaria proof, but it is not possible to render the whole bush malaria proof. Whilst the mosquito may not travel far, an infected person may travel over a considerable area and be the means of spreading disease if bitten by mosquitoes. I say definitely that there should be a school of research re-established in New Guinea.

216. *To Mr. Conelan.*—An ordinary mosquito, if it is of the right type, can transmit these diseases. The Anopheles mosquito transmits malaria. The Culex mosquito, or ordinary dirty water mosquito, can transmit filariasis, and the Aedes mosquito, or day biting mosquito, which breeds in tanks, can transmit dengue. I do not think that there is any great risk of the diseases in Brisbane, and I do not think there is any risk in Sydney. Apart from that at the Army Medical School in Cairns, there is no other mosquito testing

ground so far as I know. In Brisbane the city council carries out control work. It does not engage in research. Control and research are different. Once a policy has been laid down, health inspectors carry it out quite well by draining, oiling, &c. I am unable to comment upon the statements attributed to the Indian Medical Delegation and American medical officers visiting this country that Australia has done more to eradicate malaria than any other country.

217. *To Mr. Conelan.*—I have studied in England. I strongly support the suggestion that the Commonwealth Government, and, perhaps, some of the big shipping companies should establish travelling scholarships to enable Australian doctors to proceed overseas to engage in research into tropical diseases. I should suggest that the Committee might make a recommendation to that effect.

218. *To Mr. Mulcahy.*—At present very few Australian doctors proceed overseas in order to study tropical diseases.

The witness withdrew.

(Taken at Brisbane.)

WEDNESDAY, 4th APRIL, 1945.

(Sectional Committee.)

Mr. JAMES (Chairman).

Mr. Conelan. | Mr. Mulcahy.

Leon Alexander Meston, Government Analyst and Chief Inspector of Explosives, Queensland, sworn and examined.

219. *To the Chairman.*—I am aware that this Committee is inquiring into the proposed extensions to the School of Public Health and Tropical Medicine, Sydney. The work of my branch in the Health Department is largely to examine materials bearing on the national health such as paint, urine, hair, and the complete range of foodstuffs. We are a sub-department of the Department of Health and Home Affairs. I have not come into contact with tropical diseases in Brisbane except through contact with other officers of the departments. We have not made any contact with tropical diseases in the laboratory itself. I should like, first, to take exception to the name of the Sydney school. Instead of the School of Public Health and Tropical Medicine, I suggest it should be called the School of National Health and Tropical Hygiene. The term public health is often associated with public houses; whilst the term medicine is mostly associated with pills and potions. As an indication of what a government laboratory can do with regard to national health problems, I shall refer to the survey we have made with respect to fluorine in potable artesian bore waters. This is the first survey of the kind made in this State. It covers a fair range of samples, but has not gone nearly far enough. Drinking water containing one part per million of fluorine will cause mild mottling of the enamel of the teeth of about 10 per cent. of the children up to the age of ten years who have consumed it regularly; very little if any damage is done to the teeth. With 1.5 parts per million, the percentage of children whose teeth become mottled is increased by about 50 per cent.; in a small percentage there may be a moderately severe effect. Drinking water containing more than two parts per million causes very severe damage to the teeth of most of the children taking it. Our survey of bore waters used for town supplies shows a considerable number of bores to contain more than the accepted optimum of one part per million of fluorine in a domestic water

supply. The figures range from 1.2 to six parts of fluorine per million. There is a considerable amount of poisoning of sheep in Queensland by fluorinated bore waters. Sheep have been poisoned by water containing twelve parts of fluorine per million. Main symptoms of fluorine poisoning in sheep are emaciation and decreased appetite, salt hunger, and stiffness of joints, whilst the bones lose their normal colour and shear, becoming thickened and softened and break easily. Fluorine is a slow and cumulative poison. I have had reports from medical officers about defects in the skeletons of children, and these defects may be associated with fluorine. Dr. Montgomery White, Queensland Government Agricultural Chemist, could show the effect of fluorine on the bone formation of sheep generally. This problem I suggest concerns the national health, as it has an important bearing on the health of the people in the inland districts. Such people must be given potable waters, and this is the first survey made of potable waters in Queensland for fluorine content. It is the duty of the National Government to investigate the position with regard to these waters not only in Queensland, but also in New South Wales, or wherever water is being drawn from the artesian basin for human consumption. The intake of poisonous metals by individuals appears to be another subject which should be investigated by the Commonwealth in the interests of national health. One avenue for investigation is the arsenic content of human hair. A medical authority has stated that analysis of the hair for its arsenic content is the most reliable diagnostic procedure for detecting arsenical poisoning. This generalization, like all generalizations, is misleading because of the exceptions to it. The passage of arsenic into the hair is not contemporaneous with its deposition in other parts of the body. In acute poisoning arsenic is present in the blood and urine, but is not present in the hair. Our investigations in this field have not gone far enough mainly because our staff is too limited. Considering our war work, it is amazing that we have done so much; but we are eager to do more and would do more if given more assistance.

220. *To Mr. Mulcahy.*—Fluoride is not of particular appeal to Queensland. It occurs all over the world. In some American States it is particularly high. I do not know whether it is prevalent in New South Wales, although I have heard it is there. I have not heard of anything being done about this problem at the Sydney School of Public Health. We are anxious to carry out our department except the Department of Agriculture. In our survey of artesian bore waters we did not co-operate with any bodies in the other States. We have not been in touch with the Institute of Anatomy in Canberra. We receive pamphlets and bulletins on health subjects from that institute, for instance, on the vitamin content of bread and the vitamin content of milk. We carry out investigations from time to time on bread contents. I have forwarded the results of our investigations in Queensland to the Commonwealth Department of Health, but not to the Sydney University. I was not aware that a School of Tropical Medicine already exists in Sydney. I am not acquainted with the work that it is doing.

221. *To the Chairman.*—As mosquitoes are responsible for the spreading of tropical diseases there is definitely a danger of the introduction of these diseases on a large scale with the return of thousands of soldiers from tropical areas. I think that it is necessary for men to go to Sydney from Queensland to obtain a diploma of health. Such a diploma is essential and of great value, and every officer should possess it. Whether a man possessing a diploma would be able to command a higher salary than one not possessing that qualification, would depend upon his position. If

he were appointed to an administrative position involving those additional subjects he should command a higher salary than a man dealing with one subject only. My work does not bring me in touch with the work of the Sydney school. I do not know whether the Sydney school is used to supply special information, apparatus and material. I believe that the demands on the school will be greatly increased after the war, in view of the danger of the spread of these diseases following the return of thousands of soldiers. For that reason a very close watch must be kept upon troops when they return. As to whether the Government would be justified in expending £73,570 on extensions to the existing school in Sydney, I should say unquestionably that any expenditure in respect of any phase of national health would be justified. Australia, as it were, is an immense hospital ward with all sorts of diseases, yet with its amazing food wealth and healthy environment it should be one of the healthiest countries in the world. We mostly procure animals for our investigations from the Department of Health. We investigate industrial hygiene on the chemical side for the Department of Health. We analyse foodstuffs, particularly with respect to lead and arsenic content. We are not associated with the University of Queensland, but are directly associated with the Department of Health. The Laboratory of Microbiology and Pathology is part of the department with which I am associated, that is, Dr. Barwick's section. Health inspectors are not required to undergo a special course of training in public health. I think that they have to possess only the certificate of the Royal Sanitary Institute. That certificate is available in Brisbane.

222. *To Mr. Mulcahy.*—I do not think that health inspectors in populous centres should be required to possess the diploma of public health. That is beyond their capacity, because it is largely a medical diploma. However, there should be a diploma of public health apart from the certificate of the Royal Sanitary Institute for health inspectors in order to enable the latter to supplement their medical knowledge. They could be given courses in physiology and tropical diseases. The Queensland Department of Health is a lead-conscious department. It realizes that lead is an insidious and remarkably cumulative poison, and it has taken action accordingly to protect the people from that hazard as much as possible. It has probably done more than any other State to reduce the lead content of paints, toys, crayons, tobacco and foodstuffs. For a time we were laughed at because of our investigations with respect to the lead content of tobacco; but when tobacco growing was started on a big scale in Queensland it was found to be heavily charged with lead arsenate. We have cut out lead paints and lead alloys from toys. The metal lead itself is a poison. This in itself is a subject worth considerable investigation. This problem is not peculiar to Queensland, but the health authorities in other States do not seem to take it so seriously as we do. We restrict the soluble lead in paints. That is not done in any other State. France was the first country to restrict white lead for house paints. In a tropical climate paint tends to chalk more than in any other climate. Because of insufficient staff we have not done sufficient work with respect to the lead content of normal urine. Periodical examination of a cross section of the community should be carried out in order to determine the lead level all the time. Specimetic tests are not reliable. The real danger lies in the lead being maintained at a certain level. The maintenance of a level of .05 lead in urine would indicate an unusual absorption of lead.

223. *To the Chairman.*—In our work we deal with dust, fumes and smoke, including dust in coal mines. We do not receive applications from industrial concerns for assistance in dealing with hygiene connected with

their factories. Most applications of that kind come to us through the unions, and not from employers. To the extent of our staff we follow up those inquiries as much as we can. Lead poisoning is a national problem, despite the fact that other States do not take it so seriously as Queensland does. If the intake of lead is doing harm to people in Queensland, it must be doing harm to people of other States. They must be absorbing lead from paints, and vegetables, &c., which have been sprayed. I would not say that we do not receive any applications at all for investigations from employers, but speaking from memory most of these applications have come to us from the unions. The establishment of a laboratory in New Guinea or in the islands would be of great help in investigating tropical diseases at their source.

224. *To Mr. Mulcahy.*—Teaching is quite different from research and would have to be carried out at a convenient centre. A port like Sydney, or Melbourne, at which ships call from tropical countries, would be suitable. Experiments with animals in connexion with tropical diseases could be carried on in Sydney just as well as anywhere else, but one would not want to drag the subjects themselves to Sydney. The drinking of water containing fluorine will affect the bone growth in children. Over one part of fluorine per million affects the teeth of children. They are visual effects, but, probably, fluorine tends to make the bones of children softer, or more brittle.

225. *To Mr. Conelan.*—The safe standard laid down is one part of fluorine to one million parts. That is considered to prevent dental caries. That is a useful factor, but it appears to be illogical to add a poison to water in order to prevent dental caries. There should be other, and more logical means. A long range investigation into children's teeth is being carried out in Canberra. Little has been done in New South Wales with respect to fluorine content of drinking water.

226. *To the Chairman.*—I also emphasize the need to control patent medicines. In my last annual report I drew attention to some of the claims made in respect of these preparations. I said—

The exaggerated claims made for certain food preparations are not so much as the untruthful claims made for some proprietary medicines. For instance, radio broadcast to Queensland has been stressing for considerable time that "Bunkum's pills" contain concentrated extract of bitter apples, which gives you the laxative properties of fruit. "Bitter apples" is a synonym for colocynth which is a drastic cathartic and as such is contraindicated for the kidneys and milk it should never be given to nursing mothers. This specious form of advertising would no doubt lead many mothers to the belief that "Bunkum's pills" could be used in place of prunes, figs or grated apple as a laxative for their children, whereas an extract of bitter apples is quite unsuitable for children and is likely to be harmful to them.

When I brought this matter to the notice of the Department of Health I was told that the Commonwealth Government was allowing such broadcasts and was unable to do anything about it. Then there is the selling of drugs under fancy names. Dealing with this matter in my last report I said—

The disguising of commonly used drugs under fancy names which deceives the purchaser as to their true identity is a reprehensible practice. It is a practice that enables manufacturers in some instances to sell their products at a price involving imposition on the consumer.

For instance, tablets which may be purchased at any chain store at a cost of 9d, a 100 are being sold under a well-known name at the rate of 4s. a 100. Dealing with the use of coal tar dyes in foodstuffs, I pointed out in my report—

Queensland has taken more effective measures to reduce the amount of coal tar dye used in foodstuffs than any other foreign-speaking country except Canada. Nevertheless, the 10 per cent. Under the caption "dangerous colours", Professor J. W. Cook, F.R.S., referring to cancer-producing chemical

compounds writes, "The number of such colours is increasing and the addition to them of certain azoic dyes is particularly significant, owing to the use of these materials for colouring foodstuffs, beverages, medicines and cosmetics. One of the azoic dyes found to be carcinogenic to the liver of Japanese workers was formerly used as a food colouring under the name of butter yellow and has also been used in dying leather. The use of butter yellow in foodstuffs is now obsolete."

Manufacturers are now providing crayons free of lead and arsenic.

The witness withdrew.

Professor James Vincent Dunbig, Professor of Pathology, University of Queensland, sworn and examined.

227. *To the Chairman.*—I am aware that the Committee is inquiring into the proposed extensions to the School of Public Health and Tropical Medicine in Sydney. I do research work in addition to my professional duties. There is no course at the University of Queensland leading to a diploma of public health, but the undergraduates are given a certain amount of tuition in public health. There is an undergraduate course in tropical medicine, but not a diploma course. We do not co-operate in the work of the Sydney School of Health. In view of the danger of the introduction of tropical diseases after the war there is likely to be a great demand for men trained in public health and tropical medicine. We shall need an increase of personnel of that type. With respect to the development of the School of Public Health and Tropical Medicine I submit the following statement:—

I have no doubt that the expenditure of a large sum of money on the School of Public Health and Tropical Medicine in Sydney is necessary. I would hesitate, however, to give my approval to the expenditure of the money immediately unless there were sound guarantees that the present method of control would be altered. The school is at present run by, and from, the Federal Health Department. This is not in the best interests of research and teaching, which are the functions of the school. The research, which is predominantly the main function, necessarily suffers restrictions of outlook, scope and inspiration by reason of the school being an appendage of a civil service department.

To get the best results in teaching and in research—that is to say, to expend the taxpayer's money to the best advantage—depends on setting up the ideal organization, and that in my opinion, can be secured only by placing the school under a research organization. The National Health and Medical Research Council, which has defects, might serve the purpose for the time being, but this itself should be replaced by a national research council consisting solely of distinguished research workers, responsible only to Parliament through the Federal Treasurer.

This council might appoint a small committee of management which should include representatives particularly of the universities of Queensland and Sydney—the University of Western Australia might lay valid claims to be included—and the State Health Departments might furnish the other representatives.

The success of the school will depend in the first place, of course, on control of the superior type I have indicated, and, secondly, on the type of director appointed. I understand that the post of director will become vacant in a short time, and I would suggest that applications be called at least a year in advance of appointment, and that this time be devoted to the selection of a first-rate man secured from candidates throughout the whole world, and that his advice on re-planning and re-organization be taken, and the proposed budget expenditure subject to his advice. In the

meantime, there would be no harm in going on with building plans for such sections as are urgent and unanimously desirable.

As to the actual work of the school, research is the main function. The teaching side can be quite easily provided for. Research, however, is much more difficult, and entails the appointment of highly trained and specially selected personnel.

The teaching work can quite well be carried out in Sydney, and in the meantime, owing to shortage of teaching personnel in the University of Queensland, the course for the diploma of public health should be taken in Sydney. The University of Queensland, under its statutes, has power to institute such a course, and eventually this will be done, though at present it would be quite impracticable.

As to research, there is a lot of work which I do not think can be carried out in Sydney. For that reason I believe that problems which can be studied at first hand on the spot should be allocated to northern centres.

The Department of Physiology in the University of Queensland, and the State Health Department, are already engaged in work of this kind. The Queensland Medical School has all the resources for assisting in this work, and provision should be made to establish further research centres as branches of the school in northern Queensland, not only on the coastal belt but also in the dry interior.

I do not believe that the question of the suitability of the tropics for white settlement has been entirely solved. We still have to study the question of making our people adaptable to tropical conditions, and questions of housing, clothing, food, and industrial conditions, offer very wide scope for scientific inquiry. These matters cannot possibly be studied in Sydney, though the main directive could very well come from that centre.

Finally, I would like to indicate what I believe to be an extremely urgent need, that is, to establish a strong section of industrial hygiene within the school. In 1933, I investigated lead poisoning at Mt. Isa for the Queensland Government, and from the huge mechanization of industry there I foresaw the need for immediate development of industrial hygiene and advised the Minister for Health on those lines. Gradually, but I think too slowly, the Queensland Department of Health has taken the matter up. The enormous increase of industrialization of Australia makes the development more urgent than ever; the use of new methods, new materials, new by-products, are putting our present knowledge out of date all the time.

I am a scientific adviser to the Brisbane Trades and Labour Council, and the number of problems in industrial hygiene submitted to me have been quite beyond my own scope, and, indeed, that of the State Health Department, which, however, has done its best to co-operate. I know, too, from many conversations with Sir Raphael Cilento that it is the intention of the department to set up a strong section of industrial hygiene.

At present, however, there is no school of industrial hygiene in Australia, and before investigations in this State can go forward, we need highly trained medical personnel who are not available at the moment. This kind of training, which is a very important part of national health, might very well be undertaken in the Sydney school.

My view, therefore, is that the present set-up of the School of Public Health and Tropical Medicine in Sydney is not the ideal; and, I personally, would wish to have advice from more highly qualified quarters before embarking on such a large expense. There is

not the slightest doubt that a large sum of money must be made available, but the details of how it should be spent seem to me to be of the highest importance.

220. *To the Chairman.*—When I say that problems which can be studied at first hand on the spot should be allocated to northern centres, I should include all the Mandated Territories and New Guinea.

221. *To Mr. Conelan.*—I think that "national health" is a more comprehensive and appropriate term than "public health" in the name of the school. Most of the work we have been doing up to date has been in connexion with the problems of the coastal areas, but nothing has been done so far with respect to those arising in the dry, arid central areas.

230. *To the Chairman.*—With respect to the establishment of a strong section of industrial hygiene within the school, one might ask, for instance, whether we should work a wharf labourer in Townsville and Cairns under the same conditions of employment as those applying to wharf labourers in southern ports. That problem offers scope for inquiry. Sydney would be the most appropriate place to inaugurate any big project with respect to industrial hygiene. My work brings me in contact with the hospitals in Brisbane. Our students are given the opportunity to visit hospitals in the city. We found some time ago that there was a lack of co-operation between the Hospitals Board and the Faculty of Medicine. The faculty held a very important special meeting some time ago and later we forwarded our plans to the University Senate. We now have every reason to hope that our medical students will be given much better opportunities for clinical studies. You ask me whether the provision of about twenty beds for tropical disease patients in the Prince Hospital near the Sydney school would be necessary, or desirable, for those undergoing the tropical health course there. I have an open mind as to the number of beds, but you cannot teach tropical medicine without clinical material. I have no direct connexion with the work of the laboratory of microbiology and pathology conducted by the Health Department, except that we interchange materials and views. No research into modern nutrition problems is carried out at the University of Queensland. A start was made on that work, but priority had to be given to more urgent war problems. However, the nutrition work we were engaged on was not of sufficient scope although what we did was good.

231. *To Mr. Mulcahy.*—The existing Commonwealth Laboratories could form an excellent nucleus for teaching in respect of research. The danger of infection from tropical diseases will be very great after the war. I am aware that in America they have been inoculating animals against malaria. Some excellent research work is being done in that country in respect of malaria. In the past we did not believe that the same kind of protection existed in the human body against animal parasites as existed against bacteria, like typhoid. Dr. Penfold, director of the Commonwealth Serum Laboratory, was the first to show that immunity could be provided against the tape-worm. Similar work is being done in America to produce immunity against malaria. America's expenditure upon research is colossal. When I started consulting practice in 1929, filariasis was very common in Brisbane. For some extraordinary reason it has died out around Brisbane. I have not seen a case of filariasis for some years, although the Brisbane City Council and the State Health Department have recently brought to light cases of filariasis in the Goodwin Mental Asylum. The figures show that about 15 per cent. of our hospital population in those days had filariasis. I do not know what the present position is further north. My own personal experience is that it is a rare disease now.

That does not mean that it may not come back. A limited number of mosquitoes, *Anopheles*, transmit malaria. Malaria-transmitting mosquitoes have been found as far south as the Riverina. The only relationship we have with the Sydney school is that represented by grants. One worker in my department is in receipt of a grant from the National Health and Medical Research Council. I know Sir Colin MacKenzic personally. Unfortunately the anatomical work at the Institute of Anatomy, Canberra, has been put aside and attention is now being given to nutritional work. Dr. Clement's work on nutritional work is outstanding.

232. *To the Chairman.*—We breed our own experimental animals from disease-free stock.

233. *To Mr. Mulcahy.*—Generally, the salaries paid to professional men in the Public Service in Australia are too low. I could give a long list of research minds who have been lost to this country because of lack of opportunity here. Off-hand, I mention Professor Howard Florey, Dr. Brian Macleay, Dr. Hugh Cairns, Sir Charles Kellaway, Dr. E. S. Hornung, Dr. Eccles, Sir Rupert Willis and Sir Charles Martin. Salary is not altogether the primary consideration. The conditions under which men are required to work in this country are probably of greater importance. But we shall have to pay salaries comparable with those prevailing overseas. The value to the community of the services of eminent research minds is beyond estimate. I have had experience overseas. I did my special course in London after the last war.

234. *To Mr. Conelan.*—I should appoint as the new director of the school a man of the type I have mentioned. The position should be advertised throughout the world and the selection should be made by a panel of outstanding research men who could also act in an advisory capacity with respect to future research. I would nominate as No. 1 member of that panel Dr. Burnet, of Melbourne. Men of that calibre would ensure that no mistakes would be made in the expenditure of money allocated for research purposes. When I look back upon the three institutes which I founded, namely, at the Mater Misericordiae Hospital, the Brisbane Hospital and the Brisbane Medical School, I can see where I made mistakes. But in this project the man who is to direct the school should be consulted, particularly when debatable points arise.

235. *To Mr. Mulcahy.*—If the Commonwealth Government develops any research scheme it must make allowance for travelling scholarships on an exchange basis in order to send our men abroad and bring eminent outsiders here.

236. *To Mr. Conelan.*—There is a tremendous field for anatomical work in Canberra. The section of marsupials and the investigation of opossums may sound a very far-fetched idea, but you must allow the research worker complete freedom, provided he is well qualified. To give an example of how knowledge which appears to be completely useless crops up again, I point out that many years ago I investigated venomous fish, including the stone fish. When I was engaged on that work I published a short paper dealing with a certain by-path not directly concerned with that subject. Apparently, that paper was not of the remotest importance to anybody, but some years later I received a letter from a man in Philadelphia who had read a reprint of that article telling me that he had found that particular piece of knowledge very useful in devising a test for the presence of vitamin "C" in the blood. Extremely little research work has been done in Queensland on any branch of medicine. The State Government has set aside a grant of £14,000 a year for the establishment of an institute which will be attached to the general hospital here. But up to date research work has been very small and piecemeal and

has been undertaken only in spare time. I am a member of the research committee of the Faculty of Medicine in the University of Queensland, and we have been invited to suggest a scheme. This will be a big scheme. Only mosquitoes of certain species can transmit malaria. I do not think that the ordinary mosquito can transmit it. Work in connexion with industrial hygiene is of very great importance. In 1933 I conducted an investigation at Mount Isa. At that time plumbers were extremely bad. I shall make available to this Committee the report I made on that investigation. In that report, I pointed out that the plant as handed over to the Mount Isa Company represented a magnificent engineering job on the part of the contractors. It was the last thing in industrial lay-out, not only in respect of the mill, mine and smelters, but also the township. The whole undertaking was a marvellous example of what high-class engineers can do; but they forgot that this plant had to be worked by human beings. The result was that lead poisoning was terrific. After my visit, application was made to the Arbitration Court, and, eventually, lead poisoning was stamped out. The mechanization of industry and the industrialization of Australian life will present problems absolutely unheard of before, and such problems will crop up like mushrooms.

237. *To the Chairman.*—New problems will arise in respect of new products, new gases, leakage of gases, fatigue, accidents through fatigue and bad design of machinery. There is hardly a union affiliated with the Trades Hall here which has not submitted some industrial health problem to me for investigation. I told Sir Raphael Cilento that this problem is getting ahead of us. We have not yet found any means of combating T.N.T. poisoning in munition factories. That is an example of an industrial development getting right ahead of modern medical knowledge. Medically, we must get ahead of industrial development. I suggested the formation of an expert committee to work in co-operation with the Trades and Labour Council. We may have new plastics and materials which will present us with new medical problems. The Queensland Government gives five scholarships a year in the Faculty of Medicine, and those men contract to remain in the service of the Department of Health for a given period after they finish their course. They will be used to develop the work of which I have spoken, but we must have training schools. I cannot over-emphasize the necessity to go ahead with such plans immediately. As the national income at present is approaching £2,000,000,000 annually, I refuse to believe any one who says that we cannot afford to undertake comprehensive research schemes of the kind I have mentioned.

238. *To Mr. Mulcahy.*—Health inspectors in our larger cities hold the certificate of the Royal Sanitary Institute. I am opposed to the idea that such officers should hold a diploma of public health, because the standard of university training is lowered by the man who wants to obtain a special qualification merely to increase his earnings. We must make use of the best brains and pay for them. That policy will pay in the long run; but I am opposed to allowing health inspectors to do work which should be undertaken by medical graduates specially trained in tropical hygiene.

The witness withdrew.

Sir Raphael Cilento, Director-General of Health and Medical Services, Queensland, and Professor of Social and Tropical Medicine in the University of Queensland, sworn and examined.

239. *To the Chairman.*—At present, I am on loan to the Commonwealth as chairman of a national survey for the health of coal-miners, and at the moment I am

engaged on that activity. I am aware that this Committee is inquiring into the proposed extensions to the School of Public Health and Tropical Medicine, Sydney. I know the building. As a matter of fact, I was director of the Institute of Tropical Medicine in Townsville when it was decided to transfer the activities of that institute to Sydney and set up the School of Public Health and Tropical Medicine. Thus I was closely associated with its institution in February, 1930. They then transferred to it the activities of the Institute of Tropical Medicine, Townsville, together with its library, specimens and staff. In Queensland, the State Health Department deals with all health problems, and the Commonwealth is mainly concerned with quarantine operations. The Commonwealth has no constitutional activity in respect of health and a domestic problem. Under the Constitution, it is restricted to quarantine, but, with the consent of the States, circumstances have led to a very wide development of the Commonwealth field. That development has, I believe, been in the interests of Australia as a whole. There is not much contact between my department and the Commonwealth health authorities. From time to time the Commonwealth has offered assistance to the State in particular problems. For example, it has co-operated with the State in respect of hook-worm disease for the last twenty years, and, occasionally, it co-operates with us in respect of problems of industrial hygiene. The State authorities meet the Commonwealth authorities at least twice a year in the National Health and Medical Research Council, and there are other contacts of a similar nature. We do not obtain men for our staffs from the Sydney School of Public Health and Tropical Medicine. The University of Queensland provides training in tropical medicine and public health as a routine part of the training of all medical students. It is the only university in Australia that does that. Consequently, Queensland graduates have no need to go to the School of Public Health and Tropical Medicine in Sydney for a post-graduate course, because, actually those studies are taken as part of their usual course for medical practice in a State which is largely tropical and which is closely associated with the tropical Territory of Papua, the Mandated Territory of New Guinea, the British Solomon Islands Protectorate and the New Hebrides, which this war has demonstrated so materially to form Australia's natural frontier. We do not encourage men from Queensland to go to the Sydney school, although we appreciate the excellent teaching given at the school and consider it to be a valuable contribution to the facilities available to students elsewhere, and also to students from Queensland who desire either specialized work in tropical medicine or public health after they have done their usual course. Until the outbreak of war, very few students went through that school at all for the specific activity of public health and tropical medicine in a post-graduate sense, although many hundreds went through for routine training in public health. The only cases of tropical disease that occur in Brisbane are a few cases of hook-worm, and sporadic cases of other tropical diseases like malaria, which are brought here. Perhaps I should make an exception with respect to filariasis which has been here for a large number of years. Since the outbreak of war, we have seen considerably more tropical diseases in this part of the State, but, generally speaking, our tropical diseases begin about Cairns, Cape York Peninsula, and the Gulf of Carpentaria. Those areas produce a fairly considerable number of what might be called tropical diseases.

240. *To Mr. Conelan.*—Around Brisbane, we get sporadic cases of malaria and a few cases of dysentery. We have cases of typhus occurring here, bilharziasis,

which comes from Egypt, and leishmaniasis. Hookworm occurs in a small percentage, but is not a major risk even for people who have it.

241. *To the Chairman.*—The quarantine precautions have proved effective against quarantinable diseases. I believe that the quarantine system of the Commonwealth Department of Health is one of the best in the world. That has been admitted by competent authorities. Against malaria and things of that kind it cannot be effective because the disease remains latent, and the disease appears after the people have been in the country for some time, at which stage the Commonwealth has nothing to do with them. Such cases then become matters for the State Health Department and the local government authorities. The return of thousands of soldiers gives rise to possibilities of infection in respect of some diseases. Smallpox is guarded against by universal vaccination of the troops. Plague is a possibility, particularly as the troops enter the very heavily infected areas in the Dutch East Indies which, presumably, they will do in the very near future. Dysentery, cholera and diseases of that kind are also possibilities. The regulations laid down by the Commonwealth Department of Health are sufficient in most instances to meet those menaces, although the exigencies of war often involve treating the quarantine regulations rather lightly. Our chief menace in Queensland is plague which has been brought here several times. It is a rat-borne disease, and at present we have more rats on our coast than we have ever had in my experience.

242. *To Mr. Connel.*—We have done some experiments with various drugs that are supposed to destroy rats. Some drugs are very good in respect of some species but are not very effective with other species. Perhaps, we could best say the results are promising, but at present they are unconfirmed as to their final efficiency. I take it that you refer to the drug anticoagulant. We are meeting with great success in respect of particular varieties of rats in the use of that drug, but it does not destroy all rats, and one type not readily destroyed by it is one of the types that will carry plague.

243. *To the Chairman.*—Our laboratory of Microbiology and Pathology is used for research into local health problems. We have done considerable work with respect to varieties of typhus. That work proved to be of great assistance in the war in New Guinea. We have also discovered several types of diseases like leptospirosis, a rat-borne disease, and also "Q" fever. The latter was discovered in Queensland, hence the name; and it has since been discovered in other parts of the world, particularly in America. All that work has been of considerable importance and has reflected great credit upon Dr. Derrick and his staff who have carried out this research. Some diseases are of considerable importance in the cane-fields. In 1934 an outbreak of leptospirosis was sufficiently virulent to stop work. It created industrial unrest which took considerable time to allay. That disease is carried by rats and field-mice. I am not certain as to what services are performed by the government steamer *Outer*. It makes trips between Townsville and various islands in the bay. Except as a means of transport and communication I do not know what service that steamer performs. The position with respect to the development of the Sydney School of Public Health and Tropical Medicine is extremely complicated. Development will depend mainly upon what the Commonwealth Government intends to do with respect to this matter after the war. Perhaps, I could best indicate what I mean by saying that Australia's interest in tropical medicine began about 1909 when, in Queensland, Bishop Frodsham, of Townsville, pointed out that we were really a tropical country,

that we were in immediate association with tropical countries very heavily infected with tropical diseases, particularly New Guinea, and it was necessary that Australia should know something about the conditions of living in a tropical country and also the threat of tropical diseases that menace the citizens of any tropical country. A beginning was made at Townsville by establishing the Australian Institute of Tropical Medicine. The late Dr. Anton Breinl was brought out from Liverpool, where he was a brilliant student, to set up the first work in tropical diseases in the State. The work was set up by arrangement between the three universities of Adelaide, Melbourne and Sydney and various governments, particularly the Government of Queensland. We carried on for some time with remarkably good results in a research sense. However, the funds for the institute were not adequate to meet its needs and the Commonwealth was brought into the picture and assisted with funds for some years. When war broke out in 1914 the staff of the Institute of Tropical Medicine at Townsville was used very largely to deal with malaria, and the only effective treatment for malaria at that time was instituted by Dr. Priestley, now of Sydney, and Dr. Breinl, late of Townsville. At the end of that war the Commonwealth had assumed an important association with the institute that financial control was transferred to the Commonwealth, and shortly afterwards full control was handed over to the Commonwealth. The Commonwealth carried on a programme of research work and general investigations, and also treated patients in ward 10 of the Townsville General Hospital which was set aside for that purpose by the hospital board. However, Townsville was too far away from the southern centres to attract men who were willing to do a tropical course. Moreover, we were so isolation-minded that Australia's medical men and its people generally were unaware of the importance that tropical diseases might at any time assume if we fully developed our northern areas, or if we became involved in a war with anybody who might attack our northern frontier. When I was Director of Tropical Hygiene, with head-quarters in Brisbane, I recommended that the teaching activity of the Institute of Tropical Medicine be transferred to Sydney. That was in order that people might have the opportunity to go to the institute without having to live in Townsville under the disability of being far distant from home and large hospitals. I made that recommendation in 1928 and the institute was finally opened in Sydney in 1930. Unfortunately, however, it had been understood that the institute would take away from Queensland only the teaching activity, leaving research and various other activities in this State. The library, specimens, &c., were to be left in Queensland. The idea was that five months' teaching might be done in Sydney and the remainder of the attack on what was really a tropical problem would be made on that problem in north Australia, New Guinea and the British Solomons. The institute, once removed from Townsville, took all activities with it, and there has never since been research activities in the north. At the same time, it was proposed to link up with the work that was being done in Papua and the Mandated Territory of New Guinea from which I had recently returned as Director of Public Health, with headquarters at Rabaul. In Rabaul, the possibility of the establishment of effective white control and of building up that country to resist any invasion from the Pacific was envisaged as long as twenty years ago and was made the subject of a report by me in 1932. However, the active work in New Guinea was restricted to clearing Rabaul and two or three other places of malaria, treating the natives for hook-worm, opening up the country and providing medical stations at thirteen centres and staffing them with medical officers. Before

I left Rabaul in 1925, we had 2,000 native medical assistants. Their training was very primitive, but they acted as a sort of intelligence corps. Unfortunately, the service in New Guinea did not greatly attract Australian medical men. It was not always possible to keep the service adequately staffed, and tropical disease research was always frowned upon in the southern parts of Australia as being more or less an extravagance. The short-sightedness of that view was made very apparent at Milne Bay and other places, where, because we had no men trained in tropical diseases, we probably suffered a considerable number of casualties which we might have otherwise avoided.

That position has since been brilliantly retrieved by Dr. Neil Fitchey, and the tropical medical corps built up under his supervision. After the war, however, we must definitely bear in mind that New Guinea, the British Solomons, the New Hebrides and, possibly, Timor have become our northern frontiers, and we must fill them with people white, or coloured, or both. Unless we can do so, our tenure of those parts will be seriously threatened. This is essentially a medical problem. Regardless of what other problems exist in New Guinea, the medical problem is supreme, because, unless we can keep people alive, healthy and multiplying, we might just as well say farewell to those parts and to any hope of security for southern Australia. For that reason, I believe that the building up of the study of tropical diseases in Queensland and in Sydney is a very important aspect of present-day politics and is a matter of common sense. Queensland has pledged itself to make every man who passes through its medical school competent to deal with ordinary tropical diseases partly because of the threat that may menace us from New Guinea, partly because that area has to be populated and held, and partly because we do not yet know whether tropical disease like malaria to which many of our men have become subject may not be brought here and established in Australia. The Anopheles mosquito, which carries malaria, extends from Cape York to Tasmania, and it is found right throughout Western Australia. Fortunately, the type of Anopheles varies slightly from north to south, and its average percentage among other mosquitoes gets less and less as one proceeds south. There is a definite risk to the country as far south as Rockhampton, a lesser risk down to the Northern Rivers of New South Wales, and a minor, and possibly a negligible, risk to Perth. If you treat people living in a temperate climate in hot rooms to determine their reaction to a hot climate you find that they become accommodated to a comfort zone 6 degrees higher than when the test began. When dealing with people who actually live in a tropical climate, you do not need to deal with that aspect. I was in New Guinea in the last war and later, in 1924 to 1928 inclusive, as Director of Public Health. Subsequently, I visited New Guinea on several occasions, once following the volcanic eruptions in 1927. I also visited all the French and British Islands in the Pacific at the instance of the League of Nations. On that visit, which took place in 1928-29, I was accompanied by Dr. Paul Heymant. I do not think that the Committee would get very much help by visiting New Guinea at present. Existing military conditions have so disorganized both the white and the native methods of living, and have so dislocated the population, that such an investigation would not be of any value. I knew Milne Bay before the war. I frequently visited Gili Gili plantation in that vicinity. It was heavily infected with subterranean malaria. That locality was cleared in a splendid way and is now completely free of the disease. That work was done with any amount of money and under military discipline. From 1922 to 1924, the whole area of Rabaul was similarly cleared of malaria and remained free of the disease until 1927, but that work was done at a very low cost and without military power to ensure obedience. That kind of work can readily be done by trained men working according to a proper plan. Incidentally, I might mention that the name Rabaul is composed of two native words, "Ra" and "Babal", meaning the swamp. It was a well-known malarial swamp before it was set up as the capital by the Germans. There is no evidence

problem of introducing coloured races to Australia, or other races to New Guinea and the British Solomons in order to build up those areas. In that connexion it should be recognized that every coloured race—certainly every coloured race with which I have had association—might be regarded as museums of parasites of various types of diseases. One of the main reasons why the black races are more prone to these diseases than Europeans is the primitive conditions under which they live. They are not sufficiently protected by sanitation and other means. It is true that some American personnel have been infected in islands to the north of New Guinea.

244. *To Mr. Connel.*—The education of natives in this matter will take at least two generations, but we can only count on one generation, say, 25 years, before we shall be put to the test.

245. *To the Chairman.*—If the School of Public Health and Tropical Medicine is set up as a central body for the teaching of tropical medicine it should be provided with every possible aid in order to enable it to function in Australia as the London School of Tropical Medicine functions in respect of the British Colonial Service, and as the Hamburg School formerly functioned in respect of the German colonies. Those schools were focal points to which every one proceeding to tropical colonies went, and where every medical officer was obliged to take a course in tropical medicine. If we are going into this matter in a sensible way, that should be the objective of the school, and it should be amply equipped for that purpose. I suggest that a research school should be set up in New Guinea. It is quite impossible to do research on tropical diseases anywhere except in the tropics, where one can study the reaction of tropical conditions on tropical residents. A certain amount of work can be done in artificially situated rooms. Professor Lee has done outstanding work in that regard, but the factor of acclimatization can never be properly dealt with when you are dealing with people who are used to living in a southern climate. If you treat people living in a temperate climate in hot rooms to determine their reaction to a hot climate you find that they become accommodated to a comfort zone 6 degrees higher than when the test began. When dealing with people who actually live in a tropical climate, you do not need to deal with that aspect. I was in New Guinea in the last war and later, in 1924 to 1928 inclusive, as Director of Public Health. Subsequently, I visited New Guinea on several occasions, once following the volcanic eruptions in 1927. I also visited all the French and British Islands in the Pacific at the instance of the League of Nations. On that visit, which took place in 1928-29, I was accompanied by Dr. Paul Heymant. I do not think that the Committee would get very much help by visiting New Guinea at present. Existing military conditions have so disorganized both the white and the native methods of living, and have so dislocated the population, that such an investigation would not be of any value. I knew Milne Bay before the war. I frequently visited Gili Gili plantation in that vicinity. It was heavily infected with subterranean malaria. That locality was cleared in a splendid way and is now completely free of the disease. That work was done with any amount of money and under military discipline. From 1922 to 1924, the whole area of Rabaul was similarly cleared of malaria and remained free of the disease until 1927, but that work was done at a very low cost and without military power to ensure obedience. That kind of work can readily be done by trained men working according to a proper plan. Incidentally, I might mention that the name Rabaul is composed of two native words, "Ra" and "Babal", meaning the swamp. It was a well-known malarial swamp before it was set up as the capital by the Germans. There is no evidence

"at in the early days of white colonization there were any tropical diseases in Queensland at all. Malaria, filariasis, hook-worm, leprosy, typhus, and other diseases were introduced by kanakas and Chinese in the early days of colonization. As civilization progressed, those diseases tended to disappear or become restricted to local areas. The quarantine service kept out the major disorders of small-pox, plague, cholera and dysentery, but from time to time they have invaded the place. However, they have not succeeded in establishing themselves owing to the local defences built up and methods of treatment introduced. The most serious of all of them is plague, because there is no method known at present by which plague can be adequately controlled. Promising results have been obtained from the use of sulfadiazine and also the use of drugs which are being tested as anti-rat drugs. Shipping represents a definite risk, particularly during the war, when, for security reasons, vessels coming to Australia from a number of countries could not be adequately reported. This development became a matter of concern to the authorities. The situation is improving as the stringency of war cases. I was in charge when the Commonwealth branch laboratories at Cairns, Townsville, Rockhampton and Toowoomba were established. At present they assist the State Department of Health by examining slides and specimens of common diseases occurring in the respective localities. They are very helpful to us in that way. That is the only direct connexion we have with them, but they are very willing to assist us and to undertake small investigations for us. You ask me whether, after the war, special provision will have to be made for the maintenance of adequate health and medical services in the tropical areas of Queensland. I believe that Australia should set up a tropical islands medical service, and that it should be given the most favorable conditions. Its work should be fostered in every possible way. It should work on a routine research plan. Such a service should recognize that it safeguards not only north Australia, but also the densely populated southern States. Such a service should be based upon some central organization under Commonwealth control, and should carry out its activities through strategically located medical men in the island dependencies, and through laboratories established to make their work effective. That service should be linked with the service in the Northern Territory—and, if possible, north-western Australia—Queensland, the British Solomon Islands Protectorate and the New Hebrides, so that it might be large enough to offer facilities and decent positions as a life work to people willing to go into that work and carry out its essential activities. The administrative head-quarters of such a service might be at Townsville, Brisbane or Sydney in that order of importance. Townsville is the natural link, but it is small. However, it may become larger, particularly should a naval base be established there. Brisbane is the next place to be preferred as an administrative centre because the Brisbane school teaching tropical medicine has the largest body studying tropical medicine in Australia. Sydney might be suitable as an administrative centre because it is the largest port in Australia, and facilities already exist there. However, I suggest Townsville, Brisbane or Sydney in that order of preference. Queensland has recently set up an industrial hygiene subdivision of its Department of Health and Home Affairs. This section, like every other industrial hygiene section in the State, is devoted primarily to incidental investigations that come to hand from the point of view of industry and sometimes from the point of view of politics. These investigations are not carried out on any planned system. Recently the Minister, Mr. Foley, had several conferences as the result of which he has arranged to make routine investigations into industrial diseases,

A plan has been laid down for a five-years investigation of disabilities occurring in industry, particular attention being given to lead poisoning in the making of batteries and welding of ships, for instance. At present, routine investigations are being made along those lines. The trouble at the moment, however, is lack of personnel. Every man that can be spared is in the military forces. Consequently, we lack facilities to carry out these investigations expeditiously. These are long-range plans. However, the State has arranged certain health fellowships in medicine. These antedate any others, including those put out by the Commonwealth. Those fellowships are intended to frank capable young men through their medical course on condition that they subsequently serve with the department for a certain number of years. Two men at present going through are engaged in industrial hygiene work. They will come back as doctors to carry out the industrial hygiene programme of the laboratory. We anticipate that within a few years we shall have several medical men like that, and several more trained technicians. In these circumstances, we should be able to put in hand an investigation of industrial processes not only in the interests of the worker, which is the first essential, but also in the interests of the efficiency of crafts which, politically and economically, is of major importance also.

24. *To Mr. Mulcahy.*—If twenty beds were provided in the Prince Alfred Hospital for cases of tropical diseases they would never be filled. There are not twenty cases of tropical diseases in Sydney at any one time, except, perhaps, during the war.

24. *To Mr. Conelan.*—In London and Liverpool, sufficient treatment cases are always available because of the vast number of sailors coming in all the time from all parts of the world. The Albert Street Docks Hospital, which afterwards became the tropical hospital, was always full. However, the investigations carried out at the schools in London and Liverpool are co-ordinated with work done in Calcutta. They have to go many thousands of miles to get their cheek. We could get our cheek between Brisbane, Sydney, Townsville and Rabaul.

24. *To Mr. Mulcahy.*—There would be no danger of cattle transmitting malaria. There is no form of animal malaria transmissible to humans, except it is known malaria which occurs in monkeys on the west coast of Africa. The type that occurs in animals and birds is similar under the microscope, but is not transmissible to humans. I do not know of any firms in Australia making microscopic apparatus and equipment suitable for this purpose, although the war has made America and Australia very much more self-contained in this respect than they were previously. The idea that the Commonwealth should inaugurate a system of travelling scholarships for the study of tropical medicine is excellent. The best way to tackle the problem would be to put men in New Guinea for two years and then to send abroad the most suitable of those selected for that work. They would then have the advantage of a practical background, and would be better able to build up their knowledge in schools in England or America, after which they would return to the tropical areas. It would not be of much use to give travelling scholarships to people who were not intending to continue as active medical officers. I think that the remuneration for doctors in Australia is about the lowest in British countries. However, the main trouble is not so much remuneration as the conditions of work. In India and Malaya the tour of duty is somewhat longer, but the conditions of employment in those countries are superior to those in Australia, particularly with respect to the length of service before retirement and the retirement allowance. In Australia, it has not been recognized that if

a man retires from tropical service at 55 years of age he should retire as from a life work, and should retire on conditions comparable with those which he would have built up for himself in practice. At present, if a man spends the whole of his active life in tropical service he is retired on a basis which at best merely keeps him in genteel poverty for the rest of his life. Such conditions do not offer any incentive to capable research men. Professor Harvey Sutton is Professor of Public Health. Although he is in charge of the school in Sydney he has not been interested in tropical medicine. That work has been done largely by Dr. A. H. Baldwin, who is now in the Air Force, and at one time was my second at the Institute of Tropical Medicine, Townsville. It is very difficult to say whether we should look abroad for the new director of the school. The difficulty in the first place with regard to the school itself was that the men who were teaching there had no practical experience of tropical diseases at all, although they were excellent medical men. The war has provided us with numbers of men who have had excellent experience in one or two diseases. I think it might be well to advertise the position extensively and to give careful consideration to the claims of men from abroad but, at the same time, to weigh the scales rather heavily in favour of Australian applicants who might have the necessary knowledge as well as the necessary experience.

24. *To Mr. Conelan.*—I could not suggest any one off-hand as a member of a committee to examine the qualifications of applicants for the position.

250. *To Mr. Mulcahy.*—It is true that we are gradually losing some of our best research men. There is practically no future in Australia for the best men who, consequently, look abroad. The vast number of the positions available in Australia are either too poorly paid, or too circumscribed in their authority or sphere of action to be attractive to capable men. Most of the positions are divorced from practical work, and a man feels that if he is working purely in an academic position he is losing his clinical acumen. It must be so arranged that men doing tropical work must have access to tropical fields. A man working in Sydney should have constant contact with New Guinea, and for his own sake should visit those places two or three times a year.

251. *To the Chairman.*—A considerable amount of information has been built up by the Army Medical Corps with respect to the treatment of a lot of those diseases on the spot. This information will be available after the war, but for security reasons none of it has yet been made available by the Army medical authorities to the civilian authorities. On the other hand, the State authorities have partly under legislative sanction, and partly as a matter of course, constantly kept the Army medical authorities informed of everything occurring in their own sphere. We are now entering the most dangerous stage of the war, because up to now we have not really been in touch with the Japanese in any place in which they resided.

252. *To Mr. Conelan.*—I was a member of the medical and hospital survey committee of the Social Security Committee which toured Australia and examined hospitals and medical facilities in 1943. I brought to the notice of the Commonwealth Government all the facts in my possession concerning the Dutch East Indies and the dangers likely to arise from that quarter. Subsequently, I was advised that as a precaution, the Commonwealth authorities had made provision for 60,000 anti-plague doses and a considerable quantity of sulfadiazine, and had taken all precautionary measures. Personally, I feel that it is not sufficient to have in hand something to treat people with after the plague gets here. We should be undertaking an active

campaign now for the destruction of carrier rats and rat fleas. When it was brought to the notice of the Commonwealth Government that we needed for that purpose some 40 men we were told that they could not be spared, and that there was no evidence of plague attacking the place. Presumably, the only evidence of the appearance of plague would be actual deaths from plague. To-day, we have more rats on our coast than ever before, whilst we have less defences, and greater possibilities of the introduction of diseases from the Dutch East Indies. I have seen the plans of the proposed extensions to the school in Sydney. You ask me whether I think the Government would be justified in expending £73,570 on these extensions. I would rather see the money expended in Queensland; but if the Commonwealth is going to take up the job seriously and push it through not merely under the spur of war fright but for the next 25 years the money will be well expended. Otherwise, it will be wasted. During the time the school existed prior to the war only half a dozen men did courses at Sydney in tropical medicine. The number of diplomas of public health and tropical medicine issued at that institute before the war could be counted on the fingers of one hand. The only place in which I can foresee tropical medicine existing as a live issue after the war is Queensland. New South Wales, admittedly, has facilities, but I do not feel that tropical medicine can be adequately dealt with other than in the tropics. I should like to see the activities of the Queenland University, small and struggling as it is, very greatly aided, because it can do the job. I should like to see a research station at Townsville, partly to do the job on the spot, and as a feeder to the institute here. If you cannot get the medical men to come to the patient, you can often bring the patient to the doctor. There should be a research station at Rabaul, one at Port Moresby, one farther north, possibly one at Madang, and one at Townsville. Darwin also should have all the facilities that go with diagnosis, because it is a point of entry. If Broome and Wyndham become points of entry from Africa they should receive equal treatment with Darwin. At present, we have only a tropical school in Sydney and a tropical course at the University of Queensland.

253. *To Mr. Conelan.*—Malaria gets into the blood stream and is thus conveyed to every part of the body. From time to time, it leaves the blood stream and takes refuge in the bone marrow, emerging periodically and causing new attacks. The patient continues under those conditions until he gets rid of the disease. Generally speaking, subacute malaria disappears in one year, benign tertian in three years, and quartan in seven years. Australia's treatment of tropical diseases generally compares favorably with that of any other country, and under Dr. Neil Fairley, a research man of international repute, it is at any rate as good, if not better than elsewhere. He has made considerable personal contributions to tropical medicine which are recorded in many text books. We have our own experimental animals, but we have not been able to carry out research work in that section owing to shortage of staff. Very valuable information has been obtained from the work at Cairns. The Army medical authorities would have that material. They will transmit that information to us in due course.

254. *To Mr. Conelan.*—Timor is divided between the Dutch and the Portuguese. It is very mountainous. On the Dutch side it is very well looked after, whereas on the Portuguese side practically nothing is done. It could be easily freed from disease and made a place for white people to live in. Some of its areas are similar to the Atherton Tableland. The coastal areas are hot and humid, and similar to Rabaul, but have a better climate. The mosquito exists up to a height of 2,500 feet. In New Guinea, if you bring natives from

above that level to the coast, they will get malaria. You would not get malaria in Wau. Most natives get salted to malaria, which you can do after six months of constant attack, if you do not die in that period. That applies to old residents in the tropics who never get malaria now; but if you move them from that particular locality to another locality where the strain is different, they get malaria, and very often die. There are three strains of malaria. A lot of the diseases among Queensland aborigines are due to primitive living conditions and malnutrition. Tuberculosis is extremely common among natives. They readily get venereal disease and suffer from hook-worm. Whereas 50 years ago every museum in Europe used to want to get a native skull because the teeth were perfect, it is the rarest thing now to get a native with a full set of teeth unless he is between 10 years and 25 years of age. The white man's food—flour, sugar, tea, tea is the main cause for this, combined with the finding that the native things they used to eat are contemptible. They themselves now describe such things as "something belong wild time".

255. *To the Chairman.*—The disease of elephantiasis is carried by a mosquito and gets into the blood stream. Very frequently it does not do any harm at all. At one time in Brisbane, 8 per cent. of the people had filariasis. In a small percentage of cases, however, they get all sorts of manifestations due to the death of the worm and the blocking by the dead body of lymph which comes back from the vessels which join one or two main trunks. If those lines are blocked by a dead body, no lymph can escape. It is dammed back and swells the limb. The limb thickens, and you get elephantiasis. There is nothing you can do unless you can take the worm from the vessel and free the lymph. However, the worm is very difficult to find, whilst the scarring of the tissues by the surgeon's knife might produce worse results. What you can do sometimes is to cut down on the enlargement, take out a wide piece and sew up the limb again. By taking in that tuck you can reduce the limb to normal proportions. In early cases, as the limb begins to swell, you can sometimes apply an elastic band, or garter, which will keep the limb under control. If you look at an elephantiasis swelling in a leg, you will notice that, when a boot has been worn, the boot area has not been enlarged at all.

The witness withdrew.

(*Taken at Brisbane.*)

FRIDAY, 6TH APRIL, 1945.

(Sectional Committee.)

Present:

Mr. JAMES (Chairman).

Mr. CONELAN. | Mr. MULCAHY.

Professor DOUGLAS HARRY KEDGWIN LEE, Professor of Physiology, University of Queensland, sworn and examined.

256. *To the Chairman.*—I am aware that the Committee is inquiring into the proposed extensions to the School of Public Health and Tropical Medicine, Sydney. I am familiar with the work at present being done by the school. I do not think that the diploma of the Sydney school is equal in status to the diploma of the London school. It is absolutely essential to send promising students, or graduates, overseas for further study and experience.

257. *To Mr. CONELAN.*—I have had close association with both the Sydney school and the London school. I am a graduate of the Sydney school, and I worked for two years at the University College, London, during which time I was frequently associated with the London school. The facilities for instruction in Sydney are comparatively poor and access to information and opportunities for research are restricted in Sydney compared with those offering at the London school.

258. *To the Chairman.*—I have not made a particular study of malaria in Queensland. The drift of our best scientific men abroad is extremely serious. It is very seriously handicapped our scientific war effort. The main cause is that large centres like London are always more attractive than smaller centres. Other factors are the poor salaries paid in Australia and also the complete lack of encouragement—I should even say discouragement—of scientific research in Australia. I know personally many of the men who have gone overseas, including Dr. Neil Fairley, Sir Charles Martin, Dr. Kellaway and Dr. Eccles. They told me that they found conditions in Australia intolerable. There seems to be little sympathy among those who control funds, public and private, for research in the true sense of the word. Where people have ideas about research, they seem to be extremely limited. Usually it is a question of producing results within a few months. Those in control out of what one might call impractical research must be dealt with in the knowledge that history has shown that your important point very frequently arises out of what one might call impractical research rather than research designed for a specific aim. Possibly the explanation for this attitude is that as a young country we still retain the pioneering outlook. For that reason we are prepared to say that anything will do, so long as the thing works. That is a fault common to every young country. A young country does not look ahead. We have passed that stage, and must abandon that attitude.

259. *To Mr. MULCAHY.*—I suggest that we should induce three or four really first-class scientists to come to Australia to show us how to go about research. We should not wait for our own men to emerge by their own efforts. That is precisely what I had to do. I had no one to whom I could turn in Australia. Therefore, I went to London. It is not only the poor standard of emoluments but also the atmosphere in which research workers are obliged to work in Australia that drives them overseas. More complaints are made about the unsympathetic atmosphere than about the poor emoluments, although they say the emoluments are not good enough. That position is the responsibility of those in control. Dr. Clements is developing a fairly good show in Canberra in nutritional work. That work has improved considerably, and it has quite a fair future. Not very much work has been done on nutrition at the universities. Sir Stanton Hicks has done considerable work in this sphere, but not so much in his own department as in the Army. The work being done in Canberra forms a very good nucleus for future activities.

260. *To the Chairman.*—Regarding the development of the School of Public Health and Tropical Medicine, I submit the following statement to the Committee:—

(1) There has long been, in Queensland, a dissatisfaction with the constitution and operation of the School of Public Health and Tropical Medicine. I am not concerned with the historical aspect of this but, as a graduate of the school and as one actively

interested in tropical physiology and research, I have definite views on the present and future possibilities of the school.

(2) I consider that at least the tropical interests of Australia would not be greatly served by expanding the school as long as it has its present constitution. From a close personal acquaintance with the school over the past eight years, I maintain that—

(a) Its subjection to public service requirements and methods stifles initiative and free thought.

(b) Its activities are too subject to the policies of the Department of Health and the personal wishes of the Director-General of Health.

(c) The outlook upon medical research at present prevailing in the school is too circumscribed in scope and time.

(d) The school lacks a real driving force.

(e) It is not in adequate touch with the more human problems of tropical settlement.

(3) Before it can occupy its rightful place in promoting and guiding Australia's development, a thorough re-organization is necessary along the following lines:—

(a) Place the control of the school under a governing body responsible to the Minister for Health directly, or through the National Health and Medical Research Council (or Medical Research Council, if this is established as a separate body).

(b) Empower this council to expend an adequate vote authorized to it from revenue.

(c) Have all medical schools represented on the council, with a somewhat increased representation for Sydney and Queensland, by virtue of their particular interests.

(d) Continue the present affiliation with the University of Sydney in respect of academic matters.

(e) Give the council power to arrange for investigation and teaching to be carried out by other institutions, where those institutions already have special facilities or interests.

(f) Give the council a mandate to effect exchange of personnel with other institutions in Australia or throughout the Empire.

(g) Give the council power to publish papers and books directly and under its own name.

(h) Give the council a mandate to establish field stations.

(4) As the personnel of the council I would suggest the following:—University of Sydney, three representatives; University of Queensland, two representatives; Minister of Health, Commonwealth Department of Health, University of Melbourne, University of Adelaide, Department of the Army, Department of Air, Department of External Territories, one representative each. The Director should also be a member.

(5) If a reconstitution were effected along these lines, I consider the scope for the school almost unlimited. There would need to be an expansion of staff, the crucial member of which would be the Director. No pains should be spared to get the very best available man for this position. Vision, experience and drive are essential. Provision of equipment and buildings should await his appointment. I understand the present Director is due to retire in two years.

(6) In my own department, the Fatigue Laboratory, set up for combined service use, is being re-organized

and expanded to deal more effectively with the physiological problems of the tropics and hot industries. This development follows eleven years of close personal interest, with the accumulation of experience and the assembly of specialized facilities. I should be very happy to collaborate with the school, particularly if it were reconstituted along the lines suggested above. Advice, encouragement, and collaboration would be very welcome. I would be strongly opposed, however, to any attempt by the school to take over the class of investigation already established here.

261. *To the Chairman.*—With respect to the present and future possibilities of the school, I point out that in my department we have been doing an increased amount of research into tropical fatigue, first as a private venture, and then at the request of the services. Recently the British Admiralty came into the picture, and later I shall visit India on this work. We also have been doing work on animals because selection of domestic animals is an important aspect. We have been very interested in those fields, and it looks as though we shall be even more interested in them in the future. When I refer to tropical Australia I do not refer to Queensland only, but also to the territory and dependencies and also to the islands which come within the Central Pacific Administration. I know of at least three men who have not developed as they should have developed because of subjection to public service requirements and methods. They have been kept down. Under a different system they would now be approaching first-class standard. The outlook of the school upon medical research at present is too circumscribed in scope and time. It does not take into account industrial hygiene and industrial physiology apart from the question of infection. When I say that the school lacks real driving force I suggest that we should introduce first-class men from overseas. We must get somebody of the Florey type who has a reputation and a personality and, therefore, would be able to get things done.

262. *To Mr. MULCAHY.*—In order to extend research in tropical medicine it is essential to go to the tropics. It is absolutely essential to establish field stations in New Guinea and other places to the north as adjuncts to the school. An institution of this kind should not be under the control of a government department, but under a special governing body. The exchange of personnel with other institutions in Australia, or throughout the Empire, must be a essential part of the school's duty. In fact, I feel that the London school has fallen down in that respect. It has not undertaken sufficient interchange of personnel throughout the Empire.

263. *To the Chairman.*—Field stations would provide certain research facilities and would be focal points. Some personnel would be stationed there permanently to see problems as they arise in their genesis, and not after diseases develop and become a public menace. You cannot understand the problems of the tropics until you live in the tropics, that is, live with the people and see the conditions under which they live. Somebody must be there all the time and must have freedom to move about. He must also have the basic facilities to carry out investigations he thinks worthwhile. A field station will also serve as a point to which a team could go from the central school in Sydney should there be an outbreak of disease. They could go there and work from there. The establishment of field stations would have nothing to do with the extension of the existing laboratory system. Definitely, they should not be under the Commonwealth Department of Health. The field stations could work in conjunction with the existing laboratories, but such an arrangement would be dangerous. I worked for two

years in the Commonwealth Health Laboratories, and I know their general outlook on these matters. The field stations would be places to which students would go to see things as they actually exist in the tropics and not as they are written about in text books.

264. *To Mr. Mulcahy.*—The provision of beds at the Prince Alfred Hospital for cases of tropical diseases would not be of much help. Where would the tropical cases come from? I used to go to the Endersleigh Gardens Hospital for seamen, which was situated a couple of blocks from the London school. They always had 50 cases of tropical diseases in their hospital. When I did my diploma in Sydney I saw one case of black water fever. I saw no case of sprue, or any case of naturally acquired malaria. In Singapore the wards were full of cases of other types of nutritional deficiency and tropical disease. Within half an hour in a native village you would see more cases of tropical disease than you would see in six months in hospital in Sydney. In the clinical portion of my examination I was given a case of polycystic kidney which had nothing whatever to do with tropical diseases. They could not find cases of tropical diseases. I am not suggesting that the school should be brought to Brisbane. In Australia, Sydney would be the best place, but it is still far from what we want.

265. *To the Chairman.*—With respect to the personnel of the Council, I do not suggest one representative for the services combined, because their interests are different. I have not included the Navy because so far the Australian Navy has not evinced much interest in this work. One representative could not represent all the services on such a body. The University of Western Australia has no medical school. If such a school is established there, that University should also be represented on the Council which I propose should control the school. A Council constituted as I propose would not be too cumbersome. It would not be an executive committee, but a Council to decide policy. It would have to have a smaller executive committee. The Council would authorize the expenditure of the vote. A good deal more will be required of the Director of the school than is required of the present Director. He is doing a good job, but the job I have in mind is very much bigger. This is one position which can be made sufficiently attractive to enable us to obtain an overseas man of high calibre. Such a man in this position would influence medical research in this country to a very great degree.

266. *To Mr. Mulcahy.*—You ask me whether I think the proposed expenditure of £73,000 on this work is advisable. I would rather see the more fundamental question of organization studied first. Then, your new organization could let you know what it really wants. On the other hand you will not get very much for £73,000. Extensions are being made to my department at an estimated cost of £40,000, and one can see very little for that expenditure. It will cost a lot more than £73,000 if you are going to establish field stations.

267. *To the Chairman.*—You ask me whether the Commonwealth should provide all of the finance or whether the State governments should contribute a share. What Australia wants is one integrated organization in which all the powers that be would co-operate. To that degree the State governments should be given an opportunity to join in. The mere provision of extensions to the Sydney school will not ensure extension of the work of the school. Medical practitioners in a State like Queensland must be more conscious of tropical diseases and tropical problems than practitioners in the southern States, but it is not necessary for all practitioners in Queensland to have a training

equivalent to the Diploma of Tropical Medicine. A certain number of practitioners in this State would need that diploma. As to whether the expenditure of £73,570 on the proposed additions to the Sydney school is essential, I do not quite know how urgent the accommodation problem is there. To the degree to which their accommodation problem is at present urgent it should be met as soon as possible, but I still think that the questions of additional expenditure, functions and facilities should await the appointment of a new director. At present I do not think that there is any unnecessary duplication of the work of the Sydney school in other States, but from time to time there have been suggestions that the University of Queensland should set up its own course of training and examinations for the Diploma of Public Health. They have not become actual proposals, but they are likely to arise as proposals in the near future. If the Sydney school is reconstituted, such proposals would be rendered unnecessary. If the Sydney school is not reconstituted, however, Queensland must inevitably set up its own organization and the external territories would have to set up their own organization. No independent research is being carried out in Queensland with funds supplied by the Rockefeller establishment. Where the field stations should be established beyond New Guinea is a technical rather than a policy question, and it could be better decided by the director and the people running the school. There would have to be the closest liaison with the Central Pacific Administration. I have been in New Guinea. I think that this Committee would be well advised to visit Angau and see what they are doing in New Guinea. They are doing very good work particularly with respect to native rehabilitation. A visit to Angau by this Committee would be very much worth while and would lead to co-ordination of their proposals with the proposals of the external territories. A number of official conferences have been held between the civil health authorities and the Army medical authorities with respect to malaria. Brigadier Fairley has been a member of the General Head-quarters committee on malaria control. There has been a good deal of co-operation between the civil and Army authorities in that sphere, but in other fields the conferences held have been entirely unofficial and localized. I have not seen any case of European troops being infected with filaria. I have not heard that some American troops in the islands further north have been so infected. I have not heard of any case of filariasis among our own troops. I have not visited Milne Bay.

268. *To Mr. Connelan.*—I have visited India for only a few days. Service visitors from India tell me that our malaria control is very good and much better than that in India, and that India's best malaria rate is ten times worse than ours. Judging from reports by Angau, conditions among the natives in New Guinea from a hygiene point of view have been vastly improved. So far as whites are concerned many parts of New Guinea have been freed of malaria. That is largely through taking atebirin. Blacks will not take atebirin. Some areas have been improved so far as mosquitoes are concerned, but whenever I went to an area and was told that there were no mosquitoes and no need to worry about mosquitoes, I caught an Anopheles mosquito in that locality within an hour of my arrival. One can become too optimistic in that respect. Travelling scholarships should be provided for promising students in tropical medicine, but I agree with Sir Howard Florey, who points out that more urgent than that aspect is the creation of positions in Australia with security for those people to come back to after they take out their travelling scholarships. To-day,

there are far more travelling scholarships available than there are positions for such men to come back to. Whether students in the south see actual cases of tropical disease is really unimportant compared with the need to study the variety of cases available in the tropics.

269. *To Mr. Mulcahy.*—There is a fairly extensive library at the Sydney school. There is a certain degree of co-operation between the school and the University of Queensland with respect to that information, but the present arrangement does not work very well. If I want something from the Sydney University I have to make my request through our own library, and,

eventually, a volume comes up. The Sydney school has offered to make microfilm copies, but in war-time the technical difficulties to be overcome are too great. You cannot get a good camera or good film. In peace-time that idea was worth a trial, but at present it would not work too well. The present director proposed that as he had duplicate series of volumes of interest to us as tropical physiologists we should get them on permanent loan. That proposal was squashed by higher authorities in the Health Department. I do not know why. The excuse given was that the Auditor-General required those things to be at the school to be counted once a year.

The witness withdrew.