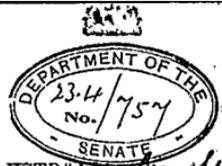


1924.



THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Presented by Senator Reid

Pursuant to Statute

By Command

In return to Order

W. M. Hughes

PARLIAMENTARY STANDING COMMITTEE

Chief of the Senate.

13 JUN 1924

ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE AND APPENDIX

RELATING TO THE PROPOSED PROVISION OF

WHARFAGE ACCOMMODATION AND SHIPPING FACILITIES, INCLUDING SHEDS, RAILWAY AND VEHICLE APPROACHES, AT DARWIN.

Presented pursuant to Statute; ordered to be printed,

, 1924.

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MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

(Fourth Committee.)

The Honorable HENRY GAZCOONY, M.P., Chairman.

Senate.

Senator John Barnes.†
 Senator Hatfield Spencer Foll.‡
 Senator Patrick Joseph Lynch.†
 Senator John Newland.‡
 Senator William Plain.†
 Senator Matthew Reid.†

House of Representatives.

Arthur Blakeley, Esq., M.P.
 Robert Cook, Esq., M.P.
 David Sydney Jackson, Esq., M.P.
 George Hugh Mackay, Esq., M.P.
 James Mathews, Esq., M.P.

† Ceased to be a Member of the Senate, 29th June, 1923. ‡ Appointed 5th July, 1923. † Resigned 28th June, 1923.

IMPROVED WHARFAGE FACILITIES, DARWIN.

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11. PUBLIC WORKS COMMITTEE—REFERENCE OF WORK—SHIPPING FACILITIES, ETC., DARWIN.
 Mr. Stewart (Minister for Works and Railways) moved, pursuant to notice, That, in accordance with the provisions of the *Commonwealth Public Works Committee Act 1913-1921*, the following work be referred to the Committee for investigation and report, viz.:—
 Wharfrage accommodation and shipping facilities; including sheds, railway and vehicle approaches, &c., Darwin.
 * * * * *
 Mr. Stewart having laid on the Table plans, &c., and a Report by Engineer Vice-Admiral Sir William Clarkson in connexion with the proposed work—
 Question—put and passed.

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The Parliamentary Standing Committee on Public Works, to which the House of Representatives referred, for investigation and report, the question of the provision of improved wharfrage facilities at Darwin, has the honour to report as follows:—

HISTORICAL.

- The original jetty constructed by the South Australian Government at Darwin was of timber, and occupied a position at the foot of Stokes Hill, to the south-east of the town. It was built on a curve, and provided for the railway locomotive and trucks being brought right alongside ships using the jetty.
- The tender for its construction was accepted in December, 1884, and the jetty was opened for traffic in May, 1887.
The cost of the work was £54,743.
- In 1893 a careful examination of the jetty showed that it was badly eaten away by teredo, and it was eventually decided to demolish it, and erect an entirely new structure.
- In 1894 the suggestion was made that, instead of a new jetty, the space between Fort Hill and Stokes Hill, which is a mud flat at low water, should be filled in, and a stone wall built about the line of the edge of the mud bank. Thus, a permanent wharf could be provided, which would afford all accommodation likely to be required for an almost indefinite period. The then Engineer-in-Chief for Railways, Adelaide, reported against this proposal, pointing out that the wall would have to be 50 to 60 feet high, and that the work suggested was of such a character as to be absolutely out of the question as regards cost.
- In 1895 a petition was prepared, and signed by the captains of vessels trading regularly to Darwin, pointing out the difficulty and danger of approaching a jetty of the design that originally erected, and asking that when the construction of the new jetty was undertaken it should be placed in such a position as to lie with the run of the tide, instead of against it.
- Plans were then prepared for a new jetty 350 feet long, to lie parallel with the current. The approach was to be of rubble, the piles of cast iron, the bracings of steel, with a timber decking. It was estimated that this jetty, with curved approach, would cost £45,300, while similar berthing facilities, but providing for the working of the traffic by means of a turn table instead of a curved approach, were estimated to cost £39,000.
- The latter design was adopted. The work was commenced on it in 1900, and completed in 1904, at a cost of £66,909. The cost of the work proved to be considerably more than was anticipated. On account of the soft muddy nature of the sea-floor encountered, it was found necessary to put 80,000 cubic yards of stone into the bank instead of 20,000 cubic yards originally estimated; considerable difficulty was experienced in sinking the piles; and eventually the jetty was made longer than was originally intended. When completed there was provided beyond the rubble extension to Stokes Hill an approach jetty 350 feet long of similar construction to the main jetty, and 20 feet wide, the jetty itself being 559 feet long and 32 ft. 6 in. wide.
- In 1916, to meet the anticipated increase in traffic, due to the commencement of operations of the Darwin Meat Works, the jetty was widened by 11 feet with timber piles, and a larger turn-table installed. This turn-table was to have been operated electrically, but was altered to allow of its being turned by a small steam-engine.
- In 1923 one of the narrow-gauge railway tracks on the approach jetty was removed, and a cattle-race substituted, to facilitate the loading of live cattle.

PRESENT PROPOSAL.

10. As a result of a report submitted by Sir William Clarkson, late Engineer Vice-Admiral, Australian Naval Forces, after a visit to Darwin in 1923, it is now proposed to construct a solid wharf, running south-westerly from the point of Stokes Hill, and a few feet shorewards from the edge of the mud-bank between Stokes Hill and Fort Hill.

It is suggested that there shall be steel sheet piling along the face of the wharf, with 12 inches of concrete on the face of the wall and 3 feet behind it, to just below low-water level, the remainder of the structure being filled in at the back with material obtained from Stokes Hill. The decking of the wharf will also be of reinforced concrete. It is proposed that the structure shall be 130 feet wide and 600 feet long in the first instance, to be later extended to a length of 1,200 feet.

11. It is proposed to provide a railway to the wharf by the construction of an approach round the eastern side of Stokes Hill, and to give vehicular approach round the western side of Stokes Hill by removing the railway lines on the existing railway approach and constructing a railway from the shoreward end of same to connect with Mitchell-street. Necessary railway tracks will be laid on the wharf, on which will also be erected a bond store and a sorting shed 50 feet wide.

ESTIMATED COST.

12. The estimated cost of the work as submitted to the Committee was:—

	£
Dredging 257,000 cubic yards at 1s. 6d. per cubic yard	19,300
Taking bucket dredger to Darwin	1,200
Concrete, 4,700 cubic yards	28,200
Sheet piling, 1,036 tons at £30 per ton	31,100
Railway	6,000
Sheds	1,500
Filling in 75,000 cubic yards at 5s. per cubic yard	18,750
New road	14,000
	120,050

and the time fixed for completion, twelve months from date of commencement.

ROPEWAY.

13. As an alternative to the construction of the wharf, Sir William Clarkson suggested the provision of an island jetty in Fanny Bay, to be connected with the Darwin Meat Works by means of an aerial ropeway to facilitate the shipping of frozen beef. This suggestion was made to overcome the objections of the meat works management to using the present Darwin wharf under conditions which they contend mean loss of time and additional expense to them. It has been stated that the Darwin Meat Works will resume operations if proper provision is made for shipping their meat, and this proposal is offered as a means of shipping meat cheaply and expeditiously.

14. The work proposed is the formation, at a distance of 11,692 links from the shore, of an island jetty 400 feet long, at each end of which would be dolphins for securing vessels. An aerial ropeway would connect with the meat works, and would be operated electrically by power supplied from the works. A carrier would travel by means of a rope between the works and the island jetty. This would be capable of taking 2 tons per trip, and would take eight minutes to cover the distance to the ship. It was claimed that ships of any size could berth at the jetty at any state of the tide, and that no dredging would be necessary.

15. The estimated cost of the project is set down at £65,000, and the time necessary to complete the work, twelve months from date of commencement.

COMMITTEE'S INVESTIGATIONS AND RECOMMENDATIONS.

16. The Committee carefully examined the plans submitted, and took evidence from Sir William Clarkson, railway, harbour, and other engineers, representatives of the pastoral industry, &c. In addition, a Sectional Committee was constituted, which travelled to Darwin via the North-West coast, inspected the jetties at tidal ports in that locality, visited the Wyndham and Darwin Meat Works, and took evidence from the representatives of those works; carefully examined the reinforced concrete jetty in course of construction at Beadon Point, also the Darwin jetty, and took evidence from representative people in that town. Inspections were also made of the methods adopted for working cargo on wharfs in Sydney and Melbourne.

17. The Committee perused the large amount of evidence obtained, some of which was of a contradictory nature, and gave close attention to the various matters placed before it as affecting the condition of the wharf in particular and the welfare of the Northern Territory in general.

18. The position of the Committee was rendered difficult by the fact that the proposed work referred for consideration was practically a suggestion for overcoming certain difficulties made by Sir William Clarkson, a man of considerable experience and sound judgment, but without experience as a harbour engineer. A plan was furnished to the Committee, but no specification, and an estimate was furnished of the cost of the work, although no investigations had been made of the nature of the sea-floor in the vicinity, and an assumption was made as to the position of bed-rock. Sir William Clarkson himself admitted that the scheme had not been finalized, and that before the Committee was asked to consider it detail plans should have been drawn up and the proposal submitted properly as a finished scheme.

19. The matter was further complicated by the fact that the scheme did not emanate from the constructing Department of the Commonwealth, and the one which would control and operate the wharf (the Department of Works and Railways), but is portion of a developmental policy of the Department in charge of the Northern Territory (the Department of Home and Territories), and that the proposal was not submitted for the consideration and report of the Commonwealth Railways officials before being brought before the Committee.

20. The Committee, therefore, found itself confronted with a crude, ill-digested proposal for the expenditure of a large sum of public money on a scheme which had been made in the absence of essential data, and without being backed by expert opinion as to whether it was possible to construct it in the position and manner indicated, or at anything like the price mentioned. The value of the evidence obtained from engineers was discounted by the fact that their opinions were expressed in the absence of specifications and other information with which they should have been furnished, but all agreed that a great deal more detail was necessary before work could be undertaken, and that it was more than probable that the estimate submitted would be considerably exceeded.

CONDITIONS AT DARWIN.

21. At the outset of the inquiry, the Committee endeavoured to set before itself in true perspective a view of Darwin as it is to-day, and to visualize to what extent it may develop in the future.

22. From the 1st January, 1911, to 30th June, 1923, the Commonwealth expended on the Northern Territory a sum of £3,113,753, while the revenue received from lands and mining totalled £206,705, and the net revenue received from Customs and Excise was £129,886.

23. At the census of 1921, the population of the Territory was 3,807, of which 2,459 were Europeans (but not necessarily British or Australian), and the population of Darwin, exclusive of full-blooded aboriginals, was 1,716. Of this small population, 226 are Government employees, and during the year 1923, 338 persons were receiving Government relief. While the Darwin Meat Works were in operation, affairs in Darwin were prosperous, but since the works closed down trade has fallen off considerably, and during 1920-1921 only 60 vessels entered and cleared the port. At the present time there are two boats per month calling regularly at Darwin, one going northwards and one southwards, and the tonnage passing over the wharf averages 6,000 tons per annum. It is obvious that under existing conditions no further expenditure on wharf improvements is necessary, but the Committee is satisfied that with the re-opening of the meat works this tonnage will be considerably increased, while the adoption of a progressive policy for the Territory should lead to rapid development. It is with this in mind that the Committee has approached consideration of the project submitted.

ACCOMMODATION AT JETTY.

24. As the Darwin jetty is 559 feet long and most of the vessels using the port regularly vary in length from 360 feet to 500 feet, there is room for only one vessel at a time to berth on each side. On account of the proximity of the mud bank extending between Stokes Hill and Fort Hill, several ships' masters have a prejudice against using the inside berth, as they consider it dangerous, so that although it has on occasions accommodated vessels of 3,000 tons, it is at present in most cases utilized only by small craft. This means that for all practical purposes Darwin jetty may be regarded as having accommodation for only one ship at a time.

25. It was apparent to the Committee that the new wharf proposed could not accommodate more than one vessel at a time either, so that unless the present jetty were also utilized no additional berthing facilities would be made available by the proposed expenditure, and the only return for the outlay would be the advantage of direct approach for railway trucks and vehicles, and sorting sheds in proximity to the ships.

26. The convenience to ships' masters aimed at by the provision of the existing "L"-shaped structure has resulted in inconvenience in handling cargo once it is put off the ship, and the jetty is too narrow to admit of the erection upon it of bond or sorting sheds. The form of this jetty also precludes a railway locomotive from coming on to it, while the existence of a turn-table at the angle obviously retards to some extent the movements of trucks on and off the jetty.

27. The design of the suggested new wharf provides for sorting sheds thereon and a direct railway approach; but it was stated in evidence that with the longer approach, and the additional charge for a shunting engine on the wharf, it was unlikely that goods could be handled much more quickly, or cheaply than at present. The Committee was informed by the Commonwealth Railway officials that the existing jetty is able to cope with all tonnage now offering or likely to offer with the re-opening of the Darwin Meat Works.

28. It was stated in evidence that the biggest tonnage passed over the wharf while the meat works were operating was 39,126 tons per annum, and the railway authorities contend that they could handle 60,000 tons per annum without congestion. As a matter of comparison, it may be mentioned that some of the Melbourne wharfs deal with 2,000 tons of cargo per day. It is admitted that passing trucks over the turn-table causes a slight check, but the railway officials contend that they can pass 30 to 40 trucks over the turn-table per hour, or up to 100 tons per hour of general cargo. With the average rate of unloading at 10 tons per hatch per hour, this would seem to give a reasonable margin for unforeseen delays.

29. The Committee agrees that, with the present volume of traffic, the system in operation, though cumbersome, can be made to serve, and a considerably larger tonnage could be handled if matters could be regulated so that it reached Darwin at regular intervals. Where a large cargo arrives by one boat, however, or, as sometimes happens, two vessels arrive on the same day, congestion is certain to occur, and if one of the ships' masters refused to take the inner berth, loss of time would be occasioned awaiting the vacation of the outer berth. A comparatively small expenditure on dredging, however, would eliminate all reasonable objection to using the inner berth.

30. The Sectional Committee, while at Darwin, made a careful examination of the present wharf, including the decking, braces, girders, and piles down as far as low water, and from this examination, combined with the opinions expressed by various witnesses, the Committee is satisfied that the main portion of the wharf is well constructed and in a sound condition, and may be expected to give good service for another 25 years. The additional 11 feet attached in 1916, being on timber piles, will probably require renewing long before then.

31. A great deal of the trouble in connexion with the jetty occurred when the handling of cargo was under the control of the Darwin Meat Works' management acting as stevedores, and the Committee is under the impression that many of those difficulties could have been overcome by more expert management. Moreover, in the lay-out of the wharf and the handling of goods there was a lack of that efficiency noticeable in southern ports. The fiasco following the erection of the electric capstans at considerable expense, the failure to install or initiate modern appliances or methods, and the neglect of the Railway authorities to satisfactorily overcome the continual complaints made regarding the inefficiency of the refrigerated trucks in use, suggested an indifference to customers' requirements which should be rectified without delay.

32. After giving the question considerable thought, the Committee feels that, under present conditions, and in the light of the evidence received, it is unable to recommend the adoption of the proposal submitted by Sir William Clarkson.

33. The decision arrived at by the Committee in connexion with this matter is shown by the following extract from its Minutes of Proceedings, namely:—

Mr. Blakeley moved:—

That the tonnage passing over the Darwin wharf does not warrant the expenditure of such a large sum as proposed in the report and recommendation of Sir William Clarkson; further, that the Committee is of opinion that the present wharf, with the addition of traversers, utilization of a horse for shunting purposes, improvements to turn-table, and re-organization of railway lines on the wharf, will give reasonable facilities for many years to come.

Seconded by Mr. Gregory (*pro forma*), in the absence of Senator Barnes, who had previously intimated his intention of seconding the motion.

Mr. Mackay moved as an amendment:—

That all the words after "That" be omitted with a view to inserting:—

The proposal submitted to construct a concrete wharf on the lines recommended by Sir William Clarkson be not approved.

Seconded by Senator Reid.

The Committee divided on the motion that the words proposed to be struck out stand as part of the motion—

Aye (1).
Mr. Blakeley.

Noes (6).
Senator Lynch.
Senator Reid.
Mr. Gregory.
Mr. Jackson.
Mr. Mackay.
Mr. Mathews.

And so it passed in the negative.

Mr. Mackay's motion was then put and carried unanimously.

34. Although the Committee cannot see its way to recommend the proposal submitted, it realizes that, with the re-opening of the meat works, and the adoption of a progressive policy for the Northern Territory, the existing wharfage facilities will be wholly inadequate for the efficient and economic handling of goods to and from Darwin. More particularly should attention be given to the export of frozen beef, which for many years to come must be the dominating industry of the Territory, the success or failure of which may well be regarded as of national concern.

35. To permit of direct railway approach on to the present jetty, and obviate the use and expense of the turn-table, the Committee had estimates prepared of the cost of constructing a curved approach, so that the locomotive might be used on the wharf, and save the hand-shunting of trucks. The particulars submitted showed that a cast-iron and steel bridge-work approach, to provide for a double track of 3 ft. 6 in. gauge, would cost £137,233, while to provide for a single track would cost £98,920.

36. The Committee did not consider that it would be justified in recommending this large expenditure until a full and detailed examination of the harbour had been made, and it was placed in possession of all the information necessary to enable it to recommend the adoption of a scheme of harbour improvement which could be developed to meet all future requirements.

37. As indicating the necessity for such an examination, it may be pointed out that, when the first jetty was built near Stokes Hill, difficulty was experienced in bringing ships alongside owing to the sweep of the current, and the present form of jetty was adopted to overcome this difficulty; but similar complaints are now being made, as the direction of the tidal current is said to have changed.

As previously mentioned, the speywe nature of the sea-floor necessitated the employment of 50 per cent. more rock-filling in the approach than was estimated. Further, screw piles were specified for the new structure, and it was found that owing to the nature of the sea-floor they could not be used.

38. These facts were not brought out in evidence, and the Committee having had difficulty in obtaining particulars from the Commonwealth Departments relating to the building of the earlier structure, the run of the tides and currents, the nature of the sea-floor, &c., instructed the Secretary of the Committee to proceed to Adelaide to make special investigations. His report, which appears in the Appendix, clearly demonstrates the necessity of having a complete and exhaustive examination of the port by a harbour engineer, to arrive at the best means by which Darwin could be provided with up-to-date shipping facilities and allow of development to meet all future needs; and the Committee recommends that this should be done.

39. The decision arrived at by the Committee in connexion with this matter is shown in the following extract from its Minutes of Proceedings, namely:—

Mr. Mathews moved—

That the Government should forthwith instruct a harbour engineer to make a full and detailed examination of Darwin Harbour, and report what scheme of harbour improvements or utilization of the existing wharf would provide efficient and economic transit of imports and exports.

Seconded by Mr. Jackson.

Senator Lynch moved as an amendment—

That all the words after "That" be omitted with a view to inserting—

- (a) the Committee favours the construction of a curved railway approach to the present wharf on the eastern side of Stokes Hill, sufficient to carry a track of standard gauge in the future, if necessary;
- (b) that the portion of such approach from the embankment to the wharf be of cast-iron and steel construction;
- (c) that a loop siding be provided in the neighbourhood of high-water mark;
- (d) that the existing railways from the puntable to the railway-yard be removed;
- (e) that access from the jetty to the town be made by utilizing the old railway track and connecting it with the southern extremity of Wood-street.

Seconded by Senator Reid *pro forma*.

The Committee divided on the motion that the words proposed to be struck out stand as part of the motion—

Ayes (6).
 Senator Reid,
 Mr. Blakeley,
 Mr. Gregory,
 Mr. Jackson,
 Mr. Mackay,
 Mr. Mathews.

And so it was resolved in the affirmative.

The original motion was then put. The Committee divided—

Ayes (6).
 Senator Reid,
 Mr. Blakeley,
 Mr. Gregory,
 Mr. Jackson,
 Mr. Mackay,
 Mr. Mathews.

And so it was resolved in the affirmative.

40. This investigation and report will necessarily take some time, but it is anticipated that there will be ample time to consider and act upon it before the trade of Darwin will develop to such an extent as to make it impossible to handle it over the present jetty. Instructions should, however, be issued to the Railway Department that while existing conditions obtain, a special effort should be made to obviate or minimize any possible difficulties or delays associated with the peculiar shape of the structure, and so avoid all reasonable cause for complaint.

DEVELOPMENT OF THE TERRITORY.

41. The problems of the Northern Territory are many and big, and should be handled in a big way. They should not be attacked from the point of view of present expediency, but a long view should be taken of what the future holds for this immense area, and a course shaped accordingly. In the natural order of things, unless the Northern Territory presents opportunities greater than exist elsewhere in Australia, we should not expect it to attract any considerable population until the southern States are becoming uncomfortably crowded; and, with our present small population in proportion to area, this may take many years. If, for reasons of policy, insurance against aggression, or other causes, the Commonwealth desires to attract to the North in advance of normal development a population which not only could but would act in the interests of Australia in any eventuality, then definite steps must be taken to bring about this result, and such steps will cost money. Industries such as mining, sheep raising, cotton growing, &c., may later prove to be lucrative propositions, but the one industry which has proved itself up to the present is the cattle industry, and everything that can reasonably be done to reduce the difficulties, disadvantages, and expense with which that industry is handicapped in the Territory as compared with other States should be done.

42. In developing a large and sparsely-populated area, essential services cannot be conducted on the ordinary commercial lines. The capital cost of providing railways, roads, and wharfe facilities under such conditions is necessarily heavy, and obviously interest and sinking fund cannot be met by the small population. It is therefore considered that all such services might for a period of years be regarded as essential public utilities, and a reasonable proportion of the cost be met by the Central Government. Under this arrangement, the Commonwealth Railways Commissioner would be informed that the Northern Territory Railway was, until further notice, to be treated as a developmental railway, and settlement encouraged by charging minimum fares and freights, and that his Department would be credited with an amount sufficient to make up the loss sustained by this action.

43. The Committee is influenced in making this recommendation by the fact that it believes that any extensive development of the port will be unwarranted unless every effort is made at the same time to develop the interior.

RAILWAY ARRANGEMENTS.

44. Evidence was obtained by the Committee that considerable loss is caused annually by the bruising of cattle, and that all the care bestowed whilst fattening and droving to the trucks may be nullified in a few hours after trucking. It is therefore suggested that the Railway Department should be invited to give special attention to the construction of trucking and untrucking yards, the utilization of sound trucks, well padded, about hip high; careful driving; well-ballasted trucks, &c.

CHARGES ON WHARF.

45. It was stated in evidence that the cost per ton for handling goods on the Darwin wharf was in 1916, 12s. 1d.; in 1917, 12s. 2d.; in 1918, 17s. 10d.; in 1919, 28s. 1d.; and in 1920, 37s. 2d. In 1921, the cost was reduced to 21s. 8d. In November, 1921, the Commonwealth Railway Department undertook the handling of goods on the wharf, and the cost was immediately reduced to 15s. per ton. On 1st August, 1922, the cost was further reduced to 12s. 6d. per ton; on 1st July, 1923, to 11s., and since then to 10s. per ton. To this must be added a further charge of 3s. 6d. per ton for wharfrage on general cargo or 1s. 5d. per ton on ore and coal, and 1s. 6d. for haulage between the wharf and the sorting shed, and a floor charge of 9d., making the total for general cargo 15s. 9d. per ton.

46. Although the Commonwealth Railway Department is to be commended for the large reduction in handling costs brought about under its management of the jetty, still it is obvious that such charges must be a severe handicap to any enterprise succeeding in a new and sparsely populated district; and the Committee unanimously recommends that with a view to assisting the development of the Territory the expenditure on harbour improvements should be deemed a Commonwealth grant-in-aid, and all wharfrage dues abolished for a period of at least five years.

47. The decision arrived at by the Committee in connexion with this matter is shown by the following extract from its Minutes of Proceedings, namely:—

Mr. Gregory moved—

That with a view to assisting the development of the Territory the expenditure on harbour improvements should be deemed a Commonwealth grant-in-aid, and all wharfrage dues abolished for a period of at least five years.

Seconded by Mr. Jackson.

Carried unanimously.

LABOUR.

48. One of the contributing factors to the high cost of handling goods at Darwin is stated to be the cost and inefficiency of labour. Evidence given and reports produced before the Committee on this subject have been very contradictory. On the one hand, it has been contended that labour on the wharf has been woefully inefficient and idling common, and that men were often discovered asleep when they were being paid for working. On the other hand it has been stated that the men work as hard as can be expected considering the climate and that any slackness that did occur was due to want of managing capacity of those in charge. Possibly, both statements are correct as applying to separate periods. It is generally recognized that during the war period labour was difficult all over the world, and some members of the union admitted that at times a few malcontents exerted a very bad influence on the men, and an effort was made to take as long as possible over what work was available. This may have been the result of the fact that men employed on the wharf were not allowed to undertake any other kind of employment when there were no ships to load or unload, and as they were working at an hourly rate they naturally desired to get in as many hours' work as possible on any given task.

49. During 1913 and 1914, the work of handling cargo on the wharf between steamers and trucks and the shunting of trucks over the turntable was performed by contract labour. The steamers' crews worked the cargo on the vessels, and on the wharf two men received the cargo from each hatch and shunted the trucks over the turntable. At times the rate of discharge ran as high as 30 tons per hatch per hour. The first rate paid to the contractors for the wharf work was 9d. per ton, which rate was raised successively to 1s., 1s. 3d., and finally 1s. 6d. per ton. After 1914, local labour was employed on both vessels and the wharf at hourly rates. Up to 1916, the rate was 2s. 3d. per hour; in 1917, 3s.; 1919, 3s. 6d., and later 4s. The present rate arrived at by agreement between Vestey's and the Australian Workers Union in 1920 and registered with the Arbitration Court gives the men 5s. per hour ordinary time, 7s. 6d. per hour overtime, and 10s. per hour for Sunday work.

50. Each gang consists of 2 shunters, 4 men in trucks (southern practice 2 men), 2 winchmen, 1 hatchman, 6 men in hold (southern practice 4 men), 2 men at turntable, 1 foreman, 1 union representative, 1 timekeeper, and 1 tally clerk for each hold working. Supposing a gang worked round the clock, they would be paid for 20 hours (4 hours being meal hours), but really worked 18 hours 10 minutes, having four smoke-oh's of 20 minutes and one of 30 minutes. Elsewhere in Australia there are only two smoke-oh's each of 30 or 35 minutes. The rates payable under the 1921 award in Queensland are:—Brisbane, 2s. 11d. per hour; Cairns, 3s. 2d. per hour; Townsville, 3s. 2d. per hour.

51. Looking at these rates from the general public point of view, the result has been as follows:—

In 1916, it cost the ship 4s. 6d. per ton, plus all overtime, and the consignees 2s. 6d. per ton.

In 1921, it cost steamers on an average 19s. 6d. per ton, including wharf and sorting shed overtime, and at the same time the cost to the consignee amounted to 17s. 7d. per ton.

At the present time, it costs the ships on an average 10s. 3d. per ton, including overtime on wharf and in sorting shed, and the cost to the consignee for wharf and sorting shed labour is 10s. per ton.

52. The average rate of discharge of steamers works out at approximately 10 tons per hatch per hour.

53. From the point of view of the labourer, these rates under present circumstances are not sufficient. He has to depend solely upon wharf work for his livelihood, and with two ships per month in port the number of hours' work available is not very great. With the lower rates mentioned as obtaining at Queensland ports, the wharf labourers are possibly earning a reasonable living wage, but at Darwin, it was stated in evidence that the average earnings of the men engaged on the wharf are £2 8s. per week.

54. Although this rate at present does not constitute a living wage, still it must be admitted that the high cost of labour is inimical to the best interests of the Territory. In the course of its investigations, the Committee ascertained that at Wyndham the Meat Works management has an agreement with the combined unions, one clause of which provides—

“When, owing to completion or interruption or reduction of all or any of the operations from any cause, no employment is available for an employee at his usual task, such employee shall, if so required by the management, do any other work available, and be paid the rate appertaining to his regular task.”

and it is probable that some arrangement of the kind at Darwin might be of advantage to employer and employee alike.

55. During its stay in Darwin, the Committee learned that some time ago members of the Northern Australian Industrial Union went on strike and refused to handle cargo from boats in port. Certain men, however, undertook to do the work, and formed themselves into the Northern Territory Workers Union, and since that episode have been granted preference in respect of work on the wharf. Some members of the Committee felt that this preference is not in the best interests of the Territory and should be terminated. The majority, however, especially in view of the fact that a Judge of the High Court is shortly to visit Darwin for the purpose of inquiring into labour conditions generally, consider that the Committee should refrain from expressing any opinion in the matter.

56. The decision arrived at by the Committee in connexion with this matter is shown in the following extract from its Minutes of Proceedings, namely:—

Mr Blakeley moved:—

That the Committee is of opinion that the preference for employment on the wharf given to the members of the Northern Territory Workers Union is not conducive to the smooth working of the Northern Territory.

Seconded by Mr. Mathews.

The Committee divided on the motion—

Ayes (2).

Mr. Blakeley.

Mr. Mathews.

Noes (6).

Senator Lynch.

Senator Reid.

Mr. Cook.

Mr. Gregory.

Mr. Mackay.

And so it passed in the negative.

LACK OF FACILITIES.

57. Another factor which it is claimed contributes to the cost of handling goods at Darwin is the lack of facilities on the wharf. Owing to the shape of the jetty, the railway locomotive cannot move trucks on or off, consequently all shunting of trucks has to be done by hand. In addition, there is no vehicular approach to the jetty and no sorting shed thereon, and goods destined for the town have to be moved by railway to the sorting shed, about $\frac{1}{2}$ -mile distant, where the goods are unloaded and sorted. From this point they are conveyed by wagon to the retail stores at a cost varying from 5s. to 15s. per ton.

58. A sorting shed on the wharf as provided in Sir William Clarkson's scheme, it was claimed, would make for cheaper and more expeditious handling. The Committee, however, is aware that many wharfs in Adelaide, Melbourne, and Sydney are without sorting sheds, and is of opinion that the provision of a sorting shed on the wharf at Darwin would not greatly reduce the actual cost of the goods landed there. The cost of sorting in the shed would be practically the same; there would be a saving in shunting charges and double handling into and out of the trucks, but against this there would be the cost of wheeling from the ships' slings into the shed, and the extra cartage from the shed to the town.

TURNTABLE.

59. To get the trucks on to and off the wharf they are taken round the angle by means of a turntable. Empty trucks brought down to this point are slowly pushed by the engine on to the turntable, which is turned round by a small winch, and the trucks are then pushed by hand on to the jetty and along to their positions opposite the hatches of the ship. When loaded the trucks are shunted back by hand on to the turntable, and when it is turned round they are taken away by the locomotive to the sorting shed.

60. Representations were made to the Committee that the presence of the turntable necessitates the employment of two extra men, delays the passage of trucks on and off the jetty, and so delays the gangs loading and unloading ships, and makes for extra cost to the ship and to consignees. It is difficult to say what money loss is occasioned by the turntable, but it is claimed that if it were abolished the cost of handling inward goods could probably be reduced by 25 per cent., while there might be an even larger saving in respect of outward cargo.

61. On the other hand, representatives of the Commonwealth Railway Department, which controls the wharf, claimed that, although the existence of the turntable involves the employment of more men than would otherwise be necessary, still, as the shunting on the jetty is done by hand, it is not thought that the slight delay at the turntable materially affects the speed of loading. It is stated that the turntable will easily handle all the traffic passing over the jetty to-day or that is likely to pass over it for years to come. It is held that the increase in cost due to its existence is 1s. 9d. per ton, and that with the employment of a different type of wagon carrying 25 per cent. extra load that cost could be reduced.

62. In June, 1914, prior to the establishment of the Darwin Meat Works, an agreement was entered into between the Commonwealth Government and Vestey Brothers, in which it was stipulated, *inter alia*—

“The Commonwealth will, before the completion of the erection of the said works, make such alterations to the accommodation and conveniences on the wharf at Darwin as shall enable railway trucks containing frozen meat to be discharged directly alongside the vessel at a rate which will enable 3,200 quarters per ordinary working day of eight hours to be loaded on the vessel.”

63. The representatives of Vestey's claimed that this was meant to imply doing away with the turntable and constructing a direct approach to permit of the locomotive and trucks coming right alongside the ship, and that such fact was clearly stated in the original draft of the agreement, but not included in the completed document. They stated that if the railway officials claim that they can deliver 3,200 quarters per day (which was denied), it can be done only at excessive cost. Vestey's representatives claim that the wharf will never be efficient until the turntable is abolished, and that they are greatly prejudiced by lack of direct communication by truck with the ship.

64. After carefully sifting the evidence, the Committee is satisfied that, although the existence of the turntable retards the passage of trucks on to the jetty, yet the delay occasioned is not such as to prevent the plying of a sufficient number of trucks per hour alongside a ship to enable the terms of the agreement to be complied with. To that extent, therefore, the Committee cannot agree that the Darwin Meat Works is prejudicially affected by the existence of the turntable.

INSULATED WAGONS.

65. During the course of its investigations, strong complaints were voiced to the Committee by the representatives of Vestey Brothers that the wagons supplied by the Commonwealth Railways for the purpose of conveying frozen beef from the Darwin Meat Works to the ship were inefficient. It was claimed that these wagons were too small and not properly insulated, and that on many occasions meat which was in good condition when it left the works was too soft to ship and had to be returned. This, it was claimed, necessitated all meat being loaded at night, which, owing to overtime charges, considerably added to the cost.

66. The Commonwealth Railways officials contended that small wagons were expressly asked for by Vestey's, and that the wagons were constructed by the Queensland Railways of similar type to those successfully used by the various meat works throughout Queensland.

67. The Darwin Meat Works are approximately 2½ miles from the wharf, but it is stated that meat is often in the wagons four to six hours before shipment; it is contended, however, that this should not be material, as with properly-insulated wagons it is stated that meat can be safely held in the sun for 36 to 48 hours. Evidence was given that meat loaded from Ross River, Townsville that had been in wagons for 30 hours in very hot humid weather, was found to have snow dry and crisp on the wrappers when opened, and it was contended that if the Darwin wagons were efficient no trouble need be anticipated from them.

68. The Committee was informed that in a test carried out by Mr. Henderson, Chief Mechanical Engineer, Commonwealth Railways, in June, 1918, meat taken from the store where the average temperature was 9 degrees Fahrenheit, and which as far as could be tested with a knife, appeared to be in a thoroughly frozen condition, was loaded into one of the wagons, which was then allowed to stand in the sun for a period of 4 hours 24 minutes, the sun temperature at the time being 92° and the shade temperature 82°. At the end of that period, examination showed that certain parts of some of the hind quarters were soft, and in one instance a knife could be pushed in for at least 3 inches. The Meat Works management state that meat as soft as that would be refused by the ship, and claim that this test clearly shows the inefficiency of the wagons.

69. The Meat Works were not in operation while the Committee was in Darwin, so that there was no opportunity of making personal examination, but arrangements have been made for one of the Darwin wagons to be shipped to Townsville and undergo tests under actual working conditions. The result of this should show if there is any fault in the class of wagon in use at Darwin, and if so the Committee strongly recommends that it be remedied by the time the Meat Works are ready to resume operations.

PROPOSED ROAD.

70. The suggested formation of a road from the jetty to connect with Mitchell-street at a cost of £14,000 was carefully considered by the Committee. The existing road is on a fair grade, and but little longer than that proposed. The projected road would be expensive to construct, difficult to maintain, would destroy a picturesque portion of the foreshore, and might not be in harmony with any general scheme to be adopted for the development of the port. Under these circumstances, the Committee is unanimously of opinion that the proposal should not be entertained.

ROPEWAY.

71. In regard to the aerial ropeway suggested, the Committee is of opinion that such an installation could be made to suit the purposes of the Meat Works, but would be of little benefit for the general requirements of Darwin. Articles of more than 2 tons weight could not be carried by it, and such cargo for Darwin as could be handled would still be 2½ miles away from the township, to which it would have to be taken by train. The landing of passengers also from the island jetty would be very difficult. In the circumstances, the Committee is unanimously of opinion that the aerial ropeway should not be installed by the Government.

VICIOUS CIRCLES.

72. Darwin in the past might aptly be termed the town of vicious circles. Many matters are so interwoven and so react upon one another as to materially retard the progress of the town and of the Territory generally. For instance, the small number of boats calling at Darwin means little work for the men, therefore, they demand high rates of wages; the result is increased charges on the wharf and delay and consequent expense to the ships, and the circle is completed by failure to attract more shipping. Take another instance. One of the crippling factors of the Inland is the high cost of cartage; this is brought about to a great extent by the absence of good roads, and especially river crossings. But river crossings cannot be freely built because of the great expense of getting material to where it is wanted, and so the vicious circle again closes.

FREIGHTS.

73. The question of freight to Darwin and from Darwin to other parts of the Territory is one of such importance that the Committee feels justified in saying a few words in regard to it.

The railway charges the Meat Works 4s. per ton to take meat from the works to the wharf, 2½ miles distant, and the Company complains that this rate is extortionate and that they could do it cheaper by camel transport.

The local carters charge from 5s. to 15s. per ton for the cartage of goods from the railway sorting shed to the retail stores in Darwin, a distance varying probably from a mile to a mile and a half.

The shipping company charges £3 10s. per ton for carrying flour from Sydney to Darwin, while the freight from Sydney to Java is 35s. per ton. Taking the cost of discharging at Darwin as 10s. 9d. per ton, and at Java as 2s. 6d. per ton, it will be seen that the shipping company gets from the Darwin consignee 59s. 3d. per ton for carrying his flour 2,684 miles, and from the Java consignee the sum of 32s. 6d. for carrying his flour 4,008 miles.

74. These are matters which adversely affect the establishment of industries in the Territory, and reflect on the cost of living of the inhabitants; and the Committee recommends that every effort should be made to reduce these freights and so help the development of the Territory.

SUMMARY OF RECOMMENDATIONS.

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

- (a) That the proposal to construct a concrete wharf at Darwin, as recommended by Sir William Clarkson, be not approved. (P. vi.)
- (b) That the Government should forthwith instruct a harbour engineer to report upon a scheme of harbour improvement at Darwin. (P. vii.)
- (c) That a special effort should be made by the Railways Department to cope with the difficulties associated with the peculiar shape of the present jetty. (P. viii.)
- (d) That, with a view to assisting the development of the Territory, the expenditure on harbour improvements should be deemed a Commonwealth grant-in-aid, and all wharfage dues abolished for a period of five years. (P. ix.)
- (e) That the railway be run as a developmental line, and minimum fares and freights charged; the Commonwealth Railways Department to be credited with an amount sufficient to make up loss sustained by this action. (P. viii.)
- (f) That special attention be given by the Railways Department to all matters appertaining to the careful handling of stock consigned to the meat works. (P. viii.)
- (g) That if the tests about to be made at Townsville in regard to the type of insulated wagon in use at Darwin disclose any fault in those wagons, such fault be remedied before the meat works are ready to resume operations. p. xii
- (h) That the suggested formation of a road to connect the jetty with Mitchell-street be not approved. (P. xii.)
- (i) That the proposed aerial ropeway should not be installed by the Government. (P. xii.)
- (j) That every effort should be made to reduce the high shipping rail, and other freights ruling in the Territory. (P. xiii.)

H. GREGORY,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Federal Parliament House, 13th May, 1924.

APPENDIX.

DARWIN WHARF.

The Chairman,
Commonwealth Public Works Committee.

In accordance with your instructions, I left for Adelaide on 2nd January, 1924, for the purpose of ascertaining whether the State records contained any information likely to prove useful to the Committee in regard to the early history of wharfage recommendation at Darwin, particularly as to under-water investigations, &c.

I was very courteously received by the Acting Chief Traffic Manager and the Engineer-in-Chief, South Australian Railways. A room was placed at my disposal by the Engineer-in-Chief, and every facility afforded me in my investigations.

I searched through the records of the Department from 1884 to 1905, and perused several hundreds of reports furnished by the Resident Engineer, Darwin (Mr. W. W. Andrews), to the Engineer-in-Chief for Railways, Adelaide, during the course of construction of the present jetty.

Such information as I considered would be useful or interesting for members, I have condensed into the following paragraphs:—

ORIGINAL JETTY.

The original jetty from Stokes Hill was built on a curve, and provided for the railway locomotive and trucks to be brought right alongside the ships.

The tender for its construction was accepted on the 4th December, 1884, and the jetty was opened for traffic in May, 1887.

The cost of the work was £54,742 15s. 2d.

The specifications for the work provided—

Timber—All timber shall be straight, sound, and well seasoned. . . . Piles shall be of jarrah, karri, or ironbark, and the walings, braces, corbels, girders, struts, ties, dock kerb, landing stairs, &c., of ballon, Jolore teak, tampuis or moraboo from Singapore, or jarrah, or karri, or ironbark.

Piles—All piles, whether sheathed or not, shall before erection be thoroughly coated with coal-tar from the point to not less than 3 feet above low water, and hooped and shod with wrought iron.

Sheathe Piles, Braces, &c.—All piles, walings, braces, and other timber work between the ground and a height of 6 feet above low water shall be carefully sheathed. The sheathing on the piles shall be carried down to not less than 4 feet below the surface of the ground.

The metal shall be in sheets 4 feet by 1 ft. 2 in. and weighing 20 oz. to the super. foot. The sheets shall be lapped over each other at the joints, and securely fixed with 1½-in. composition nails.

The housings for walings, braces, &c., below the level mentioned—viz., for 6 feet above low water—shall also be covered with metal properly dressed on and fixed.

In 1885 two test piles of jarrah timber were driven at the side of the jetty for the purpose of ascertaining whether that timber would resist the attacks of the teredo. On examination eight months after, they were found to be honeycombed by the insects. This led to the order to sheathe all timber in the jetty up to high water of spring tides.

The timber piles used were of karri. Notwithstanding the evident precautions taken, and the fact that the whole of the timber piles, braces, and walings—from high water of spring tides down to 4 feet below the ground line was tarred and then sheathed with best yellow composition metal as used in ship-building, the whole of the bolts and nuts within these limits being also of yellow metal, it was not long before the teredo made its presence felt.

DAMAGE TO JETTY.

On the 26th December, 1892—five and a half years after the jetty was opened for traffic—the *s.s. Ocampo*, from Hong Kong, in coming alongside, collided with the jetty, and broke in half 15 feet below the deck, the south-east corner pile.

The Resident Engineer, in reporting the matter, added—

“The corner pile that is broken is completely riddled by the teredo.”

The Resident Engineer was then instructed to have an examination made of the jetty, and on 22nd March, 1893, reported to the Engineer-in-Chief, Adelaide, as follows:—

“I regret to have to report that the Port Darwin Jetty is in a much worse condition than it appeared on the preliminary examination. I have now tested every pile in the jetty with a ¾-in. auger, with the result that I found 37 piles badly eaten with teredo. . . . In the first few piles in which the auger showed these signs, I had the pile opened out with a chisel to be sure that there was no mistake. I found them riddled with small teredos, ¾-in. to 1-in. diameter, and got some small live ones.

The metal on all these piles is a beautiful piece of work, and some of the worst piles looked the best. The copper where out to put in the auger holes was tough and showed no sign of corrosion with one or two exceptions, and it was impossible to see where the teredo could have entered. I do not believe that we could get a better piece of sheathing done than there is on these piles.”

Up to 30th June, 1893, the jetty had cost, in addition to the capital cost of £54,742 15s. 2d., the sum of £1,476 5s. 4d. in renewals and maintenance.

On 6th September, 1893, the Resident Engineer at Darwin (Mr. W. W. Andrews) was instructed to proceed to Singapore to inquire into and examine timbers which have been found by experience most suitable for piles in the construction of wharfs and jetties, more especially as to their resisting the attacks of worms and other marine creatures.

On 16th December, Mr. Andrews reported that no unsheathed timber would permanently resist the attacks of the teredo, and also pointed out that several local timbers were superior to karri and jarrah. He added—

“I would call your special attention to the remarks of the Manager of the Singapore Docks on the destruction of muntz metal bolts by sea-water in tropical seas, and I would strongly urge that in any scheme of splicing or strutting adopted, as little use as possible should be made of bolts.”

After considerable correspondence it was eventually decided that a new jetty was necessary, and while plans of the class of structure proposed were being prepared, Mr. Walter Griffiths, M.P., interviewed the Engineer-in-Chief, suggesting that, instead of renewing the jetty, the space between Fort Hill and Stokes Hill should be filled in and a new stone wall built which would be of a permanent character and afford all the accommodation required.

On this suggestion, the then Engineer-in-Chief (Mr. A. B. Moncrieff) reported to the Railway Commissioners on 5th November, 1894, as follows:—

To build anything of a permanent wharf between Fort Hill and Stokes Hill for ships to lie alongside would cost an enormous amount of money.

The wall would have to be between 50 and 60 feet high, and there are drawings in the office which show that it was the original suggestion while planning the railway along the foreshore of Fort Hill to turn the jetty parallel thereto nearer that hill than the site at present occupied. But the site upon which the jetty is at present fixed is the one which was approved by the Marine Board.

The work suggested is of such a character as to be absolutely out of the question as regards cost.”

On the 8th January, 1895, the Engineer-in-Chief further reported to the Railway Commissioners that to erect a concrete wall and rubble mound at which even one vessel could be moored would cost at least £110,000. He added that he had prepared a sketch plan for the partial restoration of the existing jetty in iron with a rubble approach as far as low water.

Strenuous objection was then raised by shipmasters to the jetty being constructed on the same site as the old one, and on 24th September, 1895, the Resident Engineer forwarded the following report:—

“The captains of the *Chingta*, *Tsainan*, *Guthrie*, *Mennuir*, and *Darwin* have all spoken to me and asked me to draw your attention to the difficulty of approaching this jetty as it stands at present, and asking whether a T-head could not be built, or the jetty altered in some way so that it would lie with the tide instead of against it. A petition has been prepared and signed by some of the captains, but as it is being kept here to get the signatures of all the regular traders of this port, it will take some time yet. As, however, the matter is sure to be brought before you soon, I think it best to report to you at once.

Whatever may have been the theoretical advantages of the present site, on account of deep water, the experience of eight years has clearly proved that a more awkward jetty to get alongside could scarcely have been built. Captains who trade to all the large ports of Australia, China, and Japan say it is the most difficult jetty to approach they know of. With a tide running across the jetty like a millrace, and a steamer coming in dead slow she is swept away from it or against it, as the case may be, before there is time to do anything. The direction of the flow of the tide varies a little at the different stages of water. . . . The line of low water is nearly a straight line from the point of Stokes Hill to Fort Hill, and a very steep bank reaches down into deep water all along here, being kept clear by the run of the tide. A wharf parallel to low water mark and backed from the bank at various points would have given 23 feet at extreme low water at about 100 feet out, and would have been nearly in the direction of the tide, enabling steamers to run alongside without any swinging round at all. The wharf could have been built half the width and double the length of the jetty. There is never any rough sea in this harbour, so that the only thing to be looked at is the set of the tide. I mention this site simply as one I consider the best, and if by any chance the head of the jetty is to be swung round, the further it could be swung in this direction the better. The cost, of course, would be greater than to build under the present jetty, using it as a stage, though not, I think, very much, on account of the shallower water, but it seems a great pity that in building a practically new jetty the old mistake should be perpetuated.”

On the 13th December, 1895, the Engineer-in-Chief, Adelaide, wrote to the Railway Commissioners as follows:—

“The work of reconstructing the approach to the jetty in rubble has been put in hand, and is progressing favorably.

The Commissioner will remember that the original estimate for thus renewing the jetty, giving the head thereof a length of 225 feet only was £33,000, but it must also be remembered that it was afterwards urged that the head must be at least 320 feet in length. This would, of course, increase the estimate, which would then amount to £43,000.

The original idea of reconstructing the existing jetty partly or entirely in iron on the same site as the old one has been strenuously objected to by shipmasters visiting Port Darwin.

In accordance with the suggestion of those who have to use the jetty, a modified plan has been made providing an iron jetty 350 feet long parallel with the current, and with the necessary approach of rubble. It is estimated that this work would cost £45,300, while a similar arrangement, but for working the traffic by means of turn-tables instead of a curved approach, would cost approximately £39,000.

On 17th December, 1895, the Resident Engineer, Darwin, despatched a communication to the Engineer-in-Chief, Adelaide, reporting that—

“On 3rd instant, as reported to you by wire, a serious collapse of a portion of the jetty approach took place.”

This wire was as follows:—

“100 feet of end of jetty embankment sank 12 feet in a few minutes to-day, carrying the piles eastward and seaward 10 to 15 feet, and breaking them off. Jetty collapsed for 120 feet; piles all rotten with teredo. . . .”

The jetty was all right at 11.30 a.m. when the men went to dinner, and some time after 12 o'clock, at extreme low-water spring tide, the bank took a sudden settlement in an E.S.E. direction, the mud evidently slipping towards deep water. The mud to the east bulged up 40 or 50 feet away, and opened up in deep cracks, and some of the heavy stone was carried some distance over. He estimated that from 1,500 to 2,000 cubic yards of stone disappeared.

“On the west side, where the piles did not part,” said Mr. Andrews, “the stone seems to have gone straight down. The decking on that side remained nearly at its proper level, though dragged over somewhat, but on the east side the decking sank 6 to 8 feet, so that it stood at an angle of nearly 30 degrees.”

Subsequent reports showed that several similar troubles occurred.

On 26th February, 1896, the Resident Engineer wired:—

“End of jetty bank again subsided 8 to 10 feet, carrying away all repairs made in December, and breaking the piles. . . .”

On 30th April he again reported:—

“Last 60 feet of jetty bank subsided 5 feet to-day. . . .”

These failures are mentioned to show the difficult nature of the sea bottom being dealt with. On 30th October of the previous year (1895) the Resident Engineer had reported that he expected the embankment to take a good deal more stone than estimated, as the soft mud was then swelling up on each side under the weight of the embankment, and had risen over 3 feet on one side for 40 or 50 feet out.

Again, on 23rd December, 1895, he stated that the amount of stone put into the bank at that date was 16,000 cubic yards, and he added:—

“But so much has sunk into the mud that I think it will take nearly 30,000 cubic yards in all instead of the 20,000 which the section showed.”

Concurrently with the work being done in connexion with the new jetty, work was also proceeding with the demolition of the old jetty. This was found to be in a very bad state on account of the teredo. While the work was in progress, portion of the jetty collapsed, and a gang of men employed in stripping off muntz metal were precipitated into the water, one of them (a Chinaman) being drowned.

On 7th July, 1899, the Resident Engineer reported that the pitching for the embankment was completed and the old jetty demolished to the point where the new jetty would cross it.

On 9th June, 1900, the Resident Engineer reported that the party which was to commence the construction of the new jetty arrived on 13th May, and had been employed on preliminary work erecting sheds, getting plant ready, &c.

NATURE OF SEA-BED IN VICINITY OF NEW JETTY.

I spent some considerable time and trouble in an endeavour to trace the investigations conducted by the South Australian Government about this time as to the nature of the sea-bed in the vicinity of the jetty. Reports of borings were sent down from time to time, and plotted on a plan kept in the office for that purpose. All efforts to obtain this plan have so far been unsuccessful, and the last advice I had was that it had been transferred to the Commonwealth in company with a number of other files in 1911.

The following reports from the Resident Engineer, Darwin, however, give some indication of the class of material likely to be met with—

On 28th May, 1898, the Resident Engineer furnished particulars of certain bores put down as follow:—

"Bore P.—

Surface soft mud	21 ft. 6 in.
Stiff yellow clay	24 ft.
Hard clay shales, full of small quartz pebbles the size of a pea; chisel required to break it	27 ft. 6 in.
Hard various coloured shales	35 ft. 6 in.
Band of white quartz, 6 in. thick	37 ft.
Various coloured shales	37 ft. 6 in.
Band of white quartz, 9 in. thick	40 ft.
Softer brown shales	40 ft. 9 in.
Stiff clay with quartz pebbles (bottom)	42 ft.

On the shales called hard the chisel rebounded after each blow. In the softer shales the chisel still had to be used, but would penetrate a little each time.

Bore Q.—Similar.

Bores Y to J.—Gave fairly uniform results. I doubt very much if 'shale' properly describes the material, and I am sending you a few small pieces by post, taken from the cutting near the jetty, and which, when pounded up, exactly resembles the material from the bores.

This runs in bands of all colours, some hard and some soft, and has in many places narrow bands of quartz running through it."

On 26th September, 1898, referring to the demolition of the old jetty, Mr. Andrews stated—

"In most of the piles drawn the foot is badly battered up in the driving, in some places the crushed point standing at right angles to the pile and from 12 inches to 18 inches to one side of it. Some four or five piles only have come up with the shoe still on. Some of the piles are in fairly sound condition; others are eaten through where the lower diagonal brace crossed them or at mud level. Hardly any are untouched by teredo."

On 20th February, 1902, he furnished a further report in the following terms:—

"I am forwarding a small box through the Chief Storekeeper with specimens of the core taken from the bore for pile No. 9.

All the material in this box came up at the same time, and broken up as you see it.

From the strain we judged that the barrel started up with far more core in it, but that when part way up it fell back into the hole.

You will see that part of the core is large boulders and quartz, while the shales stand on edge and easily break off along the cleavage.

We had great trouble with this hole, the pieces of core which fell back filling the chase, and we had to bore through it again.

The teeth were very much worn, and the outside of the barrel was scarred with deep grooves, evidently from sharp quartz in the outer walls of the bore."

From further investigations, I ascertained that the proposal to use screw piles proved too difficult, and had to be abandoned—as has been stated in evidence—and that annular holes were bored and the piles stopped into them and then filled with concrete.

The construction of the jetty was completed in 1904 at a total cost of £96,908 16s. 4d.

It is interesting to note, however, that a large amount of coloured labour was employed at a cost of 3s. per day.

G. WHITEFOY D,
So return.

4th February, 1924.

MINUTES OF EVIDENCE.

(Taken at Melbourne.)

MONDAY, 13TH AUGUST, 1923.

Present:

Mr. GREGORY, Chairman;	
Senator Barnes	Mr. Jackson
Senator Lynch	Mr. Mackay
Senator Reid	Mr. Mathews.
Mr. Cook	

Engineer Vice-Admiral Sir William Clarkson, sworn and examined.

1. To the Chairman.—I was commissioned by the Commonwealth Government during the present year to investigate and report upon possible harbor improvements in the Northern Territory. The main purpose of my visit to the Territory was to examine the western shore of the Gulf of Carpentaria in order to report upon the possibility of opening up a new port, and as I had to go through Darwin, I was asked to examine the wharf conditions there and submit a recommendation as to how they could be improved, particularly with a view to the shipment of frozen meat. I examined the coast about Darwin very carefully, with a view to discovering some site more suitable for a jetty than that at present used. I found an excellent site in Fanny Bay, but a north and south current running between 6 and 10 knots per hour between the Spit and Point Emery disqualifies it. The existing wharf, of iron columns and steel lattice girders, is built at right angles to an approach jetty. Originally there was a double narrow-gauge railway track on the wharf, but one line was lifted and a cattle race substituted. The wharf itself is of screw cast-iron piles, of 12-in. diameter, with steel bracing. The original dock is of wood. The width was increased by about 11 feet a few years ago, and a number of wooden piles that were driven in to support that extension are being eaten away very rapidly by the teredo. I think the piles were sheathed. The wharf is only about 60 feet wide. It is very slender, and I think that a ship striking it very hard would knock it over. A ship discharging alongside has to dump the cargo on to a platform rigged on trestles at truck height. From the platform the cargo is dragged on to the truck and stacked. The full truck is taken to a turntable operated by a steam winch, and is then shunted by hand for some distance until it can be attached to a locomotive, which takes it to a sorting shed about half-a-mile away. This handling is slow and costly. From the sorting shed the cargo has to be again put on trucks and carted to the township. This handling has been costing 12s. 6d. per ton to the sorting shed, and 16s. from the shed to the township. The 12s. 6d. could probably be reduced to 10s. and the handling from the shed to the township to another 10s., making a total cost of £1 from the ship to the town. At one time the cost was £8 to £7 per ton. Hourly wages on the wharf are very high, but not excessive, because the men get only two shifts per month, and the quantity of cargo handled is very small. The lumpers can get very little other work, and even the high hourly pay gives them no more than a bare living. If there were a greater volume of trade through the port the labour conditions would be altered. The wharf lumpers would get work all through the year instead of

twice a month, and they could afford to work for lower wages. I watched them loading and unloading while I was at Darwin, and they seemed to work extremely well. In order to get over the wharfage difficulty it is, in my opinion, necessary to build a new wharf. Owing to 6 or 7 knots' ebb tide, ships experience considerable difficulty at times in berthing. Unless they get their lines ashore and made fast very quickly, the tide sweeps them away from the wharf, and they have to go right out and come back again. Although there is a depth of 24 feet at the inner berth, shipping companies refuse to use it. If a big meat steamer were alongside with a strong ebb tide flowing, it would not be surprising if the wharf were carried away, especially as the braces are becoming weak. The Department of Works some time ago put forward a scheme to enable the railway to be run directly on to the wharf without the intervention of a turn-table; but I am opposed to that because of the likelihood of trouble from silting. There is evidence that the piles in the present jetty are causing difficulty in that respect. The outer berth was dredged to a depth of 26 feet a few years ago, but there is not that depth of water now. I scribble the shallowing of the water to interference with the current by the piles causing the berth to silt up. If the pier is brought back to the point it will be quite easy to make a new railway approach on the north-east side of Stokes Hill, and the present railway approach on the south-western side of the hill would be made available for ordinary road traffic. At the present time there is no road approach to the wharf. All cargo and luggage has to be put on a truck and taken to the sorting shed. Ordinary vehicular traffic cannot get within a quarter of a mile of the wharf. I came to the conclusion that, in a place like Darwin, where timber cannot be used on account of the teredo, it would be preferable to make the wharf of solid construction. Structures, built on piles, whether of iron or timber, always involve a heavy annual charge for maintenance. It is costing quite £2,000 per annum to maintain the present structure, but the maintenance of a solid structure would be trifling. I have proposed a solid wharf with steel sheet piling along the face, and filled at the back from Stokes Hill. The material in the hill is quite suitable for filling purposes, the capping to a depth of 4 feet being limestone, and below that is a soft schist. That schist is good enough for filling, and is not sufficiently hard to cause any difficulty in pile driving. The proposal to use steel piles may be criticised because of the risk of corrosion. I am proposing to leave them exposed up to 3 feet below low-water mark. Above that they will be bedded in concrete with a certain amount of reinforcement. Only every alternate pile will be carried to wharf level. There will be 12 inches of concrete on the face of the wall and 3 feet behind it. The space in between the long piles will be tied to the back wall with iron stirrups. One cannot speak with certainty with regard to the risk of corrosion, but we can be guided by experience. To the north of Stokes Hill is to be seen the wreck of a steel ship that has been lying in the water for years, and the amount of corrosion that has taken place is negligible. There will be little fear of corrosion in that portion of the pile which is embedded in concrete, and experience teaches that steel or iron does not corrode

rapidly under water. Those who have seen the anchor of the *Suez*, and Sydney, have noticed how the cross-iron took place during the 100 years that it lay under water. The engines of ships that have been salvaged after being under water for years have been found to be almost intact. The United States of America battleship *Maine* was sunk, and when raised fifteen years later was found to be comparatively free from corrosion, except in the vicinity of brass or copper. Therefore, I do not think there is any need for four corrosion of the jetty piles; but if it is thought desirable to err on the safe side, 2-in. galvanized-iron pipes spaced 3 feet apart could be built into the wall on the inner side of the wharf, where it sits on the sandy bottom, and if later it were found that corrosion had taken place, cement grouting could be forced through those pipes under pressure, thus consolidating the foundation. That method is comparatively new in Australia, but is being used to a large extent and very successfully in dams and tunnel work in America. I do not think there is much risk of galvanized-iron pipes corroding, but if that did happen 1 1/2-in. pipes could be inserted inside the 2-in. pipes, and the cement grouting forced through them. I also propose to transfer the sorting shed from its present site to the wharf so that cargo from the ships may be run straight into it and stacked instead of having to be slanted half-a-mile. It is not practicable to sling the material from the ship's holds into the trucks, because the cargo must be stacked in the trucks. I think it is necessary also to provide a better road from the wharf to the township. The present road goes via the sorting shed to the railway station, about a mile from the wharf, then up a hill to the back of the township, and thence into the business area. I suggest the construction of a new road joining the wharf with Mitchell-street. As that street is quite 60 feet above the level of the wharf, and the hillside is fairly steep, the construction will be expensive. Drainage will have to be considered, and probably retaining walls will be necessary; but if such a road could be built to a 20 grade it would be of great advantage. My proposal is that only 600 feet of the new wharf should be built, but when the port develops, as it will if it is given a fair chance, another section of 600 feet can be built on, and ultimately the structure can be carried right on to Fort Hill. I believe that as soon as the first section of the wharf is built the ground between it and Stokes Hill, now covered at high tide, will naturally fill in with silt, and in time will become a very valuable ground for warehouses, offices, and buildings. In fact, it is filling in now. I am making provision to shift the existing sorting shed to the wharf, and as trade develops further sheds may be built on the wharf, which will be 130 feet wide. A fear has been expressed that the existing bank near the jetty may grow, but the records show that since 1898 it has receded about 20 feet. If the channel is dredged there will be sufficient scour to keep it clear, especially when the existing wharf and approach jetty are taken away. The berth was dredged to a depth of 25 feet four years ago, and no difficulty was experienced in dealing with the schist. I am proposing a 25-ft. berth at present, to be eventually deepened to 30 feet, and I do not anticipate that a bucket dredge will have any trouble in cutting into the schist. I am quite satisfied that boring tests are not necessary, so far as the dredging is concerned. I am aware that at ports like Geraldton and Broome goods are slung straight from the hold into the trucks and then run into the town, but there will be an advantage in Darwin in delivering cargo into a shed on the wharf. I cannot see how the Territory can go ahead unless costs are reduced to a minimum. Therefore, my proposals aim primarily at a reduction of costs.

2. To Senator Reid.—There is a 23-ft. 0-in. rise and fall of tide at Darwin, and the scour has been sufficient

to erode the existing bank. Therefore, I do not anticipate any trouble from silting, when the new wharf is constructed. If silting did necessitate frequent dredging a suction dredge and pump could deposit the silt behind the wharf, and so gradually reclaim that area; but that system of dredging is very costly, and I think it would be cheaper to carry out the reclamation by taking filling from Stokes Hill or Fort Hill.

3. To the Chairman.—I have estimated the new railway, wharf, road, and two tanks to cost £132,000. My estimates are on the generous side. I think the work could be done at very much less cost, but in estimating for a place like Darwin it is wise to allow a fairly wide margin. I am assuming that up to date labour-saving devices will be employed. For instance, the dredges now lying idle at Cockburn Sound could be taken to Darwin, and the steel piles should be driven by a steam pile driver rather than by a steam winch and monkey. I have estimated the dredging at 1s. 6d. per cubic yard, which is rather excessive, and I have allowed an additional £1,200 for the transport of the dredge from Cockburn Sound to Darwin. The quantity of material to be dredged is calculated at 257,000 cubic yards. For the concrete I have allowed 26s. per yard. I do not fear any trouble from electrolysis in connexion with the reinforcements. On the whole, reinforced concrete in harbor works has been very successful. Such failures as have occurred have been due to faulty construction.

4. To Senator Reid.—Concrete piles would be very much more costly than steel piles, and they would considerably protract the period of construction. Steel piles can be driven very quickly, especially with a steam hammer. Only a few minutes is occupied in driving each pile. For the sheet piling I have allowed 23s. per ton, including the driving. The railway, which will be less than three-quarters of a mile in length, will cost £6,000. Very little cutting, and only one small embankment at the southern end, will be required. The existing sorting sheds can be transferred to the wharf for £200, but as it will require to be built on piles on account of the settlement of the ground the sum of £1,500 has been allowed. For silting in behind the wharf I have allowed 5s. per yard, but the cost would be considerably reduced if diggers and other modern appliances were used. They are available at Cockburn Sound. The 20 chains of new road will cost £14,000. That estimate includes provision for retaining walls.

5. The suggested aerial ropeway is an alternative proposal. It would cost considerably less than the construction of a new jetty, and it would enable meat to be shipped from the Darwin Meat Works with reasonable expedition. At the present time the meat is taken from the works to the existing wharf in insulated trucks. Complaint has been made that the trucks are not sufficiently insulated, and in consequence the shipping of meat has to be done at night. This cost, together with the delay on the turntable, the poor wharf facilities, and the objection of steamship owners to put their ships alongside the wharf, have been fatal to the success of the meat works. The meat works management say that they will not re-open the works under present conditions, but they will resume operations if proper provision is made for shipping their meat. The meat can be loaded at a fairly rapid rate by means of an aerial ropeway with a carrier that would take 2 tons. The meat would occupy eight minutes in travelling from the works to an island wharf alongside which ships of any size could lie at any state of the tide. The wharf would be only 400 feet long, but either end would be two dolphins for securing the vessels. There is ample depth of water at the proposed site and little or no tide. The ropeway and island jetty would cost about £65,000, and it would serve the meat works admirably; but the requirements of Darwin would be very inadequately met. In fact, for all heavy lifts it would still be necessary to use the existing jetty. The landing of passengers from the town by water would be very difficult. I do not recommend the aerial ropeway,

cut if money is not available for building the new wharf, that expedient can be adopted to overcome many of the present difficulties. In addition to facilitating the meat export it would enable material destined for up-country to be handled more cheaply than at present. Any material of not more than 2 tons weight could be landed by the aerial ropeway into a shed near the meat works and there stacked in trucks and sent direct into the interior without passing through Darwin. That the ropeway would not help Darwin very much; material would have to be carried 24 miles from the shed at the works to the township. That would not matter very much because the requirements at Darwin itself are very small. I estimate that the new wharf and auxiliary works could be carried out in twelve months.

6. To Senator Lynch.—The purpose of my inspection of the western shore of the Gulf of Carpentaria was to locate a new port that would serve the Barkly Tablelands, but it was not to be a substitute for Darwin. There are many excellent sites for ports along the coast of the Territory. Darwin is not the best port that could be found, but developments have taken place there, and it is the starting point of the railway. It is impossible to say in which direction future developments will take place. A lot of the country immediately south of Darwin is not particularly good for grazing purposes; in fact, I think the good country only commences at the Katherine River. But I am told that there is a lot of country between there and Darwin sufficiently good for the rearing of cattle, and that a fair number of cattle are grazed. An considerable expenditure has been incurred in making Darwin the port and administrative centre of the Territory, I think that the proposed new expenditure is justified. If a new port were created a new railway into the interior also would be required. The discontinuation of ship-owners to take big steamers into Darwin is due to the unsatisfactory wharf accommodation and the very strong current which sets around the end of Stokes Hill. The disabilities of the current will be avoided by the proposed new wharf, although the natural scour will be preserved. Captain Donaldson, of the *Montoro*, agrees that the proposal I have put forward is the best that can be devised to improve the conditions of Darwin. There will be no difficulty in berthing any ships at Darwin when the new wharf is built. Until the second 600 feet is added, the present wharf will be retained, and the combined accommodation of the two should be sufficient to meet the requirements of Darwin for some years. The 600-ft. wharf will accommodate two ships of moderate size. Three ships in port at the same time is not a likely contingency of the near future. I do not propose that ships should berth on the inside of the new wharf. If a berth were dredged there it would fill in very rapidly.

7. To Mr. Mackay.—I suggest that the new length of railway shall be built around Stokes Hill in order to provide direct access to the wharf by road and obviate the use of the turntable on the wharf. The present railway comes round a 40-ft. vertical cutting at the foot of Stokes Hill, and there is no direct approach from the town to the wharf by road. There would be no advantage in building the new road alongside the new railway, because the township is 50 feet above the level of the wharf, and in order to get from the wharf level to the town the proposed line has to travel a considerable distance. By rail the township will be further away from the wharf than it is at the present time; but I anticipate that the town will use the road more than the railway, and that the cost of transport from the wharf to the town will be reduced from the present rate of 10s. per ton to 2s. 6d. per ton, or at most 5s. per ton.

8. To Mr. Cook.—It is difficult to estimate the cost of wood piles at the present time, because they are very difficult to procure. Jarrah piles of the length required at Darwin are almost unobtainable, and turpentine timber is becoming more costly every

day. Steel piles will cost about £15 or £16 per ton. The wooden piles that are supplied to-day are very much below the quality of those that were obtainable years ago. I am extremely optimistic of the future of the Territory if the cost of transport is reduced. The exports last year from Darwin were very small, consisting of a few hides and empty beer barrels. The Director of Agriculture—there is no agriculture to direct, but he is also in charge of the Botanic Gardens—told me that the climate of Darwin is more suitable for cotton cultivation than is that of any country he has visited.

9. To Senator Reid.—I do not think that the proposed expenditure would be justified for the development of the Darwin district only. The country for a good many miles inland from Darwin has not great possibilities. But I recognise that Darwin is the railway terminus, the present outlet for the Territory, and the site of very big meat works. If another port were made at Pellew Islands, it and Darwin would serve the whole of the Territory, except the western country, of which Wyndham is the natural port. My conviction is that if costs are not reduced the Commonwealth might as well abandon the Territory. It is useless to continue frittering away money something radical must be done to reduce the cost of transport, and a reduction in the cost of living and wages will follow. The Territory is evidently enormously rich in minerals and has vast pastoral areas, but the cost of living is so great that industrial development is impossible.

10. To Mr. Jackson.—It might be advisable for the Government to issue a regulation prohibiting the driving of stock on the main tracks during the wet season. I considered the possibility of constructing a wharf on the ground it is now proposed to reclaim, but I am convinced that the siting danger makes that proposition impracticable.

(Taken at Melbourne.)

TUESDAY, 14TH AUGUST, 1923

Present:

Mr. GIBSON, Chairman,	
Senator Barnes	Mr. Cook
Senator Lynch	Mr. Jackson
Senator Reid	Mr. Mackay
Mr. Blakeley	Mr. Mathews.

Engineer Vice-Admiral Sir William Clarkson, recalled and further examined.

11. To Mr. Mathews.—If the Pellew Islands scheme were successfully carried out it would compete with Darwin for the trade from the southern but not from the northern portion of the Northern Territory. It would certainly tap the trade from the Barkly Tablelands and the Roper River district. I look upon the three ports of Wyndham, Darwin, and Pellew Islands as being necessary for the development of the Northern Territory. Subsidiary ports will be required, and, no doubt, will eventually be opened out, but the trade with those subsidiary ports could be carried out through the three main ports by using small coast boats. I think it necessary to go on with the Darwin scheme, even though that of Pellew Islands is proceeded with. I am afraid that the Pellew Islands scheme will be very costly. Penuliar conditions exist down that side of the Gulf, south of Cape Gray or Caledon Bay. The mainland back from the coast is all flat, although not swampy. Very heavy rains fall in the wet season, even as much as 10 inches an hour being talked of in some places. The country becomes water-logged for a distance of 10 miles back, and is intersected with estuaries, making it quite impossible to establish a port on the mainland. Settlement could not take place

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 nearer the beach than 10 miles. It would, therefore, be necessary to establish the port on one of the islands, where low water can be obtained close to the shore, and where the conditions are as healthy as can be found anywhere in the Tropics. The difficulty is that the nearest of these islands is quite 3 miles from the mainland. The intervening distance will have to be bridged partly and an embankment made where not bridged.

I assume that the cost of establishing a connection with the mainland by railway would be about £370,000. Connection with the mainland could be obtained by a railway along Vanderlin Island, together with a causeway and bridge. Capt. Barclay proposed a scheme which I examined very closely, but found to be absolutely impracticable. He was incorrect in a lot of his data, and the cost of his scheme would have run into millions of pounds. He said the cost would be £250,000 without the viaducts. Several costly viaducts were included in his scheme. He proposed to cross the delta of the McArthur River, which is liable to very heavy flooding. He proposed an embankment for this delta, which I am certain would never stand, and would be very costly to construct. I had, therefore, to rule his scheme out and find a fresh one, so I settled upon Vanderlin Island. The only difficulty with regard to that is the long 3 mile stretch. The railway embankment on the mainland presents few difficulties. Although it is waterlogged it is not swampy, but possesses a good, firm, clayey ground. I do not think that the Fellow Islands scheme would enter into competition with Darwin for many years. The proposal now is to construct a wharf on Vanderlin Island and make the island available for the establishment of meat works—the cattle to be lightered in shallow draught lighters down the McArthur River to Port Vanderlin—which, I think, is quite practicable as a start, to open up the Barkly Tablelands there, as the rice becomes developed and the trade increases, the expenditure on a causeway and bridges will be justified. The greatest depth of water between the mainland and this site is 30 feet. That 30 ft. depth would have to be bridged. There are parts which are only 12 to 18 feet deep, on which a causeway could be made. There is no difficulty in regard to material. The hills are covered with a very good sandstone rock that is lying about in boulders everywhere. In fact, on the hills themselves you cannot walk, you must jump from one boulder to the other. There would be no necessity to quarry any stone, it could be gathered up on the surface. The Territory is so huge that three ports would be quite a moderate provision. The size of the Territory is not generally realized. Fellow Islands are 800 miles from Darwin. The work on the Darwin wharf ought to be carried out within twelve months quite easily if proceeded with in an energetic manner. I am making provision for a depth of 25 feet at first, with 30 feet as the scheme develops and deeper draught ships use the port. The difference between high and low water is 23 ft. 6 in. at extreme spring tides. Every spring tide does not rise and fall to that extent, probably a dozen tides in the year fall to the lowest and rise to the highest point. Boats having the heaviest draught could lie alongside the wharf for several days without fear of touching the bottom. There are spring tides only once a fortnight. The maintenance of the new wharf would cost practically nothing. Damage will be prevented to the wharf by having fender piles along it. I do not think there will be any land slides from the hills, because of the construction of the railway. The country consists of soft schist. Very little cutting will be required, and the natural slope of the country will not be interfered with. The angle of repose will be about 60 deg. The railway will proceed on the flat for about half the distance, then there will be a certain amount of cutting, followed by an embankment.

12. To Senator Reid.—The depth of the cutting will be 10 feet at the outside—a mere nothing.

13. To Mr. Mathews.—When the new railway is constructed the existing line will be taken up, and the ground on which it is laid will be used as a roadway. It will be quite wide enough for a roadway, because it has been recently widened for use as a cattle-race. I think eventually the cattle-yard will be situated on the south-eastern part of Stokes Hill. That area will need reclamation. It would not be expensive to make the embankment as the material is close to the spot. I did not go into the question of the size of the leases. Senator Pearce was busy for a number of days receiving deputations on that subject. Typo-written statements were handed to him containing a close reasoning of the whole question. I went very closely into the question of the cost of living in Darwin, and proved definitely that it is at least 50 per cent. higher than in any of the southern States. I did not hear of there being any demand to have Darwin made a free-port. That request was not made to me by any one.

14. To Mr. Blakely.—I am responsible for the plan of the proposed ropeway. If the cables and the steel structure were properly looked after they would have a life of from ten to fifteen years. The usual method with a ropeway is to run an oiler with every carrier. This cable would haul fairly light loads, and if kept well greased and oiled it ought to last fairly well. I do not think there would be a tendency for moisture to collect in the cable, because of the intermittent nature of the work. The greasing and oiling would be quite sufficient to preserve it. In any case, the cost of a new rope would not be very great. The length of this would be 9,342 feet, and its cost would be a great deal less than £1 per foot. I obtained an estimate from persons who have done a great deal of this work, and are doing it now, and they say that the towers, the rope, the overhead gear, the island wharf, the carriers, and the electric motors would cost only £15,000. The proposal is to have two standing ropes, one for the outward journey and the other for the return journey, with an endless driving rope driven by an electric motor. The power is available at the meat works. The rock along the face of the wall at the Darwin wharf is not sufficiently hard to prevent dredging operations being carried on. Provision has been made for the employment of a second dredge. I do not anticipate trouble from a bulging out of the material. I propose taking the steel sheet piling down 10 feet below the lowest dredging. I am stopping the concrete 3 feet below low water mark. The piling will consist of 12-inch joists with a locking bar. Below water, where it will not be exposed to the air, the life of the steel will be very many years. Yesterday, I witnessed the fact of an anchor which was dug up and exhibited in the streets of Sydney. It had been down under the water, not exposed to the air, for 100 years, and it has not rusted very materially. There are instances of ships which have been sunk and recovered after many months with the bright finish still remaining on their engines. Steel does not rust very quickly when it is not exposed to the air. Marine growth acts as a preservative on steel. I know jetties round the coast which have been built of wrought iron, and are just as good under the water, to-day, as the day they were put down, and they have been down fifty years. So I do not anticipate that there will be any fear of corrosion. What I said yesterday was that if, at any future time, it is found to be corroded, the wharf could be made safe by building 2-inch pipes through the concrete, and forcing cement grouting through these pipes under pressure. That would consolidate the ground and prevent the sand washing out if the steel corroded. That method has been used very largely in America, and has proved very successful. I think there will be no danger if the wharf is constructed in the way I have suggested. It is a quick and a cheap method of construction. Those are its two main features. Even if it does rust it can be made safe at very little expense. To sheathe it on the outside again would be very

expensive. The cheapest way would be to build the pipes into the concrete wall about 1 foot away from the steel piling, and if it were found to be corroded to form in cement grouting.

15. To Senator Barnes.—The natural siting would have the effect of reclaiming the area inside the wharf nearly up to high water mark. Any further reclamation could be done with material from Stokes Hill or Port Hill. I think that work of that description could be done for a good deal less than 5s. a yard. I estimate that it will cost 6s. a yard for the wharf under pick and shovel and wheelbarrow conditions. If the cost of transport and the cost of living were reduced, I think that that country would develop very rapidly. There is not the slightest doubt that it is an enormously rich country. Give it a start and a chance to develop and I think it will go ahead like wildfire. The question of labour is a very material one. I was astonished to find that the aborigines up there are not nearly the useless lot they are generally thought to be. They are doing a tremendous amount of work, and are mauling the majority of the cattle stations to-day.

16. To the Chairman.—There are a great many in Darwin. Some wild blacks came over from Melville Island, and I saw them at work in the Botanical Gardens making a new road. They were working just as well as one could wish, drilling holes for blasting, and doing pick and shovel work. They were cannibals in their native state. They seemed to have taken a fancy to Mr. Allen, the director of the Gardens, and worked splendidly for him. I do not see any reason why they should not work as well for any one else. The ropeway scheme would serve the meat works' interests better than any other. Over a million pounds have been spent on these works, which are wonderfully well fitted up. No expense has been spared in connexion with them, and they certainly can serve a great area of country in the vicinity of Darwin. Although many people say it is not possible to keep cattle near Darwin, that it is necessary to go a few hundred miles further south, I think that it has been proved that it is possible to fatten cattle in the vicinity of Darwin if the necessary transport facilities are provided, and the cost of living reduced. I think a large number of cattle will be kept on small holdings and fattened in the vicinity of Darwin, and that it will be necessary to have the meat works established there to deal with them. I take it that it would be an advantage to have cattle fattened near a meat works in order to save the cost of transport. The electric power for this aerial ropeway would be provided by the Darwin Meat Works, which has a sufficient amount of spare power to do all the work which the ropeway will be required to do. It would, of course, be necessary to have an agreement in order that the interests of other people might be conserved. I suppose that the power would be supplied at so much per unit. No dredging will be required in connexion with the small wharf as the bank is a very steep one, having an angle of almost sixty degrees.

17. To Mr. Mathews.—It is composed of sand. There is an eddy there, and the sand is deposited.

18. To Mr. Blakely.—From investigation I have come to the conclusion that the creation of the wharf and no records have been kept. There is no tide gauge, and consequently the depth of water at the lowest low water spring tides is uncertain, and largely a matter of individual opinion. I actually measured a depth of 24 feet alongside the wharf at an exceptionally low tide.

19. To the Chairman.—The proposals I have made are the result of my observations only. There have been no observations whatever of the tides at Darwin, and no records have been kept. There is no tide gauge, and consequently the depth of water at the lowest low water spring tides is uncertain, and largely a matter of individual opinion. I actually measured a depth of 24 feet alongside the wharf at an exceptionally low tide.

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 The *Geranium* obtained greater depths, but I fear that they did not reduce their soundings to forest low water. My deductions have been arrived at as the result of my experiences when I visited Darwin.

20. To Mr. Mathews.—When the survey was made at Darwin the Admiralty obtained the times of high water; full and change, height of tides and that sort of thing, and marked on the chart the speed of the currents in various parts of the harbour, but no tide gauge has been established, and no records have been taken of the tides ever since.

21. To the Chairman.—The present wharf was built by the South Australian Government. All that the Commonwealth Government has done has been to add 11 feet to its width. The wharf was made an "L" shape on account of the tide, to make it more convenient for the boats to berth. It would have been impossible to berth ships broadside on to the current. The masters of Burns, Philp's steamers tell me it will be very much easier to berth ships at the new wharf than at the present one. I have here a few details regarding quantities and estimates. They are as follows:—

Dredging, 257,300 cubic yards at 1s.	£10,300
6d.	
Taking bucket dredger to Darwin	1,200
Concrete, 4,700 cubic yards	28,200
Sheet piling, 1,000 tons at £30 a ton	31,100
Railway	5,000
Sheds	18,750
Filling in, 75,000 cubic yards at 6s	1,500
New road	14,000
	£120,050

To do any reclamation work with the bucket dredger would add to the cost. I took sufficient depths to enable me to estimate the quantity of filling. I have shown the Committee photographs of sheet piling work that was carried out at the port of Richborough, England, where 2,000 feet of wharf was constructed of this sheet piling. It was left entirely exposed. No concrete was used on the face of the wharf. The latest advice is that it is showing no sign of corrosion, although that might naturally be expected because it is alternately wet and dry. Of course, it is covered with bitumen. The work was commenced in April, 1916. In 1918 the Director of Inland Water ways and Docks (War Office) wrote—

I am very pleased to inform you that the sheet piling which was used in the construction of the Richborough New Wharf, up to the present has not shown any signs of deterioration. As you will remember, we had some doubt on this point when the work was commenced, and, I am sure, it will be satisfactory to you to know that it has stood so well.

The agents, in Australia, for sheet piling have since informed me that it is still showing no signs of deterioration. Consideration has not been given to the production of steel of a rustless nature because it is too costly. It is becoming cheaper, but it is still very costly. I have stated in my report that £2,000 is the cost of the maintenance of the present wharf. I do not estimate that the maintenance of the proposed wharf will amount to anything for many years. The figure of £2,000 does not provide for accidents. A ship ran into the wharf the other day and broke several of the piles. If large ships were berthed alongside the wharf not by all surprise to hear of its being pulled over altogether, it is so slightly built and gimcrack. In my estimates I have made provision for the high rate of wages that prevail at Darwin.

22. To Mr. Cook.—I was responsible for the plan of the railway and the wharf. I am a mechanical engineer. In considering the permanency of the railway and the wharf, and the utility of the ropeway, I have given weight to the fact that in the course of years Darwin may be a very large centre. In the first

place, I was sent up by Senator Pearce, chiefly because of the fact that for several years I ran the shipping of Australia. At that time he was looking into the shipping aspect of the matter more than any other. I certainly would prefer to go on with the construction of the wharf rather than to have the aerial ropeway, which would merely be a temporary expedient. There is quite sufficient current along the face of the wharf to keep it scooped.

23. *To Senator Reid.*—I have considered the livestock aspect of the question. The new cattle yard will be placed in the southern corner of Stokes Hill. There will be quite sufficient room there for cattle yards, and to erect a "crush" up to the ship. The proposed area is quite four times the size of the present area. When the approach to the jetty is taken away only a little dredging will be required to be done, and ships will be able to go right past the present approach, thus enabling the cattle to be taken straight from the yards into the ship. It will be very much better than the present arrangement.

24. *To Senator Lynch.*—I do not think it will be very long before the second portion of the wharf will be required. It would be economical if the whole of the sheet piling and wall were done straight away, leaving the filling in to be done when it was found necessary. There is room for two further extensions to carry the wharf to the point of Fort Hill. The new wharf now projected is sufficient to accommodate two *Marella's* or *Montoro's*. Until the second portion was constructed I would keep the present wharf where it is. That I would provide two berths on the outside, and two on the inside. The inside of that wharf is no good at present. The shipping companies will not use it, as it is too close to the bank. When it is dredged, and the new wharf is made, the inside berth will be available and there will thus be a space for six ships there. The space inside the proposed wharf cannot be used even if it was dredged. If it could be used it would double the usefulness of the wharf. There is no scour there, and it would quickly silt up. It would require to be continually dredged. At the time the wharf was constructed I strongly urged the engineer to do that which I now propose should be done. He agreed that my proposal was the best, but the South Australian Government could not find the money. The present wharf and approach jetty cost, I believe, about £20,000. Wharfs could be constructed right round the corner of, and up along Fort Hill. In fact, wharfs can be put all round the township. It is necessary that the area indicated on the plan should be reclaimed, as at present it is an eyesore. I am aware that motor traffic is competing successfully with the railways to-day. I do not think motors could be used in this instance, because it will be necessary to send goods hundreds of miles. I am looking at the Territory as a whole. From Darwin to Katherine is a distance of 200 miles. Between those two points a railway is made, but there are no roads. It would be necessary to construct a road before a motor could compete with the railway. It would not be worth while building a railway to take goods to the railway station. It will be necessary, however, to transport them as far as Pine Creek, Katherine, Daly Waters, and probably Newcastle Waters. The communication between the railway station and the township of Darwin, and the wharf, will be by motor. We have provided for that by making a new road to give easy access to the wharf. The railway is necessary to take material into the interior, and from the interior to the ships. The difference between sheet piling and concrete is very great. If the method of pumping in concrete failed to fortify the wharf there would be no difficulty in facing it with concrete piles. It would be a great advantage to have cranes on the wharf, though at this stage it would be rather a luxury. The ships' derricks are quite sufficient to cope with everything at present.

The Fremantle wharf is equipped with cranes, and the arrangements are admirable. It is a great pity that places like Melbourne, Adelaide and Sydney will not follow its example. It is the only up-to-date port in Australia.

25. *To the Chairman.*—Captain Donaldson, of the *Montoro*, has assured me that he does not anticipate any difficulty in being able to get in if the present wharf is allowed to remain until the second portion of the new wharf has been built. There will be a distance of 300 feet between the end of the new wharf and the old one, and that will be ample. In fact, he thinks it would be an advantage to keep the old wharf, because in going out he will be able to make fast to the western end and swing the vessel clear. There will be no necessity to have two turn-tables. There will be a cross-over line. The present line will go straight across to the old line. To carry out the whole of the sheet piling and the concrete walls would add an additional £50,000 to the cost of the work. It certainly would be economical to make one job of it. To do the filling in also would mean the addition of £70,000 instead of £50,000.

26. *To Senator Lynch.*—Double the accommodation would be provided for a little more than half the cost.

27. *To the Chairman.*—I think that the railways should have charge of the wharf, but I am strongly of opinion that the railways should be under the Administrator. Certainly the railways have taken control of the wharf, and are doing exceedingly well. The Railway Superintendent, Mr. Millican, has managed things splendidly and has materially reduced the cost of discharging and getting the goods into the shed.

(Taken at Melbourne.)

SATURDAY, 18TH AUGUST, 1923.

Present:

Mr. Gnzoozy, Chairman;

Senator Barnes Mr. Cook
Senator Lynch Mr. Mackay
Senator Reid Mr. Mathews
Mr. Blakely

William Scott Brownless, C.E., Constructional Engineer, Commonwealth Railways, sworn and examined.

28. *To Senator Lynch.*—I am acquainted with Sir William Clarkson's proposal for the new jetty at Port Darwin. I was in Darwin in the employ of the Railway Department from 1913 to 1917, and I am aware of the difficulties in connexion with the transhipment of goods at the existing wharf. It is impossible to get carts on to the wharf, and, therefore, extra handling of goods is necessary, but with the exception of the period when the Darwin Meat Works were in full swing, the wharf was capable of meeting the requirements of the time, and in that respect was quite as good as any other similar port. Even in Port Melbourne, one's luggage is put into a truck and sent into a goods shed, where it has to be claimed before it can be taken away. From a railway point of view, I do not think the existing arrangements are satisfactory. I have not made any calculation as to the cost per ton for the handling of cargo. If I were asked for an opinion as to the best means of improving the shipping facilities of Darwin, I would say that an extension and widening of the present jetty would meet the situation. The scheme I have in mind includes an alteration in the alignment of the existing structure to correspond with the flow of the tide, with a new approach curving on to Stokes Hill, and the utilization of the present approach as a roadway, after the railway rails had been removed. I have made a careful study of all the data dealing with harbor facilities in Darwin. A thorough examination of the harbor

made by a South Australian commission of engineers proved conclusive that the site of the existing structure was ideal, but since the jetty was built and the approach wall made, there has been a slight alteration in the run of the tide, which now sweeps across the end of the jetty, although when it was built the jetty was in true line with the run of the tide. Observations made over a period of twelve months, show that 200 ft. out from the jetty, the set of the tide is parallel with the jetty. Mr. Elliott, Engineer for Rivers and Harbors, discussed this matter with me in 1916, and came to the conclusion that the jetty ought to be widened to carry a goods shed, and that the alteration should be made so as to keep the structure in line with the set of the tide. I am afraid, judging from the information available as to the strata, that it will be absolutely impossible to drive piles in, or dredge the site recommended by Admiral Clarkson, because borings made by the South Australian Railway Department, and soundings made while I was in Darwin, show that it will be necessary to drive piles through 15 feet of schist, some of which is decomposed, and at least 12 feet of which is solid. When we were driving 75-foot piles on the inside of the existing jetty some years ago, we employed a ton monkey, and when we struck the hard schist we got only an eighth of an inch penetration with a 12-foot blow. It is quite possible that even this 1/8 inch did not represent penetration, but that the pile was being squeezed into the shoe. In the end we had to rely upon the timber work being supported by the other part of the jetty, the piles of which are sunk to a solid foundation. The jetty extension was only temporary work to enable Vestey Brothers to get their meat away. The South Australian authorities, in 1908, hoped that by using cast-iron piles with screw heads and cutting edges, to penetrate into this strata, but they were unsuccessful. Finally, they had to get a special boring plant, cut out a 16-in. hole in the schist, then, forcing the mud and water out of the hole, drop the pile in and set in concrete. Unfortunately for the new proposition submitted by Admiral Clarkson, the sea-floor shelves about 1 ft. in 14 ft. from the jetty towards the land, so that instead of only having 6 ft. of schist to deal with, there will be at least 15 ft. of this strata. Dr. Jensen's report, dated 11th January, 1916, does not encourage the hope of the schist floor being at a greater depth at the proposed new site, because borings show that it rises about 1 ft. in 14 ft. Dr. Jensen states:—

I had a look at your section of the foundation of the present jetty. The following points are evident from the soundings and bore sections:—

1. The land shelves, and water deepens gradually, and very regularly and slowly opposite the muddy beaches.
2. The mud deposit is thicker opposite the muddy beach than opposite the rocky shore.
3. The mud deposition is very slight around that elevation in the sea bottom, which almost underlies the corner of the jetty. Round this there is a swirl which washes away the mud.
4. The "hard-clay" of your section is, in reality, schist, *in situ*, somewhat decomposed, and is of firm structure. The "hard clay, with gravel" is schist with broken up veinlets of quartz. The hard "sandstone," is the arenaceous schist seen in the railway cutting below your office. These are firm structures.
5. The depth of true mud deposit is very irregular, ranging from 2 ft. or less on the shore and round the elevation in the sea bottom, where there is a tide rip or swirl, to 10 ft. in the more peaceful areas.

6. About one-half of the curve of the proposed new jetty, commencing at the corner of the present jetty, is affected by the tide rip, and has, therefore, practically no mud deposit (18 in. to 2 ft.). Under this, hard clay (10 ft. to 15 ft.), then the undecomposed schist probable.

7. From the middle of the proposed new jetty, as one gets opposite the low beach on the other side of Stokes Hill, the mud deposit will thicken to, say, 10 ft., and then diminish regularly on approaching the beach.

8. There is very little true detrital material in Darwin Harbour, this being due to the powerful currents and the rising nature of the coastline. This should, in my opinion (although I can claim no expert knowledge in the matter), militate against any form of driving piles, whether wooden or reinforced concrete. It will probably be found very difficult to drive piles into the so-called (on your section) "hard clay," and "hard clay with gravel," which are, in reality, decomposed schist *in situ*. Screw piles will probably penetrate this formation much better.

29-30. *To the Chairman.*—In the course of construction work at the wharf some years ago, the South Australian Government Railways used iron piles with gimlet-like points, in the hope of being able to screw them into the schist, but they were not successful. Finally, they had to drill holes and plant the piles in them. The original structure was as good in 1917, when I was there, as when it was built. The timber piles put in in 1917 were not driven in more than from 3 to 6 feet, but, as I have stated, the South Australian Government were unable to drive the iron piles, and had to bore holes in the schist. I think it very advisable that borings should be made into the nature of the ground, otherwise it is possible that a lot of money will be wasted in connexion with the proposed work. Assuming the wharf has to be erected on the site proposed, I do not say that it would be impossible to get over the difficulty I have mentioned. In engineering nothing is impossible, but, of course, the work would be much more expensive. It is not possible to drive in that strata, and that it would be a very expensive job indeed to cut right along the wharf line to a depth of 25 feet below low water mark. The hard schist which is known to exist will have to be cut by some means. I doubt if it will be possible to get so much penetration with the piles as I did when we were making the additions to the existing structure, because they will be locked together and the resistance will be greater. In 1917 I found the cast iron piles that had been put in by the South Australian Government were in a satisfactory condition. The site then selected was believed to be the best, and when the jetty was built it was in true line with the tide, but the approach wall had the effect of turning the tide across the corner of the jetty. If Darwin deduced into a big port, warranting additional accommodation, the widened jetty could be lengthened in just the same way as Admiral Clarkson suggests in connexion with his scheme. Copies of all the reports dealing with wharf construction are available at Darwin. Damage would certainly be done to the existing jetty if a big ship bumped heavily against it, but this is not anticipated. The *Teatung* did some damage when she struck the wharf. I regard the old portion as a fairly solid structure to-day, and my idea is that if additional accommodation is to be provided, the existing jetty could be strengthened, widened and lengthened. Mr. Elliott submitted a report to the Railways Commissioner on our investigations. All these records

are available in the office of Mr. Bell, the Commonwealth Railways Commissioner. Very few engineers like to have a wharf in deep water, with no chance of reclaiming the foreshore. If I were living in Darwin I would use all the influence I possessed to build as Admiral Clarkison suggests, but 100 feet further out. I do not think this would mean any considerable increase in expenditure. It should not run into more than an additional £20,000. As a set off, there would be less danger of siltage. I am afraid that trouble will be experienced in this respect at Admiral Clarkison's site, whereas, if the jetty were placed 100 feet further out it would be in the line of the current. I think that it will be impossible to drive steel sheet piles into the schist, which is a very compact material. I have never seen it, but I saw several piles being driven, and when the shoe of the pile got on to the schist, the blow delivered by the monkey only made an impression of about $\frac{1}{4}$ inch. I do not think that it will be possible to record the same success on the site selected by Admiral Clarkison, because there the schist is probably 20 feet thick. The life of a wooden pile at Darwin is not more than ten years. The only known tere-dore-resisting timber is the billion, from Borneo. Mr. W. Andrews, construction engineer for the South Australian Railways Department, made a special trip, some years ago, to the East for the purpose of investigating borers, and found that the piles in wharfs in Borneo were tere-dore-resisting. The South Australian Government adopted the billion pile as a fender pile in 1902. In 1917, when I was dredging in Darwin, I dredged up one or two of these broken billion piles and cut them into 1-foot lengths. On examination I found that there had been penetration to a depth of about only $\frac{1}{4}$ inch, otherwise the piles were as good as when they were placed in the water. We tried to get billion piles for the extension work at Darwin, but that was during the war, and we were unable to get them, therefore, we had to use Australian timber, which is not tere-dore proof. I have not had experience in reinforced concrete piling for deep sea water, but, like other engineers, I have read what information is available on that subject, and I understand it has been proved that no concrete absolutely prevents sea water from getting to the steel, with the result that corrosion sets up and bursts the concrete. Scientific journals report that definite evidence of corrosion is seen in the veinlets appearing in the concrete. I have no knowledge of the reinforced concrete work carried out recently in Sydney Harbor and elsewhere, as I have been in England for some years, in connexion with work for the Air Ministry. I have never heard of copper being used as a substitute for steel as a reinforcement for concrete.

31. *To Mr. Mathews.*—I was not in Australia until 1910, and therefore I have no knowledge of the earlier proposals at Darwin, but I know that, at one time, there was a wharf nearer to the shore than the existing structure. Except that it would cost more, I would be in favour of a wharf nearer the shore. I do not think that there has been any considerable siltage near the existing jetty. I made soundings in 1916 and compared them with the soundings made in 1897, and found that there was very little difference along that line. I am confident, therefore, that the bank shown to be in front of the suggested new wharf is a bed of mud and schist rising from the wharf to town.

32. *To Mr. Blakely.*—The data relating to the borings made by the South Australian Government are in Mr. Bell's office. The borings were made practically from every pile section along the old jetty, and disclosed what has been described as "hard clay," but which Dr. Jensen says is schist. Referring to the plan before the Committee, and taking a section north and south through the centre of the proposed jetty, starting from the existing jetty, at a depth of 26 feet below low water mark you strike mud for a depth of 6 or 7 feet, then 6 feet of a hard red clay and gravel, which Dr. Jensen describes as firm schist, then 4 feet of hard blue clay, which Dr. Jensen describes as arenaceous schist. Yes-

terday I made a sketch, working from the old borings, showing at the face of the proposed new wharf mud at about 6 feet above low water mark, and beneath 12 feet of mud, schist, semi-decomposed for a depth of 6 feet, schist slightly softened for about 2 feet, and hard schist for about 8 feet. A bucket dredge could remove the mud, and probably a drag-bucket with teeth would deal with the top layer of schist, but I am afraid that the lower strata would have to be drilled and blasted. I estimate that it would cost about £2 per yard to remove this lower layer. I was unaware that Admiral Clarkison had estimated that the dredging of 257,000 cubic yards could be done for 1s. 6d. per yard. I disagree somewhat emphatically with that estimate. My experience is that there will be trouble from the day you get a dredger at Port Darwin until you get away again. I should say that the proportion of mud and schist to be dredged would be fifty-fifty. It would be difficult, without definite information as to the character of the material to be removed, to estimate what this work would really cost. I should say roughly it would cost 30s. a yard on the average, allowing £1 per cubic yard for the lighter schist and £2 per yard for the hard schist. I can prepare an estimate and supply it to the Committee later. My experience of dredging in Darwin in 1916 was that when the men get these they find themselves in circumstances entirely different from those in the southern ports, and they were out to do the least possible work. Generally the tidal flow does not interfere with dredging except during the spring tides. If my suggestion were adopted the new railway approach, in the form of a curve, would have the effect of keeping the flow of the tide in line with the jetty. The style of wharf proposed by Admiral Clarkison is good, but there is no reliable information available yet as to the life of concrete surrounding sheet piles. I have seen some of this class of work done, but not on exactly the same section as is proposed by Admiral Clarkison. We did somewhat similar work in the Mary Valley, Queensland, for the purpose of putting down foundations. We withdrew the piles when they were finished and put in the concrete base. The type of pile is now being adopted for permanent works. Messrs. Beardmore, on the Clyde, are using it in connexion with all their works, and judging by reports in scientific journals it is coming to the fore for this class of structure.

33. *To Senator Lynch.*—There would be a certain amount of siltage around the pile-bases of the proposed new approach, but there should be no trouble along-side the jetty, and no danger of slack water there, because the piles would not be close together. The only suggestion I have to make with regard to Admiral Clarkison's proposal is that the wharf should be built 100 feet further out. It is probable there would be less schist to encounter, and it might be possible to drive the piles. I wish it to be clearly understood that on this point nothing can be known definitely until borings have been made. If the wharf proposed by Admiral Clarkison were brought out 100 feet I doubt if ship-masters would bring vessels so long of the existing jetty stands. Indeed, I doubt if they would come in any case if the jetty is allowed to remain there, because the Port of Darwin has no tug and ships' captains do not care to take the risk. I should say that, if it is not possible to drive the piles, and I don't think it is, the added cost for the pile work would be 100 per cent. My opinion as to the relative values of steel sheet piling and timber piles is that it is about fifty-fifty, except that timber would be more convenient to put into position. On the whole, however, I would give my vote for the steel sheet pile, for while its life would be just about equal to the life of timber piles, the structure would be stronger. In 1917 an estimate was made of the cost of widening the existing jetty and constructing a circular railway approach. I think the amount was £100,000. It would not be about 50 per cent. higher. I am not certain what was provided for

in the estimates, and for the details I must refer the Committee to Mr. Bell, who has the figures. If the jetty were widened and extended it would be possible for ships to berth on both sides, but shipmasters would never care about taking the inner berth because of the risk of getting their sterns on the mud. It would make a difference, of course, if there were a tug at Port Darwin.

34. *To Mr. Mackay.*—Exclusive of dredging and the proposed new road, I estimate that Admiral Clarkison's scheme would cost about £160,000. My estimate is based on the feasibility of being able to drive the piles, which, I think, is doubtful. Admiral Clarkison says that it is possible. If borings prove Admiral Clarkison in the wrong goodness knows what the wharf will cost. If it were possible to build the wharf as Admiral Clarkison contends, then I would prefer his scheme, provided the wharf were brought out by another 100 feet. I do not think his estimate is anywhere within 50 per cent. of the amount the wharf will cost. I took out the quantities yesterday, as well as I could from the information at my disposal, and from an examination of the plans, and I estimate the cost at £160,000, excluding dredging and the road to the top of the hill. I have carried out railway works in Queensland, and I found that the labour conditions in Darwin were such that the cost of similar work there was three or four times higher than in the western part of Queensland. I approve of the suggestion to have storage accommodation on the wharf. This could be provided for at a cost of about £3,000. Overtime is largely responsible for the increased cost of handling goods at Darwin. I should say that the railway charges are not out of proportion. Everything has to pass through the Customs House there, and at present it has to be put on railway trucks and run about half a mile to the sheds. In the case of bulk cargo for Government works, we arranged to have it dealt with on the wharf as soon straight away up country. Handling charges are very heavy. In 1916 it cost us 6s. per ton more to unload coal from the ships on to trucks and deliver in Darwin than the total cost from the mine to Darwin wharf. Improved wharfage accommodation will, to some extent, reduce handling charges, but from my experience at Darwin, I should say that whatever facilities are provided, the labour question will always be the determining factor. The men seemed determined to get the last penny out of every vessel that arrived in Darwin. I never had such an experience in my life as during the four years I spent there, up to 1917, and I believe conditions are worse now. If they are, I would not care to go back to Darwin in charge of work for £6,000 a year. There is no urgent need for the construction of the road on the western side of Stokes Hill.

35. *To Mr. Cook.*—I think that eventually it will be found that Admiral Clarkison's present estimate will be exceeded by 100 per cent. Mr. Bell can supply all the data in connexion with the scheme which I have outlined for the extension of the existing jetty. If the Northern Territory does not progress at a greater rate than it has during the last twenty years the present facilities are sufficient.

36. *To Senator Reid.*—When I was in Darwin I did not come in close contact with people from inside, but I met several mine managers and a few of the station people. From what I was able to gather in conversation with them, I believe that if Darwin is linked up by a railway line with the Queensland Gulf country, there will be some prospect of development in the Territory. I question whether development will follow the construction of the north-south line. It would be impossible to say definitely what Admiral Clarkison's scheme will cost until data is made available, and this information can only be obtained as a result of test borings. I favour the widening of the present jetty, with the construction of a new railway approach. The cost is not likely to be so great, because the piles would be 15 feet apart, whereas under Admiral Clarkison's scheme

it would be necessary to cut a trench in the schist for a distance of 1,200 feet. It is possible that the ultimate cost might be six times the estimate. If there were a reasonable prospect of the Northern Territory developing rapidly in the immediate future, and if cost were not a consideration, I would certainly recommend Admiral Clarkison's scheme, provided the site were 100 feet further out. If the existing jetty were widened and the other improvements made, including the new railway approach, the rails on the existing approach could be removed, the road raised in and utilized for the loading of cattle on to steamers. In this respect it would be quite as satisfactory as Admiral Clarkison's scheme.

37. *To Mr. Blakely.*—If Admiral Clarkison's scheme were adopted, but if the wharf were built 100 feet further out, as I suggest, there should be only four or five feet of schist to be encountered beneath the mud-bank.

38. *To the Chairman.*—The only dredger with which I have had experience was the *Wombat* at Darwin. That is known as a clam shell bucket dredger. We did not think it advisable to use the ordinary bucket dredge there, because it was known that a considerable quantity of bulk goods, including bales of barbed wire, had been lost off vessels, and these would have torn off the buckets. The dredging costs were not made up before I left Darwin, but I estimated that the dredging would cost about 6s. per cubic yard. I am confident, from what I know of trouble with labour there, that if the expense of returning the dredge to the south is included, the cost for the removal of the mud would work out at about 12s. 6d. a yard. We recovered a considerable quantity of material with the clam shell bucket dredge. I have no knowledge of dredging costs at Fremantle, but I should say bucket dredges used there would dredge at a lower cost than at Darwin. I doubt, however, if a bucket dredge would remove the shale-like strata in Darwin Harbor unless explosives were used. With the *Wombat* we were working to a depth of 26 feet low water, and as the average tide is 15 feet, that gave a depth of 40 feet, so it would be a bit of a proposition to use air compressed hammer drills, explosives, and employ divers there. I am aware that on some of the north-west ports of Western Australia, such as Broome, shipmasters take their vessels in, and do not mind if there is a little delay when they find their ships resting on the mud. There is more inducement for shipmasters to run the risk of delay in those ports because there is a fair amount of cargo offering. The same may be said of ports on the east coast of Queensland, but the position is quite different at Darwin. The cargo for that port is usually only about 150 tons, and unless the tide is right, shipmasters will not take the risk of delay, but will go on to Java, where they are more needed. If the jetty were widened, and a sorting shed were erected, the cargo could be placed into lorries and thus saved the difficulty of present goods having to be placed in trucks, and taken to the other end of the jetty and unloaded. This means one extra handling, but I do not think this would make a difference of more than 2s. 6d. per ton. It would be advisable to have a sorting shed on the wharf, because then, when a boat came in, merchants could go down and arrange to get their goods cleared through the Customs. At present the stuff is taken down the wharf and dumped in a heap in the Darwin shed, with the result that some times a man may be waiting with his horse and cart for days before his goods appear out of the miscellaneous pile. I have seen a spring tide of over 26 feet in Darwin. Mr. W. Andrews, who kept a careful record for a number of years, estimates that the highest spring tide is 26 feet, but on one occasion, with the prevailing wind, it rose to 26 ft. 3 in. These spring tides occur only twice a year, and last for only two or three weeks. I agree that motor traction in the Northern Territory is likely to play an important part in its development, and I certainly endorse Admiral Clarkison's recommendation

for the erection of storage tanks for supplies of crude oil and petrol. No doubt the use of internal combustion engines on the Northern Territory railways would result in a considerable saving, because the handling of coal is very expensive, but I have had no experience of internal combustion engines, and I do not know that my opinion as to their adoption would be of any value.

39 *To Mr. Mackay.*—Darwin is one of the most sheltered harbours in the world. Rough weather is only experienced during the equinoxes, but goods stored in a shed on the jetty would not be exposed to risk from rough weather. I have never known of any trucks being blown off the wharf, and in rough weather the water does not go over it.

40 *To Senator Lynch.*—There should be no difficulty in handling on the existing jetty any railway material necessary for the extension of the Northern Territory railways. We handled all the material for the Pine Creek line quite easily, and with a one-truck turntable. The new turntable put in in 1917 takes two trucks, so the work ought to be easier still. The girders for the bridge over the Katherine would be transported in sections, so no difficulty need be apprehended in handling that material on the existing jetty. I should say that it could be handled just as cleanly as on the wharf, if pressed by Admiral Clarkson. My experience of the labour situation in Darwin is that it costs about four times as much to do any set work there as in Western Queensland. The Darwin wharf is within 200 or 300 yards of Darwin. All the labour organizations in the Northern Territory are controlled from Darwin. The secretaries of the unions, the walking delegates, and the men in charge of the gangs, all meet in the local boarding houses, and discuss labour matters. In this way they ascertain what everybody is doing. If some men are working longer hours, and doing more than others, the men bring pressure to bear upon their delegates to prevent any man from doing too much, or from going over the line which they set. In Western Queensland, where the representatives of the unions spread over long distances, the union control is such that, generally speaking, people get a fair deal. But in Darwin there are cross currents in every direction. The union determines how much work a man shall do, and the men, on the other hand, declare what they want the unions to allow them to do. Thus the man who is least efficient sets the pace for other men. If any men are out of work in Darwin the cry is at once raised, "We must have more men on the wharf." Whilst I was there I saw four men at one truck loading steel rails. I remember seeing one man sitting alongside the Customs House during the whole of the time, another man was sleeping under the truck, and two men were standing on the truck. One of these would take hold of the rail as it came over in the slings and the other man watched him. Occasionally the latter took his companion's place. Thus there were four men doing what was really one man's work. It is no good mincing matters. The labour factor in Darwin is an important consideration. Conditions there are worse than in any other place in Australia.

41 *To Senator Reid.*—In Darwin the temperature never gets above 93, but it is very humid; however, the men do not work long hours. In Queensland, where I was working for a time, the temperature was dry and hot, the thermometer reaching 116 degrees in the shade, and averaging 108 degrees for a couple of months.

42 *To the Chairman.*—I do not remember what wages the four men I have referred to were drawing. My opinion is that so long as Darwin is the main port, so long will all labour costs be excessive. I quite agree that there ought to be a better approach to the jetty, but there are worse wharfs on the Queensland coast, and the labour costs there are not nearly so high as in Darwin. The trouble in Darwin is that

about 95 per cent. of the people are drawing Government money, and nearly everything that goes into the port is Government stuff, so the labour costs in handling are excessively high. Until Darwin is freed from Government control I cannot see how any improvement will be made. I would not like to have another experience of handling labour in Darwin.

(Taken at Melbourne.)

MONDAY, 20th AUGUST, 1923.

Present:

Mr. GREGORY, Chairman;
 Senator Barnes Mr. Blakely
 Senator Lynch Mr. Mackay
 Senator Reid Mr. Mathews.
 Norris Garrett Bell, M.Inst. C.E., Commonwealth Railways Commissioner, sworn and examined.

43. *To the Chairman.*—The Commonwealth Railways Department is in control of the wharf at Port Darwin. I am aware that Admiral Clarkson recently submitted a report on the wharfage accommodation at Port Darwin, a copy of which report, together with plans, has been submitted to me. I have not seen any detailed estimates of cost, but am merely conversant with the total amount which he submitted. When the Commonwealth Railways Department took charge of the wharf at Port Darwin, Vestey Brothers and Jolly and Company jointly controlled the handling of goods on the wharf from the time they left the ship's slings until delivered at the sorting sheds. In November, 1921, my Department undertook the handling of goods on the wharf, and their delivery in the sorting shed. Vestey Brothers were not leasing the wharf, but were working under an arrangement entered into with them by the then Administrator, Dr. Gilruth. Vestey Brothers and Jolly and Company handled all the goods, which they delivered at a fixed rate per ton. When these firms were in control of the handling of goods on the wharf, the charge for taking delivery and landing at the sorting shed was at one time as high as 40s. per ton. Prior to the Railway Department assuming control, the rate, however, was down to 20s. per ton, but we have now reduced it to 11s. per ton. That rate includes taking delivery of the goods from the ship's slings, loading them into trucks, sorting them in the shed half-a-mile away, and giving delivery to the consignees, either on rail or otherwise. It is possible that we may shortly be able to reduce the existing rate of 11s. to 10s. When Vestey Brothers and Jolly and Company were in control, they were compelled by the unions to pay the same rate of wages in the shed as was paid on the wharf, and also to employ the same number of gangs in the shed as was engaged on the wharf. We now pay only the ordinary railway labourer's rates to those engaged in sorting in the shed, and engage only the number actually required in the shed. In that way considerable reductions in handling costs have been made. As far as is practicable, we employ the same men in the shed as on the wharf in order to provide continuity of employment. I am collecting information as to wharfage and other rates at ports on the Queensland coast, which I shall be able to submit to the Committee later. I do not think the construction of a new wharf would be the means of reducing the charges to any considerable extent. The question of improving the shipping facilities at Darwin has been under consideration at different times during the last seven or eight years. Several schemes have been proposed, but none of them has ever been seriously considered, because the traffic has been so limited. Recently it has fallen off to such an extent that it has been considered that heavy expenditure would not be justified. I do not

think the conditions at the Darwin wharf, as they exist at present, would be the means of increasing costs to Vestey Brothers. We are able to deliver frozen meat alongside the ship at a quicker rate than it could be taken aboard. Very careful records were kept at the time of one shipment. I had men stationed at the meat works, and also at the wharf, keeping a tally of the trucks as they came down. After keeping a very careful check, it was found that the Railway Department could deliver meat alongside the ship at a quicker rate than it could be taken into the ship's holds. Trucks could be taken from the works to the ship's side in fifteen minutes. Delay occurred in discharging from the trucks into the ship's hold. I sent my Accountant from Melbourne to keep a careful tally of the whole of the operations, and if the Committee desires further information on this point it can be obtained from my officer, who submitted a special report. This report showed very clearly that the meat could be delivered at the ship's side at a quicker rate than the ship could receive it. The investigations were made in October, 1918, when Vestey Brothers were in control of the wharf. The information I have received from Queensland is to the effect that they can load about 12 tons of frozen meat per hatch per hour when working four hatches, or 48 tons an hour. Mr. Millicien, the Railway Officer-in-Charge at Darwin, estimates that he can put 40 trucks over the turntable per hour; this would represent about 100 tons of general cargo.

44. *To Senator Lynch.*—It cannot be said that the turntable interferes with the despatch of meat to the wharf, as the actual turning of the table takes only a few seconds. To pass over the turntable causes a slight check, but, according to Mr. Millicien, trucks can be passed over at a rate of one every minute and a half. It cannot, therefore, be said that the turntable retards delivery. We have not done any loading of frozen meat for Vestey Brothers since we have been in full control of the wharf.

45. *To the Chairman.*—As regards the necessity for extending and improving the present shipping facilities, I may mention that we are now only handling 6,000 tons per year at the Darwin wharf, whereas in 1917 we handled 36,000 tons. We could handle 60,000 tons a year without any congestion. Even if Vestey Brothers resume operations, I believe the existing wharfage facilities will be sufficient for some time to come. Of course, when the North-South line is completed, and the present railway extended, additional facilities may be necessary, but my opinion is that increased wharfage accommodation will not be required for some time. I have not had the opportunity to give very careful attention to Admiral Clarkson's report. Dr. Jensen, who was Government Geologist in the Northern Territory, stated in a report that the rock below a certain depth is very hard; therefore the sheet-piling proposed by Admiral Clarkson could not be driven. I have discussed the matter with Mr. Brownless, and I agree with what he has said concerning pile-driving and bucket-dredging. There would be difficulty in removing the lower strata with a bucket dredge, but the possibilities in that direction could only be ascertained by boring. Boring operations have not been undertaken during my time, but I believe certain borings were taken some years ago by the South Australian Government. Before a reliable estimate could be compiled, boring would have to be undertaken. The only information available concerning tides and currents is that contained in a report submitted in 1916 by Mr. Elliott, Deputy Engineer for Harbours and Rivers, Queensland. Particulars as to tides and currents would have to be obtained before a design and estimate of the cost of a new wharf could be prepared, and probably twelve months would be required in which to submit an estimate of any value. Personally, I do not think the existing conditions justify any alteration,

even if Vestey Brothers' works were in full operation. Mr. Millicien has recommended that the existing rate of 11s. for handling goods should be reduced to 10s., but in addition to that a shunting charge of 5s. 6d. per ton is imposed, and 9d. per ton for the use of the sorting shed. The existing charge of 11s. per ton covers working expenses and the cost of any clerical assistance involved. It does not cover interest on the cost of the construction or of the maintenance of the wharf. The latter are met by wharfage rates, which are quite distinct from those which I have mentioned, and which are imposed to provide for interest, repairs, and renewals. The wharfage rates vary according to the description of the goods. The wharfage on frozen meat is 5s. 3d. per ton, on general goods a flat rate of 3s. 6d. per ton is charged, and on cattle 2s. 1d. per head. In Brisbane and Townsville, the wharfage rates vary considerably according to the type of merchandise. The charge for conveying frozen meat from Vestey Brothers' works to the wharf is 4s. per ton. The handling charge from the trucks to the ships has not been fixed, as we have not handled meat since we have been controlling the wharf. If Vestey were shipping meat, they would pay 4s. per ton railings from the works to the ship, and they would then have to pay the stevedores' costs incurred in taking the meat out of trucks and putting it into ships' slings. I shall supply the Committee with a statement showing what the charges to Vestey Brothers would be, and I think I shall be able to show that the rate will be less than it is in the case of some ports in Queensland, where meat has to be conveyed a greater distance from the works to the wharf. From Burdickin, the distance is 74 miles, and from Rodbanks 16 miles. I think our charges would be less than those from Burdickin. The charges on frozen meat from Vestey's works, if loaded during ordinary hours, would be—From the works to the wharf, 4s.; stevedores' charges, 8s. 10d.; and wharfage, 5s. 3d. per ton. There would not be any other charges on frozen meat. Vestey Brothers' works are about 2½ miles from the wharf.

47. *To Senator Reid.*—We use insulated waggons for the carriage of meat.

48. *To the Chairman.*—I do not think a complaint concerning the waggons can be justified. The insulated waggons we use were built by the Queensland Railway Department to their own design. Four-wheeled trucks were provided at the request of Vestey's, because it was said that they would be more easily handled; also for the reason that the meat would not be so long exposed to the air during loading and unloading; but it should be remembered that an eight-wheel truck will carry a larger quantity, and, consequently, a low temperature can be longer maintained. I shall supply the Committee with particulars of the inward and outward charges on general merchandise, and also the outward charges on frozen meat. If a reduction in handling charges were made, it would not be for the purpose of granting a concession; the rates would cover the cost incurred, apart from interest on capital expenditure. During the last seven years £7,264 has been spent on maintenance, and during the same period the revenue has amounted to £14,512; the wharf itself cost £100,000 approximately. When the Commonwealth Railway Department assumed control of the wharf, we commenced by imposing a charge of 15s. per ton for handling goods on the wharf, and for sorting and delivery at the sorting shed. Reductions have been made from time to time, until the rate is now 11s. There is no delay on the wharf under the present system, and we have handled as much as 1½ tons per hatch per hour. On the coastal boats two hatches are worked at a time. At present the facilities are sufficient, but I hope that

the development in the Territory will be such that additional accommodation will be required. If improvements were carried out, the cost of handling goods would be reduced to a slight extent to those resident in Darwin. It would save the charge imposed for shunting up to the sorting sheds, and the cost would probably be reduced by 3s. or 4s. per ton. The loading instead of going over the turntable up to the sorting shed would be landed on the wharf, and wheeled into the shed, where it would be sorted and delivered. We carry out similar operations at Port Augusta, where the loading is delivered from the weekly boat on to a wharf. We take delivery of the goods, wheel them into a shed, sort them, and deliver at 3s. 6d. per ton. For labour we pay only about half the rate in Port Augusta that we do in Darwin. The same work in Darwin would cost about 7s. per ton. We are about to reduce our present charge to 10s. per ton at Darwin. We would thus save 3s. per ton, which, plus the shunting charge of 1s. 6d., and sorting shed charge of 8d. per ton, makes 5s. 3d. per ton, against which would be the additional cost entailed by longer cartage from the new wharf to the town. I am responsible for the economic carrying on of the operations of the line, and if the capital cost were increased by the addition of £120,000 on the proposed new wharf, and the revenue were not increased, the financial position of the railway would consequently be adversely affected. I do not think it would be fair to charge the railway with any cost incurred in developing the Territory. The Northern Territory is largely a pastoral proposition, and the provision of a new wharf must depend upon that industry to a large extent unless the mining industry considerably improves, which does not appear likely at present. By extending the railway, subdividing suitable country, charging only low rentals, and enforcing stocking conditions, the possibilities of the Northern Territory may improve. Before transferring to the Commonwealth, I occupied the position of Engineer on the Queensland railways, and consequently am conversant with the opening up of pastoral areas in that State. I do not think the construction of a new wharf would have very much effect on the development of the Northern Territory, although anything that may be done to reduce the cost of handling would be of assistance. I do not think the spending of a large sum on the wharf would increase development unless the cost of handling could be substantially reduced. Personally, I believe the money would be spent to greater advantage on the construction of a line to tap the sheep country in the vicinity of the Barkly Tablelands, which country at present carries a certain number of sheep, but which would carry more if adequate railway facilities were provided. I do not think the trade of the port is sufficient to justify serious consideration being given to Mr. Brownless' suggestion. I rather favour Admiral Clarkson's proposal when the traffic justifies it. Within six months after boring tests had been made, I would be able to make a definite recommendation as to the type of wharf, the site, and probable cost. I do not know the intentions of the Government in connexion with the dredging plant at Fremantle, but if dredging is to be carried out at Port Darwin, probably one of the dredgers that are to be sold would be suitable for this class of work. I shall bring the matter under the notice of the authorities.

49. *To Senator Reid.*—Four years ago I visited Darwin and the head of the line. I have been to Alice Springs. I know the Flinders and Diamantina country in Queensland. I believe that the wharfage accommodation at Darwin is sufficient for a considerable time, or at least until greater development takes place. We have provided very good appliances at Darwin for handling live cattle, and have loaded 500 head in three and a quarter hours. A good race has just been completed,

and I do not know any place in Australia where better facilities for shipping live cattle exist. Even if particular trade were to develop, we could easily load all the live cattle likely to be despatched from that port for some time. With improved facilities, probably a saving of 3s. or 4s. per ton could be effected on handling inward goods, but the people at Port Darwin are no worse off than those in Townsville or Bowen, where the loading is brought some distance from the wharf. Even at Port Adelaide the cargo usually has to be sent a long way from the wharf to the sorting sheds. I think it would be cheaper to cart the cargo from the wharfs to the town than to sort it in the shed and convey it by train, because it would mean additional handling. It would be cheaper to deliver the cargo to the carters at the wharf. Even if trade develops as the result of the extension of the line to Daly Waters, the wharfage accommodation at Darwin will be adequate. If the wharfage accommodation were improved, I do not think the cost of the construction of the proposed line would be reduced to any appreciable extent. The cost of operating the turntable is very small. I do not know of any improved appliances that could be installed which would effect a saving. At present the goods are dumped from slings into a truck, where they are taken from the sling and transferred to another truck. With the present traffic I do not think the Government would be justified in expending any large sum on the improvement of the wharf, even if Admiral Clarkson's proposal concerning the railway were adopted.

50. *To Mr. Mathews.*—The present wharf was constructed in 1898. I did not have anything to do with Darwin at that time. I believe the present situation at Darwin is satisfactory, and the trade will extend as the Territory develops. I think any future wharf at Darwin should be as shown by Admiral Clarkson, but a little further out to sea. I think it is possible to construct a suitable wharf, but the work may be costly. I could not say how the cost would compare with the outer harbor in South Australia or the present harbor at Fremantle. A good deal of dredging had to be done at the outer harbor in South Australia. I think that Darwin has a better harbor than the outer harbor in Adelaide. It would be advantageous to provide access for vehicles to the pier. A road, as suggested by Admiral Clarkson, would provide an easier grade to the town. I favour the suggestion to carry the wharf, say, 100 feet further out to sea, but the site could only be determined after boring tests had been made. If an extension were made beyond Port Hill point, it would be found that the water was rather shallow and the wharf somewhat exposed. When my Department took over the wharf work at Darwin, in November, 1921, conditions were not very prosperous. I have not had any difficulty with the men since that time. I have been satisfied with the way the men are working, and the output from the ships compares very favorably with that in other ports. The rate of discharge per hour has been as high as 15.57 tons, which compares favorably with other ports. There was trouble on the wharfs when Vestays and Jolly and Company were in control, but we have never experienced any. The men seem quite satisfied with the present arrangements, so far as I know.

51. *To Mr. Blakely.*—I have used steel sheet-piling for temporary coffer-dams, but I have not built wharfs on that principle. Personally, I prefer a different design. I do not know anything of the strata, although I have seen samples of the rock exposed on the fore-shore. I know Stokes Hill, and I have seen Dr. Jensen's report. I am satisfied that it is hard rock at the bottom. With my knowledge of the strata and my experience of sheet-piling, I do not think it could be driven into the rock. The present wharf has been in use for twenty-five years, and it is in fairly good

order, with the exception of the approach, which has recently been repaired. The present wharf, if properly maintained, should last for twenty-five years. According to the renewals and maintenance cost incurred up to the present, heavy maintenance should not be necessary for some considerable time. With the present traffic, I do not think the removal of the turntable is justified.

52. *To Senator Barnes.*—It is not correct to say that the present cost of delivering goods from the wharf to the town is 25s. per ton. Whatever wharfage arrangements are made, the wharfage charge of 3s. 6d. per ton on general goods would remain. Apart from the wharfage charge, it now costs 11s. per ton to deliver goods into the sorting shed, which charge, plus 1s. 6d. for shunting, makes the amount 13s. 3d. per ton. There is, in addition, the cost of carting goods from the sorting shed to the town, which is not heavy. We have handled 39,000 tons in one year, but I estimate that the wharf, in its present condition, could handle 60,000 tons. The tonnage has been reduced owing to the absence of the export of frozen meat and the receipt of coal for Vestays. I have been over the existing railway, but have only been a short distance from the line. Until there is some indication of there being sufficient settlement, or a large increase in the mining industry, I do not think the provision of roads to feed the railway would be justified. This expenditure would be high on account of the numerous creeks and rivers which have to be crossed.

53. *To Mr. Mackay.*—My Department was not consulted by Admiral Clarkson in reference to his plan, although we gave him all the information we had available. We had no idea of what his scheme was likely to be, but if effect were given to it we would have to assume responsibility, as we would be debited with the capital cost, the interest on which would be a charge against the Railway Department. I understand the estimated cost of the proposal which he suggests is £120,000, but I think that that estimate would be considerably increased. The span at the shore end of the approach to the jetty has been repaired at a cost of £1,900. The jetty is in a perfectly safe condition. The maintenance cost naturally increases as the structure becomes older, but I think the wharf is quite capable of meeting all requirements for the next ten years. I would prefer to submit plans for improved wharfage accommodation if such is considered necessary. I do not think that the type of wharf suggested by Admiral Clarkson is in general use in England and in other places, although it may have been used in a few instances. I could look up and see in which places it has been used, but the general feeling is that the reinforcement must be carefully protected from contact with salt water. Admiral Clarkson proposes to use reinforced concrete on the upper portion of the wharf. Unless great care is taken in mixing the concrete, and keeping the reinforcements well back, great risk will be incurred. If the reinforcement rusts, the concrete will split in all directions. I have read of concrete work of this type being used on similar constructions, but I think it would be risky to undertake the work in the way Admiral Clarkson suggests. I could submit a design which would be preferable. I understand that work of this kind has been undertaken in Queensland and in other places, but after ten or twelve years it is now being abandoned. I have read a number of reports as to the failure of reinforced structures in sea water. Concrete made with salt water and sea sand was used in Vestey Brothers' cold-stores, but the reinforcement has rusted, and the concrete become broken, and consequently a large amount of damage has been done. The risk

would not be so great if clean sand and fresh water were used. Clean sand could be obtained at several places along the line, and water could be obtained from the railway dam at Darwin. Our present water supply is fairly satisfactory, but could be improved upon. Shipping requiring water at Port Darwin are supplied from the railway dam. If I were asked to submit a plan for a new wharf, I would be inclined to favour the sinking of cast-iron cylinders on to the rocks. Cylinders 6 feet in diameter could be quite easily sunk a certain distance apart, and when they once touched the rock the foundations could be operated upon from within them, and the work carried out more economically than has been suggested. If a new site is to be decided upon, I could submit plans for work which would be less expensive than that proposed by Admiral Clarkson, and I expected the drawings of the alternative scheme, and I do not think that it is necessary. I do not think it would be possible to handle frozen meat over a roadway, and, apart from any other disability, even if the time occupied were short, the meat would be exposed to the sun. Vestey Brothers have made complaints to the Department, and have constantly demanded reduced freight rates. They have said that the refrigerated waggon was not sufficiently insulated, and, generally speaking, have endeavoured to get as much as possible out of the Department. They have said that the waggon are not as scurrilous as those in use in Queensland, but that is quite incorrect, as they were specially constructed for the carrying of frozen meat. If the frozen meat could not be taken to the wharfs in good condition, naturally trade would be interfered with; but it has always been carried to the ships in good condition. One ship's captain stated that it was received in better condition than in any other port, and, so far as I am aware, Vestey Brothers have never been able to show that the meat had deteriorated. The only occasion on which I can remember meat having to be returned to the ship was when there was some defect in the ship's refrigerating chambers. It was not due to delay in transporting it from the works to the vessel, or to any defect in the trucks.

54. *To the Chairman.*—No provision has been made for vehicular traffic on the railway bridge to be constructed across the Katherine River. I do not see that it will be any advantage to provide for vehicles to cross the railway bridge, because if the river could not be crossed in the ordinary way, the surrounding country would naturally be too wet, and when the railway is extended there will be no necessity for teams to cross the river.

55. *To Mr. Mathews.*—Admiral Clarkson was instructed to report upon this project by the Home and Territories Department, which is quite distinct from the Department of Works and Railways. The question of the alteration of the wharf has been considered at various times, but has never been seriously proceeded with, apparently because the traffic did not warrant it. The Home and Territories Department engaged Admiral Clarkson to report upon the whole question. I have never complained to the Department of Home and Territories concerning the present wharfage accommodation, although Vestey Brothers have repeatedly alleged that delays have occurred through the use of the turntable. My experience has been that the turntable has not been the means of delaying shipments or increasing the cost. I do not think the railway arrangements or the wharfage accommodation has been responsible for any delay. The cost of maintaining the wharf has averaged £1,000 per year during the last seven years, although the cost last year was £2,000. A fair average, I think, would be £1,000 per year. When Vestey Brothers Meat Works were operating, 70,000 head of cattle were carried over the railway to

Darwin in a period of three years, principally from Emungalan. If the works were again open probably a large number would be received.

56. *To Senator Reid.*—I have seen the report of Mr. E. A. Cullen, M.Inst.C.E., Engineer for Harbours and Rivers in Queensland, who stated, "My conclusions, based on the experience of several years, are that in wharf or similar constructions, a covering of 2 inches of concrete over the steel is desirable; that concrete rich in cement should be used, and that great care must be taken to prevent dislodgment of the reinforcement. Notwithstanding precise instructions to the latter effect, there is evidence of corrosion, due to carelessness in this work in several of the structures built in Queensland under my direction and advice." I have numerous extracts to the same effect, which show that there has been corrosion in nearly every instance. I know Townsville and Burdekin Meat Works, which latter works are further from the wharf than Vestey Brothers' works are from Darwin. It costs more to despatch meat from the Burdekin works to the ship's side than from the Darwin Meat Works. I do not think that there is any greater handicap at Darwin than at Townsville. At Townsville the men on the wharfs are paid 3s. 2d. per hour, and at Darwin 5s. per hour, and, as far as the wharfage arrangements are concerned, the conditions are somewhat similar.

57. *To Senator Barnes.*—If effect were given to Admiral Clarkson's proposal, and a new wharf costing £120,000 were constructed, the present charges would have to be increased in order to return interest on the capital expenditure. As a matter of fact, we could not expect to impose charges high enough to cover the interest.

(Taken at Melbourne.)

TUESDAY, 21st AUGUST, 1923.

Present:

Mr. Gregory, Chairman;	
Senator Barnes,	Mr. Cook,
Senator Lynch,	Mr. Mackay,
Senator Reid,	Mr. Mathews.
Mr. Blakeley,	

Harold George Nelson, Member of the House of Representatives for the Northern Territory, sworn and examined.

58. *To the Chairman.*—The new wharf at Darwin as designed by Admiral Clarkson is absolutely essential because the condition of the existing jetty is such that it cannot last a great deal longer. I have seen places where the corrosion has eaten right through to the girders. By pulling off lumps of scales one can see daylight right through these girders. At Darwin there is a rise and fall of tide of about 28 feet, and the sweep of the tide out of Francis Bay to the north-east and beyond Stokes Hill is fast lifting up under the approach to the jetty. At one time there was a fair amount of space between the jetty and the mud bank in the bay lying between Stokes Hill and Fort Hill, but the sweep of the tide out of Francis Bay has so filled up that space that there is now barely room for a vessel to go to an inside berth at the jetty. I believe that when a new wharf is built as suggested by Admiral Clarkson, the sediment will be prevented from sweeping around the point of Stokes Hill as it does now, and will be carried out to deep water. For many years the water at the inside berth was 2 feet deeper than that on the outside of the jetty, but it will not be long before the inside berth will not be available for vessels. As a result it has become necessary to replace two spans on the approach to the jetty where it abuts on the land, and I understand that locomotives of the "B-13" type, similar to those used

on the Queensland railway, are no longer allowed to run on the approach to the jetty. Its condition is such that only the lighter engines can run on it.

59. *To the Chairman.*—The s.s. *Marella*, which has recently arrived at Darwin, has given evidence of the effect that the bad facilities of the jetty impair its efficiency to the extent of something like 40 per cent. I have read Mr. Hobler's statement, but it is absolutely impossible for two vessels to work at the present jetty at the same time. On one occasion when two vessels were at the jetty at the same time an endeavour was made to work four hatches on one and two on another, but the water became so congested that operations had to be suspended on two of the hatches of the vessel which was anxious to work four. I have seen occasions when it was utterly impossible to get trucks on or off the jetty. Full trucks so monopolized the single line leading to the jetty approach that empties could not be sent forward. In fact, I have seen an hour and a half wasted in getting empty trucks on to the jetty. It is due to the fact that the locomotives could not get the loaded trucks away. Only a limited number of trucks can be placed on the jetty beyond the turntable, and the short sharp curves on the rails leading to the inside sets of rails are such that it is almost impossible for eight men to push loaded trucks on to the middle sets of rails. Even if the trucks can be got away without congestion, it is estimated that at least twenty minutes is lost in every two hours because of the fact that the trucks have to be man-handled. The full trucks have to be pushed by men on to the turntable, and thence on to the jetty approach before they can be replaced by empty trucks. If a vessel is working four hatches, three or four trucks per hatch are pushed on to the jetty, but if the cargo in two of the holds can be put out at a fairly rapid rate, enabling six of the trucks to be filled very speedily, operations at those hatches have to be suspended until the gangs on the other hatches have filled their trucks. It is impossible to get any of the trucks away without moving the lot. Should large supplies of material for railway construction be forwarded to Darwin, it will be absolutely impossible to work a boat delivering this material if it is at the jetty when the ordinary monthly boat is discharging. That condition of affairs existed when construction material was being discharged at Darwin about three or four years ago. In considering Mr. Hobler's statement about the quantity of cargo handled at Darwin, it must be borne in mind that there has been a very severe depression in the Northern Territory since 1919. As a matter of fact, the existing jetty is quite capable of handling the present cargo, but when the freezing works were in course of construction it was quite common to see two boats at the jetty at the same time. It is impossible to work more than one effectively. For many miles to the north of the jetty Francis Bay is filled with mud which is exposed at low tide. The tide has a tendency to follow the land line, and carry the mud from Francis Bay into the bay between Stokes Hill and Fort Hill, and the silt so deposited is gradually encroaching on the existing jetty. Admiral Clarkson proposes to build the new wharf well inside the line of the mud bank. This will necessitate dredging. I understand that the railway line will approach the new wharf by passing around the north side of Stokes Hill, and I imagine that the new wall, which will be necessary at the southern point of Stokes Hill to enable this line of rails to land, will provide a gradual rise that the silt from Francis Bay, instead of flowing, as hitherto, under the approach to the existing jetty into the little bay, will shoot out into deep water. There is a very strong current running down the gulf towards the Point Charles lighthouse, and the proposed construction of the new wharf will, as I say, sweep the silt outwards. I am strongly of opinion that a new wharf is essential because I have seen the jetty operating under abnormal conditions, by which I mean occasions when extra shipping is required to land material for public works

and so forth. When the Government are forwarding material to Darwin there will frequently be two vessels awaiting discharge at the same time, and any port which is incapable of discharging two boats at the one time is naturally inefficient, and also costly, to the ships on account of wharfage and demurrage costs. The curves which Mr. Brownless put on the rails on the jetty made it absolutely impossible to push trucks over them. They had to be replaced. Originally electric capstans were intended to haul the trucks from the main part of the jetty to the approach, but every time man power was made to use them the wires fused. Consequently, they have never been used, and all the work on the jetty proper has to be handled by men. There are four sets of rails on the jetty, but they all run into one line entering the turntable at the elbow further out than Admiral Clarkson has suggested. When I first went to Darwin thirteen years ago, the edge of the bank was pretty well where Admiral Clarkson had suggested the new wharf should be built. Any mud inside the wharf could be pumped over into the bay beyond, and that area could easily be reclaimed. If the railway runs around the back of Stokes Hill it will give a better curve for an approach to the new jetty, otherwise the curve would be altogether too acute. By taking the railway around to the north side of Stokes Hill, the approach to the jetty on the south side could be made available for vehicular and pedestrian traffic. I do not approve of the proposal to make a new road gradually rising from the south side of Stokes Hill to the plateau on which the town is built, at Mitchell-street. Such a road would cost twice as much as a road to connect with Wood-street upon which the Darwin Council have been working for some time, and which would take the traffic on an easy grade right into the centre of the town, whereas the proposed new road would end at the back of the town.

60. *To Mr. Blakeley.*—In all my life I have not known a man like Mr. Brownless for handling workmen. He was absolutely weak and irresponsible. To me, perfectly frank, the high cost of handling cargo at Darwin was partly due to the slow methods of the workers and partly to the inefficiency of departmental officers. During the war things were abnormal; there was plenty of work offering, and there were few men to do it. In those circumstances industrialism did run a bit mad. It was not accentuated by the fact that there were a number of men in Darwin who had come from the different islands and were foreign to Australia. The real factor was the method employed by the management of Vestey's Meat Works—the rates they were offering for labour, and the manner in which they were treating their employees. I shall give an illustration of what I mean. When some men were engaged loading a meat boat, the manager of the works came along and asked one of them how long he expected the gang would take. The man who was asked had no idea of how long he and his fellows would take over the work, but, in an endeavour to be humorous, he said, "Oh, somewhere about a fortnight." Shortly afterwards the manager returned to the gang and said to one of them, "What do you expect to make on this boat?" And again, in a humorous way, the man suggested that they expected to make £100." The manager said, "I will pay you £100 to get the work done as quickly as you can." It is no wonder that the men took advantage of opportunities afforded them in that way. The officials of the union got angry against the manner in which Vestey's were handling their employees, but it was those methods which were really the cause of the abnormal earnings of the men engaged on the wharf. In regard to Mr. Bell's remarks that the men at Darwin work as well as men do at any other northern port, I am satisfied that they work considerably harder than men work in any other parts. They have to work harder in order to maintain a certain degree of efficiency. They work under worse conditions because of the heat, humidity, and so forth,

and Company detected men in the Government service, some of them in fairly good positions, taking goods out of trucks and placing them in chaff bags. I do not prosecute them, but I draw attention to this fact in order to show that the present system of loading full trucks in the open is not conducive to the best results. The loss through ullying must be reflected in the price paid by the consumer for goods landed at Darwin. Under the scheme suggested by Admiral Clarkson, all this extra haulage will be cut out, and there will be the saving of the wages of engine-drivers, firemen, and shunters, and the other costs of running a train. Furthermore, no matter how many ships were lying alongside the wharf, they could be handled effectively.

61. *To Mr. Mathews.*—I would not build the wharf further out than Admiral Clarkson has suggested. When I first went to Darwin thirteen years ago, the edge of the bank was pretty well where Admiral Clarkson had suggested the new wharf should be built. Any mud inside the wharf could be pumped over into the bay beyond, and that area could easily be reclaimed. If the railway runs around the back of Stokes Hill it will give a better curve for an approach to the new jetty, otherwise the curve would be altogether too acute. By taking the railway around to the north side of Stokes Hill, the approach to the jetty on the south side could be made available for vehicular and pedestrian traffic. I do not approve of the proposal to make a new road gradually rising from the south side of Stokes Hill to the plateau on which the town is built, at Mitchell-street. Such a road would cost twice as much as a road to connect with Wood-street upon which the Darwin Council have been working for some time, and which would take the traffic on an easy grade right into the centre of the town, whereas the proposed new road would end at the back of the town.

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iron does when it is affected by sea water. You can cut it with a knife after a certain period of immersion. I could not agree with the suggestion that cast-iron piles would be preferable at Darwin. I have seen cast-iron piles—you could pare off with a knife. Although iron possesses the advantage over cast iron that they will stand well in seawater, they must never be exposed to the air. I do not think Admiral Clarkson's scheme provides that the steel work should be so exposed. It must be below low-water mark. Cheap reinforced concrete tracks could be laid down in the streams of the interior, provided sand and gravel in some place of stone are available at a reasonable rate and provided also that the streams are dry during the summer, so that the concrete could be laid in the dry. A little sunken wall would be needed on each side to prevent the current from getting underneath. The reinforcement would be an additional protection in case any of the material washed away underneath. It would provide that the whole of the concrete would not disintegrate, I have seen such crossings made of stone work, but reinforced concrete work would prove much cheaper.

65 *To Mr. Mathews.*—I have seen the breakwater at Colombo, and I see nothing impossible in adopting at Darwin the method of construction followed in making that breakwater. However, it is probable that it would be a costly undertaking to use cement instead of earth filling for the whole of the width proposed. It might be done for a portion of the structure. One would need to work out whether the strength of the concrete would be sufficient to stand the weight of the earth at the back of it. I think a concrete block system would be preferable to the Colombo method, because in that way one could limit the actual amount of concrete put into the retaining wall. A 10-foot wall throughout would not be sufficient. To maintain a height of 70 feet, you would need a wall with a great width at the bottom. A wall I built in Sydney, 40 feet high, was 22 feet at the bottom, 10 feet at the water level, and 8 feet at the top. For a wall 70 feet high the widths would need to be proportionately greater. I believe that a mass section could be built at Darwin with the back filled in with earth. The back of the proposed wharf is not to be utilized as a berth for vessels, and, therefore, it might be possible to do without a back wall. It would be cheaper to use the mass work on the sea face, and fill in the back with stone and rubble, but, instead of that wall being 10 feet thick all through, it would perhaps need to be 40 feet through at the bottom. I think it would be cheaper to build with 30-ton blocks. For Darwin cannot be compared with Colombo. There is no big raging sea there. The cost of adopting the Colombo breakwater method of construction would depend upon the level of the bottom. If the silt occurs where it is shown on the plan, and it is very sound, the height of the wall could be lowered, but the first thing to do is to get borings. This must be done before a definite and reliable estimate of cost could be made. The adoption of the Colombo breakwater method would do away with the danger of disintegration. They are having trouble in regard to the breakwater at Warrambool. Some of the concrete blocks are disintegrating for some reason or other. But the sea wall I built in Sydney Harbor in 1901 is still in perfect condition.

65a *To Senator Lynch.*—Steel must be below the low-water mark to stand. It must be covered down to 3 feet or 4 feet below low-water mark. There are means of protecting steel with concrete, but other methods are cheaper. As a matter of fact, marine growth acts as a very fair preservative. I put a preparation on iron work which has to be submerged. It is not a bituminous paint, but is a mixture of the parts of which I obtained from the man who had coated that piece of iron which I have said had been submerged for seventy-eight years in Sydney Harbor, and which

had come out of the water with the original coating on it. I ascertained what that preserving material was, and I have used it ever since. It is the only extra protection I give to steel. I have no fear that steel will not stand under low water for an indefinite period. Before I could make up my mind as to whether I would recommend a steel, concrete, or timber structure for a wharf at Darwin, I would want to see what the bottom was like. I like to have my resulting structure vertical instead of horizontal. In the circumstances, I think I would prefer a reinforced concrete front or concrete blocks in preference to sheet-piling. Timber would be of no use. The deck of the wharf would certainly be of reinforced concrete. The piers might be cylinders with a certain amount of steel in them. On the other hand, they may be caissons. There is no dredge in Australia that would be able to touch that work at Darwin, with the range of tide there. I would not swear that I have driven piles into schist, but some material into which I have driven them was very hard driving. In fact, I have had to shoot the ground to get the piles in, and often I have had to bore to put them in. I have put down a bore 14 inches in diameter to a depth of 3 feet or 4 feet, and stepped the pile in. When the sand subsequently runs into the hole, there is no getting the pile out again. This is a costly operation, and it will be especially so at a place with such a range of tide as there is at Darwin, where work can only be carried on at very limited periods. That is why I say there is no dredge in Australia that would continue working at all stages of the tide at Darwin. Dredges working under the best conditions in the harbors of the south, in a rise of 4 feet in the tide, only work 50 per cent. of the working hours. The dredges at Cockburn Sound would not be long enough. The ladders would be too long. The ladder of the bucket dredge cannot be perpendicular. The angle at which it works limits the depth at which dredging can be done. It takes us all our time to dredge to a depth of 32 feet in Melbourne. In any estimate of the cost of the work at Darwin, you may have to take into consideration the need for a special plant to do the dredging, or you must have all the dredging done at low tide, so that instead of getting a 50 per cent. capacity, you may only get 20 per cent. some days, and on other days nothing at all. Of course, there is a possibility of extending the ladders of the dredges. I should say that at Darwin the material brought up by the dredges would be used to fill in the shallow water at the back of the wharf, but it might be cheaper to get the material for the purpose from Stokes' Hill. Solid work, when it is once done, is to all intents and purposes everlasting, and maintenance costs are small. On the other hand, a timber or pile wharf always costs a great deal for maintenance. A foreshore scheme, as suggested by Admiral Clarkson, enables the railway works to be handled better. If I were advising a client as to whether he should build a pile wharf or a solid structure in a locality where he could depend on a steady grade of prosperity, I would select a type which, taking into consideration the cost and maintenance, would work out to be the cheaper. It is the only safe method. The life of a timber jetty in tropical waters is very short indeed. I have seen such jetties rebuilt in eight years. In one case the teredo had eaten the timber right away. If properly maintained and painted above the water, the life of a steel wharf should be as long as that of any steel bridge—that is to say, until it has outlived its usefulness. If there is corrosion on the steel work in the existing jetty at Darwin, I should say it is due to the fact that it has not been properly painted and painted. It is all a question of care. With adequate and proper care, a steel structure should last as long in the water as above ground, but the painters must go over it more often. On the Forth bridge a gang of men is kept doing nothing but painting the structure.

Where corrosion is rapid, it is necessary to keep painting. In an out-of-the-way place like Darwin, it is probable the jetty has not been painted since it was put up. I have not had experience of using molybdenite as a paint, but I should imagine it would be a very expensive method. There is such a thing as rustless steel, but the cost of using that would be prohibitive. Its tensile strength is very great. Reinforced concrete piles can be made impervious to the ravages of salt water; but if the concrete is not made properly, if it has not a proper resistance, it will invite collapse. You have the interchanges of the air going in with the water, and corrosion sets up, and expands with such an enormous pressure that the concrete flakes. If reinforced concrete work is found to be faulty, it is solely due to faulty workmanship or the use of bad material. You can get a bad lot of cement. We used once a lot of cement that would not set, and when we sought to use the piles within two months after they were made, they would not stand up to the driving, and broke off. The contractor wanted to say that it was because I had allowed a small proportion of bluestone dust to go in them, but I said that I was able to prove that to a great many cases a proportion of bluestone dust made the concrete impervious. I blamed the cement. Fortunately, we had another lot of piles made of a different brand of cement, and we had no trouble in driving them. Those piles are in the River Yarra, just below Spencer-street. It is the responsibility of the engineer to see that bad cement is not used. I saw that these particular piles were not used. When a parcel of cement arrives on the job, it must be tested by a properly competent testing authority. But that does not always protect you. You must, during the course of the work, watch what is being done. You must have a clerk of works standing over the whole operation if you want to prevent trouble arising. What occurred to us may occur in big mass work if the authority in charge of the job is not keen. The greatest protection is to see that none but well-tried brands of cement are used. You must not take any risk, because some local company has started to make cement without a proper knowledge of what it is doing. We have had a lot of trouble recently with cement companies starting operations, and not knowing sufficient about their work. They have put out an inferior quality, and in consequence many jobs have suffered severely. If you take a cement made by a firm with an established reputation, you cannot go far wrong. Its price is usually the same as that turned out by the other firms.

66 *To Senator Reid.*—I have had any amount of experience of tying up piles. It is the usual method of tying back sheet-piling. You are usually limited in the length of pile you can employ; otherwise, you would have to carry back the land ties too far. If mass concrete is put around the ties, they will be practically everlasting in reclaimed ground. If boring were necessary at Darwin to put the piles into the solid rock, you would cut a chase along the toe, perhaps for 5 feet deep, by machinery or by diving, and step the steel work into it. I did a job in Sydney on a sandstone bottom with reinforced piles. We cut for 3 feet deep, and then stepped in the piles. Then we sent down a diver, and filled in with concrete. That job is tied back with land ties. The depth you would have to cut into the solid rock would depend on the rock encountered. If there is no chance of it breaking off on top, you would possibly have to cut into it to a depth of 5 feet, or, if you wanted to make certain, 8 feet. I would like to see less than 5 feet of pile of very solid rock. If I were on the spot, and the bore kept reporting hard rock, I would not bother to go down any further. I would adopt another scheme, which would not necessitate a lot of rock-cutting. You must bear in mind that if the rock at Darwin is such hard, tenacious stuff as it is said to be, the dredging cost will be enormous, and only this can be guided by you is to have borings and reliable advice. Under cer-

tain conditions, the scheme proposed would probably be the cheapest, but you must have an examination first.

67 *To Mr. Mathews.*—I think most of the engineers of Australia are very interested in the Gionelg failure. I saw one of the specifications, and it clearly stated that the contractor would have to provide for a wave 8 feet high and 30 feet long. As a matter of fact, a storm came along, and the waves were 16 feet high and 200 feet long. The scheme really failed because the premises on which it was started were wrong. But there were two sides to the question. I know both the contractor and the engineer very well. The contractor lost about £40,000. The mistake was generally due to the fact that there was not sufficient information before a start was made. They had trouble at Gionelg because the force of the waves was under-estimated. There is limestone on the surface, which should have made a good foundation, but when they commenced to put in the piles they found that it was only a limestone shell overlying sand.

68 *To Senator Barnes.*—Before I could recommend any kind of wharf at Darwin, I would want the result of borings.

(Taken at Perth.)

THURSDAY, 13TH SEPTEMBER, 1923.

(SECTIONAL COMMITTEE.)

Present:

Mr. GREGORY, Chairman;	Mr. Blakeley
Senator Lynch	Mr. Cook
Senator Reid	

Edward Tindale, Principal Assistant to Engineer-in-Chief, Public Works Department, Western Australia, sworn and examined.

69 *To the Chairman.*—I am well acquainted with Darwin, and have made several unofficial examinations of the wharf there. The tides and currents are very similar to those at Broome, and a little milder than those at Wyndham and Derby. We have experienced no difficulty in driving piles along the North-West coast. Generally speaking, we have found good bottoms of sand and silt, except at Point Sampson, where there is about 3 or 1 foot of sand overlying the rock. We had to blast holes in the rock in order to get a setting for the piles. I do not think the piles can be driven into the schist formation about Darwin without boring, which would mean a substantial increase in the cost of the work. The heavy tide at Darwin will necessitate a lot of extra care in doing the work. One man will have to be on the chains all the time, taking up the slack and letting out. We are tackling a similar proposition at Beadon Point, Onslow, where a new jetty is being constructed, at a cost of about £28,000. The bottom there is very similar to that at Point Sampson. The work was let to contract, and we specified boring and blasting into the rock to a depth of 5 feet. That job has been in progress for about twelve months. So far, the Department has not found any treatment, which will enable wooden piles to withstand the teredo. The depredations of this pest are experienced all round the Western Australian coast, and their severity is not governed by latitude. For instance, the teredo is very bad at Fremantle, fairly bad at Derby, and extremely bad at Wyndham, but at Carnarvon and Broome it is not very troublesome. It seems to thrive where, as at Fremantle, it has a big forest of timber to attack and to provide it with cover for breeding. All the jetties along the North-West coast are built of jarruh. In the earlier days we did not give the timber special treatment, but we sheathed the piles with Muntz metal. During the war, however, Muntz metal was unobtainable, and we then

adopted Cunningham's process of charring the piles with a pressure lamp similar to a painter's burning-off lamp. The inventor contends that charring prevents the ingress of the teredo. We tried the system at Wyndham, but it was a failure. The heating causes the timber to crack, and the teredo enters the cracks. Moreover, it is very difficult to prevent abrasion of the char, and when it is rubbed off the timber is left open to attack. Then we tried another process—charred the piles, rubbed off the loose char, and then boiled them for four hours in coal tar. That system has been the most successful of any we have tried; one pile that has been in a dolphin at Fremantle for four years has been attacked very little; whereas, without the treatment, it would have been attacked within six months. We have been endeavouring to avoid the use of timber piles in parts where the teredo is bad. At Beadon Point we have adopted reinforced concrete. We originally designed the jetty in timber, but later decided to encase the piles in reinforced concrete sleeves, leaving a space of 4 inches to be filled in with concrete. The sleeves were to be 2 inches thick and in lengths of 4 feet, reinforced with wire netting. However, the contractor suggested that reinforced concrete piles should be substituted for the timber, and we accepted that construction for the neck of the jetty, in regard to the head of the jetty, we are still negotiating. We in Western Australia have had no experience of the use of reinforced concrete in salt water, but experts in other countries say that so long as the concrete is dense enough—about two and a half parts of sand to one of cement—and the workmanship is thorough, the result is satisfactory. The engineer of the Sydney Harbor Trust is in favor of reinforced concrete, but reports from Queensland, Auckland, and Wellington are very re-assuring. It is important that the metal shall be well covered with not less than 24 inches of dense concrete. The piles along the neck of the Beadon Point jetty are embedded in concrete, but along the head we shall blast 6-ft. holes into the rock and drive them into that. Vessels lying alongside will surge against spring piles of timber. We had intended to build at Wyndham a jetty of cast-iron piles with a steel superstructure. When the war broke out we had a lot of steel on hand, but not sufficient to complete the job. So we sold the material and built a wooden structure. Work that has stood since 1808 is a very fair test. The authorities mentioned in the book to which Mr. Cullen referred emphasize three points, viz., cover the metal well, use a dense mixture, and have careful workmanship. Attention to those details will insure a lasting job. A dense concrete wharf was built at Cossack in 1892, and it does not yet show any marked depreciation. It was built with a 2 to 1 mixture, and demonstrates that concrete will stand in sea water; a solid concrete jetty should be almost as durable as stone. At Wyndham and Fremantle the space between the pile and the sleeve has been filled in with sand. The results at Fremantle are better than those at Wyndham, owing, I think, to the milder scour of the tide at the former port. We decided that with a big scour and an open roadstead it would be inadvisable to use sand filling at Beadon Point. The vulnerable part of the jetty, where the superstructure joins the piles, is protected with Muntz metal. The walings and decking will be of jarrah. The principal objection to the present wharf at Darwin is the turntable at the knuckle. In order to make that jetty a workable proposition, the knuckle must be straightened out. There is no possibility of working the jetty economically with a turntable on it, especially as the trucks cannot be shunted on to the head of the jetty by locomotive. The wharf itself seems to have been well built and to be still in good condition, but it

was badly designed. I doubt very much whether it would be possible to get a railway curve from the mainland on to the present wharf, but it would be worth while to inquire whether that is practicable. We have not used sheet piling in connexion with jetty work, but I do not think such construction would have a very long life. We have not done any dredging north of Fremantle. Dredging at Darwin would be very expensive, owing to the rise and fall of the tide. Silt formation cannot be removed by means of a suction dredge, and a bucket dredge would be expensive, because the depth of the ladder would have to be continually altered to conform to the rise and fall of the tide. At Fremantle we have used that machine to a depth of 36 feet; the use of that machine at such a depth is practicable, but costly. Of course, the material could be removed in faces, doing the deep work at low tide and the other work at high tide, but that method would involve a good deal of arrangement and heavy cost. In dredging the entrance channel at Fremantle we have shifted about 1,760,000 cubic yards of material at a cost of 8s. 8d. per yard, including blasting, dredging, and dumping at sea. The material was similar to the limestone of which the Fremantle breakwater is built. At Dunbury we shifted 150,000 cubic yards of sand and silt for 2s. 10d. per yard. That rather high figure is accounted for by the fact that the dredges are getting old and are subject to a lot of repairs, which represented about 1s. per yard. At Albany we dredged 344,000 cubic yards of city for 2s. 2d. per yard; that cost includes 2795 per month for the hire of a dredge from the Commonwealth Government. I should estimate that similar work in the north would cost twice as much. We estimate the earthwork in connexion with the Wyndham jetty and meat works at twice the cost of such work at Fremantle. At Wyndham we had a great deal of difficulty with labour, due mainly to the climatic conditions. The men do not seem to be able to stand up to the work as well as they do in the temperate zone. Our Department worked the usual day, 8 a.m. to 6 p.m. The freezing works operate from 6 a.m. to 10 a.m., and from 2 p.m. to 6 p.m., but I do not think that anything is gained by the change of hours, because the most humid part of the day is the early morning. The humidity along the coast is very trying, but it is not as bad at Wyndham as at Darwin. From May to August the weather is fairly good, but for the remainder of the year it is bad.

70. To Senator Lynch.—The cost per square foot of constructing North-West jetties has been—

Locality.	Cost.	Area.	Cost per Sq. Foot.
	£	Sq. feet.	s. d.
Wyndham (1914-19) ..	56,800	17,085	2 10 6
Broom (1895) ..	34,629	12,240	0 7
Pt. Hedland (1905) ..	21,539	14,702	0 10
Pt. Samson (1906) ..	35,605	35,817	1 0 0
Onslow (Beadon Pt.) ..	89,577 (Netd.)	43,287	2 1 0

These jetties, with the exception of Beadon Point, were constructed in pre-war times, when timber was very much cheaper than it is to-day. The Point Samson wharf could not be built to-day for less than 35s. per square foot. The high cost of the Onslow jetty is due to the great length, necessitated by the shallowness of the water. Construction and maintenance are much higher in the north than in the south, owing to the high freights on material and the higher costliness and reduced efficiency of labour. The efficiency of the naked timber depends upon the location. Fremantle wharf was built with naked timber and it stood very well for ten or twelve years. Then the teredo became

very busy. At the present time we are reconstructing Victoria quay with concrete piles. Muntz metal, while it remains intact, is an absolute safeguard against the teredo. The earlier productions of this metal were good, but we find that the article we get to-day is much inferior; it crystallizes and becomes brittle, and breaks if it gets a hook. Such breaks must be watched and patched. We cannot depend upon the quality of the metal supplied to us to-day. It is difficult to get jarrah piles 60 feet and 70 feet in length, and that trouble is likely to become accentuated. It is probably due to the delay in re-afforestation. There is plenty of jarrah still, but not much long jarrah. We use powdered karr for beams and decking, but it will not last under water. The substitution of osanote for shouthead timber piles at Beadon Point was suggested by the contractors. They tried, unsuccessfully, to have the price increased, and as they are doing the job at the original price the natural inference is that the concrete pile is cheaper than the timber. There is a departmental supervisor on the job. I have had no personal experience of the use of sheet piling, but I know that metal under the sea depreciates very little, whereas for metal and concrete it alternately subsides and swells, deteriorates rapidly. Before criticizing Admiral Clarkson's plan for the Darwin jetty, I should like to have fuller particulars of it, but I should think that the thin slab of concrete over the sheet piling will have a tendency to flake off, and leave the metal exposed to rapid deterioration. The tie-rope also will probably deteriorate quickly. I am unable to follow Admiral Clarkson's proposal to use an asphalt sheet piling by forcing grout concrete through pipes into the space at the back of the piling. I cannot see how a continuous wall of concrete could be formed in that way. From a working point of view, the solid concrete wharf is the best that can be built, because the goods sheds can be established nearby, but if cost had not to be considered I would prefer a wharf of a solid water-gate concrete is essential, and generally speaking, we prefer the imported article.

71. To Senator Reid.—I do not think it is practicable to get improved railway access to the Darwin jetty by filling in the angle between the neck and the head. I cannot express an opinion whether it would be preferable to patch the existing wharf rather than incur the cost of a new project, the policy in this matter must be governed by the opinion of Parliament regarding the worth of the Territory. Experience shows that the greatest depreciation in the concrete pile takes place above the water level and underneath the decking. That is due to the heavy humidity, causing moisture to lodge on the concrete. A concrete job, although more costly at the outset, would be cheaper in the long run. With good stone, sand, and cement, a lasting structure can be produced.

72. To Mr. Cook.—Before any scheme of wharf construction is undertaken at Darwin, there should be a thorough engineering investigation, including boring and a general layout to show how the jetty could be approached. Of course, the main question is as to the expenditure that will be justified by the estimated traffic. At present Vestoy's meat works are closed down, and I do not know whether they will ever be open. Darwin was dead when I was last there, I personally would not invest money in large public works at Darwin, but I do not know the possibilities of development in the Territory. The expenditure that will be incurred at Darwin is a political rather than an engineering question. The sinking of concrete piles into a rocky bottom is expensive, because it involves blasting and boring, but it gives a safe job.

73. To Mr. Blakelley.—The railway could be carried on to the present jetty by means of a causeway on the outside of the elbow, but the approach would be very expensive. If the sheet piling became deteriorated, trouble might be caused by the weight of the jetty

causing the piling to burst, but the deterioration would not be great if the piling were well covered by concrete. Without trespassing upon a question of public policy, I think the present wharf will handle the existing volume of traffic.

74. To the Chairman.—The wharf at Wyndham is controlled by the meat works, which are about half a mile distant. Some insulated cars were built at Midland Junction for the meat works, but they were never sent to Wyndham, because Mr. McGhie preferred to use the ordinary "I" waggon with canvas covers. An open jetty does not tend to cause sitting. I think the sweep of the tide past the solid concrete wharf would keep the beam well scoured and cleared. A lot of boring and other investigatory work should be done before a large expenditure of public money is incurred. At Wyndham meat works we are using Diesel engines, with crude oil. The bulk storage of crude oil and petrol at Darwin should assist the development of the country. The motor car is in use on all stations, and petrol, under present conditions, is a very costly item. At Wyndham steam traction is being used between the meat works and the jetty, and crude oil is being burned in the Babcock and Wilcox boilers. The oil is obtained from Borneo.

75. To Senator Lynch.—We hired and operated for eleven months one of the Commonwealth's dredges at Henderson Naval Base. It is a good machine, but it will require alteration before it can be used at Darwin. For instance, the ladder will require lengthening; it can not be prepared to offer an opinion regarding the suitability of the Henderson Base dredges for use at Darwin. The relative merits of a solid wharf and an open jetty are governed by the amount of traffic to be handled. On the Thomas River, or in any other place where there is a tremendous volume of traffic to be dealt with, a wharf would be preferable, but when the traffic is light the cheapest possible construction is advisable. With existing traffic conditions at Darwin I would not recommend a 50 per cent. increase in expenditure in order to provide a wharf instead of a jetty. I would build whatever accommodation is required as cheaply as possible. The wooden jetty at Broom has been built for twenty-eight years, and it will be serviceable for at least another ten years. During the last eight years we have spent £12,000 upon its maintenance, and that amount must increase as the years go by. The teredo is not very bad at Broom, and generally the conditions there are good. The record of the jetty there is better than the average record of other jetties on the coast. At Wyndham the piles were attacked by the teredo within twelve months. The teredo is a water-borne species, which lodges on the outside of the timber. When it gets into the timber it continues to draw nourishment from the water through a tail or tube. If its communication with the water is cut off the worm dies. At Wyndham we put concrete sleeves about the piles, and when subsequently we drew one, the stanch from the dead teredo was awful.

(Taken at Perth.)

FRIDAY, 14TH SEPTEMBER, 1923.

(SECTIOnAL COMMITTEE.)

Present:

Senator LYONS (in the chair);

Senator Reid

Mr. Cook.

Mr. Blakelley

Leslie Jameson McGhie, general manager of freezing works, Wyndham, sworn and examined.

76. To Senator Lynch.—I was at Darwin for some months in 1918, and I examined the jetty from an expert point of view. The jetty is not well designed for traffic of that kind. The main trouble is in having to handle the trucks with a turntable. The jetty should be accessible by a curved instead of a

rectangular approach. The Wyndham arrangement, although not perfect, allows of trucks being run on and shunted off so that there can be continuous loading at one or two holds. A wharf for the handling of modern traffic must permit of the locomotives running alongside the hatches and taking away the empty trucks in continuous fashion so that there is no interruption of the process of loading. At Darwin the locomotive is not used on the wharf, but at Wyndham it can place a full load of trucks alongside the ship and by means of a crossover draw off the empty trucks. We can, however, load only one steamer at a time. The lay-out of the Darwin wharf is hopeless for the handling of frozen meat. A big ship taking export meat must be given quick despatch, or the cargo must bear the burden of higher freights. Admiral Clarkson's proposal seems to me all right in theory, but ship-masters are better qualified than I to express an opinion regarding its practical value. At Wyndham when a ship is taking a cargo of meat, loading proceeds continuously at all states of the tide. The wharf is really a little too narrow for the traffic, and we can work only two hatches simultaneously. A ship may desire to work three or four holds at the same time. A wharf should be designed to give good service to two ships simultaneously. The Wyndham berth is 300 feet long, and we cannot load the extreme forward or after hatch without excessive labour or moving the ship. A berth of 300 feet is not long enough to give quick despatch to a modern ship. A vessel has to be trimmed according to the ports she has to enter later. The wharf should be a little longer and wider, and perhaps not so high. There is a big rise and fall of tide, and some ships with ordinary derricks or cranes find it difficult to lift cargo off the trucks at low water. The design for the new wharf at Darwin does not include a crossover for the railway, but that convenience will be necessary so that the full trucks may be run alongside the hatches and the empty ones run to the siding without delay. I notice also that Admiral Clarkson has not provided for ships to berth on the inside of the wharf; that means that you must construct a greater length of wharf in order to get the necessary accommodation. The present Darwin wharf was never intended for meat traffic, which involves large ships wanting quick despatch and loading general cargo and frozen produce simultaneously. At Wyndham we do not use insulated cars. We use the ordinary cargo trucks. The meat works are only about 1 mile from the ship's side. We dunnage the trucks sufficiently to protect the meat, and we are able to put the meat in the slings and swing it into the holds without undue delay and exposure. That method is faster and more economical than putting the meat into insulated trucks at the works, which involves one exposure and taking it out of the trucks at the wharf, which means a second exposure and more cost. The method we adopt at Wyndham would not be practicable at Darwin, because of the greater distance of the works from the jetty. There the insulated truck would have to be used in order to keep the meat at a cool temperature so that it would continue hard in spite of any delay that may take place in the loading operations. At Wyndham the meat works are adjacent for the State steamers and all vessels that call there to lift meat. The works operate the wharf and stow the cargo. We have had practically no trouble with labour. Before the killing season begins we meet in conference the representatives of the unions concerned and come to an agreement, which is registered as an award. That agreement includes a provision that if no work is available for a man at his usual task he shall do any other work that is available and he paid the rate pertaining to his recognized task. This arrangement makes for continuous employment at the works and on the wharf. There is no trouble between the management and the men, but sometimes the unions

cannot agree among themselves regarding the demarcation of tasks. This season the works commenced operations early in April, and we have had no labour troubles, nor do I anticipate any before the season closes about the middle of October. The method of operating at Wyndham involves killing and shipping at the same time. We contract to convey the meat from the works and place it on board ship for 12s. 6d. per ton. At that figure we sometimes make a little profit, and at other times a little loss. That rate covers the stowdoring work inward and outward. We load continuously in two shifts of twelve hours each. In order that the overtime work might be split up in such a way as to content all the men, we made the shift mid-day to midnight; and by that arrangement the overtime earnings are fairly equally divided. The agreement between the management and the unions is that when so required loading shall be continuous until the job is done. If ships do not get quick despatch their expenses are heavy, and freights are increased accordingly. Our policy is to make Wyndham a satisfactory port for the ships. It to prevent the overseas freighter from being out of the country. We are paying 100 per cent. more tonnage was current at Townsville before the war. At present we are receiving a bounty. If it is not continued and the existing freight rates are maintained the meat industry, so far as Kimberley is concerned, will be ruined. The shipping companies have reduced freights, but not sufficiently. The freight to London is 14d. per lb.; before the war the same service was given for 9-10d. In regard to the coastal trade we cannot complain of the high freights we pay to the State steamers, because the money merely goes out of one Government pocket into another. We contend that the loading system at Wyndham is the most efficient in Australia, with the exception of that at Cannon Hill, on the Brisbane River, where the ships go alongside the works and the meat is put direct into the holds by means of chutes. We are able to deliver the meat to the ship in perfect condition. Our works do not draw cattle from country beyond a radius of 300 miles. This season for the first time we are handling cattle from the Victoria River; I have not yet heard in what condition they arrived. The idleness of Vestey's works is partly responsible for these cattle being sent to Wyndham. I cannot see how Vestey can carry on unless railways are built to these cattle areas. I saw Wave Hill cattle being killed at Darwin in 1918, and I was satisfied that it was not practicable to travel stock by road that distance except in very good seasons. I do not think that geographical considerations will altogether determine to which works the cattle shall be sent for treatment. Ownership of the cattle will influence the direction in which they will be sent. If Vestey's works do not start, all cattle within a practicable distance will go to Wyndham. The policy of the Wyndham works is to stimulate cattle-raising by providing a market for the stock, and we must be able to pay the grower an adequate price. The works are actually run for the benefit of the cattle industry. The taxpayer owns the works, and the producer the cattle, and we try to operate the works in a way that will be fair to both parties. On the whole we give a better return to the producers than do the Northern Queensland works. Our charge of 12s. 6d. per ton for handling includes stowing the meat in the hold and the payment of overtime. We have only a limited number of expert wharf labourers, who have to be utilized in other departments during killing operations. We cannot afford to have a lot of idle men, and, therefore, we have to employ on loading a number of men who are not expert wharf labourers. The labour problem is largely psychological. One has to know how to get the co-operation of the men and avoid that spirit of mutual antagonism that sometimes develops. The application, as far as practicable, of the golden rule is necessary. If the work can be so planned that all the

employees can be assured of a reasonable income once of discontent will be eliminated. If men feel that they are being fairly treated there is not much difficulty in getting them to work well. A man's position must be worth while. I do not think that elaborate loading mechanism is necessary on the Wyndham wharf; the ship's derricks are quite sufficient.

77. To Mr. Blakeley.—The jetty at Wyndham is constructed of jarrah and has been in use since 1919. The piles were charred and tarred. The terebo is in some of them, and these are being renewed. The length of the jetty is 525 feet, the neck 93 feet, and the head 900 feet, or a total of 918 feet. I would prefer to use crude oil in the locomotives, but we obtained coal-burning engines from the Railway Department cheaply, and having regard to the small number of times they are used, the saving that would be effected by substituting oil for coal would not be great.

78. To Mr. Cook.—I have had thirty years' experience of the meat export trade, and I am very hopeful of its future when Europe becomes normal. The bulk of the trade from Wyndham is export. We load dry refrigerated coastal ships that call at Wyndham, but the trade is a mere bagatelle. So far as improvements at Darwin are concerned, it would be wise to adopt a scheme that would meet requirements for twenty years ahead. In my opinion the Territory can be only a cattle-growing country for years to come. I cannot see that any other production is practicable, except, perhaps, wool after railways are constructed. I am familiar with Queensland and the Gulf country. As cattle can be produced in the north more cheaply than elsewhere, I consider that beef and beef products are likely to be the main cargo from Darwin for some considerable time—provided that Vestey's works resume operations. The first essential there is a railway for the conveyance of cattle to the treatment works. About 300 miles is the limit of influence of the Wyndham works. In the United States of America cattle are raised 1,000 miles and more. They get knocked about to some extent, but the bruising is not so serious a matter as is the wastage on the road. Railways are the most economical means of bringing cattle to the factory in such country. I fear the Darwin wharf cannot be made reasonably practicable unless the locomotives can be run on to it for moving trucks. Admiral Clarkson's design will provide a wharf suitable for quick loading if a cross-over is provided. I have recently read that a borer is making serious inroads upon concrete piles in America. If submarine pests expose the metal reinforcement the pile is doomed, because expansion follows rusting, and the pile bursts. Concrete sleeves have been fitted over a number of wooden piles in this country, and it would be worth while to inquire whether the concrete has been damaged by pests. The proposed expenditure at Darwin is very heavy, but facilities must be provided if an export trade is to be handled. It would be useless to tinker with the job; it should be faced boldly and carried out thoroughly. I do not say that such expenditure will be reproductive for a considerable time, at the outset it must be regarded as purely developmental.

79. To Senator Reid.—I do not see why the Northern Territory, if provided with railways, should not develop as North-western Queensland has done. The only two doubtful points are the future value of export beef, and whether the freights will become reasonable. Freights are our biggest expense, and they are of importance in our competition with America and Argentina. If normal conditions are retained in Europe our outlets will be increased. The buffalo fly is a new factor to be taken into consideration. It has already upset our calculations in regard to beef and tallow yields. I do not know whether it will become a serious menace to the industry, but unless some pest of that kind

makes serious inroads upon the herds, the cattle are bound to increase. I do not see any means of expanding the northern portion of Australia except by cattle-rising. The conditions in the north seem to be similar to those in Northern Queensland. I am of opinion that facilities should be provided in advance of development. The present wharf at Darwin was designed only for the small coastal trade. While you are at it you should make as good a wharf as you can design, and it should be at least big enough to berth one 10,000 ton ship. The insulated trucks in use at Darwin are built on the same plan as those that have proved so satisfactory in Queensland. Nevertheless, they are blamed for the damage to the meat, and it may be that whilst the plans are right the construction is faulty. I advised that an extra timber sheathing should be built over them in order to give them a shade instead of a sun temperature. How that experiment resulted I do not know. At present there are not sufficient cattle within the radius of 300 miles to keep the works at both Wyndham and Darwin going. About 7,000 or 8,000 of Vestey's cattle are being killed at Wyndham this season. When Europe becomes normal, the increased outlet may lead to an increase in the number of cattle, but it is largely a question of finance. There are no mortgage companies assisting the Kimberley pastoralists, as there are in Queensland and New South Wales. Prices are low. Pastoralists have been battling for twenty years or more, and they have not the money with which to erect fences, improve their herds, and work their holdings properly. This financial problem does not arise in connexion with properties in the Territory that are owned by big English companies, and they therefore have an advantage in competition with the Western Australian growers. The big corporations own both the cattle and the meat works, and they are able to improve their properties so far as it is advantageous for them to do so. Everything done by the Commonwealth to assist the cattle-growers in the Territory helps them to compete against the pastoralists in the Kimberleys. The labour employed at the Wyndham meat works has to be brought from Fremantle at the beginning of the season and returned at the end. Therefore we have to calculate carefully the work to be done, and provide labour in such quantity and of such description as will enable us to have a maximum output with a minimum wages bill. We engage a certain number of wharf labourers, slaughtermen, &c., for as long as killing continues, with a guarantee of at least sixteen weeks' employment.

80. To Mr. Cook.—I have never been in Argentina, but I judge from conversations I have had with pastoralists and experts who have been there, that the Argentine cattle from which the chilled beef comes are better than ours, and the chilling process is very much better for the British trade; but reports show that no better dressed meat is put on the market here than that which we send away from Wyndham. We cannot alter the quality of the bullock that is delivered to us, but we handle it well and turn out the beef in the best condition possible. The slaughtering is done by contract and the rest of the work by day labour. The market in the Orient seems to grow very slowly. The cold stores established at Singapore in 1910 have been a great success, because there is a large shipping trade at that port, but in other Oriental centres where there is no shipping market the local consumption is practically restricted to the Europeans. I have no doubt, however, that the trade will expand. The present prohibitive freights are strangling the meat export trade. If we could get our beef carried at the pre-war rate of 9-10d. per lb., the industry would flourish. Refrigerated steamer space and cold storage also are necessary, but in those essentials there are monopolies. The Americans built up their control largely through the ownership of the refrigerated cars on the railways. Interests which

stations, killing works, and ships, and cold storage in Australia as well as abroad, are keeping the rates too high to permit of others successfully competing with them.

81. *To Mr. Reid.*—I have no fear of American meat cutters, apart from combination with the shipping companies. So far as I know, our meat industry, with the exception of Swift's works in Queensland, is controlled by British interests. A big proportion of the trade, especially that with the Orient, is in the hands of shipping companies, and they charge 1½d. per lb. freight. Western Australia is able to supply Java with meat because the State steamers carry at reasonable freights.

82. *To Mr. Blakely.*—I would not care to expend £200,000 on new wharf accommodation at Darwin if the existing jetty could be made workable and proper access provided.

83. *To Senator Lynch.*—For the first time, the Wyndham works are operating this year to their full capacity. We started in 1919 by handling 9,000 cattle, and doubled that number in the next season. Last year we killed 23,000 cattle, and this season we expect to put through about 30,000. The weights have been disappointing this season, and we have had to kill more bullocks to get the same output of beef. If Vestey's works reopened, Wyndham would not be able to get enough cattle to work to full capacity, although we would still get some of the Vestey cattle—for instance, those from Ord River. Our relations with the cattle raisers are different from those of Vestey's. We seek to give the maximum encouragement to the producer without involving the taxpayer in risks greater than necessary. The prices offered are determined by those ruling in North Queensland. It was only in war-time that the Vestey works operated, and then all producers received the same price for their cattle. Cattle lose a lot of weight in travelling 300 miles by road, and that is the maximum radius of Wyndham's influence. Fifty miles of railway would help us considerably. It is the last 50 miles of travelling that spoils the beast. Unless cattle can be brought to the works in good condition it is useless to grow them; therefore, railways are needed. To railways is due the development of Northern and North-western Queensland. Cattle are raised to Townsville, a distance of 600 miles or more.

(Taken at Port Hedland.)

MONDAY, 24TH SEPTEMBER, 1923.

(SECTIONAL COMMITTEE.)

Present:

Mr. GREGORY, Chairman;
Senator Lynch Mr. Blakely
Senator Reid Mr. Cook.

John Paterson Loupox Brown, officer in charge of Port Hedland-Marble Bar Railway, sworn and examined.

84. *To the Chairman.*—I submit to the Committee a list of the charges on the Port Hedland jetty and the fares and freights on the railway to Marble Bar. The recently-amended schedule provides that all goods shall be carried at a rate of 2s. per ton per mile, minimum charge as for 5 cwt. and 10 miles, with these exceptions: Wool, 1s. per ton per mile, minimum 5 cwt.; ore, 4d. per ton per mile, minimum 5 tons; crude asbestos, 4d. per ton per mile, minimum 5 tons; empty bottles, 4d. per ton per mile, minimum 3 tons; firewood, 4d. per ton per mile, minimum, 3 tons. A lot of trouble arose through the charging of differential rates, and I suggested that a flat rate would be less harassing to the people. Since the flat rate was imposed the railway has been paying fairly well. Notwithstanding that I have had to pay £9,000 for improvements to the jetty, and £3,500 for repairs to

locomotives, I have paid to the Department a profit of over £5,000 in four and a-half months. There has been less loss of time, and less handling of the goods in loading and unloading. Hitherto there was a hard and fast rule that the train should go to Marble Bar on Wednesday and return on Friday, but having been given a free hand I decided to run the service to suit the traffic. I avoid running an empty train, but I put one on whenever the goods and passengers warrant. The savings that have been effected are due entirely to control having been vested in me as the local authority. I have a certain amount of freedom even in regard to the charges. If a person wishes to send to Port Hedland 2,000 sheep I run a special train, if time permits, and charge a special rate. If a picnic or racing party can guarantee a certain number of passengers I run a special train for it. I consider local control essential to the success of a railway of this kind. The population travels only when a boat arrives at Hedland, and if the train service does not fit in with the boat's arrival, people in the interior travel by motor car to Mackatharra and catch the railway there.

85. *To Senator Lynch.*—The annual interest on the capital cost of the Port Hedland-Marble Bar Railway is £16,000. The line shows a slight profit after paying working expenses and interest. The wharf is about 40 feet too short, and the railway crossways are badly spaced, with the result that they come right opposite the hatches, and cannot be used without interfering with loading or unloading operations. Moreover, the jetty is weak, the piles being set in mud and resin on rock. The piles should be keyed into the rock, and surrounded with Hume pipe sleeves, and the space between the sleeves and the pile filled in with concrete. The £9,000 spent on the jetty was for renewals and labour. In a tidal port yokes on the jetty are very high. If the jetty were more substantial and properly protected, it would not make such inroads on the earnings of the railway. Of course, the piles of the present wharf could be sheathed, and the back filled in with concrete, but the cost of that scheme would not be warranted by the trade of the port. If Hume pipes were adopted, the contractor would send a small plant to the district, and make the piles locally. The jetty has been built about thirteen years, and most of the piles have had to be renewed twice in the last eight years. The toro is very bad, and copper sheathing does not keep it out of the piles. The best type of jetty for this port would be one of reinforced concrete piles, keyed into the rock to prevent any sliding movement.

86. *To Mr. Cook.*—I had a lot of experience in wharf construction in Fiji for the Colonial Sugar Refining Company. I have seen concrete piles in use in New Zealand, and they are still sold after thirty years of use. Of course, at the port of which I am speaking, there are no big steamers to damage the piles. I recommend the concrete pile because it obviates the cost of frequent renewals. If the Government, instead of using timber, had built the wharf of concrete piles, reinforced with old rejected rails, we would have a structure which would stand practically for all time. I am rejecting a lot of 45-lb. rails which could be used to reinforce concrete piles. I would bore into the rock, cement the rail in position, enclose it with Hume pipes, and then fill in with concrete. Wooden piles may cost only 2s. 6d. per foot in the south, but to that price has to be added handling charges and freight to Port Hedland. A sleeper from the railway saw-mills costs only 4s. 6d. in the south, but by the time it is in the road in the north, its cost has increased to 10s. 6d. This season we replaced three piles which had been in the jetty only four years. The largest vessel that comes into Port Hedland is the *Gascogne*. Owing to the inability to drive the wooden piles into the limestone that underlies the silt, the strength of the jetty

depends upon the wooden cross-bracing, and the concrete pile would be no better unless the rock were drilled and the pile keyed into position. The braces and cross-braces, if necessary, would be of timber, because they would not suffer so much from the toro as does a wooden pile. The decking would require to be of timber. Reinforced concrete decking would have to be put in with channel iron, and there would be no means of dogging the rails.

87. *To Senator Reid.*—The repairs carried out this year at a cost of £20,000 represent arrears that should have been attended to years ago. To repair the damage done by the toro to the Port Hedland jetty would cost about £1,000 per annum. The railway would not pay any better if a more frequent service with only light loads were instituted. Since the Commissioner gave me a free hand, the line has been run to suit the district, rather than to conform to the regulations that apply down south. For instance, the *Gascogne* arrived one night, and the captain decided to remain in port twenty-four hours. The agent came to me, and said that if he had known the ship would remain so long in port, he would have got in a train load of wool. I rang up Marble Bar, got into communication with the engine-driver at about midday, and the wool was in port by 9 p.m., and was put on the ship, which cleared at 11 p.m. At other times when a boat has been waiting in port, I have run special trains to bring in goods, and by getting rid of them have freed the trucks. If I were constructing a jetty, I would employ reinforced concrete to above high-water mark, and have a steel superstructure with a wooden deck. I would prefer that to solid concrete, unless the back of the concrete wall were filled in with rubble. Both railway and road bridges in America are built of steel on concrete piers.

(Taken at Wyndham.)

SUNDAY, 30TH SEPTEMBER, 1923.

(SECTIONAL COMMITTEE.)

Present:

Mr. GREGORY, Chairman;
Senator Lynch Mr. Blakely
Senator Reid Mr. Cook.

Fredrick Alfred James Bowie, Works Manager, Wyndham Meat Works, sworn and examined.

88. *To the Chairman.*—I am aware of the conditions under which goods are handled on the jetty at Darwin. The outstanding disadvantages of the jetty are the L-shape and the turntable. For the export of beef it is essential that facilities should be provided for the rapid handling of goods. It should be possible to load frozen beef and by-products simultaneously, but it is very difficult to do that on the Wyndham jetty. We work three gangs of men on the jetty—two gangs for twelve hours in loading frozen meat into two holds, and one gang for twelve hours in loading by-products, such as hides, tallow, horns, and extract. By this method we aim at continuity of handling. As soon as two trucks have been emptied, the engine pushes them off and brings in two others. There is only one scissors crossover on the jetty, and if we attempt to load frozen meat and tallow at the same time, the shunting of the trucks means an interruption of work at the general cargo hatch every time the engine passes. This jetty would be greatly improved if it were constructed in the form of a loop joining up with the mainline, and there would be no interference with loading operations. Another improvement would be the widening of the jetty to carry an additional set of rails. The jetty is not long enough for a vessel with five hatches;

so much of the vessel overhangs the straight head of the jetty that we have to stipulate that hatches one and five be eliminated. With the great rise and fall of the tide, and the bow of the ship standing out so far from the jetty, the derricks cannot operate the No. 1 hatch. The jetty is now 300 feet on the straight; that length should be increased by 150 feet, or the jetty should be made a continuous loop from end to the mainland. I suggest that any wharf built at Darwin should permit trucks to be taken on to the jetty and off again without shunting. Scissors crossings are a great advantage. It is desirable that landing and loading operations should be continuous; any interruption of work upsets the men. In this climate men like to keep going or stop altogether, and it is remarkable how a little hold-up will put them out of their stride. If trucks of frozen beef are ready for the men to start on, and they can be supplied with a constant succession of trucks, we get better results from them than if they are speeded up for a while and then allowed to slow down. Whilst up-to-date facilities are necessary for efficient and economical handling of cargo, I do not think the electric capstans and winches would be of great advantage. We send the meat to the ship's side in open trucks. The distance from the works to the ship is about 400 yards, which is covered in about five minutes. In the transfer from the works to the ship's hold the meat is exposed for as long as thirty minutes, but that does not affect well-frozen beef. The jetty is wholly under our control, and we contract to load ships for 12s. 6d. per ton from the hook; that includes the provision of hatchmen, winchmen, and labour in the hold. We can handle general cargo for 6s. per ton, but discharging general cargo is different from loading and stowing frozen beef. We have an agreement with the combined unions—Australian Meat Industry Employees Union, Australian Workers Union, Federated Copers Union, Federated Engine-drivers and Firemen, and Amalgamated Society of Engineers—which is unique, inasmuch as very few meat works do their own shipping. About 25 members of the Australian Workers Union are employed, primarily for wharf work, but when they are not so engaged their services are utilized at the works. Clause 14 of the agreement provides—

"When, owing to completion or interruption or reduction of all or any of the operations from any cause, no employment is available for an employee at his usual task, such employee shall, if so required by the management, do any other work available, and be paid the rate pertaining to his regular task."

This arrangement has advantages and disadvantages. The disadvantage is that we are short-handed at the works when a ship is in port, and sometimes have to pay excessive overtime. On the other hand, if we had a full complement on the works, we would have to employ at least 35 men, who would be idle when there was no work on the jetty. I think all parties are satisfied with the arrangement; at any rate, there has not been a cessation of work during the two seasons in which it has been in operation. We have given the men nothing to which they are not entitled, and we have taken from them nothing to which we are not entitled. The agreement has been operated fairly, and I find that the workers observe their part if I observe mine. There is always a certain amount of casual labour known as "blow-ins," and our third gang is a scratch lot culled from the floating labour about the port. These men earn something like £18 per shift. I would not advise the use of wooden piles with concrete sleeves. I have advocated the use of reinforced concrete piles, but I understand that the concrete is fractured by a bump from a vessel, the salt water corrodes the metal, which swells and bursts the pile. Therefore, timber spring piles and fenders to take the shock of a vessel coming alongside should be used in order to protect the concrete. Many of the

concrete sleeves about the piles in the Wyndham jetty are broken. I think the strong current of the tide washes away the silt from below the lowest sleeve, which is left hanging. Inevitably it breaks away sooner or later, and the terebo attacks the pile behind the casing. The same thing occurs when the sleeves are lowered over a bent pile, and get out of plumb. The trouble is not due to inferior concrete; the casings were carefully made at the meat works. We are now driving piles sheathed with Muntz metal, but I have asked Mr. McGhie to make exhaustive inquiries regarding concrete piles.

58. *To Mr. Blakely.*—Nothing but insulated trucks could successfully handle frozen meat on the Darwin jetty under existing conditions. At Wyndham, we load beef from noon till midnight, and we could load throughout the twenty-four hours but for the overtime difficulty. The ordinary working hours on the wharf are from 8.45 a.m. to 4.45 p.m. If one man receives more than another for doing the same work there is a certain amount of jealousy and friction, and to avoid trouble we start in the middle of the ordinary working day, and continue until midnight. This enables all the men to get a fair share of the overtime. Otherwise it would suit us better to work from 6 p.m. to 6 a.m., but we would have to work a gang for six hours on frozen beef, and six hours on general cargo. By keeping the gang on frozen meat for the whole shift they stow the beef as well as in any other Australian port. If we have 1,000 tons of space to fill, we put into it at least the full quota of meat. The beef is well wrapped. The half-hour occupied in the transfer from the works to the ship might cause the exposed shank to become sweated, but the remainder of the beef, if well frozen, would be quite hard. I was in Darwin for three weeks on one occasion while Vestey's were shipping meat. The works maintained good storage temperatures, and any loss of condition while the meat was in transit from the freezers to the ship's hold could not be due to its having been insufficiently frozen. The labour on the jetty appeared to lack guidance. On one occasion I saw a gang of men load four casks of fallow in four hours, but I do not doubt that cargo can be handled at Darwin as efficiently as elsewhere. I find that labour is more liable to become troublesome when handling a perishable product; but most of the trouble brought about by inefficient organization of the handling. As the only industry of any importance at Darwin is the export of frozen beef, I suggest that instead of building a new wharf, a direct double-line approach to the head of the existing jetty should be provided on the inside of the L, and that the head of the jetty should be extended to compensate for any loss of length caused by the approach. That would eliminate the turn-table.

59. *To Senator Lynch.*—As a rule, the ship's tackle is sufficient to enable cargo to be handled expeditiously, but two ships that have called here—the *Falerno* and *Wainate*—have had equipment that was unsuitable for this port. Of the five boats that have loaded frozen meat at Wyndham this season, four have had efficient tackle. I do not think it necessary to install cranes on the jetty. Cargo can be handled as expeditiously at Darwin as at Wyndham if ships have efficient equipment. The cost of stowage of general cargo here is about 10s. per ton. Our agreement with labour in regard to rates and conditions is made at a round table conference, without resort to the Arbitration Court. We select the workers we require, and we try to get the most competent men for the job. The unions are not asked to supply the labour. During the two working seasons in which I have been managing the works, we have had very little trouble with labour. In 1919-20, the works seemed to be going through a test of whether or not they could handle the industry. In 1919 we exported about 800 tons of beef; the remainder

of the meat was canned. In 1920 the export was 2,800 tons. We did not operate in 1921, owing to a disagreement with labour in Perth. In 1922, we sent away approximately 4,600 tons, and we had no occasion to refer to the agreement during the whole season. The present season is within three weeks of completion, and so far there has been no cessation of work. We have been able to settle all our differences between ourselves without resort to an arbitrator. When I took charge in 1922, I called out some of the rougher men who, after taking a few beers, would cause trouble even in heaven, and the labour at the works during the last couple of seasons would compare favorably with that at any meat works in Australia.

61. *To Senator Reid.*—We have slaughtered more cattle this season than Vestey's treated at Darwin in their best season, although their works have a greater capacity than ours. Improved jetty facilities are essential to the meat export business at Darwin. If the Commonwealth can remove the disabilities in connexion with the existing jetty, a great injustice will be done to Vestey's if these improvements are not made. The expenditure would be amply justified if those works were operating to their full capacity. I have had experience of the insulated cars in use in Queensland, and I think they should be equally effective at Darwin. Beef is trucked 18 miles from John Cook's freezing works at Medkirk to Brisbane. Vestey's works are less than 4 miles from the Darwin jetty, and the climate is not so much worse as to counteract the advantage in distance. The climate of Wyndham is much drier than that of Darwin, and as hot, if not hotter, and if we can load beef in open trucks, and leave it exposed up to half-an-hour, well frozen meat should carry well in insulated trucks at Darwin for six hours. Vestey's should be able to deliver beef on the jetty in satisfactory condition even with the present inadequate facilities. At Wyndham, we have gone through the initial stages of handling meat works with something like efficiency. We have demonstrated that labour can be handled without the works being held up; but at Darwin the conditions are less settled. There was ferment over such a long period prior to the stoppage of the works, that before I would advise the Commonwealth to incur a large expenditure upon the jetty or a new wharf, I would require some proof that the meat industry can be worked with reasonable prospect of success. I would be inclined to defer Admiral Clarkson's proposal, and adopt a more modest scheme of improvements.

62. *To Mr. Cook.*—The Wyndham works, like all exporting establishments, slaughter by contract, the rate of pay for killing and dressing power-sawn freozers being 2s. 10.927d. per head. Our principal market is the United Kingdom. All our fertilizer and some of our extract are sent to Perth, Broome, and other ports along the coast. We are now shipping meat to Australia. With the exception of Java, we have not touched the Oriental markets. Ports in the East have not sufficient cold storage to accommodate shipments. Three Commonwealth inspectors are stationed at the works. We export two grades of meat, and last year we were told that our first grade was as good as, if not better than, any frozen meat produced in Australia. We are slaughtering bullocks up to twelve years of age. Prime beasts are five or six years old. We commence operations about the beginning of April, and a good season extends to the middle of September. After the latter month the best stops mustering until the following March or April. The improvement of the meat market is dependent upon the restoration of normal conditions in Europe. Latest advices from Mr. McGhie are to the effect that we are receiving very favorable prices for our beef, and that our product is holding a very prominent place in the Smithfield market this season. The opinion of those who know

the Kimberleys well is that they are suitable only for cattle raising. I do not think the country can produce anything else except minerals, and, perhaps, cotton. For the present, tropical agriculture is impracticable. If Vestey's works are to re-open a direct approach to the head of the jetty should be provided by means of a curve on the inside of the L with a doubling of rails, and the jetty should be lengthened so that the locomotive may take full trucks on to the jetty, and draw off the empty ones without unnecessary shunting. With those alterations the jetty would last ten or twelve years, and, in the meantime, the possibilities of Vestey's works would be proved. I do not think the expenditure involved in making that approach would be wasted if later the bigger scheme suggested by Admiral Clarkson were adopted. The impression I got of labour conditions at Darwin was that they were rather free and easy. In respect of isolation, climatic, social, and commercial conditions, Wyndham is worse off than Darwin. I think the employees of our works live cheaper than they could do in Perth. They are boarded by contract at the works for 25s. per week. Generally speaking, the men are satisfied with their work, although complaints are inevitable in connexion with canteen cooking.

The witness retired.

Arthur Haly, Live Stock Manager, Wyndham Meat Works, sworn and examined.

63. *To the Chairman.*—I have not much knowledge of the country south of Darwin, but I know intimately the area south of Wyndham. Cattle cannot be economically travelled by road more than 200 miles to the treatment works. Cattle have come 300 miles to Wyndham, but they arrive in poor condition. At present the Kimberley country is used for cattle only, but with railway facilities the areas about Sturt's Creek and Hall's Creek and eastward into the Northern Territory is good for sheep. Moola Bulla Station is splendid sheep country. The most effective and economical railway that could be built would be one from Broome, south of the Fitzroy River and eastward to join up with the southward railway from Darwin. Such a route would avoid all engineering difficulties, pass through a lot of sheep country, and serve other rich areas within a radius of 100 miles. A railway in that direction would serve, not only the Kimberleys, but also the Wave Hill country, which I am told is good for sheep, and would do a great deal to develop the western portion of the Northern Territory. Cattle could be driven to the line from areas as far as 200 miles to the south, and sheep from 100 miles on either side. In the Kimberleys freights are much heavier than in the Pilbara country. The charge for the cartage of goods 240 miles to Hall's Creek is £26 per ton. Of course, a sheep-raiser cannot pay such a charge for the cartage of his supplies and wool; it is more than 3d. per lb. on wool. I consider it necessary to improve the wharf facilities at Darwin in order to enable the export of cattle to Manila, and possibly Java also. That trade would give the producers a second market, if the prices offered by the meat works were not satisfactory.

64. *To Senator Lynch.*—Wyndham is the natural port of the Victoria Downs country, 4,500 cattle from which are being treated here this year. Possibly the fact of Vestey's being probable purchasers of Victoria River bullocks might influence the sending of these cattle to Darwin rather than Wyndham, but it must be remembered that from Victoria River to the present head of the Darwin railway is about 200 miles. The country approaching Katherine River is sour, and the cattle passing through it do no good. Then they have to be trucked 200 miles, and suffer a good deal of bruising. In order to reach the railroad they have to travel almost the same distance as to Wyndham, and in ap-

proaching that port they travel through much better country. The country as far south as Tanami is very good and open, and well supplied with Mitchell and Flinders grasses, but it is not selected because of the excessive cost of getting goods out. Moreover, only patches of it have natural waters. At Invermay Station, directly north of Tanami, I inspected some of the finest broken downs country I have seen. It is ideal sheep country, but without natural waters; there are miles of country that can be used for only the four rainy months of the year. It has not been tested by boring, but at Breakfast Creek, on Start Creek Station, Vestey's put down a very successful bore. A pump raised 75,000 gallons in twenty-four hours without making any apparent impression upon the water in the bore. Boring has done much for the squatter in Western Queensland, and may do the same for the Kimberleys. The squatter in the north has never been in a position to fence his holding. If he could afford to fence his run and make bull paddocks he would get an enormous advantage. At present the bulls are running with the other cattle all the season, and sometimes it takes three or four weeks to muster 400 beasts for the market, and after that they have to be driven to the treatment works. Cattle in the Kimberleys will not hold condition as they do in Queensland; they put it on quickly in the wet season, but lose it equally fast. If squatters could get Government assistance to buy fencing wire they could improve the working of their runs. The banking institutions and mortgage firms will not lend money on property out here, particularly to the small man, because they have no agents here and no means of watching their security. This financial disability prevents a man improving his property and increasing its carrying capacity. I do not yet see any necessity for reducing the size of the holdings. West of Cambridge Gulf an immense area is available for selection; it is better watered than any country in East Kimberley, and Mr. Brookman said that he had nowhere seen better country, but nobody shows any anxiety to select it. If railway facilities were provided a lot of the country now devoted to cattle would be converted to sheep, and if the right class of sheep were put on it they would thrive. Sheep are being run inland from Derby and along the Fitzroy Valley, and that country does not compare at all favorably with that about Hall's Creek and further east; it is, I am told, practically a continuation of the Barkly Tableland. I do not think there has been much increase in the herds during the last six or seven years. There has been no inducement to people to improve their holdings and increase their stock. For the last seventeen or eighteen years the small man has been on the bread-line; he has made nothing, and, in fact, has led a hand-to-mouth existence. During the last two years he has received some assistance from the fact of the works being in operation, but the prices he receives for his cattle do not pay the cost of breeding them. In this country it costs approximately 15s. per head per annum to produce a beast. The tick pest is bad, and this year the buffalo fly has been very troublesome. Two years ago it was confined to the coast, but it has now spread to Wave Hill and down into the Fitzroy Valley. It has now become an actual menace.

65. *To Mr. Blakely.*—In 1920 we killed 16,000 cattle of an average weight of 629½ lbs.; in 1922 we killed 22,000 head, average weight 671 lbs. Our agreement with the breeders in 1920 provided that 60 per cent. of the beasts they supplied should be fit for freezing, and 40 per cent. fit for canning. In the last two seasons the proportions have been 75 per cent. and 25 per cent. respectively. In the present year, largely owing to the irritation caused by the buffalo fly, the average weight has dropped probably more than 50 lbs.

96. *To Senator Reid.*—The stock in the district sadly need improvement. For a great number of years very few owners have tried to improve their herds, and at times we get a very rough class of bullock. At one time Connor, Doherty, and Durack imported a lot of bulls at heavy cost; but, having no means of inoculating them against tick fever, they lost them within a month of their landing. The country which I have said will carry sheep compares favorably with the Peak Downs district in Queensland. The Invermay country is as equally as good as Peak Downs. The broken downs give good shelter for sheep, and even amongst the timber the pasturage is good, but sheep-raising would not pay under present conditions, because the wool would have to be carted 300 miles to Wyndham. Only by the provision of railway facilities can sheep be grown there profitably.

97. *To Mr. Cook.*—This country will grow first class sheep and bullocks, but railway transport is an urgent need. It would give the squatters heart to fence their properties. The country could be worked in smaller holdings, but at present men cannot afford to improve their runs, and in consequence it must be lightly stocked. Thus a man requires a big area to make his industry payable. The distance from Broome to Daly Waters is about 700 miles. For some distance out of Broome the country is only fair, but after it is passed good pasturage is traversed all the way into the Territory. The Kimberley country has not made any progress during the last twenty years. The industry requires a reliable market for cattle at payable prices, and facilities for improving the properties and the herds. On behalf of the Government I purchased 55 leifers and 7 bulls in Queensland in 1921, and last year I sold three calves, less than twelve months old, for 35 guineas each, and I have orders for all the stock I can produce. The Shorthorn is the most satisfactory breed; the present Kimberley bullocks are fair framed, but rather coarse. In this country of wide unimproved spaces herds become very wild, and deteriorate quickly. The aborigines have caused some trouble to the station-owners, but since the Government established Moon Bulla Station and started to feed the natives, cattle killing has diminished.

98. *To the Chairman.*—If railways were provided in the Northern Territory to facilitate sheep-raising some policy should be adopted which would insure the development and stocking of the country to its full capacity. The owners of the leases could well afford to agree to the resumption of from one-quarter to one-half their holdings for subdivision because of the enhanced value that would be given to the remainder. The country would develop more satisfactorily if held in smaller areas, each man taking a direct personal interest in the improvement of his property.

(Taken at Sea.)

WEDNESDAY, 2nd OCTOBER, 1923

(SECTIONAL COMMITTEE.)

Present:

Mr. GREGORY, Chairman;
 Senator Lynch | Mr. Blakeley
 Senator Reid | Mr. Cook.
 Captain William Scott Wyles, master s.s. *Bambra*, sworn and examined.

99. *To the Chairman.*—I have been on the Western Australian coast since 1914, and have been visiting Darwin for some years. The best ports on the coast in respect of shipping facilities, are Geraldton, Carnarvon, and Wyndham, in the order named. The Darwin jetty is awkward to work on account of its L shape and the turn-table, but it could be altered to provide ample

facilities for the present trade of the port. The most effective improvement would be a new approach from the east of Stokes Hill. The jetty would not require lengthening or widening. There could be only one outside berth, but the approach could be joined up with the jetty in such a way as to permit two vessels to lie fore and aft of each other. Mooring facilities are provided on each side of the jetty, but I do not like the inside berth, because it is awkward to get into it. The Wyndham jetty is all right; we do not experience any difficulties that call for a widening of the jetty. If increased berthing is required, lengthen the jetty.

The cross-overs are satisfactorily placed. I have seen two meat boats loading without any trouble, and I believe their average handling of cargo would compare favorably with the records at other ports. The costs of handling at the different ports vary according to the size of the cargoes. Where the tonnage is large the costs are low; with small cargoes of 10 to 20 tons the cost per ton is greater. On the whole, Carnarvon is probably the cheapest port on the coast. At Darwin 900 ft. of jetty would be required to accommodate two large steamers at the outside berths. The jetty is wide enough to carry on all work. There is ample room for cross-overs, which would enable loaded trucks to be brought alongside the hulches and single ones taken away without delay. There are four sets of rails on the jetty, but two with proper cross-overs would suffice. Scissors crossings are very convenient, and should be installed wherever possible. The damage done by the teredo to timber jetties, especially at Wyndham and Dorby, is very great, and I think concrete construction would be more economical. When in Singapore recently I saw some fine concrete construction in the wharves. The engineers do not appear to have any difficulties, but they use either steel or concrete piles, according to the nature of the bottom. The failure of the concrete sleeves in the Wyndham jetty is due to several causes. There are no means of fending a ship off them, either when approaching or lying alongside the jetty. Moreover, in muddy water such as that at Wyndham, there is no certainty that the sleeve sections have fitted together properly or that the bottom one had settled well down into the mud, and if a surge were left between any two of them, the concrete filling would probably not be solid. I think that expenditure in giving improved wharf facilities at Darwin would be warranted. A few years ago the handling charges were altogether unreasonable, but now conditions are normal, and, allowing for the higher wages paid at Darwin, the costs are much the same as at other ports along the coast. For economical working, an alteration of the jetty to obviate the use of the turn-table is essential. Under present conditions if two ships were alongside, there would be undue delay in loading and unloading cargo.

100. *To Senator Reid.*—The present jetty is in the right position in relation to the tides. Whilst I have great faith in the future of the Northern Territory, I do not think there is enough trade to warrant the undertaking of Admiral Clarkson's elaborate scheme for many years to come. Improvements to the present jetty would meet all requirements until the trade of the port developed, and the cheapest and most efficient alteration would be a direct approach around the eastern foot of Stokes Hill. The wharf proposed by Admiral Clarkson would not cause any silting of the channel, and could be approached by vessels without difficulty. The mooring facilities on the existing jetty are bad. Bollards have been placed in the centre of the jetty in such a way that, if havers are put over them, they block the trucks. The mooring rings are under the water. Mooring hooks have been put on the walking-piece, and we also make fast to the piles. Electric capstans were installed, but proved a failure, and, notwithstanding that the power-house has been disposed of, the capstans remain. Improved in the

manner I have suggested, the jetty should be suitable for the next twenty years. Not often do two vessels enter the port at the same time, but when that does happen one can go to the inner berth, although the approach to it is awkward. Four hulches could be worked comfortably, but not five. Seldom, however, would that be required.

101. *To Mr. Blakeley.*—I do not think that the building of an approach from the east of Stokes Hill would cause silting, especially with open piling. The creation of an approach on the inside of the L would do away with the inner berth.

101a. *To Senator Lynch.*—I have often witnessed stoppages of loading and unloading operations, due to the use of the turntable. At present it is not necessary to open up another port for the Territory. Darwin harbor is magnificent—quite equal to any other that can be found. I think that all ship-masters are agreed as to the causes of delay and expense in the handling of cargo at Darwin jetty, but opinions differ as to the improvements that should be effected. Concrete for wharf and jetty work is gaining in favour everywhere. At Fremantle it is being substituted for wooden piling for beacons, and it is being tried in lieu of buoys in shallow water. Throughout the world it is taking the place of steel and timber for wharf construction. I do not think that a wooden fender is necessary to protect a concrete structure. If a captain knows that there are no spring piles he brings the ship alongside gently. On the north and north-west coasts, where the weather is usually fine, there is no excuse for a ship bumping a jetty heavily. A ship that bumped a concrete jetty would suffer more than the jetty.

102. *To the Chairman.*—If Admiral Clarkson's scheme were carried out, and the existing jetty were not removed, a ship could only berth head up, and it would have to remain there until ebbside in order to swing in. It would be risky to swing and back into the berth, but a vessel could back out easily in any state of the tide. During a cyclonic disturbance the wind is from the east, and a ship could get out all right under remain after the new wharf was built, would not be a hindrance to navigation.

103. *To Senator Reid.*—The statement of engineers that concrete piles have more give than have jarrah piles supports my contention that there is no necessity for spring piles or fenders on a concrete jetty. Spring piles in such a depth of water as is found at Darwin would not be very effective. A 60-ft. pile would not save a jetty much from a vessel coming alongside. With strong south-westerly monsoons blowing beam on, the steamer would have difficulty in getting away from the proposed new wharf if the old jetty were retained. Of course, if the approach were cut out, and the water thereabout were deep enough, the vessel could go ahead and get out in that direction.

104. *To Mr. Cook.*—The bulk of the Darwin trade is with the eastern States; very little is done with Western Australia, but, when Vestey's works were operating, large quantities of fertilizer were sent down the western coast. In my opinion, the Territory is worthy of an up-to-date jetty.

105. *To Mr. Blakeley.*—The Western Australian cargo to Darwin by the *Bambra* averages about 12 tons per trip, and the outward cargo might average 15 tons. The steel piling in the Darwin jetty appears to be in excellent condition above water, but I cannot speak of the condition of the structure below water. Judged on the principal need of to-day is to abolish hand shunting on the jetty, and allow the locomotive to haul the trucks. That can be done only by abolishing the turntable.

(Taken at Darwin.)

WEDNESDAY, 3rd OCTOBER, 1923.

(SECTIONAL COMMITTEE.)

Present:

Mr. GREGORY, Chairman;
 Senator Lynch | Mr. Blakeley
 Senator Reid | Mr. Cook.

John Hargreaves Millican, Officer-in-Charge, Northern Territory Railways, sworn and examined.

106. *To the Chairman.*—I have had thirty-five years of railway experience, principally in traffic. I started my career on the Great Northern railway in Queensland. In the control of the Northern Territory railways I have a free hand in the arrangement of traffic. Time-tables are subject to the Commissioner's approval, which has never been withheld. I have power to defer the running of the train for three days. For instance, if the mail-boat from the South arrives on Saturday morning, three days later I despatch a train at noon on Saturday, and so give an opportunity to get packages, mails, and passengers into the country I can, without reference to Melbourne, run a special train subject to regulations. If a person wanted a special train to load sheep, I would make the arrangements with him, but would advise Melbourne. When the meat works were running I arranged all traffic in connexion therewith without reference to Melbourne. I think I have sufficient power to enable me to work the railway efficiently. I have been in Darwin for four years and ten months, which included the last season in which Vestey's works were operating. The present jetty is sound and in good order, except that certain renewals are required, and will be carried out during the next eighteen months. If the trade of the port increased, the present wharf would be expensive to operate. The turntable is the principal obstacle, and there is no storing or sorting accommodation on the jetty to enable the goods to be sorted directly they leave the ship. The most necessary improvements are the access to the head of the jetty and the provision of storage sheds on the jetty. The existing jetty is strong enough to allow of the running of light locomotives such as we are using. It is built with cast-iron piles, except the newer portion facing the inside berth, which is of timber. That is the portion which will require to be repaired during the next eighteen months. On account of the ravages of the teredo the life of a wooden pile is very short, the average being about eight or nine years. Before being driven, the piles were charred, but that treatment proved futile. The cast-iron piles are in excellent order; the portions below water level are covered with oyster shells, and that coating acts as a further protection. The whole of the old structure, with the exception of the decking, is of iron construction. Our experience of steel is that it deteriorates much more rapidly than cast-iron. The steel girders in the approach have deteriorated rapidly in comparison with the cast-iron. There has been practically no corrosion of the piles, but we have had to exercise the utmost care to protect the steel work, which is particularly vulnerable between wind and water. A curve from the present approach on to the head of the jetty would not permit of economical working, because the engine could operate only a couple of waggons at a time. You could not take off or bring on a big rake of waggons. There would be insufficient room for the engine to shunt a number of waggons when it reached the straight line. It would be handling just two or three waggons at a time, and the shunting would still be expensive. If a new curved

approach from the east of Stokes Hill were made, all the waggons could be shunted off in a full rake. The wharf should be widened to permit of the erection of sorting sheds and an approach to them for carts. The

following statement shows the annual expenditure upon the Darwin wharf in each year from 1916-17 to 1922-3—

STATEMENT OF EXPENDITURE IN CONNECTION WITH WHARF AT DARWIN, NORTHERN TERRITORY.

	1916-17	1917-18	1918-19	1919-20	1920-21	1921-22	1922-23	Total
	£	£	£	£	£	£	£	£
Ordinary Maintenance	464	1,250	..	189	114	344	570	2,934
Special Maintenance	..	..	..	..	..	1,543	2,064	4,207
Capital Expenditure— Turntable, Electric Capstans, &c	3,714	7,007	..	..	..	..	..	10,721
Widening of Wharf	4,886	1,744	..	..	..	..	..	10,230
	12,054	10,011	..	180	114	1,887	3,240	28,092

I submit also a statement of the cargo which has passed over the wharf during the last seven years—

TONNAGE OVER DARWIN WHARF.

Calendar Year.	Inter-State		Oversea.		Luggers.		Total.	
	Inward Tons.	Outward Tons.	Inward Tons.	Outward Tons.	Inward Tons.	Outward Tons.	Inward Tons.	Outward Tons.
	1916	1,013	547	17,200	1,844	201	286	18,474	2,077
1917	862	369	27,200	5,625	577	536	28,720	6,411
1918	1,089	828	28,776	4,910	392	435	30,257	6,076
1919	3,278	944	9,774	9,701	189	238	13,335	10,943
1920	680	627	5,747	5,098	76	306	6,402	6,031
1921	285	1,059	4,062	1,097	63	582	5,010	2,846
1922	182	152	3,709	2,621	6	421	3,847	3,194
	7,339	4,504	97,108	30,060	1,655	2,804	105,052	37,074

The number of cattle shipped over the new race to date is 2,542; while 437 head were put through the temporary race last year. Another 500 head will be shipped on 5th November. If a sorting shed be established on the jetty, it should be at least four times as large as the existing shed, and be capable of extension as required. Both the inside and outside berths are used at times, but muster mariners object to using the inside berth if they can possibly have the outside one. I am not prepared to express an opinion as to whether the inner berth is safe, although it is frequently used. If general cargo could be unloaded direct from the ship into a sorting shed, and the turntable dispensed with, a saving of 3s. 2d. per ton in handling would be effected. On the tonnage which passed over the wharf last year, viz., 6,116 tons 11 cwt., the saving would have amounted to £810 2s. 7d. The saving that would have been effected in the handling of coal if the turntable were not in existence would be 1s. 2d. per ton, which, on last year's tonnage, viz., 2,730 tons 4 cwt. of coal, would have amounted to £163 10s., making the total saving upon general cargo and coal £973 18s. 7d. For the year ended 30th June, 1919, which was the last season when Vestey's operated, for the 13,323 tons of general goods which passed over the wharf the saving at 3s. 2d. per ton would have been £2,109 5s. 6d., and on the 6,133 tons of coal at 1s. 2d., £378 15s. 7d. The saving on meat products, frozen beef, &c., at 1s. 9d. per ton would have been £500 5s., making the total for the year on all goods handled on the wharf £2,988 10s. 1d. These figures are based upon the present wages and conditions of employment. Although the wages are higher now than they were in 1919, the handling of goods is much speedier. During the last six months general cargo has been discharged at the rate of 10.9 tons per hatch per hour, as compared with 6.95 tons in 1921. The wharf is operated by casual employees, as it was in 1919. When the men are not

employed on the wharf they are idle. The case is different with the men engaged in the sorting shed. At the time when Vestey's were operating, casual men were employed in the shed also, but the Railway Department, which now controls the shed and the wharf, uses its permanent men to do the sorting, stacking, and delivery of the cargo at the shed. The wharf labourers earn only about £8 per month. Unfortunately, the Railway Department has not sufficient work to absorb those men. We increased the number of men working in the yard in order to make labour available for the sorting shed while a boat is in port. Our charge for handling the cargo on the wharf, sorting, and delivery is 10s. per ton. There is a further charge of 3s. 6d. per ton for wharfage on general cargo, or 1s. 5d. per ton on ore and coal, and 1s. 6d. for haulage between the wharf and the sorting shed, and a floor shed charge of 9d., making the total for general cargo 15s. 9d. I estimate that if we were able to use larger waggons than those at present employed on the wharf we could effect an economy of 10 per cent. in shunting operations. The Railway Department does not handle any other than general cargo. Meat and coal boats must be operated by the authorities interested. If Vestey's get a boat load of coal they must make their own arrangements for the handling on the wharf, and the Department would charge 4s. per ton for haulage from the jetty to the meat works. The charges at present being levied on the wharf are sufficient to cover all expenses. Since the Department has been operating the wharf the handling charge has been reduced from £1 to 10s. per ton. If Vestey's works re-opened, the Railway Department would continue to handle only general cargo. We would haul their goods from the works to the jetty, collect the wharfage charge, and leave them to arrange for the handling on the jetty. If, however, general cargo came on one of the meat or coal boats, the Department would unload it. I do not think any disadvantage arises from the fact of their being two separate authorities on the

wharf; there are plenty of men to serve both. There is no trouble with labour at the present time, although there was a great deal in the past. The insulated cars in use here are not built on the same pattern as those used in Queensland; they are about 10 feet shorter, and have four wheels instead of eight. Otherwise they are similarly designed. They are insulated with corkite, and have a zinc lining like an ordinary ice chest. During the time I have been in Darwin I have heard no complaints that the meat delivered to the ships was soft. Meat should be in the hold within four hours of leaving the works, and, if conveyed in reasonable relays of waggons, it should arrive at the boat in good condition. The existence of the turntable involves the employment of more men than otherwise would be necessary, but as the shunting is done by hand, I do not think it materially affects the speed of loading. Vestey's may have experienced more delay with the turntable than the Railway Department has done. The gain from the abolition of the turntable would be in respect of time rather than of cost. The reduction in cost would be 1s. 0d. per ton. Rapidity of handling is a most important factor in the shipping of meat. The firmer and fresher the meat can be loaded the better. It is possible to place meat on board ships in good condition even while the turntable remains, especially as the loading is always done at night. Many of the Queensland meat works are situated long distances from the seaport. The Sellheim meat works are 74 miles from the port. I have known meat to be held for 48 hours in insulated trucks, and then be delivered in good order. In Queensland the meat is frequently held in the waggons for 48 hours and more without loss of condition. Any delay in the handling of the meat caused by the turntable should not affect its quality if it is well frozen. It is only on account of the extra expense it involves that I recommend the abolition of the turn-table. If the Department had larger insulated cars, or a direct approach to the wharf, further economy in respect of shunting might be possible. The reduction of shunting would mean quicker and more efficient delivery. I realize that the greatest efficiency and despatch on the jetty are necessary in order to facilitate the meat export trade. The derricks of the ships visiting Darwin at the present time are sufficient for the handling of cargo at all states of the tide, the average rise and fall of which is 23 feet 6 inches.

107. To Senator Lynch.—The new portion of the jetty was built about seven years ago. I have selected four piles that need immediate renewal, and no doubt others will have to be replaced in turn. The piles are not sheathed with Muntz metal. The wharf, as a whole, is in sound condition. All the cast-iron piles are in good order, and none of them have been renewed, but we shall have to replace six of the fender piles along the steel portion of the jetty. The structure may last for many years if properly maintained. It has suffered no damage from ships or corrosion. The figures I quoted in regard to the possible economy that might be effected by the elimination of the turn-table represent only the savings in the departmental handling of the wharf, but I estimate that the ships also, by getting quicker loading and unloading, would reduce their expenses by about 30 per cent. If the trade of the port increased, the savings I have indicated would probably increase proportionately. Heavy railway material could be handled on the turntable, although it might be necessary to use a crane for shifting long material, such as an 80-foot girder, from one line to another. There is considerable difficulty in the handling of long goods by means of a turn-table. The charge of 15s. 9d. for handling general cargo covers all costs from the ship's slings to delivery to the tender, but does not include the expenses in the hold. The shipping company undertakes to deliver off the

loads on the wharf. We charge 3s. 6d. wharfage on general goods. Brisbane charges 4s. 6d. for wharfage and harbor dues on frozen meat, and Townsville imposes an inclusive charge of 3s. Handling represents the taking of the goods from the ship's slings, loading on to the truck, unloading on to the floor shed, sorting, stacking, and delivering to the public. We employ a tally clerk at each hatch for the protection of the public. The hourly tonnage handled by the men on the wharf compares very favorably with the records for other ports. At Townsville the average rate of loading general cargo into ships is about 10 tons per hatch per hour. If a sorting shed were on the jetty I would undertake to handle 12 tons per hatch per hour. At Brisbane the average is between 10 and 12 tons per hatch per hour. The price of labour in Darwin is much greater than in Townsville or Brisbane. If an up-to-date jetty or wharf were provided, the charge of 1s. 6d. for haulage from the ship to the sorting shed would be saved. I do not know whether the charge of 9d. for shed floor space would continue. Probably in Townsville and Brisbane that charge is not imposed. Since I have been in charge of the Northern Territory line the rates have been increased. A few years ago labour was not giving very good results. In 1921, only 6.95 tons per hatch per hour were unloaded. At that time the wages were the same as they are to-day. When I came to Darwin five years ago the handling of the cargo on the wharf was very poor, but labour has steadily improved, and is now doing very well. I advocate the running of a line to the east of Stokes Hill in order to give the locomotive direct access to the jetty. In its present condition the jetty is the most awkward I have seen on the Australian coast.

108. To Senator Reid.—The steel girders in the approach are subject to deterioration by wind and water. They are kept in fairly good condition by annual coatings of tar, but that is a heavy expense. If regularly tarred or painted—I think red lead is better than tar—the girders would last as long as the jetty itself. Tar is fairly expensive owing to freight and other charges. I have already pointed out that a curved approach inside the L would not be suitable for shunting; it would be impossible if the jetty were rotated at its present length to shunt many waggons, but if the approach were made from the east of Stokes Hill the present jetty could be made workable. That, however, would involve a huge expenditure, which would not be justified. In the long run, Admiral Clark's proposal for the erection of a new wharf would be the cheaper proposition. If the present jetty were retained it would require to be widened in order to carry the sorting shed and give access to carts. These works, in addition to the new approach, would involve a very heavy expenditure. There is no means of improving the present jetty without incurring a good deal of expense. The widening of the wharf to accommodate the goods sheds would do away with the inside berth, necessitating the dredging of a new one, nearer the bank. The jetty would require to be widened about 40 feet, so as to allow of a proper clearance, and even then there would be little advantage unless we could shunt head on. A railway approach from the east of Stokes Hill without a roadway for vehicles would be useless. Should the North-South railway be commenced and the meat-works resume operations simultaneously, extra jetty accommodation, with a sorting shed on the jetty, would undoubtedly be necessary, because the tonnage of cargo passing through the port would be much greater than it was in 1918. With the present accommodation frequent delays would be inevitable should more than two vessels seek berthing accommodation at the one time, particularly if they were coal, rail, or meat boats, which take a long time to discharge on account of having full loads. If two

boats were occupying the jetty for two weeks there would be considerable delay in discharging any other vessel. Undoubtedly, the extension of the railway southward will mean more traffic over the wharf. The saving effected by the improvement of the jetty would compensate for the increased expenditure involved. It has been customary to work three hatches simultaneously. At one time three hatches were loaded with meat at night, and a couple of hatches were loaded with canned meats during the day. The more hatches that can be worked simultaneously, the less the cost of handling per ton. Mr. Conacher has frequently complained of the lack of conveniences on the jetty, particularly in regard to the turn-table. I do not think it delayed the loading to any great extent, but it does increase the expense. The principal repairs on the jetty so far have been the replacing of six feeder piles, re-decking, and tarring. The re-decking has been mainly on the old portion of the jetty. The repairs to the wooden jetties are heavy, and will increase as the piles require renewal. Renewal and tarring will cost about £2,000 during the next financial year. From now onward we shall be practically making a new jetty, so far as the wooden portion is concerned. At present very little tonnage passes over the jetty, and under present conditions it would last a long time, but the volume of trade must increase considerably with the extension of the railway and the reopening of Vestey's works, and something should be done to permit of the more economical operation of the jetty. Some shiploads of live cattle have been exported, and another shipload is to leave on 28th October. I understand that the pastoralists are desirous of establishing a regular shipment of live-stock, but they are making no co-operative effort to that end.

109. To Mr. Blakeley.—The arrangement of the rails on the jetty is satisfactory; there are plenty of cross-overs. The electric capstans have not been used; they were found to be a failure before I came to Darwin. I made a practical test of them, and I found that they involved increased delay. They were installed about 1917, on the recommendation, I think, of the Chief Mechanical Engineer. The bollards in the centre of the wharf are part of the original construction, as they are impracticable, we provided four additional hooks last year. There is very little room to install standard bollards in lieu of the hooks; the waggons can barely pass the hooks.

110. To Mr. Cook.—I understand that Admiral Clarkson consulted the masters of boats calling at the ports and various local people before he prepared his scheme for the improvement of the jetty. The southward extension of the railway will improve the prospect of developing the Territory. The population of Darwin at the present time is about 1,500. The jetty is ample for present requirements. I would recommend the construction of a wharf or the improvement of the present jetty only if the North-South line is to be constructed, and Vestey's works are to resume operations. If the wharf suggested by Admiral Clarkson were built at a cost of £120,000 it would have to bear an annual interest bill, at 6 per cent., of £7,200. If sufficient shipping to cover interest and depreciation were assured, the construction of the proposed new wharf would be justified. I certainly would like to see a sorting shed built on the jetty and an approach made, so that carts could have access. If there is to be a large increase in shipping, the existing jetty will require to be extended and dredging done to provide further berthing space and swinging room for the ships. I cannot suggest any means of providing permanent employment for the men on the wharf, and thus reduce the cost of handling goods. Of course, if the port became busy there would be more work for those men, and they would be assured of a regular and adequate

income. There is no opportunity of finding employment for those men in the traffic branch of the railway, and only a minimum number of men is required for the maintenance of the line.

111. To the Chairman.—On Admiral Clarkson's proposed wharf two sets of rails on either side of the wharf would be sufficient to permit of efficient working. Three sets of rails would be a great advantage in shunting the empty trucks. It would be handy to have one set of rails on the inside of the wharf for the loading of goods for the country; a line through the sheds would occupy too much space. At present we are able to supply trucks to the ships as fast as they can be loaded, notwithstanding the turn-table. The demurrage charge on large boats is very heavy. With a curved approach to the head of a jetty and an on-and-shunt we could give expeditious delivery to a ship with five hatches. We are able to deliver 30 trucks per hour over the turn-table. That rate compares very favorably with the rates at other ports for three hatches. I regard the complaints in regard to the turn-table as justified. If the turn-table were taken away and larger waggons were used, the delays in shunting would be much less than at present, and there would be a 20 per cent. saving of time if the sorting sheds were on the jetty. By the present system of working general cargo sixteen men are required on two hatches to place the goods in the sorting shed, whereas, if the turn-table were eliminated, eighteen men would be required on the wharf, but the stacking and delivery would be done by permanent men in the shed. We are using some concave embossed metal sleepers, some steel girder sleepers, and some Western Australian powdered sleepers. The white ants are attacking the timber sleepers.

112. To Mr. Blakeley.—The goods, as they are received from the ship, are stowed roughly in the trucks and sorted in the shed. If the shed were on the jetty we would place our own men in it, and they would sort and stack the cargo as it came in from the ship. The casual men would be employed only to wheel it in. A saving of 2s. 2d. per ton would be effected in that way. More men would be employed on the wharf than we have now. At present we have two shunters on each hatch, four men in the waggons, and one tally clerk. If the goods were being delivered straight into the shed, we would require two loaders, six truckers, and one tally clerk. The stacking would be done by the permanent men, as it is now. We would require to have two more men on each hatch to do the wheeling, but we would save the wages of the two men employed on the turn-table and obviate a loss of time in shunting. I have allowed 3s. 6d. per ton for stacking and delivery by permanent men, less one-third of the present sorting shed cost on account of the wheeling from the waggons.

113. To Mr. Cook.—There is no pilfering of cargo; in that respect Darwin is the cleanest port in Australia. At one time it was very bad, but there has been a big improvement since permanent men have been employed in the sorting shed.

114. To Senator Lynch.—The delivery of goods into sheds on the jetty would mean only about an extra quarter-mile of carting to the town.

The witness retired.

William Henry Grant, Secretary of Northern Agency Limited, sworn and examined.

115. To the Chairman.—I am representing at this inquiry the Darwin Town Council, in whose behalf I submit the following statement:—

1. The settlement and development of the Northern Territory is handicapped considerably by its isolation and the cost of transporting goods to and from the settled districts of Australia and the outside world.

2. Practically the only means of communication between the northern portion of the Territory and the other parts of Australia is by sea. All of our foodstuffs, except beef, as well as our general supplies are imported, and, consequently, water-borne. Our exports, except, to some extent, live cattle, as well as passenger traffic, from the northern portion of the Territory, are also carried by sea.

3. Port Darwin is the port of entrance and the channel of general trade for the Darwin district, as well as for practically the whole of the northern district of the Territory, which obtain their supplies through the northern coast.

4. It follows, therefore, that the matter of providing good facilities for shipping at Darwin, thus making the port attractive to shipping, is of the utmost importance, with respect to the settlement and development of the Territory.

5. The wharf at Darwin is really the bottle-neck entrance to and outlet from the northern portion of the Territory for all our imports and practically all our exports respectively. Consequently, it is of the highest importance that it should be as efficient as possible, as any defects there lead to increased costs and charges, which are reflected in all directions.

6. The disadvantages and defects of the existing jetty are, shortly:—

(a) Absence of means of access for vehicular traffic, except railway rolling-stock, necessitating the discharge of cargoes directly into railway trucks, for conveyance to the sorting-shed, situated about half a mile from the wharf.

(b) Bad design, which renders it necessary to pass all trucks over a turntable, beyond which locomotives cannot work.

(c) Absence of shed accommodation.

(d) A single line of rails on the approach, over which both full and empty trucks have to be shunted to and from the turntable.

7. With regard to (a), the discharge of cargo into trucks is very unsatisfactory. Four men are required for each hatch working, to receive cargo, and stack same in the trucks for conveyance to the sorting-shed, about half-a-mile distant from the jetty. In addition, two men are employed for each hatch working, to shunt both the empty and full trucks between the turntable and the vessel's side. The whole proceeding is necessarily very slow.

Under present conditions vehicles, other than hand-shunted railway trucks, cannot approach nearer to a vessel's side than a distance of about 500 yards, which is very inconvenient for passengers and the handling of luggage, mails, &c., especially during bad weather.

8. With regard to (b), the head of the jetty is at right angles to the approach, and the trucks, which are all trucks travelling to and from the vessel's side have to pass over this turntable, and as locomotives cannot work with safety on the head of the jetty, this means that all trucks have to be shunted by manual labour between the turntable and the vessel's side. This hand-shunting is necessarily a slow process, and because of the necessity for same only trucks of small size can be used. First of all, loaded trucks have to be removed from the vessel's side, and then empties moved into position alongside. While these shunting operations are in progress, the actual work of discharging from the vessel is stopped, the men employed on the vessel, as well as the truckers, remain idle. Probably about fifteen minutes in each hour is lost in this way, which, of course, means a considerable delay to shipping, and increased costs, both to the vessel and to the consignee.

The turntable is operated by a steam which, which requires the constant services of two men to operate, and this, of course, adds to the cost of handling the goods.

9. With regard to (c), the absence of shed accommodation on the jetty necessitates the removal of all cargo to the sorting-shed, where the trucks are unloaded, and the goods sorted and stacked. The goods are then delivered to the consignees, or reloaded into trucks for transhipment or despatch by rail to the country districts.

10. A good deal of the cargo arriving at the port is intended for transhipment into smaller vessels sailing for various ports and places along the coast, and under present conditions this cargo, after having been unloaded and sorted at the sorting-shed, has to be reloaded on trucks and returned to the jetty. The whole operation is very costly, the transhipment charges on such goods amounting to at least 21 11s. 6d. per ton.

11. During the wet season the work of discharging vessels has to be conducted in bad weather, and there is always the risk of damage to cargo by rain before trucks can be conveyed to and unloaded at the sorting-shed.

12. The risk of pilferage is also increased while the goods are lying unprotected on the wharf.

13. Durative times the existing sorting-shed accommodation is sufficient for economical handling, especially when two large cargoes arrive about the same time.

14. If one transhipment charge on cargo at Darwin were reasonable, there is every probability that a considerably greater quantity of cargo would come into the port for

transhipment to Wyndham and to other places along the coast.

15. Proposed New Wharf.—The most satisfactory means of providing efficient wharfage accommodation would probably be the construction of a concrete quay wall running approximately in the direction of a line between the end of the wharf to the existing jetty and low-water mark off Port Hill Point, with shed accommodation therein by means of a pier thereto, both for railway and other vehicular traffic.

16. The mud flat lying between this wall and high-water mark could be reclaimed eventually to provide accommodation for sheds and warehouses, and in the meantime the construction of the wall would facilitate the reclamation of this area by natural means.

17. The construction of such a wharf would not doubt be costly, but it would be there for all time, and in view of the large amounts which have already been expended in the past on jetties of various kinds, which have not proved satisfactory, the construction of such a wharf is justified rather than further expenditure on the existing jetty, which would in all probability prove after all to be only a waste of money.

18. A further argument in favour of a quay wall wharf is the question of maintenance, which would probably be inconsiderable in comparison with that of a pile jetty.

19. The advantage to be gained by having shed accommodation on the wharf and access thereto for vehicular traffic would be:—

(a) It would enable the discharge of general cargo to be carried on continuous trains, reducing the time of discharge (and consequently the cost) considerably. If cargo were to be landed on the wharf direct from the vessel's slings, and wheeled into the shed, as at other ports, delays which now occur while trucks are being shunted would either be cut out altogether, or at least reduced considerably.

(b) It would enable cargo to be delivered to consignees much more quickly than at present, and with less risk of damage, pilferage, &c., and at a considerably less cost.

(c) During rainy weather it would enable cargo being discharged to be put under cover immediately when necessary.

(d) Cargo intended for transhipment could be allowed to remain in the wharf shed pending transhipment, thus considerably reducing the charges which are incurred on such cargo under existing conditions. This would prove of immense benefit to residents in the outlying districts, who obtain their supplies via the Victoria, Roper, and McArthur Rivers, and to settlers generally in the coastal districts.

(e) Cargo intended for shipment could be received directly into the sheds, either from drays, &c., or from trucks arriving from the country districts.

20. The provision of a railway service to a vessel's side, eliminating the turntable, would allow larger trucks to be used, and for these to be shunted to a great extent by locomotive power.

21. The provision of means of access for vehicles to a vessel's side would be a great convenience for passengers, who under existing conditions are compelled to walk a distance of about 500 yards, as vehicles cannot approach nearer than this. This disadvantage is greatly increased during bad weather. It would also enable mails to be handled much more expeditiously than present conditions allow.

22. It should be remembered that any improvement in loading or discharging facilities on the wharf not only means lower charges for the exporter or importer, but it also means a greater reduction in costs to the ship, where a larger number of men are employed. Stevedoring costs are a large factor in the fixing of freight rates; so in this indirect way the benefit of the community would actually be much greater than the ordinary figures would show.

23. In view of the recent legislation regarding railway construction in the Territory and the possibilities of future further construction, it would greatly reduce handling costs, and consequently stevedoring costs, if good wharfage facilities were provided at Darwin. This would be reflected in lower construction costs, and in that way alone the provision of better facilities would immediately begin to show justification for the expenditure.

24. Port Darwin, by its geographical position, is destined to be one day—soon, we hope—the terminus of a North-South transcontinental railway, and in that event the best of harbor and wharfage facilities will be among the first and most urgent necessities. Why not commence to provide them now?

25. The settlement and development of the Northern Territory is hampered by big handicaps—climatic, geographical, and political. Among the greatest of these are those of isolation, big distances, and want of communications. Consequently, nothing but big, far-sighted developments, based on a belief in the future of the Territory and in view of the development of our industries and the populating of the country.

I am sure that if larger trucks were used greater economy in handling would result. The men working the hold, having made all the slings they can make, the winches are stopped until the shunting has been completed. It is the handshunting due to the turn-table that causes the inordinate delay. Some of the bigger ships that have called here to take ment have been considerably delayed, and have had to pay heavy demurrage charges. If direct railway communication to the head of the jetty were provided, the shunting would be quicker, and that would obviate a good deal of delay. I have seen small locomotives on the head of the jetty, but I understand that it is not safe to take a heavy locomotive over the turn-table. My experience has proved the jetty to be most unsatisfactory owing to the delays that occur in the discharge of the cargo. The turn-table, especially, has always been a hindrance. The men employed upon the wharf have no other employment, and the lack of continuous work has been one of the principal causes of discontent and industrial unrest. The Wyndham arrangement, by which when a man cannot be given employment at his usual task, he may be employed at other work, and be paid the wage pertaining to his regular task, might provide a partial solution of the difficulty. In the past the unions have restricted men working on the wharf to that particular class of labour, and have refused to allow them to accept other employment. Now that the Railway Department has charge of the handling of cargo, it probably could provide continuous employment more satisfactorily than could anybody else. At one time an agreement existed between the Northern Agency Limited and the union whereby the men employed on the wharf were paid a weekly wage of £6 7s. 6d. It was hoped that that regular wage would improve the conditions upon the wharf, but the result was not satisfactory. There were so many permanent gangs employed, and sometimes when a big ship was in port casual men were engaged, and there followed the anomaly of two sets of men working on the same job at different rates, and under varying conditions. A few years ago a grab-dredge cleared the channel to the required depth. I understand that the piles that were replaced in the jetty recently were driven. The original wooden jetty was condemned over twenty years ago, but I understand that the piles in it were all driven. So far as I can judge from the brief study I have made of Admiral Clarkson's plan, his proposal meets with my approval. At the present time the Northern Territory is more depressed than it has ever been. One of the greatest hindrances to development has been the lack of communication. Good wharfage accommodation would make the port attractive to shipping, and that would tend to foster development. The fact that practically nothing is being done in mining to-day speaks for itself, but I am satisfied that there are in the Territory shows which, if situated in any other part of Australia, would be paying handsomely.

116. *To Senator Reid.*—I have known many instances of cargo having been damaged by wet weather, although usually the work of loading or loading cargo is discontinued as quickly as possible when rain commences. If a sorting shed were established on the jetty, it would be possible to work between showers, and that would avoid some of the delay which takes place under present conditions. If railway communication were extended to some of the back country, a big development of the pastoral industry would follow. Pastoral development is dependent, to some extent, upon the re-opening of Vestey's works. There is opportunity for a limited trade in the export of live cattle. At this stage, at any rate, the Territory must be regarded as primarily a pastoral country, and there are great possibilities of expansion, particularly in connexion with cattle raising. I understand that much

of the country on the Barkly Tableland, and on the Victoria Downs, is suitable for sheep. If the meat works resume operations, a big improvement throughout the northern portion of the Territory will follow. I am not prepared to say that the turn-table gives increased opportunity to the men to "go slow." There is no opportunity for the town council to give employment to the men engaged on the wharf when there is no ship in port, because, unfortunately, the council has very limited funds. A sorting shed on the jetty would greatly facilitate the handling of goods. At most ports the cargo is sorted almost immediately after it is landed, but here the shed is situated a quarter of a mile from the ship, and a separate gang must be employed to do the sorting. When the discharging of the ship has been completed some of the men who were engaged on the wharf are employed in sorting and stacking in the shed, and delivering the goods to the consignees. I have no hesitation in recommending the adoption of Admiral Clarkson's scheme, because without it we shall always be in difficulties. The expenditure which it would involve is justified by the development that may be expected in the Territory. In the interests of the Commonwealth generally the Territory must be given every possible advantage if it is to go ahead.

117. *To Mr. Blakeley.*—The industrial trouble on the jetty has been partly the fault of the men, and partly the fault of the management. For a while the men exerted job control, which undoubtedly led to abuses. I do not say that the workers are wholly to blame for what occurred. The lack of facilities on the wharf is as much responsible as is labour for the heavy cost of handling. I am not prepared to say that inefficient management has contributed to the trouble. An average wage of £2 per week is not adequate remuneration for men employed on the wharf, and their irregular and inadequate income has contributed to the unrest. There is always a tendency under those conditions for the men to make a job spin out. At the present time probably 100 men are unemployed in Darwin.

118. *To Mr. Cook.*—The export of live cattle has almost ceased, and there has been very little export of other products. I think it is necessary to provide a thoroughly up-to-date wharf, because it will give an incentive to development. The export of live cattle will probably increase. I believe that the cattle that have been sent abroad have given satisfaction to the purchasers.

119. *To Senator Lynch.*—As the Territory develops there will certainly be a demand for other outlets for its produce, but any prospective development of a port at the McArthur River does not diminish Darwin's claim for the provision of an up-to-date wharf. Darwin does not even now get a very big proportion of the trade from that district, and even if a good deal of the Barkly Tableland trade went to a port on the Gulf there would still be justification for expenditure on the provision of better wharfage accommodation at Darwin. Most of the trade from the Victoria River district will always come to Darwin. The stock route is well watered. Eventually railways will be built into that country, but at present the Territory is at a standstill, principally on account of the low price of beef. The stagnation of the Territory cannot be attributed to the lack of adequate wharf facilities at Darwin, but that lack, by increasing handling costs, helps to continue the stagnation. The Territory must be developed in the interests of Australia, and I do not see how it can be populated and settled without improved means of communication, and better facilities for the handling of goods at the port. I understand that Darwin is one of the most expensive ports in Australia. In most other ports, more work is provided

for the wharf labourers, and that means a lower hourly rate. Darwin is made an expensive port by the bad design of the wharf, and the high cost of handling.

(Taken at Darwin.)
THURSDAY, 4TH OCTOBER, 1923.
(SECTIONAL COMMITTEE.)

Present:

Mr. GRAYSON, Chairman;
Senator Lynch | Mr. Blakeley
Senator Reid | Mr. Cook.
Anslly Hubert Callinan, Railway Porter, representing
the North Australian Industrial Union, sworn and
examined.

120. *To the Chairman.*—My principal work is shunting on the jetty. In my opinion, the high cost of landing goods is entirely due to the turn-table system. If the locomotive could go directly on to the head of the jetty, the trucks could be shunted more rapidly, whilst stores on the jetty would obviate double handling. At present goods are delivered into trucks which are hand shunted on to the turn-table. The turn-table is operated by a winch and two men. The truck is then hand shunted off the turn-table, and hauled by engine at least a quarter of a mile into the bond store. There the goods are unloaded, sorted, and stacked, prior to delivery to the consignees. I have been employed on the Northern Territory railways for seven years. The turn-table is responsible for delays in making trucks available for loading and discharging cargo. Since the depression set in, we have been working only two-hatch boats. Under the present conditions it would not be possible to unload a four-hatch vessel, especially if the cargo were sleepers, because as the sleepers are packed overlapping the ends of the truck, it would be possible to put only one truck on the turn-table instead of two. I think the present steam turn-table is worse than the old hand turn-table, and causes more delay. In loading a four-hatch boat, you would have to shunt off sixteen full trucks before you could get sixteen empty trucks on to the jetty. If the turn-table were moved, and the engine could go on to the head of the jetty, as soon as the sixteen full trucks were pushed off, the sixteen empty ones could be pushed up from behind. A ship cannot be kept fully supplied with trucks without delay occurring. That delay enables the Department to supply empty trucks, and take off the full ones as fast as they can be loaded, but if Mr. Millican says that the present wharf facilities enable him to keep a vessel fully supplied with trucks without any delay occurring, he is wrong. If we were working a four-hatch boat at the present time, and sixteen full trucks were shunted off the wharf, the engine would have to pull them out of the road before it could push the empties on, because each loop between the approach and the turn-table will hold only eight trucks. Certainly there is room for a large number of empties on the wharf, but only by a pool end of shunting can they be got into position. A double approach to the head of the jetty would not overcome the difficulty unless the engine could get on to the head with the trucks.

121. *To Senator Reid.*—Between the bow of the ship and the end of the jetty there is room for eight trucks. As soon as four trucks have been loaded, they are pushed out of the way, off the turn-table, then the men have to go back and push the empty trucks up to the hatches. All this shunting has to be done by hand labour. On each hatch two shunters are continually employed in pushing full trucks off the head of the jetty, and empty trucks on. For a four-hatch boat it would be necessary to employ eight shunters and two men on the turn-table. By eliminating the

turn-table, and allowing the locomotive to go on the head of the jetty, you could dispense with the services of ten men when working a four-hatch boat. The engine could do the shunting work 8 per cent. quicker than it is done by hand labour. It is necessary therefore to have four men on each truck because, on account of the turn-table, we try to put much cargo as possible on each truck, and that means stacking the cargo.

122. *To Mr. Cook.*—The cattle received at Vestey's works when they were in operation were of medium quality. I was stationed at Emunglang for two years, and the stockmen often told me that the good pastoral country only commences there. I think that the southward extension of the railway will necessitate the reconstruction of the jetty to permit of the unloading of railway material. At present, it would be almost impossible to get long lengths of the wharf, because the boiler of the turn-table would be in the way. I worked on a concrete wharf in Brisbane, and so far as I have been able to observe, concrete piles are superior to any that are in use in Darwin. I think a reinforced concrete pile would be the cheapest. The principal industry of the Territory is pastoralism, which does not employ a large number of men.

123. *To Mr. Blakeley.*—In the event of the Commonwealth deciding to spend a large sum of money on the construction of a new wharf, or the improvement of the existing jetty, industrial peace could be guaranteed by an arrangement between the employing authority and the unions. When Vestey's were operating, four or five unions were concerned, and there was always industrial strife. I think the Territory would fare better if there was only one union with which the employers could confer in order to fix industrial conditions. The union I represent comprises nearly all the railway men, and those who are still employed at the meat works. The Northern Territory Workers' Union comprises the men who are employed on the wharf for the unloading of vessels. The membership of my union is about 300, including workers in out-back pastoral districts. The only other industrial organizations are the Northern Territory Workers' Union and the Carpenters' Union. There is no organization representative of the Unamalgamated Society of Engineers in Darwin. While Vestey's works were operating the men on the wharf were earning from £7 to £8 per week, but since the depression set in, they have not been making more than about £6 per month. They could be assured of a living wage only by being given other employment when there are no vessels in port. At one time the waterside workers were paid £6 7s. 6d. per week by Vestey's for the working of the boats alone. There was then plenty of work on the jetty, but the only way of overcoming the present small earnings is to provide the men with other Government work during their slack time. Generally speaking, labour in Darwin is quite efficient. There is no truth in the statement that the workers have adopted a "go slow" policy. A lot of the high cost of the construction of the railway from Pine Creek to Emunglang was wrongly attributed to labour. Sleepers arrived at the port, and were unloaded into the trucks, from which they were unloaded into the yard. Later they were reloaded into the trucks to be sent to the head of the line at Pine Creek. There they were again unloaded and stacked until the constructing engineer wanted them, when they were once more put on the trucks. There was similar duplication of handling in connexion with rails. When the railway construction commences, labour will have to be brought from the south because there is not sufficient in the Territory at the present time for a big job of that character.

124. *To Senator Lynch.*—One factor that makes for the stagnation of the Territory is that there is no market for anything that is produced here. The men

settled on the land at Daly River could not get their agricultural produce to Darwin. There are, in the interior, mining propositions which, in any other part of Australia, would employ thousands of men. I have worked in the mining industry in Queensland and have managed mines, and none of the shows I saw there is comparable with Coronet Hill copper-mine, which is situated about 45 miles from Pine Creek. It was closed down because of the enormous cost of transport. The ore averaged 21.3 per cent., and copper was worth £1 per unit, but all the mine-owners received for their ore was £7 per ton. Transport and other charges amounted to over £13 per ton. Isolation is another handicap. If there were smelting works handy the 20 per cent. ore would be converted to 60 per cent. matte, and the carriage of the matte would cost no more than the carriage of the poorer grade ore. Of course, I realize that the cost of coke would be prohibitive of the establishment of smelters. Darwin requires more shipping, and I am unable to understand why more ships do not call at the port. From what I know of the Territory—and I have resided in all the other States—it has greater potentialities than has any other part of Australia. It only requires to be given a chance of development by the provision of railway facilities. I do not think it will be possible to do anything with the Territory so long as everything has to be referred to head-quarters 2,000 miles away. If any official in Darwin wants to blow his nose, he has to wire to Melbourne for permission. The Government policy of late has not been friendly to the development of the Territory. A great deal of money has been wasted here. The Batchelor Demonstration Farm is an instance. After an enormous sum of money had been expended in trying to breed horses and grow cereals, the farm has been let to a private individual for extor-tion. The Government did not employ an experienced man to conduct the farm, and in consequence it failed. I worked on the Broken Hill Proprietary mine when there were 9,000 men engaged, and yet there were at no time more men administering the Mining Department of the Territory with only one small mine working, than were employed in the office of the Broken Hill Proprietary Company. The Territory has not had a fair deal. More money should have been made available for its development, but it will be useless to try to develop it until the isolation is removed. Instead of every matter having to be referred to Melbourne, the Territory should be given some measure of local autonomy by means of a provincial council or Board. You remind me that £4,786,000 has been expended from revenue and loan upon the Territory during the last eleven years. I admit that that is a lot of money, but it has not been spent wisely. On the wharf are electrical capstans and a turn-table that should be driven by electricity. Standards for electric-light have also been provided. There was a power-house with beautiful machinery sufficient to light the town of Darwin, as well as the jetty. The installation of that plant cost £10,000, but the machinery is now at the locomotive sheds, the cables have been sold, and the standards supporting kerosene lamps. At Emungalan, the engine-shed was erected three years before the rails were put in to enable an engine to be housed there. It may be true that expenditure from revenue and loan, together with the loss upon the Port Augusta-Oodnadatta railway and the indebtedness of the Territory and the railway, of which the Commonwealth assumed control, total about £12,000,000, but there is nothing in the Territory to show for that expenditure, except the section of railway from Pine Creek to Emungalan. The population has actually decreased. The only way to develop this country is to build railways into the good areas that are capable of production. A railway will not be a paying proposition, but if lines were built only in those places where they would pay from the outset, there would be

very few railways in Australia to-day. I have read of the Derby-to-Camooweal railway project, but I think that the first work to be carried out should be the line from Darwin to Oodnadatta, and subsequently another line should be built through the centre of Western Australia to Queensland. The mining potentialities of the Territory are greater than those of any other State. In addition, there are great pastoral and agricultural resources, but, so long as railway communication is denied, so long will development be retarded. A bold policy is necessary; it will cost a lot of money, but eventually the cost will be repaid. A developmental railway cannot be expected to pay from its inception. The Canadian-Pacific railway did not pay until the country was settled. This Territory cannot be settled until railway lines are built and means of transport are provided. In regard to the labour troubles in the past, we industrialists admit that different unions were fighting amongst themselves and there was a certain amount of unrest, but the times were abnormal, and the conditions that obtained here were general throughout the world. Labour has not retarded the development of the Territory. Men work as hard here as in any other part of Australia. I believe the present output of cargo averages about 10 tons per hatch per hour. Officers of ships that call here say that labour on the water-front at Darwin is better than that in other parts of Australia. The last Government job carried out in the Territory was the excavation and construction of cattle-yards near the jetty, and I do not think that work could have been done cheaper elsewhere in Australia. In regard to the allegation of repeated stoppages of work by the unionists when Vestey Bros. were operating, if the employer tries to break down industrial conditions, the worker is bound to object. It is not true that the workers simply sought one concession after another. Mr. Conacher has said frequently that the works were not closed down on account of labour, but rather because of the failure of the Government to carry out its guarantee that it would supply the company with ships. For instance, the works stopped killing early in September, but no boat came here to release the meat from the refrigerators until the following March. Thousands of pounds per month were expended in keeping the freezer in operation, and the Imperial Government had to pay that cost. Mr. Conacher was quite satisfied with the labour conditions at Darwin. I can hardly credit that anybody on the *Bambra* should have said that the men on the wharf were not doing anything like a fair day's work. From an industrial point of view Darwin is the most peaceful town I have ever lived in. I realize that Australia cannot adopt a "dog-in-the-manger" policy with the Territory. If we do not populate and develop it, some other nation may take it by force and do the job. I recognize that it is part of the workers' duty to assist to develop the country which belongs to them as much as to any one else. So long as they are treated fairly they will treat the employers fairly, but it is a moral certainty that the worker will get nothing from the employer if he allows himself to be continually kicked. Hitherto the labour conditions have been fixed by agreement, but now two unions are registered in the Arbitration Court, and the conditions are governed by awards. The agreements were made for a period of twelve months, and generally were observed. The cost of living in the Northern Territory is higher than in any other part of Australia. We base our rates of pay on a 354 per cent. advance upon the basic wage in Brisbane. I do not recollect any claim by the workers having been refused by Vestey Bros. The Dutch boats discontinued calling at Darwin because they could not get sufficient loading at Singapore, and did not consider it worth while to call here to land passengers. Other boats do not call at Darwin because trade is stagnant. I do not think that labour can be blamed for the

diminution of shipping. Ever since the Railway Department has had control of the jetty, the work done on the wharf has been satisfactory, and there has been practically no unloading and pillaging. If the discharge of cargo was at any period not more than 6 tons per hatch per hour, there must have been special reasons, as, for instance, the breakdown of the lighting. I have known all the Singapore cargo to be unloaded in order to get at the Darwin cargo, and then be reloaded. So far as the climate of the Territory is concerned, I would as soon reside here as in any part of North Queensland. Darwin is free of all disease. The town itself is healthily situated. Until the Chinese gardeners were hunted away, there was an ample supply of fruit and vegetables. To-day the supply of vegetables is very small, and only tinned milk is procurable. I maintain that the employing authority has always had a fair deal from the labouring class in the Territory, and always will have. Admittedly, the Territory has been a big drag upon the finances of the Commonwealth, but that has been due to wasteful expenditure. A great deal of false information is circulated regarding labour and other conditions in this port. The workers have given every satisfaction, and the blame for unwise expenditure must not be laid at their door. Labour was not responsible for the spending of £20,000 upon the growing of a pumpkin. I am a believer in the principle of State enterprise, but the administration of the Territory has been altogether inefficient.

125. *To the Chairman.*—The handling charges at Darwin may compare favourably with those at some of the Northern Queensland ports, but that does not mean that we have adequate facilities for the loading of boats. The use of small trucks involves more shunting than if trucks holding twice the quantity of goods were used. Vestey's loaded meat only at night, but I know of no reason why the work could not have been done during the day, the insulated trucks kept very cool, and I believe would have held the meat all day without any loss of condition. Night loading meant the payment of time and a half. The discharge of only six tons per hatch per hour would not represent good work on general cargo. Of course, the big rise and fall of the tide would affect the rate of loading and discharging. I believe it is a fact that in 1910 as much as £110 per man was paid for ten days' work. In regard to the allegation that men who were being paid 7s. 6d. per hour were found asleep in the trucks and elsewhere, I have only to say that the workers cannot be blamed for inefficient management. If a man does not do his work, and yet receives his pay, the fault lies with the boss. The men were entitled to lie down between 12 and 1 o'clock, and if the boss also slept and failed to wake in time to start the gangs at 1 o'clock, the fault was his. Men who were not doing a fair amount of work should have been discharged. I had twelve years' experience of mining, and was managing one mine for the Queensland Government. The opening up of the mines in the interior of the Territory is prevented by the isolation and the lack of means of transporting ore to the smelting works. There is in the interior plenty of timber suitable for mining purposes. I have admitted that the high cost of coal and coke would be an obstacle to the establishment of smelters in the interior, although the O.K. mine in Queensland was worked successfully, notwithstanding that it was 25 miles from Chillagoe when that was the head of the line.

The witness retired.

Patriot George Scott-Cranston, Wharf Labourer, President of the Northern Territory Workers' Union, sworn and examined.

126. *To the Chairman.*—There are no difficulties in the union I represent other than the scarcity of work. Under present conditions, there is no trouble on the

wharf. We receive a fair rate of wage, and we give a fair day's labour in return.

127. *To Senator Lynch.*—I have been in the Territory eight and a half years, of which seven and a half years was spent in the bush. I think the primary cause of the present stagnation is the financial mis-administration. Hundreds of thousands of pounds have been recklessly squandered in this country by men who were wholly inexperienced. Dr. Gilruth was a man of many parts, but wholly unfitted for the job he was appointed to carry out. While public money was being squandered a number of us who were in the bush participated, but when that flow of money was shut off absolute stagnation and distress followed. I will not say that, while the squandering took place, other services were starved. As long as the Commonwealth is content to supply money with the liberality with which it was spent during the régime of Dr. Gilruth, none of us will complain. In that respect we are just as selfish as the people in the South. Nevertheless the squandering of money is a serious matter to those of us who are residents of the Territory, and have to think of the future of this country. I do not say that the Commonwealth spent too much money; it did not spend enough, and what it did spend was spent unjudiciously. The same remark applies to the private capitalist undertaking that was established here. I could mention instances of reckless expenditure that would amaze the Committee. I advise you to inquire regarding the amount of work that has been done in connexion with the Marraonby battery in comparison with the money that has been expended there. The Territory can be developed only by people with a practical knowledge of existing conditions. There are men who, if given a free hand and a little money, could do wonders with this country. We have lived the last few years under the influence of Vestey's, but we have dispelled the idea that we are dependent upon them. We are experiencing hardships, but we are content to live on here because we have confidence in the future of the Territory. Expenditure upon the improvement of wharfage facilities at Darwin would be justified because of this port's position as a link in the chain of direct communication between Great Britain, India, and Australia. If there is a prospect of the North-South Railway being constructed, and the country in the interior being developed, better jetty accommodation will be imperative, but I will not say that the expenditure will be justified if the present conditions of Darwin are to continue. The Dutch boats no longer call here, because insufficient trade is offering. The passenger traffic is small, and the other boats calling here are able to handle all the cargo upwards and outwards. I have only been connected with the labour in Darwin during the last two years, in which time there has been no trouble on the wharf. I have no knowledge of what happened prior to my joining up with the Northern Territory Workers' Union. Apparently conditions on the wharf are quite satisfactory now. I personally would have no objection to an arrangement being made with Vestey Brothers similar to that obtaining in connexion with the Wyndham meat works by which continuity of employment is assured to the men on the wharf. What attitude my union would take I cannot say.

128. *To Mr. Cook.*—I have had experience of farming in New South Wales, and I was a drover of bullocks and sheep in the Territory for over seven years. I do not think this country will ever carry a big population, but the projected southward extension of the railway will induce hundreds of people to settle in the country between the Katherine River and Daly Waters. There are patches of country that cannot be beaten in any part of Australia, and the whole district is peculiarly well watered. Because of the patchy character of the land a man would require to be given

a big area upon which to run his stock. He should have a holding of not less than 10,000 acres. There are other portions in which a man might make an excellent living by cotton cultivation upon an area of 300 or 400 acres if the figures in regard to Queensland production are to be relied upon. In the area of 10,000 acres there would be a lot of fifth class land which would be of no use for cotton growing. There are almost unlimited opportunities for the export of beef to the Orient. Live cattle shrink considerably in transit to those places, and with the possible exception of Shanghai, there is not at any of the ports land on which the stock could be grazed in order to restore their condition. From the time cattle are unshipped at Manila until they are killed, they shrink to the extent of even 40 and 50 lbs. per day. The only policy is to slaughter the cattle here, export the refrigerated beef, and have cold storage at the other end. The frozen meat trade might even be extended to Japan. During the last few years, the Japanese people have commenced to eat meat. If I had to choose between expending a large sum of money upon the improvement of the wharf, and building a railway into better country in the interior, I would advocate developmental expenditure, because until the interior is developed, the wharf will be only a buy-heat. I do not favor any expenditure upon a wharf if thereby the expenditure in the interior will be curtailed.

128a. *To Mr. Blakely.*—If the Commonwealth commenced the building of a wharf, and started the southward extension of the railway, I do not think there would be any industrial trouble. I have heard rumours of a "go-slow and ca' canny" policy having been adopted by labour in the past, but since I have been in Darwin there has been no industrial trouble. At the time when there was a good deal of disturbance here, the people in Darwin included men from every hole and corner of the universe and some of them were very difficult to control. Even the Chief Architect of the universe could not have restrained those men. The men who were responsible for the conduct of Vestey's affairs have themselves to thank for the conditions existing in Darwin. They, infinitely more than the labour leaders, were responsible for what occurred. I worked at Vestey's for a time, and the carelessness and indifference that existed, were bound to lead to the sort of thing that actually happened. The men were led to misinterpret liberty for licence. Generally speaking, labour is just as efficient in the Territory as it was many years ago on the gold-fields. There is not a better team of workers to be found in the whole of Australia than those employed by Vestey's to-day. I make that statement freely, although those men are not members of my union. A similar tribute may be paid to the men engaged in mining in the country. White men can work here and develop the country, but they cannot stink to their work as consistently, and for such a long time, as they can in the south. Here, as in all semi-tropical countries, a man is infinitely healthier if he is doing hard work, and if we were given the opportunity, we could put out energies to better use. My own earnings have averaged less than \$6 per month, notwithstanding that I have worked on every boat that has entered the port. Continuous employment could be provided for the workers if capable men were given the handling of money for expenditure on reproductive works. I do not think that friction between the two unions need be apprehended. A change in the present conditions is inevitable. Every common-sense worker in the community realizes that, but such an amount of friction has been caused, mainly by poverty, that amicable relations will not be restored for some time. A good deal of the trouble in the town is due to poverty. A man who sees his means of existence taken from him by another is bound

to feel sore, because there are no means of compensating him for his loss. The industrial condition would be much better if the economic circumstances of the worker were improved.

130. *To Senator Reid.*—I think the Territory will be developed by the settlement of smaller holdings. Six or seven miles from the Katherine River there is a fine belt of country, which leads into an area similar to the Oklawaha cotton lands. Along the Ord River 100 men could be settled on land suitable for cotton cultivation, and they could grow almost anything they required for their sustenance. On the King River also there is a stretch of 100 miles of country upon which hundreds of settlers could engage in cotton cultivation and mixed farming. The country to within 6 miles of Mataranka is remarkably well suited for mixed farming. Indigenous cotton thrives amazingly. In the aggregate, there are thousands of square miles of country suitable for cultivation, but after leaving the rail head at Katherine River there are no means of communication. The whole of the Mataranka limestone country would produce cotton. Improved lines of communication are imperatively necessary, and unless they are provided the country will be in the same condition ten years hence as it is to-day. Even in the cattle country thousands of cotton growers could be established, after railway communication has been established. If £200,000 were available for expenditure, I would prefer that it be devoted to railway extension and other developmental works in the interior rather than that it be expended upon a new wharf. After all, a wharf is not of much value until you have grown something to put over it. The existing jetty has many disadvantages, but I daresay we could make shift with it for some time. The cotton crops which have been already sown will be a pronounced success. One man has been remarkably successful; he has made £2,000, and for the first time in the history of the Territory a farm has been bought for cash. Others will be equally as successful as he, and I expect that later we shall have an influx of people who are ready to engage in cotton cultivation. That industry will support more population. The Government have promised to help in the establishment of a ginny. But if the country is to be fully developed, it must have better lines of communication by means of either good roads, or, preferably, light railways. In my opinion, Marramby is the richest tin-field in Australia, but at the present time it is impossible for any person to make a living there because the transport of supplies and concentrates costs from £18 to £20 per ton. If a man could send his concentrates to the port for £1 per ton, and get his supplies back at the same rate, the difference between that amount and the present transport charges would represent a handsome profit.

(Taken at Darwin.)

FRIDAY, 6TH OCTOBER, 1923.

(SECTIONAL COMMITTEE.)

Present:

Mr. GREGORY, Chairman;

Senator Lynch | Mr. Blakely

Senator Reid | Mr. Cook.

Percy Kelsey, Managing Partner of A. E. Jolly, and Company, sworn and examined.

130. *To the Chairman.*—I have been in Darwin for nearly forty years. I am aware of Admiral Clarkson's scheme for the provision of improved wharfage facilities at this port. My firm does the stevedoring for Burns, Philip and Company, and the boats of other

companies for which we are agents. At the present the agents are responsible for the labour on the ship, and the Railway Department for the labour on the wharf and in the yard, with the exception of the Navy boats, for which we, as agents, find all labour. I submit statements showing the rates of handling cargo and labour costs based on manifest and pay-sheet figures, from the 7th November, 1921, to the 15th October, 1922, and a further statement showing stevedoring costs from the 25th November, 1922, to the 30th September, 1923. Handling charges from 1st January, 1921, to 30th June, 1921, were 10s. 6.38d. per ton, and from 1st July, 1921, to 31st October, 1921, they averaged 10s. 4d. per ton. Between 7th November, 1921, and 15th October, 1922, the average ship's cost, including overtime on jolly and in the shed, was 12s. 3d. per ton. That reduction was due to the seaman in the union ranks. The rate per ton is now down to 10s. 9d. That represents the cost of delivery on the wharf. The costs of handling have dropped since the Railway Department took this work in hand. The class of cargo has some influence upon the handling costs. The table shows that on one occasion the average price per ton for the *Bambra's* cargo was 48s. 10d., but the vessel may have arrived on Sunday, necessitating the payment of double rates.

Date.	Vessel.	Tons.	Cost.	Average per ton.
			£ s. d.	s. d.
1922.				
Nov. 28	Bambra ..	45	61 15 3	23 0
Dec. 6	Marcella ..	91	63 7 0	13 11
Dec. 13	Montoro ..	202	106 14 0	11 4
1923.				
Jan. 6	Montoro ..	54	43 6 0	16 0
Jan. 16	Malayan ..	272	122 0 2	10 9
Feb. ..	Bambra ..	11	25 0 0	46 10
Feb. ..	Malayan ..	77	48 0 0	6 8
Feb. 15	Marcella ..	217	102 1 3	9 5
Mar. 7	Marcella ..	29	21 0 0	14 6
Mar. 13	Montoro ..	217	123 0 0	12 6
Apr. 16	Montoro ..	69	25 15 0	9 6
Apr. 15	Marcella ..	331	300 0 8	17 0
Apr. 29	Kangaroo ..	77	34 2 0	10 2
May 5	Marcella ..	72	21 0 0	8 11
May 14	Montoro ..	521	101 15 8	6 4
June 6	Montoro ..	90	45 0 0	16 1
June 6	Bambra ..	25	29 7 15	9
June 14	Marcella ..	346	142 14 1	8 2
July 7	Marcella ..	95	38 3 3	8 1
July 16	Montoro ..	368	144 11 11	7 10
Aug. 5	Bambra ..	29	69 8 0	41 0
Aug. 6	Montoro ..	118	95 13 0	16 3
Aug. 15	Marcella ..	330	177 10 5	16 9
Sept. 9	Marcella ..	110	35 15 0	4 1
Sept. 16	Montoro ..	360	183 7 0	10 4
	Totals ..	4,093	2,202 6 5	16 9.138

The ordinary wage on the wharf is 5s. per hour, overtime is 7s. 6d. per hour, and Sunday work 10s. per hour. Moreover, the cost per ton is increased at times through delay in the arrival of the ship. We receive a wireless message from the captain that the vessel will arrive at 1 o'clock, and we engage men to be ready on the wharf at that hour. If the ship does not come alongside until 4 o'clock, we have to pay the men three hours' wages for merely standing by. The cargoes handled during the recent months have been slightly less than those in previous years. If Vestey's resume operations at the wharf they may ask us to handle their goods on the wharf, but we have not done their stevedoring in the past. The high cost of work on the wharf in the past has been due partly to defective labour, and partly to delays caused by the use of the turntable. Practically no work is done while full trucks are being shunted round the turntable and empty ones are being brought in. That

represents a loss of anything from 15 to 20 per cent. I think as a rule men do better work if they are kept continuously employed. A man who is working uninterruptedly can give better results than can a man who has to discontinue his operations for a while, and then resume them. Before the union took charge of the wharf a gang of four white men were assigned to handle the cargo from the slings into the trucks and over the turntable for 9d. per ton. Then the rate increased to 1s. 9d., and subsequently to 1s. 6d. per ton. When the union took charge costs further increased, because it insisted upon the working of so many men to a gang. The four men discharged one ship at the rate of nearly 30 tons per hatch per hour, but that was on Oriental cargo, amounting to about 400 tons. The wharf labourers when not engaged on the wharf were employed in the town on other work. They used to turn one truck at a time on the turntable; now two at a time are turned, and the operation seems to be slower. When a certain number of trucks are full, discharging or loading ceases while those trucks are pushed off the wharf and others are brought on. It will be impossible to get efficient handling of cargo while the turntable exists. I should say that the turntable adds fully 15 per cent. to the cost. Generally the conditions on the wharf seem to have improved during the last twelve months, but even now delays cannot be avoided. These delays are due to the turntable. The men will not shunt the empty trucks on to the turntable; they will only push off the full ones, and when the engine is away there is some delay. Mr. Millican has eliminated a lot of that delay by insisting that the engine shall attend to the jolly. If Admiral Clarkson's scheme will allow only one vessel to be berthed at a time, it will not be much of an improvement upon the present jolly except that it will allow the engine to go alongside vessels. If after the new wharf were built the old jolly were allowed to remain, the swinging basin would be cramped, and that would be an element of danger. If during rough weather the vessel pulled away from the wharf, there would be a risk of fouling the old jolly. A ship should be able to go ahead when leaving the wharf, and not have to back out. Most master mariners dislike the inside berth because they are afraid of striking the mud bank when going out. When the jolly was widened in order to provide the inner berth, ships were obliged to go nearer the mud bank, and when a single-screw vessel is backing out she has a tendency to go to port, and her stern sheers into the mud. The need for backing should be obviated. Mr. Millican is right in saying that he can supply trucks on the head of the jolly faster than the stevedores can load them; the locomotive simply pushes the empty trucks on to the turntable and draws off the full one. But only a limited number of trucks can be put on the head of the jolly. The turntable necessitates the employment of three extra men on the wharf, whilst for the shunting of the trucks beyond the turntable two men are employed for each hatch. If an engine could pull alongside a ship it would do practically all the shunting. The great rise and fall of the tide increases the difficulties of handling, especially as the derricks of some ships are too short. Judging by what masters have told me, I do not think that the schist formation about Stokes Hill extends to the harbor bottom. About 100 feet of the end of the jolly is a bank which ships sometimes touch when coming alongside. It has been caused by the abutment of the approach having affected the tide current. At present the mud is very deep alongside the jolly; iron pipes have fallen end down, and divers have been able to see only the upper ends sticking out of the mud. Heavily laden ships have frequently touched bottom near the jolly when the tide has been out. Before a new wharf was built the tide currents should be carefully observed, and the

effect likely to be caused by any abutment considered. Possibly the building of an abutment around Stokes Hill would cause the current of the tide to revert to its natural flow and keep the berthing basin well scoured. The advantage of a wharf such as Admiral Clarkson has suggested would be that it would enable passengers' luggage to be brought right to the ship's side. Sometimes masters have taken their ships on leaving the Territory is not bright, but if a railway is to be built across the continent and other big developmental works are to be undertaken, proper wharf facilities will be essential. The existing jetty can be only a makeshift, which must add to the cost of handling all goods. It is subject to continual deterioration, and any expenditure in improving the wharf should be upon works of a permanent character. The southward extension of the railway may not increase the trade of the port immediately, but it will do so ultimately by opening up new country and giving the people greater opportunities. Under the conditions of to-day people are afraid to go into the country. The vital need of the Territory is improved communication. At present we are isolated. Only one boat a month calls at Darwin, and we have to pay very big freights, as, for instance, 70s. per ton from Sydney costs nearly 3s. Unless it is given better means of communication the place cannot go ahead. People will not bury themselves in the country if they do not see a prospect of escaping when they want to do so. The pioneer of to-day wants more spoon-feeding than did his predecessors. I am in favour of reduced freights and increased subsidies to shipping, but even improved water communication will still leave the hinterland vacant. Under present conditions of trade the jetty may suffice for another twenty years, but if the Commonwealth is to expend money in developing the Territory it should spend it economically. If thousands of tons of material are to pass through the port, there must be means of handling it expeditiously and cheaply. Unfortunately, enormous sums of money have been practically thrown away. The result is that, whilst there is an enormous debt upon the Territory, no benefit has been derived from the expenditure owing to the absence of a definite policy designed for the future. The Commonwealth Parliament has provided money invisibly, but it has been spent unwisely. There should be continuity of policy, so that men brought here may be assured of more or less permanent work. I understand that Vestey's are hopeful of finding markets for their meat. Works such as theirs, whilst not essential, can be very helpful, especially to the small man who has either to sell locally or incur the expense of droving. If he were assured of being able to dispose of his cattle at a reasonable figure he would be encouraged to breed more. A good many Territory cattle are being sent to Queensland and Western Australia for treatment. Others are driven from Newcastle Waters to Oodnadatta, where they arrive as stores. I think the export of store cattle will prove profitable. The breeder would realize better prices if he could dispose of his fats; but droving converts fats into stores. Improved facilities for getting cattle to markets should be part of the developmental railway policy. Special cattle trucks should be provided, and arrangements for receiving the beasts at the railhead and other stations should be made. There is a forward movement in the cultivation of cotton and peanuts.

131. *To Senator Reid.*—Vestey's works employed between 600 and 700 men, and drew stock from the Western Australian border, and fully 300 miles inland. Cattle were received from Wave Hill, which is about 500 or 600 miles from Darwin. The meat works would be a big help to the cattle industry. A few years ago there was a regular monthly shipment of live cattle to

Singapore. The traffic paid, but I think it was mis-managed, and that fact led to its discontinuance. The pilage of cargo at Darwin used to be very heavy, but during the last two years it has practically ceased. The cargo which I mentioned as having been discharged by four men at the rate of 80 tons per hatch per hour was, in each, 40 bags, representing 1 ton, were contained in each sling. Twelve men are now doing less work than those four did. The discharge of cargo used to average 20 to 25 tons per hour from the two hatches, but it is now 7.07 tons per hatch per hour. During the period from 7th November, 1921, to 19th October, 1922, the average was 7.48 tons per hatch per hour. I think the reduction in the rate of discharge is due to the frequent interruption for "smoko," where as formerly the men worked continuously until the job was finished. Some individuals probably work as well as did the wharf labourers a few years ago, but now the employer cannot choose his labour, and often a good man has to carry the water. Two boats in port at the same time is not an infrequent occurrence. When it last happened one boat waited two days for the other pull out. There is sufficient labour to work two ships simultaneously. Delay used to occur at the turntable owing to the locomotive not being available to shunt empty trucks on to the turntable. The one engine would be working the jetty and the railway yard, but Mr. Millican now insists that the engine employed on the wharf shall confine itself to that duty. The consequence has been that since the Railway Department has been operating the jetty there has been no serious delay in the supplying of trucks. The biggest consignment of both Wymah and Wye was 25 bales. I do not think the coastal country is suited for sheep raising, and the port is not likely to get much traffic from sheep even if the railway is extended southwards. Railway construction and wharf improvement are inter-dependent, but if only one work can be carried out at the present time, an extension of the railway would probably be better for the development of the country.

132. *To Senator Lynch.*—Darwin will be the natural port of the Territory for a long time. I doubt if big vessels will go to Borroloola, even when a port is opened up there. The water is shallow, and the course zig-zag, and a ship lying there would be exposed to the full force of rough weather. A tremendous expenditure would be required to create a port there. At present the trend of the Victoria River trade is to Wyndham, but if the facilities were provided I think it would come to Darwin. The Wyndham route has an advantage inasmuch as travelling cattle can be grazed almost to the ship's side. That fact makes Wyndham a natural outlet for live cattle. I admit that if both Wyndham and Borroloola draw their natural trade, not much will be left for Darwin except that which may be brought by the railway from the interior. The Darkly Tablelands are the best part of the Territory, and if a port were made at Borroloola, the Tableland trade would go there. All shipmasters condemn Darwin jetty, because its inadequate handling facilities cause delay to shipping. The E. and A. Company discontinued calling at Darwin because of the lack of trade, and the Australian and Oriental Company, after experiencing two or three strikes, cut this port out of its itinerary. A ship coming to Australia from Hong Kong has to deviate about six days to call at Darwin, and that delay is not warranted by the trade. The Burns Philp boats travelling to and from Singapore deviate only about two days. A longer deviation for a small amount of cargo does not pay. I think the trouble with labour on the wharf, which was acute a few years ago, can be overcome. When we tried to give the steredores other work where they were not engaged on the wharf, the union objected, and raised the principle of one man one job. Vestey's took over the jetty and intended to employ casual labour for handling the

ships and at the works in the slack periods, but after the first shipment of meat under that arrangement the union objected to men engaged on the jetty being given employment at the works. Then Vestey's agreed to pay about eight jetty workers £6 per week, and give them a fortnight's holiday per annum, and a free fare to and from Sydney; but when the cargo and doing nothing for twelve weeks. So that scheme lapsed. Then, when the steredores were doing only jetty work, they had to be paid an hourly rate which would represent a fair living wage. That, of course, caused an undue increase in the cost of handling cargo. The existing jetty cannot safely accommodate two boats on the outside, because of the immense overhang. The *Montoro* has occupied the inside berth, but because of the risk of going aground, especially when a big sea is running, captains prefer to wait for the outside berth to be vacated. The first section of Admiral Clarkson's scheme will accommodate only one vessel at a time, and if the trade of the port increases we shall soon be in difficulties. Pastoralists have had a hard struggle during the last two years. Last year they were unable to get rid of their stock, but this year the Wyndham works have absorbed some cattle, and others have been moved to other places. Now the pastoralists seem to regard the outlook as much brighter. Practically none is being sent from Darwin now, but with improved means of communication people will be induced to go out-back and develop the country. I will not say that the present jetty handicaps development, except in so far as costly handling increases the price of goods, but I cannot see that any permanent benefit will result from patching up the old structure. Sooner or later a new structure will have to be built. Ships would get quicker despatch if the turntable were eliminated, and that would mean reduced costs. Only in recent years have masters regarded this port unfavorably, and that is due partly to labour and partly to the turntable and the delays it involves.

133. *To Mr. Bialeky.*—Before the Railway Department took charge of the wharf, the steredores were sometimes waiting two hours for trucks. The absence of the engine when it was required to shunt the empty trucks on to the turntable affected the output. Some time ago we held a conference with the men, with a view to their bringing up larger slings. On occasions they brought up only one case of beer in a sling. From one ship 150 cases of kerosene had to be unloaded. The gang started at 7 p.m., and at 9 next morning only 40 cases of cargo had been discharged. That was an exceptional illustration of the go-slow policy. We had to discontinue the unloading and take the balance of the kerosene to Singapore. I think the men are loading bigger slings now than they did formerly. We used to load our own loggers for 5s. 6d. and 6s. per ton. When Vestey's took over the jetty Mr. Conacher asked me, with a view to centralizing the management and avoiding divided control, to allow them to do our work. I consented, and immediately the cost jumped to 12s. per ton. I bore the increase with patience, because I thought it might be advisable to do so. I do not care to express an opinion regarding Vestey's management of the jetty, although the circumstances may seem to indicate that the organization was inefficient. That factor, and the frequent absence of the engines from the jetty partly account for the extraordinary conditions which existed for a few years. Of course, circumstances were not normal, and many things militated against the progress of the Territory. The workers were responsible for some of the disabilities, but not for all. From September, 1922, to August, 1923, the average weekly earnings of the wharf labourers were £2 11s. 8d. That low figure is due to the insufficiency of work on the jetty. Between 300 and 400 tons of cargo are handled in a month, and it could all be disposed of in a day. Undoubtedly men

are entitled to a fair living wage. The steredores are available whenever they are required to work a ship. The only way to augment their earnings is to permit them to take other casual employment when they are not needed on the jetty. With the present volume of trade they cannot earn a living wage if they are restricted to one job. If the Commonwealth decided to spend a large sum of money upon developmental works in the Territory, the existence of two unions opposed to each other would not make for industrial peace. Agreements could be made more satisfactorily with one union. I believe that the ships from Hong Kong would resume calling at Darwin if payable cargo were offering. If I am offered a choice between large expenditure upon a new wharf and similar expenditure upon railway development, I must choose the latter, although I feel that improved wharf accommodation must be part of a policy of railway development. An improved outlet and inlet is essential. Admiral Clarkson's scheme would mean a saving of 3s. 6d. to 5s. per ton in the handling of cargo, and would give conveniences that are not provided now. For instance, the stuff could be delivered direct from the wharf. At present there is double handling of cargo, which often is left unprotected on the jetty. I admit that the trade of the port to-day does not warrant the capital outlay, and that the prices for meat are low, the capital will be idle, and the wharf be of no real benefit to the Territory. Some time ago the townspeople of Darwin suggested a railway approach to the jetty from the east of Stokes Hill, but it was ruled out as impracticable. For years we have been advocating the construction of a new road past the Government Offices into the town. The people coming into Darwin have to pass through Chinatown. No difficulty would be experienced in getting a reasonably graded road, and it will probably be essential if the new wharf is built, otherwise the cartage will be very long. The new road would shorten the distance and lessen the cost of cartage. Wages in Darwin are 33½ per cent. above those in Sydney, and living is probably 25 per cent. higher. The minimum wage paid to my office staff is £7 5s. per week, with three months' holiday on full pay and return saloon fare to Sydney at the end of three years.

The witness retired.

Albert William Adams, Bookseller, Mayor of Darwin, sworn and examined.

134. *To the Chairman.*—In dealing with the question of wharf accommodation the first consideration to me is the national one. The desire of all English-speaking people the world over is to be brought into the closest possible communication. Darwin is the one link in the chain of direct communication, and the North-South line is practically the only remaining connexion in the direct route which has not been constructed. The wharf then becomes a national necessity in view of future developments, which must be carried out. It cannot be looked at from a parochial or local stand-point, because the consequences are too large. From what I have seen, about three or four schemes already proposed are for wooden pile wharfs or jetties. Your inquiry, I understand, is for the purpose of arriving at a decision as to the advantages or otherwise of a concrete wharf from Stokes Hill to Fort Hill. From the business man's point of view, a wooden wharf is out of the question. The situation is particularly suitable for the construction of a concrete wall, and the reclamation of the immense mud flat. Strangers visiting here remark upon the advantages of a wall to reclaim the mud flat for stores and other facilities. To me as a business man the wharf question appears to be one which should be considered entirely on its merits, having regard to the future. If a man-with-money at his disposal were going to build

a house, and he had two propositions before him, the one cheap, but carrying with it disadvantages, and the prospect of extensive repairs with a life of, say, thirty years, and the other involving heavy initial expenditure upon a structure which would last for all time, I venture to think that, in most instances, he would favour the substantial building. Wharf accommodation is so essential to the development of the Territory as a whole, that there is only one practicable scheme. Residents and business people may be pardoned for asking why they should be penalized as they have been for so long by the existing jetty, which stands as a check and a charge upon them, and a barrier between them and the world outside. From the Imperial stand-point, which has been stressed for the last three decades, the shortening of the mail route between London and Australia is a paramount necessity, and although its importance has been overshadowed locally by the possibilities of an aerial service, the need has not been left sight of by the Home authorities, who have quite recently completed a railway service from Bombay to Singapore, which must have some influence in shortening the lines of communication. The final step in linking up by railway our vast British-Indian interests is the construction of a bridge across the Straits of Johore, between Singapore and the mainland. This expenditure would hardly be warranted for local service, but it would complete the most important part of the original shortening scheme, and Australia will inevitably be called upon to do her part by linking the north with the south by rail. With railway communication to the south, and proper wharf accommodation at Darwin, and the already established facilities in the countries I have mentioned, a saving of at least nine days could be effected in the service between Australia and Great Britain. I am sure that in advocating the construction of a wharf such as has been recommended by Admiral Clarkson, I am expressing the views of the commercial people of Darwin. I produce a photograph showing the mud bank at low tide, and I suggest that the advantage which would accrue from the construction of a wall from Stokes Hill to Fort Hill, and the reclamation of the mud flat. The abundance at the foot of the jetty has caused a noticeable silting-up of that area. A new wharf would cheapen the cost of handling goods by 10 per cent. The cost of living in Darwin is probably double that in Sydney. If it costs a storekeeper 10, 15, and even 20 per cent. to land his goods, the selling price must be increased to that extent, plus the profit on the increased outlay. Some steps should be taken to cheapen freights by means of increased subsidies. I cannot understand why there should be only one steamer per month calling at Darwin, as compared with thirteen per month seven or eight years ago. At present the production of the Territory is very small in comparison with the expenditure that has been incurred. On account of Darwin's position on the trade route to the Far East, a very large volume of trade must eventually pass through the port. Mining will eventually revive, but high wages and the cost of supplies are obstacles to development. I do not think there is any doubt that cotton cultivation will increase. A great deal depends upon the settlement of the interior. Early in the Commonwealth right a lot of people were put upon the land with no prospect of marketing what they produced. If there is to be development in the interior, export facilities must be provided. Vestey's works did not do much to encourage the pastoralist, because the majority of the cattle they trained belonged to the company.

135. *To Senator Lynch.*—I do not regard the prospective construction of the North-South railway as the main reason for the building of a new wharf,

although I cannot see how railway material can be landed on the present jetty. An enormous weight of iron will require to be landed for the bridge at Katherine River, and the jetty is quite unfit to bear the strain of great weights. We are led to believe that it is in a very doubtful condition. The main reason for incurring a big expenditure upon the Darwin wharf is that this port is the principal link between Australia, the Orient, and Europe. Everybody realizes that in the present circumstances of the Commonwealth, the expenditure may appear to be not justified, but we cannot be limited in our outlook by the conditions of to-day. The present mud bank between Stokes Hill and Fort Hill could be reclaimed by filling from the two hills, and Government stores and other conveniences could be established there. The Government timber store is 2½ miles out of Darwin, and if a carpenter on the jetty requires a plank he has to send a requisition to the Works Department, which in turn sends it on to the Government store. The turntable on the jetty means the employment of an additional eight to ten men. The old wooden jetty was of lozenge shape, and the locomotive operated over its full length. One of the schemes suggested for the improvement of the wharf recommendation was the dredging of the basin between the two hills and the construction of wharfs at right angles to the existing wall. The spoil from the berths could be utilized for filling in the wharfs. Probably the frequent strikes were one of the chief causes of the diminution of shipping. I believe that the present jetty will not last five years, and if a new one is to be built, it will be better to build one that will suffice for a long time than one which twenty or thirty years hence will require the expenditure of another £30,000. There has been expenditure upon the present jetty for the whole of the nine years I have been in Darwin. In recent years the Territory has gone backward, and its population has decreased. Those changes are due to the cessation of mining and the poor price offering for cattle owing to the absence of markets. The means of communication with the interior are bad. There is only one train a fortnight, and boats call at Darwin once a month.

136. *To Mr. Cook.*—I think it is possible that other ports besides Darwin will be opened up. So far as we know, the present port is the most convenient for the whole of the Territory. The general opinion here is that it would be difficult and expensive to make Borroloola a port. There is no doubt that as the Territory develops other ports will be opened up. The trade will not be centralized in one port, as it is in Sydney. Nevertheless, I think the Government would be wise to erect a substantial and permanent wharf at Darwin. I have no fault to find with Admiral Clarkson's scheme. I believe cotton-growing will be successful, and if that should happen it will be the making of Darwin.

137. *To Senator Reid.*—Business was brisk while mining was active, but the war and high labour costs killed the industry. We continue to hear of great mineral resources in the interior, but mines cannot be profitably worked because of the excessive costs. Possibly railway construction is the public work most necessary for the development of the Territory, but a railway cannot be built unless there is a sound wharf upon which to deliver the material. Wharf construction must be part and parcel of any railway-building policy, but if I were given the choice between wharf construction and railway extension, I would prefer the latter.

(Taken at Darwin.)

SAURDAY, 6th OCTOBER, 1923.
(Sectional Committee.)

Present:

Mr. GARNON, Chairman;
Senator Lynch | Mr. Blakeley
Senator Reid | Mr. Cook.

Charles Barnett Story, Government Secretary,
Northern Territory, sworn and examined.

138. *To the Chairman.*—From the middle of 1913 to the middle of 1923, 84,828 hides were exported from Darwin. The exports of cotton and peanuts during the last two years have been:—

	Weight	Estd. Value.
1922—		
Cotton	1,050 lbs.	£25
Peanuts	3 tons	£180
1923—		
Cotton	2,800 lbs.	£90
Peanuts	12 tons	£600

About 2,000 lbs. of cotton are still on hand. The total production to date has been 5,300 lbs. The increase shown in that statement is a criterion of what may be expected in future years. It has been proved that cotton can be grown in the Territory, and its cultivation in conjunction with peanuts should be ultimately successful. The cotton has been pronounced to be of good quality, although in the opinion of the Queensland cotton expert the land chosen was by no means the most suitable. This year's production was from 4 acres. Ten acres were planted, but as an experiment 6 acres were sown late, and owing to excessive rain gave no yield. We have received about twelve applications for land and seed from persons intending to grow cotton. The only settlement of soldiers has been on large pastoral blocks, but the amount of money allowed by the Government, viz., £925, was insufficient, and the scheme proved a failure. I am opposed to the repatriation of soldiers on pastoral blocks because of the inadequacy of the money that the Government will advance. The settlement of soldiers upon agricultural land which would produce cotton and peanuts would have a much greater chance of success. If the soldier were allowed 10 acres of cultivable land and 1,000 acres of pastoral land an advance of £925 would be sufficient.

139. *To Mr. Cook.*—I approve of the proposed southward extension of the railway. The stock inspector is of opinion that the land towards the east of the Territory is better than the land to the south, but the extension of the railway to Newcastle Waters will serve both areas to some extent, and therefore I am satisfied that the extension is justified. I understand that the existing wharf is in good condition, and will last for a number of years. The facilities for loading and discharging cargo are inadequate, but they can be made to serve for the time being. Developmental expenditure in the interior would be preferable to sinking a large sum in building a new wharf at the present juncture.

140. *To Senator Lynch.*—During the twelve months I have been in Darwin the Government has given no assistance to the Daly River settlement. Of the six or seven settlers there two are making good, and a third is progressing. Messrs. Parry and Hill produced one of the largest consignments of peanuts sent to Darwin this year. A boat calls at the settlement about four times a year. In addition to growing peanuts the settlers are engaging in pig-raising. The success of some of the settlers is due, firstly, to their character, and, secondly, to the fact that they are producing an article that is marketable. The failure of some of the other men was due to lack of direction, and to their not producing goods for which there was a good market outside the Territory. They

tried to grow millet, rice, fruits, and products of that kind. For peanuts there is a good market, and they yield a handsome return. This year Messrs. Parry and Hill received between £400 and £500 gross from their peanut crop. They should be able to considerably reduce their indebtedness, and prepare for a bigger crop next year. Mr. Verberg, at Adelaide River, produced this year peanuts of a gross value of about £800. If the right type of man engage in this industry its future should be assured, especially if it is allied with cotton growing. The men at Daly River have had Government assistance, but they are now working on their own resources. I should say that a man engaging in the industry without Government assistance would require a capital of £1,000. The last Appropriation Act includes an item of £5,000 for assistance to primary producers. It is intended to advance that money in instalments to men who take up land for peanuts and cotton cultivation. We have recommended that advances up to £400 be made in instalments, and that further assistance be subject to inspection. An area near the Katherine River has been surveyed and cut into blocks suitable for the cultivation of cotton and peanuts, and as soon as an Ordinance is gazetted we shall be able to consider applications. The suitable land does not commence until Katherine River, but thence to Mataranka there is scope for big developments. That is the report of the cotton expert from Queensland. The experience of assisting settlers in the past was so disastrous that future advances should be on the conservative side, and accompanied by very careful investigation and inspection. The mining of the Territory is a very good asset, which some day will be realizable. Some shows at Murrumbidgee could produce tin of good quality are being badly handled. There is no doubt that the copper deposits near the Daly River and Borroloola will be worked as soon as the metal market becomes firm. The mining industry receives assistance from the Government.

141. *To Mr. Blakeley.*—I do not think that the existence of two competing unions in Darwin makes for industrial peace, but sooner or later the two bodies will coalesce. My Department is not concerned in the preference given in connexion with wharf work to the Northern Territory Workers Union; that work is controlled by the Railway Department. So far as I know no other Department gives that preference.

142. *To Senator Reid.*—Men are already successfully settled upon blocks comprising 10 acres of cultivable land and 1,000 acres for running cattle. The small grower would dispose of his cattle for export alive, or if the meat works were operating he would dispose of them to Vestey's. The people at Daly River are raising pigs very successfully. The animals run wild in that district. No effort has been made to establish a bacon factory or to grow maize and top the pigs off for export. I have heard that the pigs are in excellent condition, but the Darwin butcher, who bought some of them, was not very enthusiastic. The inconveniences and isolation of the Territory act as a deterrent to settlement, especially when contrasted with the conditions existing in the southern States. I do not think that more liberal Government assistance would counterbalance the disabilities of the Territory, and induce southern people to settle here. The cultivation of cotton and peanuts promises a good return, and may prove attractive, but I am not hopeful of recruiting our population from within the Commonwealth; the settlers must come overseas. It should be our policy to settle those who are acclimatized in the Territory, and are willing to engage in and prove the possibilities of agriculture. Their success would attract others. If the policy of advancing up to £400 to settlers should indicate a probability of success we will be justified in asking for more money and increasing the amount of the advance to possibly £925. I would prefer expenditure upon

land development to expenditure upon a new wharf. The establishment of a ginny has been promised if the production of cotton should warrant it.

The witness withdrew.

Douglas Crombie Watts, foreman for Burns, Philp, and Company, sworn and examined.

143 *To the Chairman.*—I have been working on the Darwin jetty for about seven years. One cause of a lot of trouble in the loading and discharging of ships is the great rise and fall of the tide, which necessitates an alteration of the gear every few hours. The men have to be called out of the hatches to make the derricks conform to the tide. The strong current often sweeps the ship away from the jetty, and the winches have to be stopped and hauling gear used to bring her alongside again. Some boats cannot be worked at low tide, because their derricks are unsuitable. The *Monitors* has very good derricks, but she has not much to spare at low tide. Sometimes there is not enough room to swing a sling. For a place like Darwin a floating dock is most suitable, because ships would be always working at the same height in relation to the landing stage. At low tide the haul from the bottom of the hold is sometimes 40 or 50 feet, and that occupies time. A large dock would be best in the long run, but it would be expensive. On a jetty such as this, but it would be inevitable, whether the shunting be by hand or locomotive. The jetty is all right for a two-hatch ship with small cargoes, but a big ship with more than two hatches could not be worked much quicker. Four hatches can be worked, but a lot of time, probably fifteen minutes in every hour, is lost in shunting. No turn-table that could be put on the jetty would do the work better than does the present one, but it involves delay. When working two hatches not much time is lost, because there are two cross-overs, but when working a four-hatch ship, one hatch is between the cross-overs, and its cargo is awkward to handle. Stoppages mean loss of efficiency. If operations are interrupted, the men get out of their stride, and come out of the hatches. In this way a lot of time is lost. When Vestey's were working it was not unusual for the locomotive to go away and work in the yard, and in its absence trucks would accumulate on the wharf, and loading or discharging operations would be retarded. Even now the engine that works the jetty is employed in shunting in the yard also, but as the cargoes are small—about 350 tons for the south—there is no trouble due to shortage of trucks. When 600 tons have to be discharged there is congestion unless the engine is always available to take the full trucks to the shed, and deliver empties on to the turn-table. As the Railway Department is responsible for the cargo, it is right that it should be in charge of the jetty and all the operations on it. Formerly nobody seemed to have authority on the jetty, and the handling operations were a sort of go-as-you-please. Whilst the jetty has many defects, the most important consideration is the establishment of industries in the Territory that will provide work, and when the traffic is offering the Government will have to provide the necessary wharf accommodation. The embankment from which the approach to the jetty commences has altered the flow of the tide, and produced causes silt, but if a concrete approach were made from the east of Stokes Hill the tide would probably keep the berthing basin and the channel scoured. The approach to and departure from the jetty are difficult. The *Marella* cannot get away when the tide or wind is setting her into the jetty. When a south-easterly is blowing the harbor is very rough. During the long years the jetty has been in existence the salt water must have had some effect upon it, although it seems to be very solid. The steel girders that were removed some time ago were in a very bad state. A diver has been down alongside the jetty within the last twelve months, but there was so much

mud on the bottom that he could not work. Off the south end of the jetty the bank is continually silted up.

144 *To Mr. Blakeley.*—I do not think that the industrial trouble in the Territory is wholly due to the workers; both sides must accept responsibility for any trouble that has occurred. At one time the management was to blame for not being more strict, and perhaps the men got a little out of hand. The men here now will do as fair a day's work as can be got in any part of Australia. The discharge of cargo averages about 10 tons per hatch per hour, and I do not think the Melbourne average is much better. The sooner the two unions settle their difference the better it will be for the Territory as a whole. If the re-opening of Vestey's or the commencement of big public works led to an influx of workers one union would disappear. The Commissioner of Railways and the Superintendent are responsible for the policy of discrimination between the two unions in connexion with employment on the jetty. Other departments do not discriminate to any great extent, although it seems to me that some of the heads lean to one union. Of the men employed on the jetty only four were amongst those who came to the assistance of the Government during the strike. One of the unions must disappear. There are good men in both, and when preference is given to the members of one body we are not able to get the services of all the best men available. In accordance with instructions from my principals, I give preference to members of the Northern Territory Workers Union. That policy originated in this way: When the strike occurred certain members of that union went out on the jetty to work the *Marella*, and when the *Victoria* came in, Mr. Kelsey, of Jolly and Company, gave the union a letter stating that he would give preference to its members until the trouble was settled. The Government also has given preference to the union, and so no firm has continued to do so. Of course, it would be useless to employ on the jetty members of both unions.

145 *To Senator Reid.*—Labour to-day is about the same as it was two years ago. Prior to that the men became obstreperous on occasions, and at other times they did good work. They were then being paid a flat rate of £6 per week, and statistics of the tonnage handled per hour were not kept then. There was never a strike amongst the workers engaged in working a meat boat, and I do not remember one having been held up. The men were receiving a weekly wage, and the conditions of employment were fixed by agreement with Vestey's. That agreement was observed by the men. Those under my charge never received a weekly wage; I always paid casual rates. The men engaged in loading meat did not adopt a go-slow policy. At the works a certain quantity of meat was put into the trucks and loaded into the ship during the night. If a truck came down just before the men went off shift, and too late to be discharged, it was sent back to the works and left there until it could be again sent to the ship to be handled by the night gang. I expect an improvement in the trade of the port next year. When a large number of men are employed either by Vestey's or on Government works there is a greater quantity of general cargo. Mining is likely to develop at any time. There are many low-grade propositions which could be opened up if capital were available. Wages are not much higher in the Territory than in North Queensland. Under present conditions of transport only a rich proposition can be worked profitably. There are good prospects of opening up several shows that will benefit a great deal from the construction of a railway. When the trade of the Territory increases the present jetty will be a hindrance, and cause delay and expense. If a goods shed could be built on the inside of the jetty and two approaches made for the railway and road traffic the jetty would do all that would be required of it for some time. Until goods can be discharged direct from

the ship into the shed the jetty will be a handicap to the Territory. The inner berth is probably deeper than the outer one, but there are no fenders at the former. When two boats are alongside the traffic is congested, and it is better for a boat to anchor until the outer berth is vacant. The advantages of economy that would result from placing the shed on the jetty would compensate for any interference with the existing four sets of rails. The provision of a shed on the jetty, with the necessary approaches, is the greatest improvement that could be made until the erection of a new wharf is warranted.

146 *To Mr. Cook.*—My home is here, and I have no intention of leaving the Territory. Certainly, the costs of production and living are higher here than in the southern States. The principal expenditure in the Territory is for the upkeep of Government Departments; that cost is enormous, and one of the curses of the country. I agree that returned soldiers should have preference of employment, in accordance with the Government's policy.

147 *To Senator Lynch.*—Although the rise and fall of tide are greater at Derby than at Darwin, the disadvantage is less pronounced there inasmuch as at low tide the ship rests on the bottom and does not sink so low, whereas here it does not reach the bottom; it sinks to the full extent of the fall of the tide. A new wharf will not obviate that trouble. While Vestey's were controlling the wharf the wages of labourers were fixed, 6s. per hour, 7s. 6d. for overtime, 10s. for Sundays. Those rates were the result of negotiations between Vestey's and the Australian Workers Union, and have never been questioned. The agreement was registered by the Arbitration Court. I do not remember the average rate of discharge of cargo being as low as six tons per fifth per hour at any time during the years I have been connected with the jetty. From November, 1921, to November, 1922, the average was ten tons. Sometimes a ship is due to arrive at a certain hour and the men are waiting on the jetty at that time, but she is delayed, and they have to be paid for idleness. On such occasions the cost per ton of handling cargo may be a little higher than usual. During the last few years labour all over the world has been reticent, but the trouble at Darwin has been magnified out of its true proportions. All the ships' charges, including the handling of cargo out of the hold, are paid out of freight. The only charge passed on to the public is that made by the Railway Department. Only recently the shipping freight was reduced from £4 to £3 10s. per ton. The Burns, Philp boats, from November, 1922, to September, 1923, handled 3,906 tons of cargo into trucks, at an average cost of 8s. 2d. per ton. That includes the cost of mooring, unmooring, and all waiting time of the men on the ships. If we have an engine at night the Railway Department charges 25s. per hour overtime, and the ship pays the overtime of the railway men on the jetty. The consignee has not to pay any of those charges. The only way to reduce the cost of handling between the ship and the shed is to erect a shed on the jetty and avoid payment of overtime for the engine and the men working in the bond. The cargo could not be handled more cheaply under present conditions; not more than ten tons per hour per hour can be taken over the turntable. The men work as hard as they possibly can. A horse might be used for shunting, but that system would be slower and more costly than hand shunting. If cargo were being delivered direct into a shed on the jetty the output might be increased by three or four tons per hour. A full meat truck is very heavy and cannot be shunted as quickly as can an ordinary cargo truck. A new wharf must be built at some time, and it might as well be built now as later. If a 600-ton cargo comes into port, the handling will not average ten tons per hour. At low tide we are afraid to use the outside set of rails, although we do it at times. We cannot possibly land a motor car or other awkward cargo at low tide.

148 *To the Chairman.*—If a more convenient wharf were provided it would not be necessary to employ more men in the shed. So long as the trucks are available, the men in the ship can unload as fast as the men on the truck can receive. When there is plenty of traffic the men on the jetty can make a living wage and do not require any other employment. Under present conditions their average weekly earnings are only £2 8s., and several of them are obliged to take Government relief work, which takes the form of road construction. About £760 has been spent on one road, which nobody can use. Vestey's complained that the insulated trucks were not those which the Government had promised to supply. I have known trucks to reach the ship's side at about 6 a.m. and be sent back because the meat could not be put into chambers before the change of shift. The meat was returned to the works, remained in the trucks all day long, and was brought back to the ship at 7 p.m. and accepted as in good condition. So far as I know, the insulation was all right, but the trucks were not big enough. I cannot understand why Vestey's did not load during the day. Nearly every boat completed its loading in daytime and the meat was all right. Only once was meat sent back to the works because of softness, and on that occasion a heavy shower of rain was responsible.

149 *To Senator Lynch.*—The co-operation of all interests in the community will not be possible until the Government officials work in with the people. So long as they comport themselves like tin-gods the place cannot go ahead. The trouble is that the Territory has never had sympathetic administration. I am aware that a large amount of money has been spent in the Territory by the Commonwealth, but the disproportion of expenditure to development is due to mismanagement.

150 *To Mr. Blakeley.*—I do not think that shunting would be facilitated by the use of a travelling platform, moving transversely to transfer trucks from one line to another. The two loops between the approach and the turntable will hold only eight empty trucks, and in order to avoid a hold-up of unloading a rake of empties must be ready on the head of the jetty. On the present jetty engine shunting would not be an improvement upon the hand shunting. I do not say that the insulated trucks are such as the Government promised to Vestey's, but I do say that they appeared to do the work required of them.

(Taken at Darwin.)

SUNDAY, 7TH OCTOBER, 1923.

Present:

Mr. GABOON, Chairman;

Senator Lynch Mr. Blakeley
Senator Lynch Mr. Cook
Senator Reid Mr. Cookley

Charles William Davy Conacher, Managing Director of the Northern Australian Meat Co. Ltd., and Northern Agency Ltd, sworn and examined.

151 *To the Chairman.*—About two years ago I made a statement to the Sectional Committee of the Public Works Committee, when it was inquiring into the proposed construction of the North-South Railway. I propose to go through that statement in detail and telegraph to you in Melbourne any slight alteration which may have been necessitated by the passage of time. The attitude of Vestey's in regard to the jetty, is indicated by the fact that in the agreement, they made with the Commonwealth Government in June, 1914, there is a proviso that certain things shall be done to the jetty to enable a stated quantity of cargo to be handled. In our draft of the agreement it was clearly stated that the ship's side should be reached without the intervention of a turn-table, but that

provision was not included in the completed agreement. Nevertheless the draft showed what was in the mind of my Company. I was not a party to those negotiations, but it would appear from the draft that we were told that, although the Government did not wish to specifically include that provision in the agreement, something equivalent to the abolition of the turn-table would be done. That was only a small detail of a big agreement, but it is clear that the provision of a direct approach to the head of the jetty was intended; therefore, the advocacy by us to-day, of the abolition of the turn-table, is not a new idea. We have all along contended that the trucks should be shunted on to the head of the jetty by a locomotive. We estimate that about 15 minutes in every hour is lost through the use of the turn-table. The handling of goods is more costly than it need be, because men are required to operate the turn-table. The services of those men were not required when the small turn-table was on the wharf, but the present appliance necessitates the services of two and, perhaps, three, extra men. We have prepared figures showing the cost of the delay in the handling of our goods, and they show that, whereas, it took us about 5 minutes to get rid of a full train at the works, and get another empty train into position for loading, the operation of getting the empty trucks away from the ship and full trucks alongside for loading into the ship occupied nearly 15 minutes, so that on every rake there was a loss of at least 10 minutes. In my evidence before the former Committee I mentioned the following costs per ton for handling goods—1916, 12s. 1d.; 1917, 12s. 2d.; 1918, 17s. 10d.; 1919, 28s. 1d.; and 1920, 37s. 2d. The last three included refrigerated steamers, and the work was done almost entirely at night. In 1921, the cost was 91s. 8d. I could supply the Committee with exact figures for the handling of frozen cargo on different ships, but those statistics, especially in relation to the later refrigerated steamers are rendered of little value, because, at that time, labour was extremely difficult. The costs to-day are considerably less than when we were in control of the wharf, but practically no overtime is being paid in the sorting shed now, and labour is much more efficient than it was at that time. The wharf labour is being managed by the Railway Department, and there is closer co-ordination between the jetty and the Department than we were able to get. I am aware that talk is current in Darwin to the effect that every demand made by labour was acceded to by Vestey's. That is on a par with other statements that Vestey Brothers are allied with the Beef Trust. My attitude is to let bygones be bygones. The statement that some of our managers urged the men to make increased demands is an allegation against men who are absent and are unable to speak in their own defence, but I have no hesitation in saying that it is an absolute lie. It is very easy to make such an accusation at this date, but I am prepared to rebut them in detail if that will do any good. Every unreasonable demand made by the workers was resisted to the utmost, and it was only in order to save a huge quantity of perishable goods that eventually some of their demands were acceded to. Many of their claims were whittled down. I cannot say that the Government authorities adopted any definite attitude in regard to our industrial troubles. It was necessary to ship our meat at night, because experience proved that the insulated trucks, supplied by the Department, were inefficient. We planned day loading, but, on testing the trucks, we found them so inefficient as to render loading by day unsafe. Speaking from memory, in order to insure smooth working on the ship, and avoid delay, we relied on having three trains of eight trucks to handle each ship, and we wanted to have one full train ready before the ship

commenced to load. We would then be putting meat into another train so that there would always be one full train ready to go to the ship's side. Under that system meat would very often be in the trucks from four to six hours—rarely less than four hours—sometimes much longer. It should be possible for properly insulated trucks to safely hold meat in the sun for 36, or even 48, hours, but the test we made showed that the meat became soft after exposure for very few hours. I do not care what the departmental officers may say about the specifications upon which the trucks were built; the test was whether the trucks would do the work that insulated trucks are expected to do elsewhere. They would not. I have had personal experience of meat having been carried in trucks from the Ross River Meat Works to Townsville, and having the frost crisp and dry on the covers after having been in the trucks for 30 hours. There was no special treatment of the meat or trucks, and the outside atmosphere is as bad there as it is in Darwin. It is not true that meat, which could not be loaded by the night shift, was returned to the works and allowed to remain in the truck all day before being returned to the ship. Any truck returned from one night's loading would be discharged at the works, and the meat re-frozen. For every ounce of meat we put on the vessel we had an absolutely hard receipt; we had to get it, no matter at what cost to ourselves. Tests of the trucks were made by the Chief Mechanical Engineer, Mr. Henderson, in conjunction with our officers in 1918. His report has never been submitted to us, but I understand that it shows that the test was not satisfactory. The insulated trucks, used at the Ross River works, are more than twice the size of those provided for us at Darwin, and that increased size must be an advantage, because the larger body of meat means also a larger volume of cold in the truck. That, of course, if the truck is not sufficiently insulated that volume of cold cannot be retained. It has been suggested to me recently that possibly the inefficiency of the trucks is due to the fact that they are floored with galvanized-iron sheets; in that respect they resemble the Queensland butter trucks and not the meat trucks. Meat experts contend that the trucks supplied at Darwin are butter trucks, and butter is not required to be held at the same low temperature as is meat. The sheets of metal, at the bottom of the truck, act as a drain for the cold, metal being a very good conductor. If there is a weak piece anywhere in the insulation it will draw the cold out, and the metal will be continuously trying to equalize the temperature. That leakage would not occur if a plain wooden floor had been provided. We objected to the use of iron floors at the time, because we found that they were dangerous to the men walking on them. Men engaged in loading, instead of carrying a whole hind, ran the hinds in on the shank bone, and stood them on end. The shank bone could not get a good hold on the iron, and the hind would fall, at great risk to the men. The Department cannot reasonably contend that the trucks are efficient in view of the practical tests that were made. I cannot say that we made any direct application for Mr. Henderson's report, because our last shipping season was in 1919. I suggest that the trucks should be made efficient enough to permit of day loading, that a direct approach to the head of the jetty by a locomotive be provided, and that a sorting shed, and a vehicular approach thereto, be built. Due weight should be given to the fact that Darwin will become, in the future, a transhipment port. When the North-South Railway is completed some shipping lines will terminate their run at Darwin, probably there will be a Dutch line running between Darwin and Java, and British lines running between Darwin and Singapore and Hongkong. Efficient and economic handling

of transhipped goods will be required, and if not provided those lines will not be so likely to trade to Darwin. This place will never go ahead if the Government continue to play about as it has done during the last few years, but if we get down to brass tacks there is no reason why Darwin should not be the large transhipment port which its geographical position qualifies it to be. Our firm wanted to divert to Darwin one of the steamers that goes to London, and leave 1,000 tons of refrigerated cargo for transhipment to Sydney, but I told them it was impossible to consider the proposal. In the past, labour conditions at Darwin have been very unsatisfactory. The causes were sometimes political, rather than economical. However, even one of the chief political grievances has been removed by the granting of parliamentary representation to the Territory. I have refrained from emphasizing the labour trouble, because labour, all over the world, was difficult during the war and post-war periods, but as an Australian I hope that my fellow citizens will not get down to business. If they do that, I see nothing wrong with the prospects of Darwin. I imagine that the cost of living here is between 35 and 40 per cent. above Sydney costs. That is a very grave factor in the economic situation, because people cannot be expected to work at a lower ratio of wages, and industry, which has to pay between 35 and 40 per cent. more wages than is paid by a similar industry elsewhere in Australia, is under a tremendous handicap. In order to make Darwin more attractive to labour the factors which are responsible for the high cost of living should be studied. Freight is one of the chief of these. The cost of transporting a man and his wife and family is very heavy. I have seen that any scheme for subsidizing shipping should include provision for cheap freights and fares. I have every confidence in the future of the Territory. I have travelled over a considerable portion of it and have lived in it for the last seven years. There is no doubt about its future, but it is unreasonable to expect it to develop when opportunities in the south are more attractive. There is no question that when the more conveniently situated parts of Australia are further developed the Territory, in its turn, will commence to advance. I do not think that the interior of the Territory is rich enough to permit of profitable production with the present high rates of transport. Any belief to the contrary must concern the productivity in respect of cattle, cotton, and ore is much higher in the Territory than in Queensland and elsewhere, and we know that that is not so. At the present time we are anticipating nature by endeavouring to force the development of the Territory in competition with the more attractive areas in the south. It may be politically wise to do that, and, if so, it will be necessary to do something to assist those people whom we wish to help us in anticipating Nature. I think cheap freights and fares, especially for women and children would be a helpful factor. At the present time most employers give the officers of their staff a first saloon return fare to Sydney every three years, but they cannot afford to give the same concession to the women and children. Yet it is apparently necessary for the women and children, who are living on the coastal fringe, to get a trip to the south every few years, and fares at the present time are exorbitant. One means by which the Commonwealth might assist the development of the Territory is to devise a scheme whereby suitable persons can be provided with cheap fares. In regard to the creation of smaller pastoral holdings, probably I am biased, but it seems to me that the best way to develop the Territory is to follow along the lines indicated by Nature, and Nature clearly indicates the pastoral and mining industries. I am told that the Territory is rich in minerals. If the pastoral holders are encouraged to the limit they will be a big factor in settling the country and establishing smaller

industries. The killing season occupies about twenty weeks, but it is our endeavour to gradually lengthen it, and I think we have a chance of eventually having a longer meat season than that in Queensland. But there must be a big portion of the year during which the people employed at the works will be idle, and an endeavour should be made to get those people permanently settled, in properly organized groups, some of them carrying on agriculture right through the year, and the others working for Vestey's during the season, and contributing from their earnings to a group fund. For instance, a lot could be done in the cultivation of coconuts during the season when Vestey's works are not operating. Of course, the white ants are bad in the Territory, but so they are elsewhere where coconuts and other trees are grown. With properly insulated trucks our works could lead in the day-time at a cost, notwithstanding the existence of the turn-table. When the Minister for Home and Territories (Senator Pearce) was in Darwin, in May, he said to me, "If we make a new wharf and provide oil fuel in bulk, put the insulated trucks in better order, and go ahead with the general development of the Territory, will your firm be prepared to re-open its works?" I sent to London a cablegram conveying that question, and the reply was that the works would be re-opened, provided that suitable shipping and labour arrangements could be made. In the event of the works re-opening we would prefer the Railway Department to handle our goods from the works into the ship's hold, if it will do it at a reasonable price. We do not wish to do that outside work; it is all foreign to a meat factory. We undertook it solely because nobody else would. The Stewarding Company, which had been operating prior to Vestey's coming on the scene, discontinued operations on the jetty and the Shipping Companies asked us to take it over. An outside company experienced difficulty in stevedoring the jetty, because the Railway Department would not work in harmony. I am inclined to think that the handling of goods on the jetty would be facilitated if one authority had absolute control of all operations from the works to the ship's hold. One disability is that, at the present time, the railway is managed from Melbourne, and every detail has to be referred to head-quarters. Ships have entered the port and been delayed for days while a question was being referred to Melbourne. No industry can be properly conducted under those circumstances. I would prefer all the jetty work to be managed by a public body, but it must be done on business lines. The men in charge of the Territory railway should have fairly complete powers. The present railway policy is one of strict economy, regardless of the development of the Territory. The official attitude is that the railway is not an instrument of development; it is nothing more than a public utility, and the chief aim is to minimize expense. For instance, we have been trying for years to have a crane installed at the head of the railway, where, at the present time, there is no means of handling heavy weights; everything has to be loaded or unloaded by manual power. There is a crane at Grove Hill, which has not been used for years, and we have suggested that it be moved to the rail head; perhaps it would cost £20 to put in a new foundation. When Mr. Poynton visited Darwin, as Minister for Home and Territories, he telegraphed to Melbourne urging that the transfer should be made, but nothing has been done. We had to erect a tripod with block and tackle to handle our stuff, and it has actually handled more of the Government material than ours. I could quote a number of similar instances of false economy in the railway management. There has been a little more co-ordination lately. Formerly, when the mail boat arrived on Wednesday morning, after the train had left, the mail for the interior was held in Darwin for a fortnight. Vestey's have invested about £1,000,000 in the works

at Darwin, and we have large interests in station property. In spite of what the newspapers may say about the profits made by the beef barons, we have lost hundreds of thousands of pounds. We do not regard the shipment of live stock as an economical business; it is only a means of opening up new markets for Australian frozen beef. We wish to resume operations at the works as soon as we can, and we are repairing the buildings and plant now, so that we may be able to go ahead as soon as conditions are favorable. Recently the barracks in which the employees were quartered were destroyed by fire, and I have this morning received a cablegram indicating the views of our people in London regarding the replacement of the lost accommodation. These facts indicate the desire of my principals to re-open the works as soon as conditions permit. But you will realize that, after the bitter experience we have had in many ways, we should be very careful before we do re-open. We think the conditions will improve, and permit us to resume operations, or we would not be spending a large sum of money in making the works ready. The proposed ropeway from Vestey's works to an island jetty in Fanny Bay would, if it were efficient, be a great advantage to the works, but I do not advocate it, because any scheme of wharf improvement should be one that would give the greatest convenience to the whole of the public. Although we would be prepared to facilitate the use of the ropeway by the general public, I think that an efficient wharf is preferable. However, in the event of the Government deciding not to provide a new wharf, the ropeway would probably serve our works excellently. If our works re-opened the steamers which would call at Darwin would be such as would lift from 6,000 to 8,000 tons of frozen meat. They would have a draft of up to 30 feet at low water, and would be about 500 feet long. We can store the tons of beef easily, but it would frequently happen that a boat would come up from the south and fill up with meat, and the fact that the vessel fills up here makes it essential that there shall be full depth of water in the basin. We would operate probably four hatches at a time, two with frozen meat, and one or two with general cargo. Providing that the basin be dredged, I cannot see any objection to allowing the old jetty to remain some time after the new wharf is erected. The *Montoro*, the *Mataram*, the *Bambra*, the *Estern*, and the *Victoria* have occupied the inner berth at the existing jetty, although that is a smaller basin for them than the area between the proposed wharf and the existing jetty would be for a great meat boat. I think there should be on the wharf three sets of railway lines and ample cross-overs to facilitate loading. There is a possibility of a trade being developed in the export of chilled meat. The chief trouble that confronts Australia as a meat exporter is the fact that Argentine can and chilled meat on the British market where it is able to compete with fresh meat. Hitherto all Australian meat has been frozen, but experiments have been conducted to evolve a process which will enable Australian chilled meat to be landed in England, in a condition which will enable it to compete with the products of the Argentine. Chilled meat requires to be hung in the ship, and it will probably have to be hung in the trucks and run down on rails into the holds. I am obtaining further information upon the subject, and if the facts supplied to me should show that special provision would be required upon the wharf I will endeavour to advise this Committee. In the designing of the new wharf, the possibility of loading chilled meat should be kept in mind. Generally speaking, I think the maximum development of the interior would come from the construction of a railway directly southward. A line across the Barkly Tableland is not quite as necessary, because that area has some access to the railways of Western Queensland, and to Townsville and other ports; the centre of Australia has not that

advantage. In the course of time an East-West railway, from Camoowal to Broome, would build up a sheep-growing industry in the north of Australia, but I think that first of all there should be a line southward from the present terminus at Katherine River, and that later lines should radiate from it east and west. The southward extension of the railway would not be of any great advantage to Vestey's, because it would hardly touch any of our property, but the East-West line would be of great benefit to us. The distance which cattle may be driven to a railway is governed by the nature of the country to be traversed. The shorter the distance the better, but if the country is good, cattle should travel 200 to 300 miles easily. It is essential that methods of carrying cattle in first-class condition should be devised by the railway authorities. In London, to-day, the meat produced at the Gladstone works is holding its own against the finest Argentine products, and if it were chilled it would probably command as good a price as the Argentine beef. One of the chief reasons for the fine condition of that meat is that the bulk of the cattle come to the works on the hoof.

152. *To Mr. Blakely*.—For the two years preceding February last, we employed very little labour, but for some months we have been employing from ten to thirty men, and their labour is certainly efficient. My opinion is that the white man can work successfully in this climate. Of course, there is no scope for industrial unrest at the present time. Our experience is that if ill-considered advice is followed by the men, trouble is apt to arise when there is a large quantity of meat in store that may go wrong if its handling is delayed. I believe that the trouble we had at Darwin a few years ago was but a phase of the industrial unrest that was general in Australia at the time I am aware of the agreement made between the management of the Wyndham Meat Works and the unions. My endeavour for some years past has been to get the labour unions to work together. We would rather negotiate with organizations which are in agreement amongst themselves than with a number of organizations that are at variance with each other. The best scheme is for labour in the Territory to adopt the basis of organization existing in the south. If there are unions in the south looking after certain industries, branches of them should be formed in Darwin, and they should work together through an industrial council or some other co-ordinating body. I do not believe in setting up separate unions for the Territory. The workers here should abide by the organization that has been established by the labour brains in the southern States. I am inclined to think that if the Australian Workers' Union should absorb the whole of the unskilled labour of the Territory, that development would tend towards industrial efficiency and peace. That would be in accordance with my belief that the labour organization here should be in conformity with that in the south.

153. *To Senator Lynch*.—If labour in the Territory returns to normal conditions, the disabilities imposed by the turntable will continue; it will still be a cause of delay, rendering a number of highly-paid men idle for a few minutes in every hour. Two highly-paid men will still be required to work the turntable. Whatever the traffic organization may be, the disadvantages inherent in the turntable are permanent. In a country like this, where there is a doubt as to the practicability of white labour, the maximum of efficiency and labour-saving appliances are necessary. The turntable is a labour-wasting appliance. The Railway Department may say that it can supply and remove across the turntable all trucks that are required, as fast as they can be loaded and unloaded, but the fact remains that it has not done so. I think we have

certainly a moral claim to the removal of the turntable; its abolition was discussed with the authorities of the day, and we were asked to withdraw the condition we inserted in the draft agreement and accept, in some way, I find that Governments do not like agreements to be too detailed; they prefer to say, "Leave it to us, and it will be all right." The only way in which frozen meat can suffer is through thawing before being placed in the ship, and we have had a hard receipt for every pound of meat we placed on board. We would have obtained that receipt somehow, even if we had been obliged to convey the meat from the works in cattle trucks. Occasionally we have had to return in order to withstand undue delays and the inefficiency of the insulated trucks, we brought our temperature below zero. That did not involve any deterioration of the meat, but it was costly to us in coal and ammonia. Vestey's would not be prepared to contribute towards the cost of constructing a new wharf such as has been proposed by Admiral Clarkson. They have no more money to spend in Australia. They do not regard the proposed wharf as a concession; it is something to which they were entitled before the works opened. I believe that some Queensland meat companies have gone to the expense of jetty construction, but our works were erected on the understanding that improved wharf facilities would be provided by the Government. The cost of establishing these works in Darwin is considerably greater than is the cost of establishing similar works on the Queensland coast. I would not feel justified in recommending my company to bear any portion of the cost of erecting the new jetty. Our works were made 60 per cent. larger than they otherwise would have been in order to comply with the Government's requirement that a certain proportion of the cattle we treated should be on private accounts. That condition has cost us £300,000 of £400,000. I do not admit that the new proposed wharf would be for the exclusive benefit of Vestey's. Every industry in the Territory is handicapped by the present inadequate wharf facilities. The mining industry may revive, and there are possibilities in the cultivation of cotton and peanuts. At present every ton of exports and imports is penalized by the jetty. The immediate cause of the closing down of our works after the season of 1919 was our inability to get any satisfaction from the Government in regard to shipping which was then under Government control, but sooner or later labour, if its temper had not improved, would have caused us to shut down. We would have continued killing in 1920 if the Government had given us an assurance that our frozen meat would have been lifted in a reasonable time, and that we would not be required to store it for six months in this torrid climate at great expense. The Government would not give that guarantee. In addition, the labour position was becoming intolerable, and sooner or later a crisis would have been reached. The fertilizer by-products of the works would be of immense value to agriculture in the Territory, and we would be prepared to enter into an agreement to supply them to settlers at a reasonable price. Our policy is to encourage the local settler in every possible way. When we were operating we sold him our products at a reasonable rate, and we bought locally as much as possible of our requirements; even our pannikins were made in the district instead of being purchased in the south. Our agreement with the Commonwealth provides that we must be prepared to treat the cattle of private owners to the extent of one-third of our turnover. So far we have not had an opportunity of doing that, because the cattle have not been forthcoming. Of 70,000 beasts treated by us, only 500 were supplied by outsiders.

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154. *To Mr. Cook*.—The stocking in the interior varies from five to fifteen beasts per square mile according to the character of the country. The Territory is able to produce first-grade meat equal to that from any other part of the Commonwealth. Smithfield is our principal market, but later we hope to open up the Oriental market. Our people have stores at Smithfield, and also distributing shops, and we are practically able to convey the meat from the broad-acre to the breakfast table. Our net return for prime meat, f.o.b., would not be more than 2d. per lb. I should say that the annual cost of rearing a bullock is nearer £1 than 10s. I would be surprised to learn that the Wyndham Freezing Works are paying £4 4s. per head for beasts averaging 620 lbs. The pastoral industry cannot arrive on at that price. The grower should receive £6 per head for beasts of an average weight of 650 lbs, or 500 lbs. free of brisnet. We do not export the brisnets. We tried to can them, but we may have to merely beryl them down. I think the meat market will revive when the conditions in Europe return to normal. The best form of Government assistance in the pastoral industry is that which Parliament has already sanctioned, namely, the payment of a bounty upon the export of meat; that bounty has kept the industry going, and I think the bounty has been well spent. I have returned only to-day from a trip to Manila, Hongkong, Singapore, and Java. We have been exporting live cattle to Manila, and I hope we shall be exporting to the other places mentioned before long. There is a lot of talk about supplying meat to the teeming millions of the East, but that prospect is exaggerated; the great masses of the Oriental peoples cannot afford to eat meat. In Java, where there are 40,000,000 natives, there are only between 200,000 and 300,000 who may be called meat eaters. The Chinese are producers of cattle, and have been years supplying Hongkong and Manila, and also Japan to a large extent. They have big herds in Mongolia. I met the Australian meat delegates to the Orient, and they have come to the conclusion that there is not the huge outlet of which we have heard so much, but that there is a limited market which we can attempt to capture. I believe in the aggregation of leases and the suspension of the improvement clauses. The pastoralists will make their improvements where they are most needed. In regard to the bulk of the country out-back, it is impossible for people without considerable capital to utilize it to advantage. A man with 1,000 square miles of country may have ample water and grass for his cattle at the beginning of the season, and may have neither water nor grass at the end of the season. He may then have to shift the cattle hundreds of miles. In order to overcome these conditions, the pastoralist has to put down bores and equip them, and under existing conditions of transport that is very costly work. It may cost two or three thousand pounds to put down a bore that will water 1,000 head of cattle. The coastal belt for 200 miles is a small man's country, because it is well watered and does not require much improvement; all it needs is attention, such as the burning-off of grass. The country further back is not sufficiently improved to be converted into small holdings. Reduction of the size of holdings and enforcement of the conditions of the leases would retard rather than foster development. If small men were given holdings in unallotted areas, they probably would not make good, because there is no outlet for their cattle. Men have been on the land for 30 years, and understand the business thoroughly, and they have remained there because hope has been revived every few years, but they have not been successful because of the lack of an outlet for their stock. Provide an outlet for the cattle, and they will probably sell their

places and take up new country and break it in. Vestey's works are capable of treating all the cattle within 300 or 400 miles of Darwin. We can treat comfortably 50,000 head of cattle, working at the rate of 500 per day of eight hours. The buffalo fly is a very serious nuisance, and is becoming worse every year. It is responsible for the falling off in the condition of the cattle sent to Wyndham this year. Dipping is useless. I saw the fly in Java and Manila, but it does not worry the buffalo as it does the cattle. Certain birds seem to keep it in check in those countries. If we could ascertain the life history of the fly, it might be possible to devise some practical treatment of it.

155. To Senator Reid.—The Territory carries 500,000 head of cattle, and I do not see why that number should not be increased to 8,000,000 under improved conditions. Railways are not so absolutely necessary for the pastoral industry as to other industries, because cattle can travel to market. Even if the economic position in Europe improved, I do not think it would pay us to re-open the works under the existing conditions at Darwin; it would probably pay us better to send our cattle to Queensland in spite of the cost of droving. The Queensland works can handle the cattle very much cheaper than we can under existing conditions of labour and overhead costs. In the event of our re-opening the works, it will be our policy to co-operate with the Commonwealth, and assist in every way to establish industries that would mean the permanent settlement of men, and keep our workers employed when the meat works were not operating. There is no reason why our works should not treat pigs if the right article was produced. I do not know that there is much scope in the Territory for the dairying industry, except in the coastal districts, to supply the local market. I do not know whether in this sub-tropical country cream and butter could be brought to market from distances of 200 miles or more. The cultivation of cotton and peanuts might be developed, and goats might be reared to provide a local milk supply. Pigs should certainly do well in this climate, and it may be possible to develop the production of bacon. I have told Federal Ministers that we shall always be glad to make available our refrigerating facilities for the purpose of experiments or the assistance of other industries. The more people we can settle in the Territory, the better we shall be pleased. I would regard money spent in the provision of improved wharf facilities as developmental expenditure. It would encourage many smaller holders and others who have been hanging on here in spite of great difficulties to invest money, and the ball of progress would be set in motion. In the future, transhipment of goods, if it can be done for a few shillings per ton, will be a big feature of Darwin's trade. I do not think there is enough room for a sorting shed on the present jetty. Any shed of the kind must be right on the jetty so that cargo can be run into it on hand trucks.

(Taken on s.s. *Montoro* at Sea.)

MONDAY, 15th OCTOBER, 1923.

Present:

Mr. GREGORY, Chairman;	
Senator Lynch	Mr. Blakeley
Senator Reid	Mr. Cook.
George Alexander Hobler, Chief Engineer for Ways and Works, Commonwealth Railways, sworn and examined.	

156. To the Chairman.—Some years ago I saw a plan of the original wharf built at Darwin. I believe the structure was of wood. I am not aware of the reason why it was abandoned and the new one erected. The existing jetty is of cast-iron screw piles with

bracing rods and girders, and timber decking. It was widened a few years ago with a structure of timber, the idea being that further dredging would enable two ships to discharge simultaneously, one at the inner berth and the other at the outer berth. The original steel portion is in very fair condition and may have a life of probably twenty to thirty years. The timber addition will last probably not more than twelve years. Cast iron has a good life in salt water. There is no foundation for the statement that the jetty is liable to be knocked down by a ship at any time. In fact, about six or seven years ago a large steamer ran head on into the jetty and bent several of the girders and cut the decking away, but the structure stood the shock very well. For the amount of traffic to be handled at present, and for some years to come, the jetty is quite sufficient. In fact, it is quite capable of handling a much bigger trade. The biggest tonnage passed over the wharf was 39,120 tons while Vestey's works were operating, and the jetty will be quite capable of handling that traffic again and more if it should become available. Working at the rate of ten tons per hatch per hour, with a maximum of four hatches, approximately 1,000 tons per day could be discharged and put round the turn-table. Two ships, one at the inner berth and one at the outer berth, could be efficiently handled simultaneously. The principal objection which master mariners have to using the inner berth is on account of the insufficiency of space for moving ships into and out from the berth. Ships do use that berth, but only when the other berth is not available. Probably if it were necessary to use the inner berth more often, it would be advisable to dredge the basin wider in order to facilitate the entrance and exit of ships. The turn-table is quite efficient to do all the work that is required. It handles all the loading that passes over the jetty to-day, and is likely to pass over for years to come. The turn-table adds to the cost of handling goods about 10d. per ton. It is quite probable that with a different type of wagon, carrying 25 per cent. extra load, the cost would be reduced, because the turn-table is capable of carrying a wagon bearing a heavier load than the type of wagon now in use. Complaint was made that the sharp curve on the third line of rails made the hand-shunting of trucks difficult, but the curve was eased slightly and that removed all ground for complaint. Some time ago I considered the advisability of making a curved entrance to the existing jetty from the east of Stokes Hill, joining the head of the jetty where the turn-table is. I do not know of any agreement made with Vestey's in 1916 to construct that approach. I think the estimated cost of the work as shown by the plan that was prepared was about £80,000. The proposal was to extend the embankment out as far as might be economical and then finish the approach with cast iron steel piles, similar to the construction in the jetty, but no final design was prepared; all that was done was in the nature of a survey and plan to enable us to prepare a rough estimate of costs. It is not probable that the building of an embankment such as I have mentioned, would alter the tide current and cause silage. That, however, could be determined by further surveys and soundings. Judging by the design of the jetty, I should say that the turn-table was intended to be a permanent feature of it. In the years 1917 to 1921, when the cost of handling goods on the jetty was so high the work was being done by Vestey Brothers, I agree that a sorting shed on the jetty would mean a reduction in the cost of handling, but to what extent I cannot say off-hand. It is impossible to provide a sorting shed on the existing jetty at less than almost the cost of a new wharf. I am aware of the complaints made by Vestey's regarding the delays caused by the turn-table, but so far as I can recollect

my reports on the matter, frozen meat was delivered at the ship's side quicker than it could be loaded. I have only heard of one ship being delayed, and that was when some mishap to the refrigerator prevented cargo being taken into the holds for several hours. I know of no delay that ever occurred on the jetty in the loading of frozen meat. If Mr. Conacher will cite any definite instance of delay, no doubt we can trace the record and ascertain the cause. At the time when Vestey's were in charge of the stevedoring, Jolly and Company were in charge of the sorting shed. I do not think that delays occurred through the locomotive leaving the jetty and doing shunting in the yard, instead of shunting the trucks on the jetty. Such delays were not more likely to occur when Vestey's had control of the wharf than they are now. The locomotive attended to Mr. Conacher's requirements exactly as it has to attend to the requirements of the Department, and there is no reason why there should be the slightest difference in the operations of the locomotive under the two different controls. These matters have come under my personal observation from time to time when I have visited Darwin as the Commissioner's deputy, but they come more continuously under the notice of the Commissioner. I have had a good deal of experience in valuing land for railway purposes and development in Queensland, and, since I joined the Commonwealth service, all over Australia. Darwin will always be the principal port of the Territory, but as development proceeds it will probably be found of great advantage to open up additional ports. I have examined the mouth of the McArthur River with a view to the provision of a harbor there, but I have not yet arrived at a final conclusion. I have travelled through the north-west of Western Australia, and from Darwin to Camooweal and Oodnadatta, and from Anthony's Lagoon to Borroloola. There are in the Territory opportunities for prosperous settlements, and new ports will be necessary to increase the commercial value of the railways. In order to promote development I would urge a policy of railway and road construction, and the provision of telephones, wireless stations and water supplies. I know of no means by which railways can be run more cheaply than they are being run at present. The railways of Australia generally are being operated as cheaply as is possible. The only way in which railway freights in the Northern Territory can be reduced is by rigid economy in staff, cheap methods of maintenance and easy grades to enable big loads to be hauled. It is possible to carry cattle long distances in good condition. On the East-West railway cattle are carried 1,050 miles in as good order as they can be carried on any railway in the Commonwealth. The same thing could be done in the Territory if the railway were built to the 4-feet 8 1/2-inch gauge. If the North-South railway is to be built through at an early date, I recommend that all lines, whether developmental or otherwise, should be built to that gauge, but if the main trunk railway is to be built only in short sections over a long period, it might be cheaper to extend the 3-ft. 6-in. gauge until nearing completion. I recognise that cheap freights are essential to the producers, and in the Territory the cheapest possible freights should be charged consistent with the proper working of the railway. Of course, if the Commissioner has to make the railways show a proper return upon the capital invested, it is necessary for him to charge rates that will do that, but if the development of the country is to be assisted by the lowering of freights, the Government might consider a policy of recouping the railway accounts for the losses thus incurred. The charges for hotel accommodation, clothes and foodstuffs in the Territory do not appear to be unreasonable; certainly the prices are very little higher than those obtaining in other inland and out-of-the-way parts of Australia. When you ask me what hope there is of building up the Territory and increasing production, the Government might consider a policy of recouping the present charges for getting produce to market,

I reply that there is the same hope as there was in other parts of Australia that have been developed by the construction of railways. In New South Wales, Victoria, Queensland, South Australia, and Western Australia, railways were built into the interior when there was little probability of their showing an immediate return, and to-day those railways are the backbone of those States.

One of the first necessities of the Territory is the construction of railways. Build railways, and make proper land laws, and the people will follow, and develop the country without much further assistance from the Government. The cattle herds of the Territory are such a long distance from the market that some means of transport is necessary in order to shorten the distance that they have to be driven to market. On the Barkly Tablelands and at the head of the Victoria River are large areas suitable for sheep-raising, but that industry cannot be profitably carried on without a railway. The construction of the line through that country would encourage the growing of sheep. I am of opinion that the Barkly Tablelands would be fully utilized for sheep raising if a railway were built to serve that area, but at present it is held in very big leases. Before a railway is commenced steps should be taken to arrange with the present holders for the resumption of areas sufficient to enable blocks of from 30,000 to 40,000 acres to be cut up in order to induce a larger number of people to settle in that country and engage in sheep-raising. The same policy should be applied to cattle areas within a reasonable distance of the railways. It is generally considered that sheep raising cannot be carried on at a greater distance than 100 miles from the railway. I know sheep are grown profitably 200 miles from a railway, but the circumstances must be exceptional; the man must be satisfied with a small profit. Peanuts will grow easily in the Territory; the only question is as to how soon the market will be over-supplied. In my report on the North-South railway I have given full details regarding the mining industry of the Territory. During my recent travels from Anthony's Lagoon to Borroloola, I had evidence of a considerable body of copper ore of high grade, especially at one place about seventy miles north of Anthony's Lagoon. I saw also some very good specimens of silver-lead ore. This general opinion amongst residents in that country is that there is a good deal of copper ore awaiting development. Mining operations are handicapped by the fact that there is no coal in the Territory, and, so far as I know, no possibility of discovering any. Coal and coke required for treatment works would have to be imported from the south, or alternatively the richer ore could be selected and sent south. In most of the metalliferous areas there is a fair amount of timber suitable for mining purposes. Railways would improve the possibility of smelting silver-lead and copper ore in the Territory. One method of encouraging development would be to fix moderate freights on the railway, and to recoup any loss thus sustained the Commissioner should receive a subsidy from the Commonwealth. I do not propose at this moment to advocate the payment of a subsidy to shipping companies. I am unable to understand why shipping freights to Darwin should be so much higher than to any other port of the Commonwealth. Once railways are built and cargo is available at the ports, the shipping companies will compete for it, and rates will be lowered naturally. For some time to come a new chief will not be recruited at Darwin. When the North-South railway is completed the necessity for improved wharf accommodation might be considered. If I were asked to prepare plans for improved wharf accommodation I should require a lot of preliminary data, including surveys of the foreshores, soundings of the whole water front, borings of the submerged rocks, tide gaugings, &c. Before any scheme could be laid before the Government the Commissioner should have the services of a thoroughly expert harbours

and rivers engineer, to assist his engineer. Without the data I have mentioned I am not prepared to express any opinion as to what sort of scheme should be undertaken. It seems to me that when we once commence to provide increased wharf accommodation at Darwin, we shall be actually commencing to build a harbour. I do not think that the schist lode at the bottom of the basin could be removed with a bucket dredge, but an ordinary suction dredge would remove the overlying sand and mud. The removal of the rock would probably involve a considerable amount of submarine blasting, and rather than incur the expense of doing that work I would prefer to build the wharf further out in deeper water. A sea wall built from Stokes Hill to Fort Hill would never give accommodation to more than four large ships, whereas wet docks in that area could probably be made to accommodate about eleven ships. By damming back the water the rock could be excavated dry. Reinforced concrete in salt water has lately been adversely reported upon by harbors and rivers engineers; it is said that the steel reinforcement rusts and swells and fractures the concrete. A good deal of reinforced concrete work has been done in Queensland ports, notably Cairns, Gladstone, Townsville, and Brisbane, but I cannot say how it has lasted. If I were proposing to build a sea wall such as Admiral Clarkson has suggested, I would first prepare drawings showing alternative methods of construction. I doubt if it would be possible to drive the steel sheet piling into the bottom strata, which is of rock. The effect of sea water on steel is more serious than on concrete or cast iron. I would not be prepared to state what would be the best sort of wall to build until I had gone into the matter in detail. There is no stone suitable for concrete near Darwin; the best stone for the purpose is about 40 miles out. Admiral Clarkson's lay-out of the proposed wharf is defective inasmuch as it shows only one set of rails in front of the sheds. It would be very difficult with that accommodation to unload or load one ship, and impossible to load or unload two if there were no greater shunting conveniences. Admiral Clarkson's proposal requires the wharf to be widened to accommodate more lines of rails, and his estimate would be increased accordingly. I doubt if the wharf he suggests could be built in less than two years. The handling of railway material over the existing jetty might slightly increase the cost of the line, but I do not think the difference would be very great. Even if the new wharf were constructed within three years it would not mean a big saving in connexion with the construction of the railway. I am in entire agreement with the suggestion that railway construction in the Territory should be in accordance with a definite and continuous policy, in order to give more or less permanent employment to the workers. Serious losses are incurred by building short sections of railway and then discontinuing operations and dispersing the construction gangs.

167. *To Mr. Blakeley.*—A curved approach to the jetty from the east of Stokes Hill is not necessary or advisable while we have the turn-table. It is true that the turn-table involves the employment of two men to operate it and two shunters per hatch, but that does not add much to the cost of the goods. If the turn-table were removed, there would be some saving, but that would be counterbalanced to some extent by having to pay wages and hire of the locomotive for a considerably longer time than at present. When the existing jetty is no longer able to do the work that is required of it, we shall have to consider the construction of greater and more up-to-date accommodation, either by an enlargement of the present jetty or the building of an entirely new wharf. The timber addition to the jetty was never expected to have the same life as the steel portion. When it was built Vestey's works were starting, and railway construction was proceeding, and in view of the possibility

of a bigger scheme being required, it was considered inadvisable to incur the expense of a temporary enlargement with costly material. I very much doubt whether there is any necessity for the expenditure of a large sum of money upon a road from the jetty up the hill past the Government offices, and into the town.

158. *To Mr. Cook.*—Off hand, I should say that Admiral Clarkson's proposed wharf would probably cost £160,000, and I would rather spend that money in the development of the Territory either by railway extension or the making of roads and the provision of water supplies, telephones, and wireless stations. Judging by the hills which have already been put down, and the characteristics of the rivers I have seen, the Territory can be exploited for water supplies for the pastoral industry and for irrigation with very great success. Almost over the whole of the Territory sub-artesian water is available, there are many large and permanent springs, and in places there are good sites for the storage of large quantities of water. A scheme such as the goldfields water scheme in Western Australia will never be required in the Territory, because the supply of water is well distributed, whereas the water from the catchment at Mundaring is pumped hundreds of miles into the interior where water could not be obtained by sinking or conservation. An immediate announcement by Parliament that the construction of the North-South railway is to be proceeded with would have a very good effect upon the Territory, especially if the Government announced which route was to be followed. I know that if the Government decided to build the line through the Barkly Tableland and via Camoowal, Boulton, Birdsview, and Maree, a large number of the best up-holdings of 30,000 to 40,000 acres along the route and stock them with sheep. If, however, the railway is to follow the overland telegraph line, an early announcement of the Government's intention is not so necessary, for whilst there would be a considerable amount of settlement along the route through Western Queensland, there would be comparatively little of any consequence along the central route. If the North-South railway is built upon the Western Queensland route, the States would undoubtedly tap the line for many reasons, and for one in particular. Western Queensland and north-western New South Wales are subject to very severe droughts, but northwards towards Darwin and the Gulf country the rainfall is better and the droughts less frequent, and in time of drought pastoralists further south would move large numbers of starving stock into the northern pastures. In the building of the North-South railway, I would prefer Government day labour combined with piece-work, but if I were not permitted to do that, I would take up that system I would prefer to adopt the piece-work, but if I were not permitted to do that, I would take up that system. Rather than endeavour to enforce the stocking conditions of the leases, it would be better for the Government to come to an agreement with the pastoralists for resumption of portions of their leases. A railway would be the most important feeder of a wharf, because it would be the bigger carrier of produce and the greatest factor in developing the interior. For the next twenty years the principal produce of the Territory will be cattle, sheep, and wool, and probably a little agricultural produce from areas near the coast.

159. *To Senator Lynch.*—I do not think it would be advisable to build an approach to the existing jetty from the east of Stokes Hill, in the event of that it would conform to Admiral Clarkson's plan if it were carried out later. It would be risky expenditure to anticipate that any additions to the present jetty would form part of any larger scheme that might be developed later. No extra accommodation is necessary to meet the requirements of Vestey's works. With the present facilities Vestey's produce can be handled over the jetty quite comfortably. Mr. Conacher is wrong

in saying that the turn-table means the loss of fifteen minutes in every hour. I am not able to say why Vestey's works are not operating to-day, but I feel confident that the jetty accommodation has very little to do with it. It is true that if the works were operating and we were carrying over the railway 25,000 head of cattle per annum at an average of 10s. each, our revenue would be increased by £12,500 per annum, but that amount would not be all profit, and it certainly would not be sufficient in itself to warrant a heavy expenditure upon the jetty. That traffic would involve the running of extra trains, but we have in past years handled all the cattle that Vestey's were able to treat, and we could have handled a great many more. The estimated cost of the jetty to date is £100,445, and I should say that another twenty-five years will be the limit of its life. As that jetty meets present requirements, it is not wise to expend another £160,000 upon a new wharf twenty years before it will be required. If the trade of the port should increase considerably we can at any time provide whatever increased accommodation is necessary. So long as we can refrain from building a new wharf we are saving money; because if we were to build the new wharf now we would be merely adding the interest on its capital cost to the interest on the capital cost of the old jetty, which still has many years of usefulness. The details of costs at the ship's side are—Taking delivery from ship's slings and loading into trucks, 4s. 2d.; shunting on wharf, 1s. 8d.; operating turn-table, 10d.; sorting and delivery at shed, 2s. 9d.; clerical and other supervision, 1s. 6d.; other charges, 1d.—total, 11s. When Vestey's and Jolly and Company were handling the cargo the charges were as high as £2 11s. per ton, plus heavy losses on pilging. The cost was reduced to £1, but the pilging continued. The Railway Department took over control of the jetty on 1st November, 1921, and immediately reduced the cost to 15s. per ton. On 1st August, 1922, the cost was further reduced to 12s. 6d. per ton, and again on the 1st July last to 11s. 3d. per ton. Now we have an efficient gang of men on the jetty. They are working well, and goods are being handled at a very reasonable rate, having regard to the position of the jetty in relation to the sorting shed. The cost of sorting and delivering would be reduced if the shed were on the jetty, but the saving would not be very great, and, as I have already pointed out, if the turn-table were dispensed with the charges for locomotive shunting would be increased.

(Taken on s.s. *Montoro*, at Sea.)

TUESDAY, 16th OCTOBER, 1923.

Present:

Mr. GREGORY, Chairman;

Senator Lynch

Mr. Blakeley

Senator Reid

Mr. Cook

George Alexander Hobler, Chief Engineer for Ways and Works, Commonwealth Railways, recalled, and further examined.

160. *To Senator Lynch.*—All the railway facilities which the Commonwealth undertook to provide, according to the agreement made with Vestey's in 1914, have been provided, and the company has no grounds for complaint on that score. All the frozen meat from Vestey's works was carried by the railways, and loaded in a condition satisfactory to the alpins. Tests of the insulated trucks were made, and special reports thereon can be obtained from the Commissioner's office in Melbourne. One provision of the agreement was that alterations to the accommodation and conveniences on the jetty should be made as would enable railway trucks containing frozen meat to be discharged alongside a

vessel at the rate of 2,300 quarters per day of eight hours. That condition has been fully complied with; there are special records in the Melbourne office regarding the quantities actually loaded on each ship. The old turn-table which would only handle one 5-ton truck was replaced by the present mechanism, which enables two trucks to be handled simultaneously. The jetty is capable of handling more frozen meat than is specified in that clause of the agreement. The turn table has not caused any interruption in the loading of any ship up to the specified requirements. The Railway Department considered the question of making a curved approach to the jetty from the east of Stokes Hill, but that was not in accordance with any obligation to the company. Steel increased very much in price, and when investigations proved that the loading facility which the Government was required to provide could be given by doubling the size of the turn-table at very much less cost than would be entailed in the erection of a steel approach, that plan was adopted. The Government was not required to give additional facilities on the jetty by any particular method, but only to provide facilities to enable a given quantity of meat to be loaded. Mr. Conacher may demand the erection of a particular type of structure, but so long as the Government complies with the agreement it is not necessary or reasonable to spend large sums of money upon new wharf construction. It would not be reasonable to expect the Government to incur large expenditure upon a new wharf if it could make the present jetty suitable for all requirements by the provision of either a turn-table or a curved approach. The installation of a larger turn-table was decided upon, and it was installed in sufficient time to handle the products from Vestey's works. If the Government had spent about £60,000 or £70,000 in building a curved approach it would have been a serious loss in interest and upkeep when Vestey's works closed down. We carried out our agreement with Vestey's to build 54 miles of railway, and for several years Vestey's have sent scarcely any stock over the line. When the line was first constructed some cattle were carried over it, but for some years it has been run at a considerable loss to the Government, and no cattle have been carried over it because Vestey's works are not operating. We might have been involved in a similar loss had we incurred an expenditure of £60,000 or £70,000 upon the jetty. The Darwin meat works have been closed so long that the money spent by the Commonwealth in accordance with the agreement has earned a very small return. I cannot agree that the existence of the turn-table or the non-provision of a curved approach has any influence in keeping Vestey's works closed. I do not admit that the turn-table involves a loss of 10 per cent. I have already explained that if the turn-table were removed there would be an additional charge for engine hire. At present the engine is called on the jetty only when required to deal with an accumulation of waggons passed over the jetty by the turn-table. If the turn-table be eliminated the locomotive will be required to do all the shunting in addition to attending to the accumulation of waggons. Even if a curved approach were provided it would probably be found more economical to do a considerable amount of hand shunting. I do not know how Mr. Conacher prepared his estimate of a loss of fifteen minutes in every hour. Shunting may occupy seven or twenty minutes, and even after that the frozen meat may have to wait some time before it can be put into the hold. Meat has always been supplied to the ship as fast as it could be put into the hold, even when working four hatches. It would be an advantage to the railway if Vestey's were operating and sending 50,000 bullocks every year from the Katherine River to Darwin;

that traffic would yield a revenue of about £25,000, but the Government have done their part to build up this industry, and it remains for Vestey's to do their. The Government has no power to order Vestey's to open or close their works, but so long as it has complied with the agreement it cannot be asked to do more. It would not be reasonable to spend a large sum of money on the jetty merely in order to comply with Vestey's desires. It would not be a proper proceeding for the Government to spend more money on the wharf until Vestey's are able to re-open their works.

161. *To Senator Reid.*—The provision of a sorting shed on the jetty would not greatly reduce the cost of the goods landed at Darwin. The cost of sorting in the shed would be practically the same; we would save shunting charges and double handling of the cost of the trucks, but against that would be the cost of wheeling from the ship's sling into the shed, and the extra cartage from the shed to the town. There is no evidence that the inside berth is sitting up; so far as we can ascertain there has been very little sitting since the last dredging was done. The ship masters will not go to the inside berth if they can use the outside one, but the inner berth may be improved by extra dredging. The placing of a sorting shed on piers alongside the jetty would be useless, because there would be no access for drays from the town to the jetty. Only a very small quantity of the goods landed on the jetty go inland direct. I have been acquainted with the Territory for about ten years. Before Vestey's works started, the pastoral industry and public expenditure were the mainstays of the population. For some years after the Commonwealth took over the Territory a considerable amount of money was spent on Experimental Farms and Matranka Station, and there is no doubt that that expenditure helped to swell the trade of the Territory to a certain extent. The pastoral industry, however, has always been the mainstay of trade and commerce. Prior to Vestey's works opening the cattle reared in the Territory were driven overland to South Australia, Queensland, and New South Wales. Vestey's works caused a commercial improvement in the Darwin district while they were in operation, but they have never affected the southern or eastern parts of the Territory. Had they continued in operation they would have helped considerably the northern part of the Territory, but the closing of them down has given a considerable set-back to the country. I do not know of any small pastoralists in the Northern Territory. The clause in the agreement which requires that Vestey's shall treat their turnover probably refers to the stock of pastoralists other than Vestey Bros and associated companies. If the small man did exist he would benefit from Vestey's operations, but so far as I know he does not exist, and many years must elapse before he can be brought into existence and produce stock for Vestey's to treat. The closing down of the works has given no encouragement for the small man to start. A very large area of land is locked up in big holdings. I am much surprised if Mr. Conacher said his company preferred to drive cattle on the hoof instead of delivering them by rail. So far as I know, the railway has been utilized by Vestey's to bring all their cattle to the market. The Commonwealth spent £444,634 upon a 54 miles extension of the railway in accordance with the agreement made with Vestey's, and it would be rather inconsistent on their part if they now expressed a preference for travelling their stock on the hoof. I advocate the prompt completion of the north-south railway by the Western Queensland route. It would stimulate the pastoral industry, especially sheep raising, and the mining industry, and would make possible the development of dairying,

pig raising, and tropical agriculture. At present the Territory is not stocked to anything like its capacity. Railway construction would make it possible to carry 3,000,000 sheep on the Barkly Tableland alone, and if the country were properly subdivided, and water supplies and spur lines were provided, that number could be increased by at least 50 per cent. I have not had any experience of the feeding of railways by motor lorries. Owing to this country being so suitable for cheap railway construction it would probably be better to build short spur lines than to build roads, especially as the wet seasons would be very detrimental to motor traffic. A cheaply constructed railway could be operated during the wet season. I have absolute faith in the future of the Territory. A through railway would give people an opportunity of coming into the Territory, and encourage them to invest their money. Mr. Evans said that the country about 250 miles south of Darwin is one of the best areas for cotton cultivation in Australia. If the cotton industry should flourish 250 miles from the coast the railway would get freight upon the cotton and traffic would be further increased by the fact of people being settled further inland instead of on the coast. If the cotton cultivation should prove successful it will be of great assistance in inducing people to settle in the Territory.

162. *To the Chairman.*—I would not use timber in any submarine construction on this coast. If any alterations were made to the jetty we would probably use timber only for planking and decking. I consider that the present turn-table is efficient and carries out the obligation of the Department to Vestey's. The fact that an endeavour was made to operate the turn-table by complaints of Vestey Bros. were justified. The Chief Mechanical Engineer was endeavouring to obtain the most economical method was operating the turn-table. As electricity did not prove to be economical he reverted to steam power. If a curved approach to the jetty were made, the locomotive would be used on the jetty to whatever extent might be found necessary. It would not involve any danger to the stability of the structure. The use of the locomotive would save a certain amount of time in the shunting of waggons, but it would not necessarily have any effect in giving greater despatch to ships. There is no delay to ships, because the turn-table can handle all the waggons that are necessary to enable ships to load and discharge continuously.

163. *To Mr. Blakeley.*—If there is much hard rock or schist in the bottom of the harbor at the point where Admiral Clarkson proposes to build the wharf, his estimate of 1s. 6d. per yard for dredging is too low.

(Taken at Melbourne.)

WEDNESDAY, 24th OCTOBER, 1923.

Present:

Mr. GAZETTER, Chairman;
 Senator Barnes Mr. Blakeley
 Senator Lynch Mr. Cook
 Senator Reid Mr. Mathews.
 Harold Crofton Sleigh, Shipping Agent, Melbourne, sworn and examined.

164. *To the Chairman.*—I have some personal knowledge of the Northern Territory. I have been to Darwin several times, and I have had a number of steamers loading and discharging cargo there. At present I am engaged in shipping cattle from Darwin to Manila. Previously I have discharged coal and general cargo at Darwin on behalf of the Government

and others, and I have given some thought to the question of improvements necessary at the wharf. The most important factor, to my mind, is the question of whether a satisfactory financial return would be obtained by a large expenditure, or whether something could be done by way of improving the present jetty, to meet the requirements of the Territory as it now exists, and as it is likely to exist for some years to come. One of the greatest drawbacks to economical and cheap work there is the natural disadvantage due to the very high rise and fall of the tide. When steamers are using their own winches and the tide is high their docks are about level with the deck of the jetty. At other times the head of their derricks is about level with the deck of the jetty. This is a varying factor, and it means both slow and expensive work on the part of the steamers. Difficultly seems to be experienced in the manipulation of the trucks on the jetty, both because of the turn-table and because the trucks have to be pushed along by men. The latter difficulty could be easily overcome by the use of a horse. Horses are usually employed both in Melbourne and Adelaide in pulling trucks along the wharves. At the Williams-town piers the wheat trucks are moved along the ship's side by means of horses. At Darwin the trucks could be placed on the turn-table by the engine that brings them down, but they could be easily drawn from the turn-table to the loading points by horse-power. The present method of manipulating the turn-table is uneconomical. It was originally intended that it should be operated by electricity. I believe a motor was installed there, but it was taken away. I have suggested that the jetty should be equipped with electrical transporters so that the motive power for lifting cargo instead of being on-board ship should be on the jetty itself. I have had a plan made of a transporter to be worked by electrical power, and it would surmount the difficulty in regard to the rise and fall of the tide. It would move along rails so that it could be taken to any hatch of the ship. A transporter of this description is employed at Black Wattle Bay, Sydney, and there is another in operation at Port Pirie for the discharge of coal. There is also one installed at Newcastle for the discharge of iron ore. These transporters therefore are not in the experimental stage, but are found to be economical in use. It would require four transporters if it was desired to work four holds at once, but I do not know any port in Australia where it would be necessary to work four holds simultaneously for the loading of frozen meat. The meat works on the Brisbane River are all equipped with only one chute down which the frozen meat passes into the ship, and I do not think Darwin would need greater facilities than exist at Brisbane. These transporters have been designed to handle 40 tons of cargo per hour, and if two were used, as I suggest, they would handle 80 tons per hour per hatch. The best work we can do in Melbourne with ordinary winches is 15 tons per hatch, and the general average is about 10 or 12 tons.

165. *To Mr. Cook.*—Only one man is required to operate the transporter, whereas it ordinarily requires two men operating winches and one man at the hatch, and two or probably three men in the trucks.

166. *To the Chairman.*—The estimated cost of such transporters as I have in mind is, without electrical equipment, in the neighbourhood of £6,000 each. I think that the Darwin jetty could be fully equipped with the two transporters at a cost not exceeding £50,000, including a power plant, which would be used to work the turn-table, and would possibly light the

jetty and some part of the town as well. The following is a copy of a letter that I wrote to the Minister for Home and Territories on the 28th April last—

28th April, 1923.
 The Rt. Hon. G. F. Pearce, P.C.,
 Minister for Home and Territories,
 61 Spring-street, Melbourne.

My Dear Senator Pearce,

Herewith I beg to hand you a print of the electric transporter, of which it is suggested that two might be installed upon the Darwin jetty.

The advantages of these transporters are as follows—

1. They are installed upon the wharf and, therefore, the rise and fall of tide does not, in any way, interfere with the rapid loading and discharge of cargo as is the case when steamers' winches and derricks are used.
2. Cargo can be loaded and discharged with these transporters at the rate of at least 40 tons per hour from each hatch, and can be placed in, or taken from, any line of trucks on the wharf.
3. The transporters are movable and can be placed to work on any position on the jetty or work any of the ships' hatches.

4. One man operates the whole of the work of each transporter. Two winchmen, one hatchman, and at least three men on the wharf would be eliminated by the use of these transporters, and this must be recognised as a very considerable advantage in a port like Darwin.

I would suggest that steamers using the jetty at Darwin should be compelled to use these transporters, and as their use would obviate the utilization of the steamers' winches, winchmen and hatchmen, steamers making use of the transporters should be called upon to pay so much per hour for their use, which would be a source of revenue, and should pay interest and sinking funds upon their capital costs.

Electric power would be needed by the transporters; such power could, of course, be used for working the much discussed turn-table, and also the capstans which are at present installed on the jetty, but the position of which should be altered after a careful examination has been made as to the most efficient places for their installation.

I venture to suggest that if these alterations and additions were carried out to the Darwin jetty the port would be brought to an almost up-to-date state, and the equipment would leave nothing to be desired.

The expenditure necessary for this work should not be excessive, and, in my opinion, the present jetty is quite sufficient for all the needs of Darwin for at least the next five or ten years when it is hoped that the development of the Territory will be such as to demand an entire re-arrangement of the port facilities at Darwin.

I would point out to you that the equipment as proposed here, would satisfy the requirements of the port for the shipment and handling of general cargo, which must be considered in addition to the requirements of the frozen meat trade.

I understand that proposals have been made for the installation of an aerial rope-way, but, from personal inspection, I feel that while this might serve the meat works, it could not possibly be made to serve the other necessities of the port.

Trusting that these suggestions may be of some value, I am, my dear Senator,

Yours faithfully,
 (Sgd.) H. C. SLEIGHT

9 Herbert-street, St. Kilda,
 July, 12th, 1923.

The Secretary,
 Department of Home and Territories.

ELECTRIC TRANSPORTERS ON THE DARWIN WHARF.

In reply to your letter of the 9th inst., for convenience of reference, I append my views on Mr. Sleigh's proposal to install two electric transporters on Darwin wharf opposite his statement of advantages to be derived from such an installation, in parallel columns.

1. They are installed upon the wharf and, therefore, the rise and fall of the tide does not, in any way, interfere with the rapid loading and discharge of cargo as is the case when steamers' winches and derricks are used.

(Cont.)

9 Herbert-street, St. Kilda,
 July, 12th, 1923.

The Secretary,
 Department of Home and Territories.

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1. They are installed upon the wharf and, therefore, the rise and fall of the tide does not, in any way, interfere with the rapid loading and discharge of cargo as is the case when steamers' winches and derricks are used.

2. Cargo can be loaded and discharged with these transporters at the rate of at least 40 tons per hour from each hatch, and can be placed in, or taken from, any line of trucks on the wharf.

3. The transporters are unmovable and can be placed to work on any position on the jetty or work any of the ship's hatches.

4. One man operates the whole of the work of each transporter. Two winchmen, one hatchman, and at least three men on the wharf would be eliminated by the use of these transporters, and this must be recognised as a very considerable advantage in a port like Darwin.

I would suggest that steamers using the jetty at Darwin should be compelled to use these transporters, and as their use would obviate the utilisation of the steamers' winches, winchmen and hatchmen, steamers making use of the transporters should be called upon to pay so much per hour for their use, which would be a source of revenue, and should pay interest and sinking funds upon their capital costs.

Electric power would be needed by the transporters; such power could, of course, be used for working the much discussed turn-table, and the capstans which are at present installed on the jetty, but the notion of which should be altered after careful examination has been made as to the most efficient place for their installation.

I venture to suggest that, if these alterations and additions were carried out to the Darwin jetty, the port would be brought to an almost up-to-date state, and the equipment would leave nothing to be desired.

The expenditure necessary for this work should not be excessive and in my opinion, the present jetty is quite sufficient for all the needs of Darwin for at least the next five or ten years, when it is hoped that the development of the Territory will be such as to demand an entire re-arrangement of the port facilities at Darwin.

(Signed) W. CLARKSON,

Engineer, Vice Admiral, Retired.

The total weight of the transporter is 30 tons, and the weight in the sling would not be more than 2 tons, so that the total weight of the transporter itself and the load it would lift would not exceed 32 tons, or, say, 35 tons at the outside. The weight which a man handles on the wharves by manual labour would not exceed 15 cwt. I do not think, therefore, that there would be any undue strain on the jetty as it exists at present if such transporters were installed. Some time ago when we induced the Government to provide a

The load, i.e., the weight of the transporter, plus the weight lifted, plus the resultant of the wind pressure would be taken on the outer edges of the wharf. The wharf was not designed to carry this load, and it is not thought that it will be able to do so without extensive and costly alterations.

The winchmen only, in my opinion, could be dispensed with. Men will not work in a hold without a hatchman on each hatch, and I fail to see how three wharfmens could be eliminated. As a set-off against the winchmen there would be the running costs of the power plant and the cost of maintenance.

It would be unreasonable to charge this against the ship owner who has provided his own loading and discharging gear. If the ship was charged with the cost of operating the gantries this cost would simply be added to the freight

The power plant has now been removed and is not available. The capstans are not in my opinion, required

I do not agree. On other papers I have fully stated my views as to the requirements of the port of Darwin.

cattle race at the Darwin wharf the bogey was raised that the jetty would not bear the strain, but cattle are now loaded at this wharf more expeditiously than at any other port in Australia. Admiral Clarkson states that if the ship were charged with the cost of operating the gantries the cost would simply be added to the freight. Of course, that is not so. If you send a steamer to Sydney to load what you have to use the Government elevators whether you like it or not. The same thing applies at Durban. The charges are not excessive, and the ship-owner saves wear and tear on his winch tackle, and also saves his winchman's time. In addition, he gets a very much better discharge, and that is the main point every time. Therefore, I do not think that the Admiral's argument in that respect holds very much water. I think nearly every owner would be more willing to use an elevator at Darwin than his own winches if it would give him a better discharge. I have seen Admiral Clarkson's plan, and I think it would be an excellent one for Melbourne, but I doubt very much whether it could ever be put into operation for the sum stated. Of course, if money is no object there is not much to be said. I have endeavoured to inform myself whether it would be possible to do something to the Darwin jetty as it at present exists until such time as the Territory develops sufficiently to enable improvements to be effected on a larger scale. The cost of handling cargo at Darwin is very high, and that has an effect on the charges for the carriage of cargo there. The undue delays have been mostly brought about by the difficulties in connection with the discharge of cargo. Where you have to employ labour of the character obtainable there you are pretty sure to experience delays. If manual labour could be eliminated and mechanical handling employed the labour bogey would disappear. Electrical transporters such as the one to be seen at Howard Smith's wharf at Black Wattle Bay are in use all over the world. The one that Admiral Clarkson put up at Port Pirie for the handling of coal seems to be quite excellent work. The Darwin wharf is in sufficiently good condition to carry a couple of transporters. I should be inclined to agree with the expert opinion, which you tell me has been obtained, that the wharf is fit for another 25 years' service. Another matter that should be considered is that of a truck traverser at the end of the jetty. Truck carriers are to be seen at Williamstown. The truck itself is raised a little above the level of the rails, and it can be placed on any line desired. The trucks are pulled over by means of horses. The empties are thus passed out over another line of rails. These carriers would not be very expensive; they would probably cost £150 each. I have been inland in the Territory, and I base my opinion as to the possibilities of the country on somewhat of a personal effort to do something in the direction of development. I am afraid that we shall never have any great progress there so long as labour troubles continue. If the Territory were freed from labour legislation, as it exists in the southern States, I believe it would go ahead. I do not mean that coloured labour should be imported, but employers should be free to make their own arrangement with their workmen.

When in Java ten months ago I had a conversation with clients who are amongst the biggest sugar producers in Java. We sell them 10,000 tons of coal per year for their own use, and that gives an indication that they are in a big way of business. They were paying from 35s. to £2 per acre per annum rent for the land on which they grow sugar. Most of the land is held by natives from whom the sugar companies have to rent it. These people had just sent a commission of inquiry to the Philippines to see if they could get sugar land there more cheaply than they could in Java. I suggested to them that there was

plenty of land in the Northern Territory, and that possibly it was good sugar country. They asked me to obtain details as to climate, soil, &c., and these particulars I sent them. Some proposals were made in regard to the labour difficulty, and this was to be overcome by selling the land to growers on terms. The land was to be cleared, irrigation channels were to be put in, houses built, and the sugar cane practically planted. The men who were to buy the land were to have from ten to fifteen years in which to do it, and they were to pay for the land by means of the sugar cane delivered to the mill which was to be erected by the promoters of the enterprise. Volunuous reports on the proposal were prepared, and after two months' consideration these people came to the conclusion that there was nothing against sugar growing in the Territory, so far as soil and climate were concerned. They had no doubt that it could be grown there, but they pointed out that the production of sugar was a seasonal trade. They were afraid that when the cane was grown and probably cut, seeing that it had to be turned into sugar within a few months, they would very likely encounter labour difficulties at the critical time. The whole project therefore was abandoned. These people pointed out what had happened to Vestey Brothers. They said that Vestey had proved that they could produce cattle as cheaply as anybody in the world, but when they came to turn the cattle into beef they were "up against it." If the scheme to which I have referred had matured it would have meant 80,000 tons of sugar passing over the Darwin jetty per year. Then we could have talked about what Admiral Clarkson suggested doing, or could even have gone better than that. The men to whom I have referred would have given a guarantee that they would not sell 1 lb. of sugar in Australia. They would grow it only for export. I found that many thousands of acres of land suitable for sugar were bought outright in 1834 for the purpose of sugar production, but when the employment of coloured labour in Queensland was stopped all those purchasers withdrew, and the land has been lying idle ever since.

167. *To Senator Lynch.*—The land has not reverted to the Crown. It is freehold, and it was probably purchased when the Northern Territory was under the control of South Australia. I think most of the original owners have long since died. Many of them went insolvent, and it was very difficult to pick out the land and to find who was the owner.

168. *To the Chairman.*—I should not think that the demand for peanuts would make the possibilities of peanut culture in the Territory very promising. The export of live cattle is about the only industry left there, and unfortunately we have not shipped any cattle for the last six months. We are, however, making another shipment on the 28th of this month. Some disease broke out in the Philippines, and the importation of cattle was prohibited. I do not think for a moment that the disease originated in Australia, but we lost 295 head out of one shipment of 500 cattle. I should say that an expert investigation in regard to the ravages caused by the Buffalo fly would be very useful. Another matter concerning which I am diffident about speaking, because I am personally interested in it, is that of intra-Territory communication by means of steamers along the coast. You cannot expect much development to take place until the people have means of access between the places where they are living. What I am referring to is the carriage of provisions from Darwin to Borroloola on the one side and the Victoria River on the other. If you gave means of communication new ports would come into existence of their own accord.

168A. *To Senator Lynch.*—It would be quite possible for the electrical transporter to which I have referred to handle 40 tons an hour. It would mean only 20

slings an hour in 2-ton slings. It might mean putting more men in the ship's hold. That would depend upon the description of cargo being handled. I have no doubt that figures could be procured showing the great saving effected by these transporters at Port Pirie, Sydney, and Newcastle. If horses were employed on the wharf at Darwin the capstans would not be needed. If the wharf were electrically equipped it is quite possible, however, that the capstans would be more serviceable than horses. The transporters have been found economical where the rise and fall of the tide is not great, and therefore it would be doubly advantageous at a port like Darwin. If Darwin is to remain in its present condition I doubt whether the expenditure that transporters would involve would be warranted. It would not be possible to use a ship's power for operating such a transporter. It has a wheel base of about 48 feet, so that the weight of the equipment would not be concentrated on one spot. It would certainly not be heavier than a locomotive and trucks. I have been at Darwin during the loading and discharging of general cargo, and it appeared to me that the turn-table was well able to keep the ship going at the present rate of work. But there is no doubt that the turn-table is uneconomical, especially at Darwin, where the rate of wages now paid. I do not think there is another wharf in the Commonwealth of similar design to that at Darwin, but I am not sure that there was not one like it at Bunbury some years ago. The sugar growing scheme to which I have referred was considered on the basis of white labour, but it broke down on the question of the labour employed in the actual manufacture of the sugar and not in the growing of the cane. The locality selected for the proposed undertaking was the Adelaide River, where there was quite enough land available to keep one mill going. I think the promoters figured on employing the same kind of labour as is now used in Queensland, but I think they depended a great deal on a grower who owned his own freehold being likely to put more effort into it than a man simply working for wages. I think from the evidence obtained it was thought likely that the Daly River in some parts was even more suitable for sugar growing than the Adelaide River, but the latter appealed to us because it was more accessible to the railway, and would enable the product to be taken by rail to Darwin. The Katherine River was not inspected. The question of producing sugar on the co-operative plan was not considered. I am not sufficiently versed in the principles of co-operation to express an opinion on that matter. The cattle industry in the Territory is largely influenced by the cost of production. This industry, like others, has undergone changes. Before the South African war cattle were shipped from Brisbane to South Africa, and we used to buy them at £3 10s. per head. The men who raised the bullocks in Queensland made money at that price, but now they tell us that they cannot grow the bullocks and sell at the price at which we are now buying. If any big rise in the price of cattle took place the cattle shipping trade in the Territory would come to an end, because it is only by being able to sell meat cheaply in Manila that we are able to hold the market. There are plenty of cattle in South China. I have been there quite recently just to see what sort of competition we are getting. These cattle have the advantage that they can be led about anywhere. Weight for size they compare well with Territory cattle, and they maintain their condition much better than the Australian animal does. The cattle in South China come into competition with ours. In Singapore they can beat us, and so they can also at the eastern end of Java. The outlet for surplus stock in that direction is limited. It would be possible to handle 15,000 head into Manila in any one year it is as much as we can expect to do.

100. *To Mr. Cook.*—I should think that the average tonnage lifted at Darwin would not be more than 8 to 10 tons an hour. A transporter lifting 40 tons an hour would certainly be a labour-saving appliance, and the revenue from it would probably more than offset depreciation. Three or four experiments in sugar-growing have been made in the Territory. In 1887 or 1888 a plantation was started by Mr. de Lissa, but as it was established quite close to Darwin where the land was unsuitable the experiment proved a failure. Experiments were conducted by a Government resident some years ago, and it was proved that sugar could be successfully grown. The exclusion of coloured labour, however, put an end to the project. I do not look upon sugar production in the Territory as an experiment. We know that it can be grown in other parts of Australia. There is not the same uncertainty as in connexion with peanuts and cotton. I am interested in the meat trade with Java, and I do not think the export of frozen beef to that country will be very successful. The people there desire only the best cuts. They do not want any bone or fat, and the trade cannot be done from the meat works. I do not think, viewing the world's market generally, that we shall see very much higher prices for beef. I think it is going back to pre-war prices. The export trade in live stock, too, is limited. The chairman of the Australian Meat Council told me that a four-year-old bullock could be grown in the Territory for £3 10s. What it would cost to deliver that bullock from the station to the Darwin jetty or to the meat works I cannot say. My experience is that bullocks delivered at Darwin by rail arrive in just as good condition as those driven to Wyndham by road. That may be because the last bit of country going into Wyndham is not very good. I do not know whether Vestey Brothers will open their works at Darwin again. If they do, I think the whole thing will have to be written down. We cannot expect meat works to be built at the present time and made to pay. A cautious business man who saw the war coming would have shut down those works. Vestey's thought that prices would probably rise tremendously, and that therefore it would not matter what they spent on their works, but there was one calculation they lost sight of, and that was whether they were going to obtain the tonnage to take the meat away. It was a combination of difficulties that closed Vestey's works. It was not entirely a labour difficulty. If the price had been right they would have gone on shipping over the old jetty. Owing to seasonal difficulties I think it will be hard to grow cattle on small areas. One of the troubles we have had is to maintain supplies of cattle all the year round. We cannot sell cattle to a man in the Philippines for six months and then leave him without any. In the wet season you cannot get cattle to Wyndham, but Darwin has the advantage that you can hold them at the Katherine. The railway extension in the Territory will be of great benefit so long as cattle freights are not too high. If the cattle trade develops to warrant the running of more trains the freights could be reduced, but having to pass the overhead expenses on to a train that runs once a fortnight heavy freights are unavoidable. If the price of cattle increased the market would be more limited than it is at present.

170 *To Senator Reid.*—The Territory is undoubtedly suited for the raising of cattle, and it is not stocked to its full carrying capacity. I believe that meat will drop to the pre-war price, and stay there unless some unforeseen development takes place in Europe. What is killing the cattle trade now is not the price at Home or abroad, but the high cost of production in Australia. That is why I say that if the Territory was freed from the labour legislation of the southern States, the industry would be given a chance. I should leave the labour question to a personal contract between the

master and the man. Nobody is bound to go to the Territory. I should leave it to the employer to keep his men together if he could. I do not think we can look for much higher prices in the English market. The payment of bounties is not business-like. It means developing the manhood trade, which cannot last. The quantity of frozen meat consumed in Europe outside of Great Britain is not great. The Continent never has and never will consume much frozen beef. If the Territory railway were extended to beyond Daly Waters, and more trains were run, it would pay us with the markets we have in the East to bring the bullocks by rail instead of travelling them, because they would arrive in better condition. The export trade in cattle, of course, brings other trade with it. We have to carry to Darwin all the fodder we use on board ship, and we have also to keep the cattle fifteen days in Manila. We either have to bring that fodder from Manila or ship it from Newcastle to Manila, and bring it down to Darwin. We prefer lucerne hay, but we have been feeding the cattle on Manila hay. We found it cheaper to feed the last shipment of cattle on American hay. I think there is a market on the Adelaide River for good lucerne hay. If this were grown locally it could be exported probably to Manila as well as used for travelling cattle. There would be some demand for it in Darwin itself. I imagine that the reason lucerne hay is not grown in Darwin is that the labour costs would make it too expensive. The land in the Territory on which it was proposed to grow sugar would have had to be manured just as the producer uses fertilizers on the sugar land in Java. Their intention was to prevent the landowners from growing sugar on the whole of their farm at once. A horse could move the trucks on the Darwin wharf in the same way as at Williamstown. The transporter of which I spoke could work a ship both on the inside and the outside berths. It could carry goods from one side of the jetty to the other, and it could move up and down the jetty on rails.

171. *To Mr. Blakely.*—While the rise and fall of the tide are an important factor at Darwin the shifting of the full trucks and the putting in of the empty ones admittedly cause a great deal of the difficulty. The cross-over at Williamstown is very efficient, and it would be almost impossible to work those piers without such crossings, because otherwise all the hatches would be tied down to the rate of speed of the slowest hatch. I should be inclined to think that the cargo handled at Darwin would justify an expenditure of £50,000 on a transporter system. If the innovation would advance the interests of the Territory I think the experiment would be justified, but I should not advocate the expenditure of a sum such as £250,000, which a transporter would afford better facilities than a big wharf. If the material for the North-South railway has to be handled under present methods, as soon as the tonnage over the wharf is increased there will be labour troubles. There are sure to be two or three steamers held up at once, one waiting for the other. You ask me whether I think the whole of the recent labour trouble at Darwin was due to the workers or whether the inefficiency of the employers was a tendency to create it. My opinion is that the main employer was in such a hurry to get his works up that he exceeded what was a reasonable payment for services rendered, and when he did not need to do his work in such a hurry the men would not agree to work for anything less. You desire to know whether a case came under my notice in which a man asked 18s. per day for a certain job, and was told by one of the staff that he should make it £1. I have heard that story denied and affirmed, so that my mind is quite open on the question. I would not be surprised if it were a fact that overseers in charge used to go to sleep, and not call the men, thus causing the whole work to be

stopped until the overseers were aroused. I have no personal knowledge of the matter, but I have seen the same thing occur in Melbourne. You tell me that porous rock and badly-mixed cement were provided for Vestey's meat works at Darwin, and that now 40 men are employed trying to patch up a very bad job. You ask me whether the provision of bad material is the fault of the workers. Of course, one thing to be considered is whether better material was obtainable. A great deal of the trouble is brought about by the fact that Darwin is isolated. If communication between Melbourne and Sydney and the Northern Territory were easy and cheap a good deal of the labour trouble and every other trouble would disappear.

(Taken at Melbourne.)

MONDAY, 29th OCTOBER, 1923.

Present:

Mr. GREGORY, Chairman;

Senator Barnes | Mr. Blakely
Senator Lynch | Mr. Cook
Senator Reid | Mr. Mathews

Senator the Rt.-Hon. George Foster Pearce, P.C., Minister for Home and Territories, sworn and examined:

172. *To the Chairman.*—I recommended the Government to refer the question of wharf accommodation at Darwin to the Public Works Committee. That action was the result of a visit that I made to the Territory. I saw for myself the necessity for something being done to provide reasonable wharf accommodation. Admiral Clarkson has submitted a report on the subject. He was asked to report on three things—the wharf accommodation and anything incidental to shipping facilities at Darwin; the utilization of the flat unloaded by deep-sea ships; and the possibility of using any other port, particularly one at the mouth of the McArthur River. My chief in desiring the reference to the Committee is explained in the following statement which I have had prepared:—

WHARF.

Many complaints have been made of the policy of "go-slow" adopted at Darwin, and without doubt there were good grounds for complaint in the past. Nevertheless I consider that the man who desisted the present wharf could not have succeeded better if it was his intention to afford every hindrance to shipping and the handling of cargo.

No matter how efficient the labour is, with the wharf as at present, good results cannot be obtained. Every ton of stores, machinery, or plant unloaded is burdened with the high cost of handling. This should be borne in mind when the construction of the railway is commenced.

Difficulties arise when two vessels arrive, because it is impossible to satisfactorily berth them both. Masters refuse to take the inner berth, as they consider it unsafe. Only a few days ago the naval coaling vessel *Bioela* and the *Marella* raced to Darwin for the purpose of securing the outer berth. The *Bioela* got there first, secured the berth, and refused to move to the inner berth for the *Marella*. As a result the former vessel was delayed 24 hours and the latter 12 hours. The *Marella*'s cargo was unloaded on to the deck of the *Bioela*, whence it was taken to the wharf.

As far back as 1918 protests were made by agents of steamers against serious detention at Darwin owing to the lack of berthing accommodation and the unwillingness of masters to secure the inner berth. On one occasion the *Montoro* waited two days in the stream until she could take up. As a result the She eventually had to take the inner berth, although the master considered it unsafe. As a result she could work only some of the hatches, and after remaining in port four days she proceeded on her voyage to Singapore, over-carrying 150 tons of Darwin cargo. As the cost of detention amounted to £200 per day the delay resulted in a serious loss to the owners of the vessel.

Large vessels engaged in the meat trade cannot take up any other than the outer berth, and when the works re-open these difficulties will recur.

GOODS SHED.

The costs of handling goods will be considerably reduced upon the erection of a goods shed on the wharf and provision made for vehicular traffic to have an approach to the shed. As you are aware, the present shed is half-a-mile from the jetty, and the method of dealing with cargo inward and outward is antiquated and costly.

It is of course, impossible to provide the above on the existing structure.

The development of this vast Territory of ours is of pressing importance to Australia, and since I became Minister for Home and Territories I have devoted considerable time and thought to the matter. I will, therefore, give you an outline of my proposals for a developmental policy. It is obvious, however, that unless something is done to improve the existing wharf, which is the key to the whole situation, the development of the Territory will continue to be delayed.

My visit to Darwin and journey overland in May and June last from Darwin to the Queensland border, via the Barkly Tablelands, enabled me to obtain a practical knowledge of local conditions and an insight into the disabilities under which the Territory is labouring. I am, therefore, now in a better position to make recommendations to the Government as to the best means of obviating these disabilities, and I am firmly convinced that the remedy is contained on the following:—

- (1) Better communication by railways, roads, telegraph, telephone, wireless, and shipping.
- (2) Reconstruction of the Darwin wharf so as to give better shipping facilities.
- (3) Extension of existing railways.
- (4) Provision of bulk motor fuel power at Darwin and railheads.

The two industries which will benefit most, in my opinion, are agriculture and sheep and cattle raising. Regarding the former experiments have shown that the northern portion of the Territory is, owing to its climatic conditions, admirably suited for cotton and peanut growing. Splendid crops of cotton have already been cultivated in various portions of the Territory, which compare more favourably with that cultivated in Queensland, and peanuts have been shown by producers to be superior to those imported from the East.

Small plots at Miranran yielded at the rate of 1,850 lbs of seed cotton per acre. At Pine Creek, 1,000 lbs., and at Stanton about 600 lbs. per acre. The cotton produced was a magnificent sample, and had been grown with the natural rainfall and without any irrigation whatever. There are thousands of acres of just as good country on which this cotton was grown in the same locality. In the opinion of local experts there are hundreds of thousands of acres of suitable soil in the Territory for cotton growing. I am not dealing with the Victoria River country, because I have not travelled over it. I men when I met on the spot and who had previously been managers of stations in other parts of Australia. Their opinion was that 100 miles was quite far enough to be away from the railway.

The Territory has a distinct advantage over other parts of Australia for the cultivation of cotton, inasmuch as there is never a drought in the northern portion, and the rainfall, which is plentiful, comes at the proper time—that is when the seed is planted. There is an absolutely dry period, free from frosts, after the trees have matured and until the crop is ready for harvesting.

CATTLE AND SHEEP RAISING.

The area under pastoral leases in the Northern Territory is under the South Australian Act, 211 leases, 64,245 square miles; under Commonwealth Ordinance, 250 leases, 52,225 square miles, making a total of 470 leases, aggregating 181,590 square miles.

From Newcastle Waters to the Queensland border, a distance of 400 miles, there is rich pastoral country with profusion of the well-known Mitchell and Flinders grass. Pastoralists and stockmen used to sheep raising were of the opinion that considerable portions of this country are suitable for that class of industry, provided that the country was opened up by railways.

Experiments were carried out at Avon Downs over twenty years ago, and a 60 per cent. increase was obtained with 16,000 ewes. Two hundred and ninety heads of wool from this station were exported to the London market and realized 104d. per lb. As there was 60 per cent. increase a considerable proportion of the fleeces must have been bred on the station.

It may be mentioned that Carradotta Station, which is less than 50 miles from the Territory border, and contains similar country to that passed through in the Territory, was carrying over 40,000 sheep on 570 square miles.

COTTON GROWING IN THE NORTHERN TERRITORY.

A report on cotton growing possibilities in the Northern Territory has been made to the Commonwealth Government by Mr. Evans, cotton adviser to the Queensland Government.

The country chiefly examined by Mr. Evans lies along the Darwin-Katherine railway line, and following the report the Government decided to provide certain areas of suitable blocks as agricultural leases for cotton growing.

EXPENDITURE OF NORTHERN TERRITORY BY THE COMMONWEALTH FROM 1ST JANUARY, 1911, TO 30TH JUNE, 1923.

(Excluding Interest and Sinking Fund in respect of Loans and Repayments of Loans).

(1) New Works and other Developmental Expenditure—

(a) From Revenue	£	908,024
(b) From Loan	£	410,234

(2) Administrative Expenditure 1,318,868

(3) Subsidies 1,036,090

Missions	7,000
Advances to settlers	37,000
Steamship Service, Melbourne-Darwin	31,422
Grant, Darwin Town Council	11,334
Subsidies to Missions	10,100
Other Subsidies and Grants	5,712

90,835

3,113,763

LAND REVENUE OF THE NORTHERN TERRITORY SINCE 1ST JANUARY, 1911.

	£	s.	d.
1911 (six months) approx.	5,400	0	0
1911-12	8,430	17	9
1912-13	9,555	2	10
1913-14	10,109	12	3
1914-16	10,918	3	2
1916-17	12,200	11	11
1917-18	13,884	11	0
1918-19	15,220	1	10
1919-20	16,747	18	2
1920-21	21,620	16	5
1921-22	17,810	16	9
1922-23	18,378	16	2
1922-23	10,010	9	2
180,188	15	5	

MINING REVENUE OF THE NORTHERN TERRITORY SINCE 1ST JANUARY, 1911.

Year	Amount.
1911	394 16 0
1912	617 6 0
1913	457 18 0
1914	405 11 0
1915 (first six months)	405 3 0
1916-17	1,722 10 7
1917-18	5,226 6 3
1918-19	3,878 17 4
1919-20	4,531 5 4
1920-21	2,401 13 0
1921-22	2,307 0 1
1922-23	1,153 10 4
1922-23	2,676 0 4
Total	26,610 3 0

NET REVENUE FROM CUSTOMS AND EXCISE—NORTHERN TERRITORY, FROM 1911 TO 1923.

	£
Year ending 31st December, 1911	12,627
.. .. . 1912	12,789
.. .. . 1913	11,838
Year ending 30th June, 1915	15,405
.. .. . 1916	21,282
.. .. . 1917	18,948
.. .. . 1918	13,320
.. .. . 1919	7,179
.. .. . 1920	3,996
.. .. . 1921	4,483
.. .. . 1922	4,637
.. .. . 1923	4,862

The above figures do not include Customs and Excise Duties paid to various States on goods consumed and used by the people in the Northern Territory. In 1910-20 this amount was computed at over £40,000. The Territory dues in the respect in the same way as Tasmania, but the latter receives recognition from the Commonwealth Government by means of large grants.

POPULATION OF TERRITORY AT 1901, 1911, 1921.

Period.	European.	Asiatcs.	Other Nationalities.	Total.
Census 1901	1,055	2,330	202	4,686
.. .. . 1911	1,418	1,429	493	3,310
.. .. . 1921	2,450	768	650	3,867

AMOUNT PAID FOR RELIEF OF UNEMPLOYED IN TERRITORY DURING PAST TWO YEARS, AND NUMBER OF PERSONS ASSISTED.

Expenditure in 1921-22 on Rations and other assistance (payment of fares, &c.) to destitute persons was £2,712.

Expenditure in 1922-23 in which year Relief Works were carried out—

Relief Works	£	2,292
Rations	£	5,131
		7,423

The number of persons assisted deducted from time to time. The greatest number of persons receiving assistance at any one time was—

Europeans—	
Adults	102
Children	44
	146
Asiatcs—	
Adults	176
Children	17
	192

NUMBERS OF GOVERNMENT EMPLOYEES IN TERRITORY, HOME AND TERRITORIES—

Administration of Northern Territory	
Postal Department	39
Communications Railways	70
Customs	3
Lighthouse	0
Works and Railways	4
Taxation	3
Health	3
	220

Before I conclude my evidence I wish to refer to a statement made in the press by the Chairman of the Committee, and on previous occasions by other people. It referred to the powers of the Administrator. A number of references have recently been made in the newspapers to that matter. The statements are not correct. I would like to know the circumstances of the case referred to by the Chairman. I am quite sure that the Administrator tells people that he has to refer matters to Melbourne. There are certain rooms at the Court House, and there is a dispute between two of his officers as to who should occupy a certain room. Within the last few months he actually referred that question to Melbourne for a decision, and did not even submit a recommendation. If a man is not prepared to take upon himself the responsibility of settling a question like that, what can he be expected to do in larger matters? He has been appointed for a definite term of years. I am tired of his continual endeavour to shelter behind the old cry of "hampered by Melbourne." I have trivial questions brought before me that never ought to come to me. A certain class of thing is dealt with from Melbourne. The Administrator sends down his recommendations upon the estimates, and we have to enter into a battle royal with the Treasurer. We may not approve of some of his recommendations, and we do not always accept them. We must have a case that we can defend against the Treasurer, but I frankly confess that I cannot defend some of the recommendations that come from Darwin. Once the Estimates are passed the responsibility is

placed upon the Administrator for expending the money. He does not need to refer details to Melbourne. I wish to comment on a statement made in the press by Mr. Bell, Railways Commissioner, regarding what accommodation at Darwin. He is reported to have said that only 6,000 tons of goods passed over the wharf last year, and that with a slight alteration the wharf was capable of handling that amount of cargo. I say so too, but if the Territory will continue to have only 6,000 tons of goods going into it per year, I would not recommend the Government to spend one penny on the wharf. If the wharf is worked on the same principle as it is worked to-day, we shall never handle more than 6,000 tons of cargo per year. No part of Australia is rich enough to stand the burden of that wharf and the handling charges it entails. I have great confidence in the future of the hinterland of the Northern Territory. I am not now speaking of Darwin and the northern portion of the Territory. The country from the Katherine River southwards and eastwards is just as good as that which is supporting towns like Longreach and Winton in Queensland, and feeding most works at Wyndham. But it will remain undeveloped unless it is given the same opportunities as that country in regard to rail and shipping facilities. I think the Minister for Home and Territories should have more control over the administration of matters affecting the development of the Territory. The Minister for Home and Territories is charged with the responsibility of developing the Territory, but he has no control over the chief factor of development, namely, the railways. The railways are the most important factor in the development of the Territory. The new agreement with Vestey Brothers represents a further reduction on the old agreement. I believe the Railway Department has increased the charges for handling goods between Vestey's works and the wharf. There are many arguments against the control of the railways by the Minister for Home and Territories. There would be duplication of offices and officers. I think it would be best to allow the present system to continue, but to put on the Northern Territory estimates a definite subsidy for railway, postal, and other services. It would then be known what the development of the Territory was costing. The Government has made every possible effort to secure a reduction of shipping freights. The prevailing rates represent the most we can obtain. The shipping subsidy is £2,500 per annum. I have seen the correspondence between Mr. Sleigh and some Java capitalists regarding a proposal to establish sugar plantations in the Territory. It did not seem to me that they had gone thoroughly into the question. The only concession they asked for from the Commonwealth was that the machinery required by them should be allowed to be imported duty free. No proposal was made to me that the arbitration law should be waived. It will be difficult to induce people to take up the growing of sugar, but they are already being induced to grow cotton. Land has been made available, and has been applied for. I fear that people will go out, and unless we can give them cheaper cost of living, they will have to abandon their undertakings. I have no fear that if we can cheapen the cost of production people will be able to live there as well as anywhere else. Mr. Bell, through Mr. Stewart, informed me that it is intended to run motor trains in the Northern Territory. I have been urging this for some years, but it is only within the last few months that I have been informed that the request has been granted. The manager of Vestey's told me that if the bulk oil proposition was carried out at Darwin Vestey's would use oil in preference to coal at the meat works. He told me that oil would be much cheaper than coal. It seems to me that motor trains are just the thing for a line like that in the Northern Territory. There is not much cargo to carry, but we want to give the people means for quick transport and regular mail service. We can hardly expect people to live there if

they have a mail service only once a fortnight or once a month. For the development of the Territory I pin my hopes to sheep. I believe the whole of the Barkly Tablelands can be used for sheep raising. Sheep will employ more labour and create more wealth than cattle, and the closer settlement of the country will result in the payment of more taxation. I think 100 miles from a railway is about the limit for sheep raising. The extra cost of freight on stores carted a long distance from the railway takes away much of the profit on the wool. Much more stores have to be carted to a sheep station than to a cattle station. There are the shearing sheds and equipment, the fencing, and the boring machinery and materials. The capital expenditure is very much heavier for sheep than cattle. There is a good sheep country from 40 or 50 to 100 miles from the railway as at present proposed. The cattle industry is not wholly dependent upon the reopening of the meat works. A number of cattle are sent to Wyndham, Townsville, and Adelaide. The opening of the meat works would be a great boon, and there cannot be much future for the cattle industry without a meat works. The efforts made by the Government to secure the reopening of the meat works were with a view to assisting the development of the Territory. Admiral Clarkson told me that he considered the trouble with the insulated trucks was due to their zinc lining. He thought that if the zinc was removed the trucks would be as efficient as those on the Queensland railways. It is true that meat is loaded at Wyndham in the day time and at Darwin only at night. There is no turn-table, however, at Wyndham. With the delay which takes place on the wharf at Darwin, I should say that the exposure of meat to the heat of a tropical sun would cause some deterioration. Meat is handled much more expeditiously at Wyndham. Until industries have been started in the Territory we should make the charges for wharfage and other services as light as possible. The object should be to encourage settlement, and keep people on the land. The wharf will never pay as at present constructed. Before it can pay we must get more people to settle in the Territory. To double the rates now would be suicidal. People will not go there to pay high rates when they can go elsewhere and get low rates. Admiral Clarkson's report was submitted to the Works and Railways Department, but not for a report. We knew that it would come before the Public Works Committee, and that Mr. Bell and other persons could be called to give evidence upon it. To some extent engineers versed in harbor construction have been consulted regarding the Darwin wharf. They have been asked to report in the past as to the position of the wharf. No one has ever challenged the position of the wharf. I would consider Admiral Clarkson as good an authority as can be obtained on that point. I do not think Mr. Settle has ever been there. Captain Donaldson told me of a current that sweeps round there, and whether Mr. Settle took that into consideration I do not know, but judging by his plan, I should say he did not.

173. To Mr. Bledley.—I recommended to the Government that Admiral Clarkson should be appointed to submit a report on wharfage accommodation at Darwin. Speaking from memory his fee was £500, with an allowance for actual travelling expenses. He is a marine engineer, and has had experience of shipping. He has been connected with the Navy, and during the war was controller of shipping throughout Australia. He was concerned with the allocation of ships and the loading of them. He had considerable experience in the loading of meat at Darwin for Imperial contracts. A marine engineer is not necessarily qualified to do civil engineering work. That depends on the man. It seemed to me that the question was one for a marine rather than a civil engineer. A civil engineer might have no experience of wharves and shipping. Admiral Clarkson had had experience in the construction of

wharfs, the materials used for that purpose, and the obtaining of data regarding ocean beds. The works carried out by the Navy had been under his control. If an objection is taken to his recommendations I am sure that the Committee should refer to him and see what defence he can make. I think his defence would be a good one. I do not think the railway engineers know anything about wharfs except in regard to the railways on them. I do not think Mr. Hobbler claims to be an authority on wharf construction. I am not competent to express an opinion regarding the cost of dredging for the wharf. I understand that Admiral Clarkson availed himself of the results of the results of borings that had previously been taken. The turntable on the wharf was installed long before my time. The wharf was designed by an engineer in the South Australian Government before the Territory was handed over to the Commonwealth. The turntable was put in shortly after the Federal Government took over the Territory. Captain Elliott, a Queensland engineer, was responsible for it. I cannot give any opinion regarding the life of the present wharf. The question appears to me to be one not of its life, but of its efficiency. The Government is responsible for the payment of the subsidy of the *Rincael Cohen*. Tenders were called for, and only one was received at £5,000 a year. That tender was accepted. It was £1,000 less than the Government service was costing. I am not aware that the vessel is of too deep a draft. I know she has had a series of mishaps. She was on a sand bank once, but I am not aware that that happened more than once. The Administrator, like all of us, has his good points as well as his deficiencies. In some respects he is a very fine man. We have to take him by and large. I have no knowledge of the traversers which are used by the Victorian Harbor Trust. The Government is responsible for the preference which is given to the Northern Territory Workers' Union. The giving of that preference is the policy of the Government, and it is given because of the direct action taken and the go-slow policy pursued by the other union a few years ago. I am not aware that only eight men are left of those who came to the assistance of the Government. The present position is not conducive to the smooth working of the Territory. It would be far better if the two unions would join together and agree to work properly instead of having frequent stoppages such as there were when there was only one union. It is not in my recollection that an officer employed by the Commonwealth Government incited men to strike, and, when the strike occurred, refused to man the engines until he was guaranteed promotion. I cannot say what I would do if I was the Minister controlling the matter, but I assume that before varying the present policy he would want to know the policy of the unions for the future. I would not like to see any alteration in the steamer freights from Darwin if it would mean 70s to Brisbane and 80s. or 90s. to Melbourne. If the fares and freights can be reduced so much the better, but I do not want to see them increased. The present flat rate does not seem to be equitable, but it has to be remembered that we are dealing with a company which is the only one available. If the proposition was an attractive one I should be prepared to demand a great deal more than we are getting. If the Territory developed there would be more inducement for other companies to enter into competition. There is no inducement at present. The Government secures fair rates for passengers and goods as far as it possibly can. The service is not sufficiently attractive to warrant another company coming in, or to warrant Parliament in allowing an unpayable service to be run by the Government. There would be a tremendous loss on any service run by the Government. Vestey Brothers are not receiving preferential treatment. The

subsidy of 4d. per lb. is paid to all cattle raisers. All alike get the benefit of the reduced freight. Vestey's pay the same freight as any one else.

174. *To Senator Lynch.*—I believe that four steamship lines called at Darwin at one time. If there were four lines calling they would arrange to call within a week of one another. If a ship loading meat took more than a week to load one ship would be cut out, or the meat ship would have to lie off and let the other in. The Government, in the expenditure of money, intends to concentrate on the development of the Territory by giving better means of transport. Experiments will be cut out. I have been pressed repeatedly to establish an experimental cotton farm. I have refused to do so. I have said that we will throw open the land, and other people will demonstrate whether cotton can be grown. I think experiments in the growth of tropical plants will come, but I would rather it came by a process of evolution. If the pastoral industry is developed cotton and peanut growing, and other industries, will be started in due course. I agree that a lot of money has been spent, and that there is nothing to show for it, but the amount is not very excessive when one compares it with that in the same area in Queensland. If we do not develop the Territory we shall continue to spend £117 per head of the population of the Territory per annum without any return. The expenditure can be lessened only by developing the Territory. In order to develop it, it is necessary to spend still more money. Residents near Wyndham are in as bad a position as those in the Northern Territory. The north-west of Western Australia needs the same policy of development as I am advocating for the Northern Territory. It will not go ahead until it has it. I do not agree that there is a very good wharf at Darwin. It is a useless wharf. I do not endorse the estimate of the Railway Department regarding the extra cost imposed by the turntable. I would not accept the view that 2s. 6d. a ton represents the extra cost. The system under which work is done on the wharf slows down the labour, goods could be handled 50 per cent. cheaper if there was an efficient wharf with a proper railway connexion. The present wharf is demoralizing to labour. Any man would become demoralized when working under those conditions. The men have to wait on one another. One gang has to sit down while another is working. It is impossible to measure in money the demoralization that is caused. The loss would be even more than fifteen minutes per hour, as estimated by a representative of Vestey Brothers. I would not like to be dogmatic and say that it would be wise to construct the wharf even if it would cost £200,000. That is a matter for the Committee to determine. The question would then arise whether it would not be advisable to abandon Darwin as a port. We must not make the Territory subordinate to Darwin, but Darwin must be subordinate to the Territory. If a suitable port could be found on the east it would diminish the necessity for Darwin as a port for the Barkly Tablelands. Darwin is the natural port for cotton and agricultural produce. A certain amount of stock will always go to Darwin. I attach great importance to the reopening of the meat works. Without the meat works the railway is largely useless, for it is really intended to feed the meat works, and without them must be run at a tremendous loss. I consider that there is some moral obligation resting upon the Government to remodel the wharf as desired by Vestey Brothers. When the agreement was formulated no one could foresee the enormous increase in the cost of production. We cannot reduce wages. The only way to reduce the cost of production is to reduce the cost of living, such as mill-wages and wharfs, must be made more efficient. Admiral Clarkson's plan was to fill up the semi-circular basin and have warehouses and buildings there adjacent to

the wharf. The proposal to run the wharfs at right angles to the direction proposed by Admiral Clarkson does not take account of the current.

(Taken at Melbourne.)

TUESDAY, 30th OCTOBER, 1923.

PRESENT:

Mr. GREGORY, Chairman;
 Senator Barnes. Mr. Blakelock
 Senator Lynch. Mr. Cook
 Senator Reid. Mr. Mathews.

The Right Honorable George Foster Pearce, P.O., Minister for Home and Territories, recalled and further examined.

175. *To Senator Lynch.*—Referring to the correspondence between Vestey Brothers and the Railway Department between 17th March, 1916, and October, 1917, concerning the turn-table on the Darwin wharf, you ask me whether Vestey Brothers received fair treatment at the hands of the Government. I think there has been tremendous delay right through in dealing with the wharf. This delay arose largely from the fact that all the reports indicated that before anything worth while could be done a large capital expenditure would be needed. Public opinion with regard to the Territory was such that the Government at that time did not feel that it could obtain parliamentary approval of the expenditure that would be necessary. There was also diverse opinion as to how the wharf could be improved. The fact that the Railway Department advised on 17th March, 1916, that "owing to scarcity steel not putting course across jetty, but putting large turn-table to carry two and four wheel wagons" is regarded by me as an implied recognition by the Government that something of a substantial nature ought to be done. You draw my attention to the statement in Mr. Conacher's evidence that on 9th September, 1916, he formally notified the Government that Vestey Brothers would claim any loss occasioned through failure to give facilities according to the agreement. So far as my knowledge goes, no such notification has been received by the Government. No mention of any pending proceedings has been made since I have been Minister for Home and Territories. You ask me whether, in view of the present financial condition of affairs in the Territory, the present wharf should be scrapped in favour of one that might cost £200,000. Darwin, in my opinion, will always be a principal, if not the chief, port of the Territory, and in view of the constant loss due to the inefficiency of the present wharf I think it would be more economical in the long run to provide an efficient one. Such an improvement would, I think, have considerable influence in the direction of inducing Vestey Brothers to resume operations there. Assuming that a new wharf were erected, the Government would have no power to compel Vestey Brothers to resume, but there are other means that the Government could adopt to develop the port. The Government is not without power to say that Darwin shall not be permitted to continue in a state of stagnation. Whoever has made a statement that the turn-table could handle all the goods required to keep four hatches going continually cannot have been to Darwin and seen what happens. Anybody who has been there must know that it is impossible to keep four, or even two, hatches going continually until improvements are effected. At present there is a waste of time on the ship, on the pier, and on the turn-table. Not one of the three gangs can work continuously while the turn-table is in operation. I am not an engineer, and am not competent, therefore, to say whether a new wharf is absolutely necessary, but

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I am of the opinion that the present wharf is inefficient. It may be possible for it to be made efficient. That is a question for an engineer.

176. *To Mr. Cook.*—Admiral Clarkson was paid £500 for his report. His son, who is a civil engineer, accompanied him on his visit to the Territory. A previous Government, of which I was a member, had experience of Admiral Clarkson, who, during the war, when it was essential to get quick loading at Port Pirie, recommended the installation of apparatus for handling lead and coal. This work was a tremendous success. It enabled ships to be dealt with more expeditiously and cheaply than previously. The work was carried out under Admiral Clarkson's supervision, and this fact gave me the impression that he was a man who knew his job. My experience of him is that he is fairly cautious, and I think he would have some justification for his estimate of 1s. 6d. a yard for the cost of dredging. The Government, I think, carried out its agreement with Vestey Brothers, but the inefficient wharf failed to give Vestey's the facilities that would enable them cheaply and efficiently to land their meat in a climate such as that of Port Darwin. You tell me that Admiral Clarkson stated that a heavy bump from a ship would break some of the girders of the jetty. When I was there some girders were being replaced. I saw some that had been taken out, and some others that were about to be removed. They were certainly above water, and I do not think it would have required much of a bump to break them. They were practically eaten through by rust. No matter what sum of money is spent on the development of the Territory, all who trade there will be taxed as long as the jetty remains inefficient. Therefore, it is essential as part of the developmental policy to provide efficient means of handling inward and outward cargo at the chief port of the Territory; otherwise it is like a man bringing ship rails instead of a good gate at the entrance to a sufficient estate, when a gate would save his time. You tell me that Mr. Doll said the existing wharfage facilities would be sufficient for some time to come. I admit that the existing wharf would be sufficient for all time, because so long as it is there no development will take place. It raises the cost of living. For the proposed cotton and agricultural farms the Government is setting out areas of 1,000 acres each. There will be from 100 to 150 acres of good agricultural land, and the balance will be mostly grazing land. The idea is that a man with 150 acres suitable for the cultivation of cotton and peanuts would, with the addition of a little grazing, be able to make a living. I am referring now to the Katherine River and Mataranka country, which is very much better than the land immediately around Darwin. At least 100 square miles of grazing land would be required as a pastoral holding. Some pastoral leases are up to 1,100 square miles in extent. The Government has already brought in a Bill to authorize the resumption of all the areas held under the South Australian Acts, since under the Northern Territory Acceptance Act the Commonwealth is bound not to resume these lands for pastoral purposes. The people who tell the Committee that the lack of water supply generally is the great drawback to the Territory's development cannot have visited the place. I do not know any part of Australia that is better supplied with water. The Government is spending £10,000 this year on bores, and if it proposes to continue that policy. I am informed that in the Victoria River country there is plenty of surface water for pastoral purposes. 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sheltered water could be opened up at the mouth of the Macarthur River. Stock and goods could be lightered to deep water at Vanderlin Island. From Borroloola to the heart of the Barkly Tablelands you could have a cheap light railway, which would open up the whole of that country. To open up Northern Australia properly it would be necessary, also, to have a railway from Wyndham into the Northern Territory. Darwin will always be the port for the coastal country and for Newcastle Waters. The recent labour troubles in the Territory certainly had the effect of bringing development to a full stop, because nobody had any confidence in the country. The Marranbidgee field is one of the richest in Australia, but it is impossible to induce capitalists to put money into it. This is largely due to the suicidal policy of strikes as far back as 1916. The Government was unable to give any assurance to Vestey Brothers or anybody else in regard to the industrial situation in the Territory. I have made a recommendation to the Government, which has been adopted, that it should inaugurate a system of freeholds in connexion with agricultural land, and I have already indicated that Parliament now has before it the Land Ordinance Bill that will liberalize and improve the conditions of leaseholds. I do not think it would be wise to fix the maximum area of holdings leased for grazing purposes. In some districts 100 square miles is ample, whereas in other parts a lessee might need 1,000 square miles. The quality of the land varies in the Territory as in other parts of Australia. I do not regard it as impossible to legislate for the Territory from Melbourne. The present system is the only one that could be adopted in the circumstances. With less than 3,000 people in the Territory, and half of them resident in Port Darwin, how could they be given power to govern themselves? I am aware of the obstacles to be faced in legislating for the Territory from the southern States, but until the population in crosses that country cannot have self-government. Mr. Allen, the present Director of Agriculture there, has had experience in tropical agriculture in Central Africa. It was realized that it would be useless to choose for this position a man whose experience was limited to temperate regions.

177. To Senator Hill.—I do not regard the turn-table as the whole cause of the inefficient wharf facilities. Vehicular traffic cannot go on the wharf. There are no goods sheds on the wharf, and it is impossible to put sheds there under present conditions. It is not possible to have effective shunting, nor can a locomotive go on the wharf. I admit that the turn-table is the chief cause of trouble. I was there whilst a truck was being loaded, and when the loaded truck was being taken away the men on the ship and those who had been loading the truck sat down. Then a gang that had been sitting down came up and pushed the load on to the turn-table, where some others who had been sitting down took up the work, and so on. Whilst the men were sitting down they still received their pay an hour. You do not see that sort of thing carried on in any other port in Australia. For an hour I watched the loading and unloading of a ship. I had Admiral Millican and Mr. Millican with me. I asked Mr. Millican if it was not possible to put points in so that the trucks could be shunted expeditiously and efficiently. He told me that it was not possible, and I realized that with the jetty as at present such shunting was impracticable, because it would be necessary to lengthen and widen the jetty. I consider that the men work just as hard on the Darwin wharf as on any other in Australia. There may have been no delay to shipping so far as the present wharf facilities will permit, but if there were an efficient wharf much saving in time would be effected. When I was there the tonnage was £1 per ton for handling between the ship and the wharf. Why should goods destined for the town be put in trucks and taken to the goods shed instead of being

put straight into a dray for direct cartage to the town? Darwin may not be badly handicapped compared with some towns on the north-west coast, but why should it have to suffer disabilities at all when it has deep water right along side? I do not know whether there is any possibility of Vestey Brothers resuming operations in the Territory at a very early date, but they are not the only pebbles on the beach. Quite recently I noticed that new meat works were being opened at Normanton, in Queensland, on the Gulf of Carpentaria, and I think the prospects at Darwin would be far better than at Normanton, where goods have to be lightered 12 miles out into the Gulf. If the wharf facilities at Darwin were made reasonably efficient, and other things were done to enable Vestey Brothers to function at a fair working cost, I think they would reopen their meat works. The Government is now having data prepared as to what land is available for cotton growing in the Territory. We have received Mr. Evans' report, and surveys are now being made to ascertain the number of blocks available. We have an analyst, Mr. Ball, who is quite capable of making analysis of the soil to test the suitability for the production of cotton. Mr. Evans stated that he did not see much good cotton land close to Darwin, but he did in the direction of the Katherine River. Of course, he did not go far off the railway line. He speaks very highly of the land along the Katherine, out towards Mataranka and the Roper River. We are informed that irrigation is not necessary for cotton culture in the Territory, because the rainfall is ample. The land that Mr. Evans reported upon as suitable has a rainfall of 40 inches a year, and he states that it falls at the right time. He adds that the continuous dry season for seven or eight months suits the cotton plant. Possibly we shall not be able to induce many Australians to take up cotton-growing, but there are plenty of people in Great Britain, and there are time-expired soldiers in India, who would be quite suitable for the work and willing to do it in the Territory. We are already receiving applications for cotton lands from people in Australia, including some from Queensland. But if we are to grow cotton on a large scale it will be necessary to rely on immigration for the purpose. The Government is negotiating an agreement with the British Australian Cotton Growing Company for a ginnyery. At first the company took exception to the agreement, but as the Government has now been able to give a guarantee that 800 acres will be put under cotton next season, the company has undertaken to erect a small ginnyery. I feel quite sure that an improved wharf would be most desirable in view of the railway extension authorized in the Territory. I believe that if the Macarthur River were developed meat works would very soon be established there, and it would stimulate development in that area. Darwin would still serve all the coastal country and the district between the Newcastle Waters and the Katherine. I am hoping that sheep raising will be taken up on a large scale, because, provided the growers have access to markets, sheep will pay. I know of some companies already making arrangements to go in for sheep in the belief that Parliament is determined to open up the Territory. I am strengthened in my hopes in that direction by the applications made for the wire-netting granted to settlers. If I had to choose between improving the wharf and adopting a policy of railway development, I should certainly devote the money to railway extension, but I firmly believe that both are necessary. I am simply asking that the Northern Territory be provided with the facilities that Queensland already enjoys.

178. To Mr. Mathews.—I should not have recommended the appointment of Admiral Clarkson had I thought he was not fit for his position. In spite of the criticism levelled against him I have confidence in him. You direct my attention to the statement in his evidence as follows:—"A fear has been expressed that

the existing bank near the jetty may grow, but the records show that since 1898 it has receded about 20 feet." I do not think the Admiral would make such a statement unless he could prove it. You also point out that the witness further stated, *inter alia*—

If the channel is dredged there will be sufficient scour to keep it clear, especially when the existing wharf and approach jetty are taken away. The channel was dredged to a depth of 25 feet four years ago, and no difficulty was experienced in dealing with the silt. . . . I have estimated the dredging at 1s. 6d. per cubic yard, which is rather excessive, and I have allowed an additional £1,200 for the transport of the dredge from Cockburn Sound to Darwin.

I do not think Admiral Clarkson would make the above statement unless he had some justification for doing so. Taking the Northern Territory as a whole, Darwin is probably the best port, but if you consider the Victoria River country it seems that either Wyndham or some other port in that locality would be more suitable. Similarly Borroloola is the natural port for the Macarthur River country and the Barkly Tablelands, but neither Borroloola nor Wyndham would suit the coastal country near Darwin. I believe that the naval authorities have a very high opinion of Bynoe as a harbor, which is not a very great distance from Darwin. But it is obvious, considering the policies of past Governments, that Darwin has always been regarded as the principal port. That is one justification for the expenditure I advocate on improved wharfage facilities. I do not look upon a causeway at Borroloola as justified at present, because stock and goods could be lightered from Borroloola to Vanderlin Island more cheaply. A causeway would be very costly, and its construction could be left to later generations. The Government is waiting for the report of Mr. Hoebler on railway connexion between the Barkly Tablelands and Borroloola. I do not think it would happen more than two or three times a year that there would be two ships at the Darwin wharf at once. This may have occurred more frequently when the meat works were in operation. I do not fear the danger of two vessels arriving simultaneously. The trouble is due to the costly working of the cargo from one ship. I cannot understand any railway man who desires cheap and efficient handling being satisfied with the wharf as it is at present. You tell me that Mr. Ball states that since the Railway Department has taken over the wharf the cost of handling cargo has been reduced. In my judgment, however, the work is still far too costly. If the Northern Territory is given the same chance as the hinterland of Queensland has received, I am satisfied that similar development may be expected. I spoke to a man who had had experience of cotton-growing in Queensland, and he had no doubt as to the success to be achieved from its culture in the Territory. The Government is following with interest the inquiry made by the Queensland Government into the advisableness of growing ratoon cotton, and it is taking the same stand in the Territory as the Queensland Government has in disallowing ratoon cotton. The great danger we are told is that ratoon cotton propagates disease, but where the plant is ploughed in or burnt every year the grower gets rid of most of the pests.

179. To Senator Barnes.—I do not favour a Government subsidy in connexion with the unloading and loading of cargo at the Darwin wharf, because it would not get over the trouble due to inefficient handling facilities. Why should we continue an arrangement by which the handling costs amount, say, 25s. a ton if they could be reduced to 10s. a ton? I am not in favour of subsidizing inefficiency. It is a rotten policy. A new wharf would be an aid to development, whereas the present structure is a hindrance. The existing system is an incentive to laziness. It sets the tone to the whole place.

180. To the Chairman.—I asked Admiral Clarkson whether, owing to the great rise and fall of the tide, there would be an element of danger in a vessel approaching the proposed new wharf if the present jetty and approach remained. Together we put that question to Captain Donaldson, who expressed the opinion that it would not be dangerous. I assume that a new wharf would reduce the cost of transport of the material required for the extension of the Northern Territory railway southward. Before very much progress can be made in that direction it will be necessary to bridge the Katherine River. Plans are now being prepared for that bridge, but it will be some time before it is built. I do not see why the proposed wharf could not be constructed within twelve months. I see very little chance of much progress being made with the bridge over the Katherine under twelve months. It would be advisable to give the men engaged on railway construction permanent employment. The nomadic population in the Territory has been responsible for much of the trouble experienced in the past. A percentage of the railway employees, if they were given permanent work, would possibly become settlers. I am not familiar with the working of the traverses, drawn by a horse for shifting weak trucks at the Williamstown pier. If a considerable number of people were induced to settle in the Territory it would be impossible, of course, to guarantee that the condition of affairs that existed in 1917 and 1918 would not return, but I think there is more sanity among the people of the Territory now than there was then. Many of the wilder spirits who were responsible for the trouble have gone away, and the people realize that it is not in their own interests that those conditions should obtain. Most of the local people are married men who have their families there. I believe that its policy of reducing the cost of living by freight subsidies ought to be continued. As a result of the representations made after my return from the Territory the Commonwealth Commissioner of Railways determined to decrease some of the freights, but not to anything like pre-war rates. The freight on tin concentrates had been raised to a figure five times what it was before the war, although the cost of handling had not increased five times. It will be necessary to adopt some scheme of subsidization in order to reduce the cost of freight. The Government recognises that it cannot treat the Territory in the same way as other parts of Australia. Until we can secure population there a subsidy must be continued. The time is ripe, and the problem is big enough, for Imperial co-operation in the development of the Territory, and I think it offers the best scope for immigration on a large scale. I should be quite prepared to assist in any movement in the direction of securing co-operation by means of a joint Commission between the Commonwealth and Imperial Governments. The States interested should also be consulted. Such questions as the construction of railways east and west on the land grant system should be investigated.

181. To Senator Reid.—The question of a definite policy of railway extension in the Territory is one with which a Commission could deal. It seems to me that the Territory should be considered without regard to geographical boundaries, which have always limited railway propositions in the south. For instance, Wyndham is naturally a part of the Territory, yet a Federal Minister has no business to make recommendations with respect to Wyndham. That is one reason why I favour a joint commission.

182. To Senator Lynch.—So far as my experience goes, Vestey Brothers have been fairly reasonable in their dealings with the Government. When Sir Philip Proctor was here I discussed with him the various requests which Vestey Brothers were making. I told him that was in my mind as to the best lines of development to follow, and he said that if the Government

would proceed on those lines it would probably be unnecessary for them to ask for anything else. The extension of the railway from Pine Creek to the Katherine was largely made to minister to the needs of Vestey Brothers, but it also carried out the contract with South Australia. The cost of the proposed wharf might fairly be charged as a subsidy to the Territory. Such an improvement would lead to population and development, but we could not expect an immediate return because at present the population is so small. There are a considerable number of men on the relief roll at present. They are given rations, and they are asked to do a certain amount of work.

Norris Garrett Bell, Commonwealth Railways Commissioner, recalled and further examined.

183. To the Chairman.—I have had an opportunity to further inspect the plans of Admiral Clarkson for a wharf at Darwin. In the construction of a wharf there, the first thing necessary would be to make borings in order to decide on the position of the wharf, and then a design should be prepared to suit the nature of the ground. I do not approve of Admiral Clarkson's design. I think a better design could be adopted. There is a rise and fall of from 26 feet to 27 feet in the tide at Darwin. To cover the shored piling with concrete would entail boxing it in for 27 feet, and the boxing would require to be made watertight. That would entail very considerable expense. The piles would have to be driven first and then boxed in before the reinforcing. The boxing-in would have to be watertight, because the concreting of the reinforcing could not be done in the water. I doubt very much if the piling could be driven as shown on the plans. My experience in driving shored piling is that when the pile strikes anything hard it twists in all directions. If these difficulties could be overcome, I think there would probably be some trouble in reinforcing concrete, because I believe that the movement of the wharf would be liable to break the strip of reinforced concrete along the top of the piling. I do not disapprove of the use of reinforced piles. I have used them myself in quite a number of places. I would not attempt to drive reinforced concrete piles into the rock. I should probably put cylinders in the rock for a little distance and plant the reinforced concrete piles in the cylinders. I consider the siding arrangements in Admiral Clarkson's proposal impracticable. They would have to be altered. There should be three roads in front of the wharf, and no road at the back. From a railway point of view the wharf, as proposed, is not laid out properly, because for the siding arrangements Admiral Clarkson provides for two roads in the front and two at the back. You could not load frozen meat from two roads. The arrangements at Townsville present an example of what I consider necessary. There, there are three roads in front of the sheds and no railway road at the back. I would prefer that arrangement. The advantages of it are that if you have one road alongside the wharf for delivering the goods into the ship's slings, the other two roads can be used for shunting. When loading frozen meat the truck with the lead would be on the centre road, the slings could be lowered to the road in front of the wharf, and the outside road could be used for shunting. I should require to make further inquiry before deciding whether the site proposed by Admiral Clarkson could be a suitable one. I imagine that it is too far back, and that it would be necessary to go much further forward into the deeper water. I doubt whether the portion of the cove on the inside of the wharf as proposed by Admiral Clarkson could be dredged by carrying the wharf further into the deep water you would save dredging. If the rock had to be blasted alongside the wharf, as proposed, the dredging would be very costly. I do not think that the

ebb and flow of the tide would affect in any way the alterations I suggest. It is probable that a certain amount of silt will be deposited, but the further you go forward with the wharf the less silt will be deposited and the less dredging will be necessary. There is very little silting up there now, but there was some dredging done there some years ago. I have heard no complaints of silting since. I do not think that ordinary vessels would have much difficulty in reaching the wharf, but it would probably be difficult to bring a big ship close up to the approach of the existing wharf on account of the strong current. If it were decided to erect the wharf further forward in deeper water it would be necessary to remove the present approach. If it were decided to erect a new wharf, after borings were made and soundings taken the advice of one or two harbor engineers should be obtained as to the design and direction of the wharf. There have been reports by harbor engineers on the Darwin wharf. We have had a report from Mr. Gilbert Elliott, Deputy Engineer for Harbors and Rivers in Queensland, and he recommended that Mr. Settle, Director of Naval Works, should be asked to prepare estimates and plans. Mr. Elliott's report was made in 1916, and Mr. Settle's report in 1919. Mr. Settle's report was not prepared from Mr. Elliott's report, but from information I was able to give him. One of Mr. Settle's plans provided for three docks, the centre one of 1,134 feet, and one on either side of it. The docks would be between Fort Hill and Stokes Hill, and the plan would be very convenient for the railway. The dock would be very convenient there. A ship could go in when the tide was at the full, and when the dock gates were shut she would remain at the same level. There would not be much dredging or excavation required in view of the tremendous rise and fall of the tide. If a vessel arrived at low tide she would have to wait to enter the dock until nearly full tide. That would cause some delay, but with the use of the dock the vessel would remain at the same level while she was in the dock. If there were a vessel in the dock, another arriving could not get in until the tide was again at a certain height. This would occasion some delay, but there are a great many such docks in existence in different parts of the world. Ships might be engaged for two or three days loading, and they would be enclosed in the dock at the same level during the whole of the time. Mr. Settle's scheme would be very expensive as compared with Admiral Clarkson's scheme. All the schemes he proposed would be very costly. I submit another of Mr. Settle's plans showing docks and lines of railway, and a plan showing the wharf in the same position as that the wharf in Admiral Clarkson's plan, only with the wharf frontage on both sides. Although the dock would be very costly, it would provide for very much more wharf frontage than Admiral Clarkson's scheme could possibly provide for. The wet dock and entrance lock proposed by Mr. Settle, giving a depth of 24 feet over the entrance sill, is estimated to cost £286,000, and with a depth of 30 feet over the entrance sill it is estimated that it would cost £372,000. His scheme B, providing for a wharf with reinforced concrete piles, would cost £232,000 according to the estimate. There is no doubt that the dock would provide considerable accommodation, and could be increased and extended as the place developed. The estimate of £306,000 is for one dock only, and does not include cost of siding accommodation, wharf sheds, cranes, &c. The reports made by Mr. Settle were not made to me, but to the Minister. The estimate for the island wharf scheme is £253,000, making provision for a depth of 20 feet, and is estimated that it would cost £261,000, to make provision for a depth of 24 feet. The wharf proposed by Admiral Clarkson would lie in the same

direction as the present wharf. I have not seen a plan of the original Darwin wharf, which was washed away. Having examined the papers, I am confirmed in my opinion that before anything is done in the matter, a special examination should be made by a qualified harbor engineer. Assuming that it is considered advisable to build a new wharf at Darwin, I would strongly recommend that a properly qualified harbor engineer should be instructed to investigate and report on the matter. I should prefer a report by a man who has made a speciality of wharf work. I have not seen the traversers used in Melbourne, but I have seen traversers used elsewhere. You could install traversers at Darwin, but you would have to remove the present cross-over roads. There would not be room for both. I see no objection to using horses on the wharf at Darwin. I have used horses on the Port Augusta wharf for years. I doubt whether the use of traversers would result in quicker work than the use of the cross-over roads. With present facilities we could handle ten times the present traffic on the Darwin wharf. I do not think that there are any delays now in the handling of traffic. There may have been delays when Vestey's were handling it. I have not seen a ship being worked there recently, but the output indicates that there cannot be much delay. Mr. Elliott was deputed to visit Darwin and report as to what alterations were required to the wharf to enable frozen meat to be loaded in terms of the Vestey agreement. I do not remember that Vestey's were informed that owing to the scarcity and high cost of material owing to war conditions, other means would be adopted to give the necessary facilities, but they knew that it would have been very expensive to have carried out the work at that time. The widening of the wharf was not done, as an alternative. In my opinion it had to be done in any case, because the wharf was too narrow for the loading of frozen meat. I believe that the estimate for the curved approach was between £200,000 and £100,000. It was not a very reliable estimate, but only an approximate estimate. Cast-iron screw piles the same as in the existing wharf were to be used, but no proper plans or accurate estimate were prepared. The original turn-table could only turn one four-wheeled truck at a time, but the table which is now there can turn two four-wheeled trucks at a time. The mechanical engineer in charge at the time the turn-table was installed was a man named Evans. I do not think that the work was badly placed in unsuitable positions, but two of them might be better placed than they are. With that exception I think they are all right. Vestey's could not induce their men to use the capstans; I do not think they tried to do so. I do not think they do not admit the truth of the report that the plant is inefficient. They are standard capstans at standard height, and travel at standard speed. They were made by a well known manufacturer of capstans and are similar to those in use elsewhere in Australia. The position of two might be improved. It would be a simple matter to alter their position. Vestey's made all sorts of excuses in connexion with the matter. My contention is that the plant is all right, but Vestey's would not insist on the stevedores using it. Some one interfered with the armature of the dynamo and put it out of order. I do not know that there was a special strike on them, but it was done during the disturbing times at Darwin. I am sure that the electrical appliances installed on the wharf at Darwin would prove effective in the handling of goods. It was intended to electrically work the turn-table and capstans, and to light the wharf, but when Vestey's would not use the capstans it did not pay to run the plant for the purpose of lighting the wharf only, and other lights were installed. The working of the electric plant would be more expensive than the working of the present small steam

engine. It would not pay to run the electric plant for the turn-table and lights only. With electric power, a traverser could be used on the wharf, but I do not think the expense would be justified. If we were handling a sufficient quantity of goods we could use a traverser to handle the ships at any state of the tide, but I think the majority of ships that call there can be worked right through. It is only some of the smaller boats that have to wait a short time for the tide to rise sufficiently to enable them to be handled. As there is not a sufficient quantity of goods to be handled to justify the expense of a traverser it is better in the circumstances that some vessels should occasionally have to wait for the tide. I wired yesterday to Queensland for drawings of the insulated meat waggon, and will be able to let you have them in a day or two. They are similar as regards insulation to a large number of the waggon used in Queensland in transporting frozen meat, except that the floors are lined with zinc. I have not seen the trucks used in Victoria. I am satisfied that the statement that because of these trucks it is necessary to land at night instead of in the day, and at double the expense, is entirely incorrect. I know that it has been made repeatedly by Vestey's, but they have never attempted to prove it. They continue to make the statement without bringing forward any proof of it. Vestey's were supplied with copies of the drawings of these trucks before they were constructed. They were made by the Queensland Railway Department, and have the same insulation as that used on the Queensland trucks, and Queensland handles more frozen meat than all the other States put together. They are four-wheeled instead of eight-wheeled trucks as used in Queensland, and were so made at the special request of Vestey's. They were made small because of the turn-table, and another reason given at the time for preferring the four-wheeled truck, was that it could be more quickly unloaded than an eight-wheeled truck, and that when open meat would not be exposed to the atmosphere so long as an eight-wheeled truck. There is not the least reason why meat should be in any way damaged in these trucks. I have never been able to understand why they decided to load at night instead of in the daytime, but I have heard that certain ships prefer to work at night because of the difficulty in maintaining a low temperature in the holds during the day time. The trucks complained of have exactly the same insulation as trucks used on the Townsville line in which meat is sometimes kept for over twenty-four hours. The only difference is that there is twice as much meat in a Queensland truck as in one of the Darwin trucks, and, naturally, the greater quantity of meat remains longer at a low temperature. Mr. Henderson, my chief mechanical engineer, when at Darwin made certain tests of the trucks, and I will leave you a copy of his report. This is an extract from his report of June, 1918, on his inspection of the Northern Territory railway.

TEST OF REFRIGERATOR TRUCKS.

Mr. Conacher kindly consented to lend a truck similar to that loading for shipment, and for this purpose a car was placed opposite one of the openings of the meat store. Prior to loading the meat into the truck the thermometers in the meat store were read, and the registers were found to be 8 deg. Fahr. on one and 10 deg. Fahr. on another, representing an average of, say, 9 deg. Fahr. The meat had been in the store for a period of three weeks, and so far as could be tested with a knife, was in thoroughly frozen condition. The truck was then opened at 11.50 a.m., and the men commenced loading into the truck, the temperature in which, prior to loading, was 75 deg. Fahr. The loading was completed at 12.5 p.m. and the doors closed. The truck was then shunted on to the middle road, where it would be exposed to the sun temperature, and left there for a period of 4 hours 24 minutes. While this truck was standing on this siding, the sun and shade temperatures were taken, and were as follows:—Sun temperature, 92 deg. Fahr.; shade temperature, 82 deg. Fahr.

These temperatures were taken with the thermometers suspended 2 ft 0 in. from the sides of the truck. After the 4 to 24 minutes had elapsed, the truck was returned to the opening from which the meat had been removed and pushed back into the store. The truck contained 27 hind-quarters and 48 crops, the weights of the hind-quarters averaging 13 lbs each and the crops 57 lbs each. During the period of unloading a large number of the hind-quarters and crops were inspected and tested, and in a number of instances the thin ribbed portion of the crop showed decided softening; in one or two instances the jute felt marks on the flooring of the flanks of the hind-quarters were also, in many instances, soft, and on one instance the knife was pushed in for at least 3 inches. The Works Manager stated that if meat of this quality taken from the truck were delivered to the ship it would be refused, but I am not in a position to say whether or not this statement is correct. Certainly I am of opinion that the softening shown should not have occurred with the fairly low temperatures of the sun and shade, with well-insulated refrigerated trucks. Mr. Conacher desired to know what improvements were to be effected, and in reply I informed him that I was not aware that any improvements would be effected, but that the motor would receive consideration, and, in any case, it was not probable that any alterations could be made for the present season. In order to make the test as correct as possible, a truck which had been standing on the siding at the loco. yard was taken for the test.

It will be seen that in carrying out this test the conditions were quite unreasonable. Meat was taken at an average temperature of 9 deg. Fahr. was loaded into a truck with a temperature of 75 deg. Fahr., and then left exposed in the truck to the sun for 4 hours and 24 minutes with a sun temperature of 92 degrees. In the circumstances it is not to be wondered at that some of the meat became softened. If the truck had been cooled before it was loaded, or if another load had been tried in the same truck after it was cooled, it would have been found that the meat would have remained hard for a considerable time. The insulation of the trucks is intended not to cool the meat but to retain the cold. I admit that in this case some of the meat was soft, but solely because it was put into a hot truck. In my view the test was of no value at all as a test. Trucks should be pre-cooled before frozen meat is loaded into them. The practice in Queensland is to cool the trucks by pumping cold air into them before loading them. At Lakes Creek, for instance, before loading they make a connexion between the cold store and the truck and pump air from the store into the truck. Suggestions have been made to Vestey's several times about the necessity of pre-cooling trucks. It is not proposed to alter these trucks, as I am satisfied that they are as efficient as those used to handle thousands of tons of frozen meat in Queensland. I again say that I know of no reason why the loading at Darwin should be done in the night-time. I have never had any definite statement from Vestey's to say why the trucks have failed or what should be done to make them efficient. They have contented themselves with the statement that they are not satisfactory. In Queensland, frequently bags of snow scraped from the cold stores are put into the trucks for the purpose of absorbing the heat prior to loading. They go to considerable trouble in pre-cooling the trucks. If Vestey's resumed operations we will continue control of the wharf, and will make a charge for taking the meat out of the trucks and placing it upon the slings. We have recently increased the freight from Vestey's, and also wharfage charges. The freight from Vestey's was originally fixed under an agreement with the Government at 2s. 6d. per ton, but that led to a considerable loss. When the agreement expired I increased the rate to what I considered a reasonable rate for the service performed. The wharfage charges were increased to the same rate as those at Port Augusta and South Australian ports. The charges are lower than in some of the other ports. I am sure that they are lower taking all the charges into consideration than the charges of the majority of the Queensland ports. Properly they should be higher than they are. In the event of the Department handling frozen meat on the wharf, I propose charging the actual

cost plus a percentage to cover supervision. I do not regard it as my duty to develop the Northern Territory. The Government can decide to carry meat and cattle entirely free if they choose, but if they so decide I will make claim on the Treasury for the loss to the railways so entailed. The Minister approved of the rates and fares fixed in 1919. The charges even now are not high. They are not higher than the charges made by South Australia during the twenty years ending September, 1914. When Dr. Giljuth was in charge the railway rates were very much reduced. On my recommendation the rates were increased in January, 1919, and again in October, 1921.

184. *To Senator Reid.*—The cost of operating lines, of course, increased tremendously. Whilst the railway was operated by the South Australian Government, Chinese coolies were employed on the line. I cannot say what the increased cost per train mile was, but I know that wages increased very rapidly. Just before the increase in the freights, the base rate was 2s., and up till July last we paid 2s. 6d. per hour. Handling costs increased very much, though perhaps not in quite the same proportion as the increase in freights and fares, but a very considerable loss had been entailed in the working of the line.

185. *To the Chairman.*—Vestey Brothers have constantly complained that the turn-table increased the cost of handling goods. When I am informed that Mr. Conacher makes the claim that at the meat works a truck loaded with meat can be shunted and replaced with an empty truck in five or six minutes, whilst a similar operation on the wharf takes from fourteen to twenty minutes, I have to say that the comparison fails because the operations are not the same. The statement made is not evidence that the turn-table delays operations. The mere fact that it takes longer to push the truck over the turn-table than to shunt them at a siding is not proof that delay at the wharf interferes with loading. As the operations are not the same, no comparison can be instituted between them. When Mr. Conacher says that the use of the turn-table accounts for a loss of a quarter of an hour in every hour, I say that that might have been so when his company was working the wharf, but it is not so now. The evidence I have is that we can handle forty trucks an hour over the turn-table, which gives about one minute and a half for each truck. The information I have from the officer in charge is that he can put 100 tons an hour over the turn-table—twenty trucks holding 5 tons each, and twenty empty trucks going back. I sent my accountant up to Darwin to make notes while a ship was being loaded with frozen meat. Men were stationed alongside the turn-table and at the meat works. They were instructed to time the whole of the operations, and I have a most complete report from the accountant as to the results. The substance of the report was that if there be no delay at the meat works in loading the meat into the trucks from the cold stores, we can deliver frozen meat at the ship's side much more quickly than it can be discharged from the truck into the ship. Vestey's has constantly made a complaint about delays due to the turn-table, but has never been able to produce any evidence in support of that complaint. I cannot recollect that in their complaints any particular ship was definitely referred to in connexion with which there was undue delay. There are two men operating the turn-table, and the cost of fuel has to be allowed for. The wages of men who are employed exclusively in the shunting trucks about the wharf are not included in the cost of working the turn-table. Their wages would not necessarily have to be added to the ledger ship cost against the use of the turn-table. In the pushing of trucks about the wharf two men are engaged to each hatch. If four hatches were working there would be

eight men pushing trucks about, but there would probably never be four hatches working at one time except in the case of meat boats. The expenses of men engaged in pushing the trucks about are covered by the handling charge of 11s. to which Mr. Hoibler has referred.

To Senator Lynch.—The engine with its crew of two men that brings the trucks from the meat works could not carry out the work of shunting on the wharf because the engine is required to take back a rake of empties to be loaded for the next trip. A separate engine would be required for wharf shunting if the work were to be done in that way. When I am informed that at Wyndham there is only one engine engaged on the whole job, the answer is that the meat works there are close to the wharf. Vestey's meat works are situated 2½ miles from the Darwin wharf. At Darwin the engine that takes the empty trucks back to the meat works has to do the shunting that is done at the wharf. The engine brings a full rake of trucks to the wharf and they are pushed on to the turn-table two at a time. The men shove them on to the ship's side, and feed the empty trucks on to the turn-table again. When six empty trucks have been released, they are taken back to the meat works. On the question of profit and loss on the railway in the Territory, I may say that it costs about £2 to earn £1 there. The figures show that the loss in eight years on the railway from Darwin to the Katherine River on working expenses alone was about £140,000; interest and sinking fund has to be added to that figure. I do not think that there is any more economically managed line in Australia. There are fewer men employed on the line now than under South Australian management, when it was shunted by 27 per cent. In considering the loss on the Northern Territory railway it has to be added to the loss on the line from Port Augusta to Oodnadatta. From the point of view of development of the Northern Territory, I would not regard it as a good investment to spend something like £200,000 in erecting a new wharf at Darwin for the sake of getting Vestey's works going again. If the property was mine I would not incur the expenditure. Under the "Vestey" agreement, the Commonwealth undertook to convey cattle for freezing at the rate of £8 10s. per truck load. It was estimated by Vestey's that they would kill from 40,000 to 50,000 head per annum, but in the three years they killed only 69,000 head. We lost approximately £30,000 in those three years in having to carry the cattle at the rate fixed by the agreement. As a matter of fact, if we had had to carry more the loss would have been greater. The rate was entirely in Vestey's favour. It was £8 10s. per truck from the Katherine, whilst the actual cost of running the train was practically twice as much. You cannot compare the cost per train mile of running the railway in the Northern Territory with the cost under the State railway systems. The same staff is required to run one train per fortnight as to run one train per week. If the service is reduced from one train per week to one train per fortnight, that practically doubles the cost per train mile, although you may be economizing by reducing the service. The Northern Territory railway cannot fairly be compared with State railways on the basis of the cost per train mile. We could run three trains per week, and so reduce the cost per train mile, and yet make a much greater loss on the line. Improved track does not present a bright prospect if the goods have to be carried at unproductive rates.

186. *To Mr. Cook.*—I do not think that any alteration of the existing wharf is necessary unless the traffic increases. If the traffic increased sufficiently the alterations I would feel inclined to introduce would be the operation of the capstans, and perhaps the installing of traversers as the Chairman has suggested. If Darwin went ahead means should be provided to give drays

access to the wharf to enable the townspeople to get their goods direct from the ship's side. It would have to increase very much, in my opinion, before I would consider it advisable to spend over £200,000 on the erection of a new wharf. The life of the existing wharf is largely a question of maintenance. The timber portions will, of course, have to be renewed. We will have to put in several piles in the next year or two, and in the next five or six years may have to renew a great deal of the timber portion of the wharf, but the steel portion will last for a considerable time. The present wharf and plant is sufficient to cope with the existing traffic. Undoubtedly the low price of meat in England had a great deal to do with the stoppage of Vestey's works. Then the high rate of wages which have to be paid because the place is so remote has to be considered, and the climate is not good. The costs for wharfage facilities are really low and not high. If a good port could be established at the mouth of the McArthur River or at any place in the Gulf, I believe it would soon become quite as important as Darwin, because it would be closer to better country. I have been in Darwin and down the line, but I have not been over the Barkly Tableland. From what I hear of it, however, the country there is much better, and on that account a port in the Gulf would become quite as important as Darwin in a very little time.

187. *To Senator Reid.*—There is nothing in Mr. Conacher's statement that the meat trucks on the Darwin line are what are known in Queensland as butter and cheese trucks. Vestey's has four-wheeled instead of eight-wheeled trucks. Queensland was not using four-wheeled meat wagons, so we used the frame and under-carriage of a butter wagon for the four-wheeled insulated truck for the Northern Territory. Those trucks have exactly the same insulation as is used in Queensland on some of the eight-wheeled trucks. Since 1913 Queensland trucks have been provided with the same thickness of corkite. Prior to 1913 the wagons were insulated with cow hair. I do not know whether any of the trucks on the Townsville railway are zinc-lined.

188. *To the Chairman.*—Zinc-lined wagons may be slippery for men working in them, but they are very clean and sanitary.

189. *To Senator Reid.*—Whether a truck is zinc-lined or not does not affect the insulation. The Reid bank works in Queensland are 17 miles from the ship's side, and meat has to remain in them for a long time. They are carried through South Brisbane, and have to be shunted over very congested lines. Meat from the Reid bank works is frequently twenty-four hours in the trucks.

190. *To Senator Lynch.*—The distance from the Ross River Meat Works to the ship's side is 6 miles.

191. *To Senator Reid.*—The distance from the Burdekin works to the ship's side is 74 miles. The same class of trucks are used for the carriage of meat on the Townsville line as those on the Darwin line except that the Queensland trucks are larger than those on the Darwin line. Wyndham is said to be the hottest place in the southern hemisphere, but there the meat works are close to the wharf. I have not heard what Mr. Conacher's objection to the meat trucks is. If Vestey's reopen we should be prepared to take meat from Vestey's works to the ship's slings and incur all the risk of carrying the meat in the trucks.

192. *To Senator Lynch.*—We would willingly undertake to do this if Vestey's gave us a hard certificate for the meat when loaded into the trucks.

193. *To Senator Reid.*—The trucks used on the wharf for general goods do not hold more than 5 tons or 6 tons. Two men are engaged in pushing each truck. In unloading, the sling is landed on one truck standing next the ship. There are two men in that truck who unhook the sling and tumble the goods out of the truck. The

other two men stack the goods from that truck to a truck alongside. There are four men taking delivery of goods from the sling and another two men shoving the trucks, as they are filled, along to the turntable. I believe that the conditions at Darwin could be improved. One difficulty is that under an agreement with the men we are compelled to put four men in each truck. I had nothing to do with fixing the rate of wages or conditions of employment. No doubt the time has arrived to review the rate of wages and conditions of employment at Darwin. Mr. Justice Webb, I understand, is likely to go there soon, and the rates paid to wharf labourers will probably be the subject of arbitration. Men at Wyndham get 3s. 6d. per hour as against 5s. per hour paid at Darwin. The men at Wyndham are paid wharf-labourers' wages on the wharf, and are employed at union rates in the meat works when there is no work for them on the wharf. At Darwin at present the men are not allowed by their fellow-unionists to do any other work than the work on the wharf, and, as a result, they average only about £2 per week in wages.

194. *To the Chairman.*—It would certainly be better if the conditions of employment at Wyndham were adopted at Darwin, and wharf labourers given employment in the works when there was no work for them on the wharf.

195. *To Senator Reid.*—The agreement with the men provides that there shall be four men in a truck to receive goods. I do not know whether the agreement also provides that there shall be two men pushing a truck. If the practice adopted in Wyndham were followed in Darwin the men would have continuous work when the meat works were running. The difficulty arises when the meat works are not running. The union has so far prevented it being done. I could not give men work in connection with the railway. I, of course, could not force the municipal authorities or private persons to find employment for the men.

196. *To the Chairman.*—I do not consider that there is anything in Mr Henderson's report which I have submitted to prove that the meat trucks are not sufficiently insulated. His report does not prove anything. It proved that some of the meat became soft, but it did not prove that the trucks were not sufficiently in-

sulated. The report showed that the test was not carried out under proper conditions. I could not ask him to carry out a test under proper conditions, because he had left to come to Melbourne when I received his report. The report on the meat trucks was included only as a portion of his general report on the inspection of the Darwin line. I pointed out to him that his inspection of the meat trucks was of no value as a test of the efficiency of their insulation. In spite of his report I am satisfied with the trucks, because trucks similarly insulated are in common use in Queensland for the carriage of meat. Vestey's have continually complained on the subject. One complaint was in connexion with the *Shropshire* shipment in 1917, it being alleged that a train load of meat had to be returned to the works owing to the meat becoming soft. On the other hand, we have invariably received hard certificates from all the ships that have been loaded. I have always been told that the reason why loading should be done at night has been that the ships should not open their holds during the day owing to the sun beating directly into the hatches. Loading is done during the day at Wyndham. I had information in connexion with the *Shropshire* that they could not commence to take delivery of the meat for some time after the vessel arrived because they could not get the holds down to the proper temperature. Naturally there must be some reason for carrying out the work at night time at double the expense that would be involved if it were done during the day. I do not think that very much meat is loaded in Queensland at night time. Payment or allowance to our Department of a subsidy to permit of the fixing of charges approximately the same as those at Townsville, would, in my opinion, be very liberal treatment of the people of Darwin. The Railway Act specially provides that if the Government desire to subsidize any special industry I may be instructed to reduce rates for freight, and on a certificate from the Auditor-General the necessary provision is made in the annual Estimates to make up the difference due to the altered rates of freight. I submit the following comparative statement of handling costs per ton on general goods at Darwin and other Australian ports. It shows that the people of Darwin have in this respect not much cause for complaint.

COMPARATIVE STATEMENT SHOWING HANDLING COSTS (PER TON) ON GENERAL GOODS, DARWIN AND OTHER AUSTRALIAN PORTS.

Fremantle-Perth (By Rail).			Fremantle-Perth (By Lighter).			Adelaide (Outer Harbor) to Adelaide.			Townsville.		
	s. d.	s. d.		s. d.	s. d.		s. d.	s. d.		s. d.	s. d.
Wharfage	..	6 0	Wharfage	..	5 0	Wharfage	..	4 2	Wharfage	..	4 0
Handling	..	2 0	Handling	..	2 0	Handling to stores at	..	4 2	Handling	..	4 0
		7 0			7 0	Port Adelaide	..	7 6	Cartage from jetty to	..	6 0
Add 20 per cent. surtax	..	1 6	Add 20 per cent. surtax	..	1 6	Cartage from Port Adelaide to warehouses in Adelaide	..	10 6	town	..	6 0
Rail freight to Perth	..	11 0	Lighterage	..	8 6						
Cartage	..	2 0	Cartage	..	2 6						
		21 11			19 6			22 2			16 6

* If loaded in 4-wheeled truck with a minimum of 6 tons, or 8-wheeled truck (minimum 10 tons), freight would be 8s. per ton.

Cairns.			Port Alma-Rockhampton.			Darwin.		
	s. d.	s. d.		s. d.	s. d.		s. d.	s. d.
Wharfage	..	4 6	Wharfage and harbor dues	..	6 8	Wharfage	..	3 6
Handling	..	1 0	Handling Port Alma 7s. to 12s., average	..	9 6	Handling	..	10 9
Cartage	..	5 6	Rail freight—Port Alma-Rockhampton	..	12 0	Shunting	..	10 9
					28 8	Cartage from sorting shed to town	..	5 0
			Cartage Rockhampton	..	4 0			
		11 0			33 2			20 9

I consider that if it were decided to make the same charges at Darwin as are made at Townsville, that would be generous treatment for the Darwin people.

197. *To Mr. Cook.*—I do not think that men can do so much work in a day of eight hours at Darwin as at some other ports of the Commonwealth. I think it is generally estimated that a man's work is about one-third less efficient at Darwin than at ports in the southern States.

(Taken at Melbourne.)

WEDNESDAY, 31st OCTOBER, 1923.

Present:

Mr. GREGORY, Chairman;

Senator Barnes | Mr. Blakeley
 Senator Lynch | Mr. Cook
 Senator Reid | Mr. Mathews.
 William Stephen, Engineer, Victorian Railway Department, sworn and examined.

198. *To the Chairman.*—On the Williamstown jetty there are trawlers worked by electricity and horse-power, and they have proved very satisfactory. At the near end of the pier there is only the horse-power trawler, but undoubtedly the electrical trawler at the end of the pier is most efficient. I do not think I would seriously consider the use of electrical trawlers if we had to supply our own current; my attitude would be determined by the amount of current that would be required for other purposes. With only two boats per month calling Darwin electrical power cannot be considered unless there is other use for the electric current. We have been utilizing horse trawlers at Williamstown for about 40 years, and we find them easy and economical to handle. The horses which are engaged in shunting the trucks on the jetty operate the trawlers. The possibility of utilizing horses on the Darwin jetty would depend upon the clearance between the trucks. If the necessary clearance is obtainable I see no reason why horses should not work the trawlers as well as do the shunting on that jetty. Probably two trawlers would suffice, and certainly these would be ample. It would probably be necessary to have a bollard at the end of the jetty so that a rope could be hitched round it, and the horse could move parallel with the rails. I should think there would be ample room to draw the loaded truck direct on to the middle set of rails, and for the horses to draw the trucks up to the turntable. The horse would then be unhooked and the truck allowed to run on to the turntable by its own momentum. I do not anticipate that there would be any difficulty at Darwin in obtaining horses suitable for this work. The installation of electrical trawlers at Darwin would not be warranted with the present volume of traffic. Such an installation might be justified if 35,000 tons of goods were passing over the jetty annually, but I understand that at present only 6,000 tons per annum is handled. Practically all modern trawlers are worked by electrical power. I do not think it would be desirable to attempt to work them with crude oil. If such a large and costly mechanism is to be installed the Government would be justified in providing the necessary plant to produce the electric power. Such a plant would be utilized only when a boat was in port, and there would be very little scope for it with the present volume of traffic at Darwin. Horse trawlers cost about £320 to £350, or with crossings on three tracks about £420 to £450 each. The electrical trawler we have in use at Williamstown cost about £1,400, but probably at Darwin a smaller one costing about £1,000 would meet all requirements. For the hauling of trucks on the jetty we have an electrical capstan placed on the trawler. Capstans are used throughout the world,

and I cannot understand why those installed on the Darwin jetty were not satisfactory if the design was all right. There is one in use at Newport for the general handling of trucks, and it is perfectly satisfactory. The height of these capstans may be modified slightly to suit the rolling stock, but they are more or less of a standard height and design. I know no reason why electrical capstans should not be successfully employed at Darwin.

199. *To Senator Reid.*—The trucks in use on the wharf carry 11 tons, 16 tons, and 26 tons respectively. The trucks themselves weigh about 6 tons, 6 tons 15 cwt., and 13 tons. If the trucks at Darwin carry only 6 or 7 tons of cargo, it should be easy for the horse to give to them the necessary momentum to send them on to the turntable.

200. *To Senator Lynch.*—Trawlers serve the same purpose as points and crossings, but whereas the latter take up a considerable area of space on a pier the trawler occupies practically only its own area. The Victorian Railway Department prefers the trawler system to any other. Points and crossings with the lead-up and the curve in between the lines take up a large area, and that portion of the two tracks occupied by them is dead when the cross-over is being used. I do not think the trawler could be improved upon. On a jetty where quick despatch was not an important consideration, and there was plenty of space, points and crossings would probably serve satisfactorily, but for a vessel working four hatches and requiring quick despatch the trawler system is undoubtedly superior. At Geelong trawlers have been in use for years, whilst the one on the Portland pier is being overhauled so that it will be in good working order for the coming season. The trawler is superseding points and crossings because it is a more convenient and economical system. A trawler made on the 3 ft. 6 in. gauge could be converted to the 4 ft. 8½ in. gauge by putting in new centre cross girders. The expense of remodelling would probably represent about one-third of the original cost. Of course the lines crossing it also would have to be altered.

201. *To Senator Reid.*—With the comparatively light trucks in use at Darwin a trawler could be operated by manual labour. It could be made with ball bearings so that it would move easily. The main difficulty would be in moving the truck up the slight grade on to the trawler. I would not recommend the installation of trawlers unless horse power or electrical power were to be used.

The witness retired.

Thomas John Murphy, Transportation Officer, Victorian Railway Department, sworn and examined.

202. *To the Chairman.*—I am in charge of the Williamstown pier. We find the trawlers in use there very efficient, and prefer them to points and crossings. The cross-over is more expensive to work than is the trawler. The curve has to be fairly sharp in order to change from one set of rails to another, especially on a short pier, and that necessitates the use of greater power. I should say that a cross-over requires nearly double the power that is needed on a trawler. A good deal of meat is loaded at Williamstown. The principal objective with frozen cargo is speedy handling. We employ labour on the jetty to suit the ship. For a vessel loading two hatches we employ one horse with a driver and one other man to shunt. Meat coming from Shepparton and Murttoa would probably be in the trucks for sixteen hours before it reached the pier, and then ten or twelve hours may sometimes elapse before the complete rake of trucks is discharged into the ship's hold. The insulated trucks are zinc-lined, and so far as I am aware, are not cooled before being loaded. The meat is examined before being put into the ship, and any that is soft is returned to the works. Not a quarter per cent. of the total is found to be soft,

and even in respect of that proportion the cause is often insufficient freeing or delay en route. Our principal export season is in the hottest summer months. If we are working more than two holds, we have to employ an extra horse, driver, and shunter. The average charge for the whole of the labour employed by the Railway Department on the pier is 2½d. per ton of cargo handled. That does not include the stovedores' charges. We simply deliver the truck at the hatch, and the stovedores then place the meat into the hold. As soon as a truck is emptied, a horse pulls it away on to a traverser, it is transferred to another set of rails, and made available to the engine. The full truck is pulled up to the hatch by a horse. On a jetty 43 ft. 6 in. wide such as that at Darwin, horses could be utilized in the same way as we use them at Williamstown. Having regard to the small volume of traffic at Darwin, I would not recommend the use of electrical traversers there, but I cannot understand why the electrical capstans that have been installed have proved ineffective. The fault must have been in the design and construction. We find electrical capstans effective, and there is no trouble over the relative height of the truck and the capstan. When handling a large quantity of cargo the electrical capstan is very economical. The electric current is provided by the Harbor Trust. There is no difference in the construction of the trucks used for meat and butter respectively. The same truck is equally effective for both classes of goods. I cannot understand why there should be any difficulty in loading meat at Darwin in a hard state if it has been properly frozen.

203. *To Mr. Mathews.*—I have seen the electrical transporters in operation in New South Wales, and have discussed them with the officer in charge at Darling Harbor.—Even if the traffic over the Darwin jetty again reached its former maximum of 37,000 tons per annum, I would not entertain for the moment a proposal to install transporters there. The normal working day for horses on the pier is eight hours, but we sometimes work them as long as twelve hours without injury, and no overtime is paid to the contractor. Ships would not lie very easily at the outside berth of the breaker pier in bad weather. That berth has not been used for many years. In bad weather there is the difficulty of getting a vessel alongside the inner berth, and under certain weather conditions pilots or masters will not take their ships in. Therefore, the berthing difficulties at Darwin are not singular.

204. *To Senator Barnes.*—The use of horses on Darwin jetty would not obviate the use of the turntable, but it could be operated very much cheaper with horses than with hand labour. The jetty at Geelong used to be worked by manual labour, but about twelve months ago we introduced horse power, and the cost of handling was reduced by approximately 50 per cent. Horses could pull the trucks on and off the turntable cheaper than it is being done by manual labour.

205. *To Senator Lynch.*—So far as I am aware, traversers were installed at Williamstown when the first trucks were laid on the pier. Investigations are now being made as to the desirability of electrifying all the traversers on the pier, but no decision has been arrived at. These inquiries show, however, that the Department is satisfied that the traverser system is the best for the expeditious handling of trucks. We find it most economical to work either two or four hatches, because one horse with a driver and a shunter can operate two hatches that are being loaded with meat, whereas if three hatches are being loaded an extra horse, driver, and shunter have to be employed, and that same labour would operate four hatches. The horse feeds the full truck to the ship and removes the empty ones. Engine shunting on the wharf would be too extravagant. Points and crossings are not economical. In traversing

from one set of rails to another a horse does work that an engine cannot do except by means of points and crossings. The Railway Department is not operating any wharves with cross-overs. The Geelong instance I quoted may be accepted as an illustration of the superiority of horse power over manual power for shunting purposes. The total charge for handling cargo from the hold to the warehouse is about 16s. per ton. The sorting-shed at Montague is twelve miles from Williamstown and two miles from East Melbourne pier, but no difference is made in the charge because of the varying distances. The system of discharging cargo is this: A stovedoring company lands the goods from the ship's holds into a truck; we cover the goods in the truck with a tarpaulin at our own expense and haul the truck from the jetty to the sorting-shed at Montague, where it is discharged by railway employees and sorted out according to the bills of lading. The consignees then come along and take the goods from the sorting-shed to the warehouses. Occasionally, when cargo are presented to the Customs authorities, and, if possible, arrangements are made with the stovedores for the cargo to be loaded into separate trucks. We handle very little cargo of that class. The stovedores would not always be amenable to that proposal, because a large consignment from London or Liverpool, say 500 casks of cement or cases of goods, would be brought to the ship's side at intervals, and all indiscriminately, and the stovedores at Williamstown would have difficulty in sorting it out for direct consignment to the country. It is not the practice for consignees to take delivery of their goods at the ship's side. The Railway Department would have no objection to that system if it were acceptable, to the Harbor Trust and the Customs Department, but I think merchants are content to have their goods delivered by the present system. A sorting-shed on the wharf would eliminate the long charge between the wharf and the shed, but I do not attach a great deal of importance to that accommodation. Of course, if it were possible to have the sorting-shed on the wharf and distribute the goods from there direct to the consignees, that would be the most economical system of handling. Many vessels discharge their cargo into sheds at Victoria Dock, Melbourne, and the goods are then carted by road to the consignees' warehouses. The horses employed on the Williamstown pier are supplied by a contractor; we find that system is best.

206. *To Mr. Cook.*—Horse traction has given great satisfaction at Williamstown, and I think it could be employed to operate the turn-table at Darwin while the traffic is small. Horses require training for this work. Some animals take to it readily and others not at all. If we decided to employ horse traction at Darwin, I would suggest that tenders be called for horse shunting on the jetty for a period of one to five years. There would not be sufficient continuity of work to justify the purchase of horses, the feeding of them, and the provision of stables unless there was other work to keep them employed when the jetty was idle. Meat which had been in the trucks on the pier for twelve hours was found to be still hard. I admit that the climatic conditions of Melbourne are milder than those of Darwin. I advise the Committee to obtain evidence from meat-exporting companies regarding the length of time for which cargoes of meat, properly frozen and stacked in trucks, will remain hard. Of course, the more fully the truck is loaded the better the meat will carry.

207. *To Senator Reid.*—Generally eleven men work in a gang in the ship's hold, two men on the truck, and two men on the wharf. The men on the wharf stow the cargo in the sling. When unloading, the men on the truck are usually two or three men in the truck. Our trucks are 22 feet long and 8 feet wide. I am not prepared to express an opinion as to how many men are required to work a truck on the Darwin jetty, because, on account

of the great heat, the work there must be more strenuous than it is at Williamstown. Shepparton is distant about 125 miles from Williamstown, and the trip generally takes about twelve hours. The meat is brought straight through on a special train, and we have never had any trouble with it. We have even brought frozen goods from Donington to Williamstown, a distance of about 100 miles. Our insulated trucks were built especially for the frozen meat traffic, but I do not know that they are different from the insulated trucks used in other States. Very rarely have we had to return meat to the works on account of softness. Never have we had any trouble due to the faulty insulation of the trucks. Sometimes when we are loading a vessel at Williamstown the meat comes along in larger quantities than we can handle, and it may be necessary to stop the work at one hatch in order to cool off the chamber into which the meat is being loaded. When that happens there is bound to be an accumulation of trucks on the pier, and if there is a protracted delay in hot weather the meat may get soft. The fault on those occasions does not lie with the truck. I am very much surprised to hear that meat which remained a few hours in the trucks at Darwin during night loading was found to be so soft as to require its return to the freezing works.

(Taken at Melbourne.)

TURSDAY, 1st NOVEMBER, 1923.

Present:

Mr. Gnzoozy, Chairman;

Senator Barnes	Mr. Blakeley
Senator Lynch	Mr. Cook.
Senator Reid	

Louis Norman Stutter, Mining Engineer, Marranboy, Northern Territory, sworn and examined.

208. *To the Chairman.*—I have reported to the Minister on the possibility of the development of the tin mining industry in the Northern Territory. In recent years, owing to the low price of tin, the industry has had a setback. At present it is worth 37s. per unit, which is equivalent to market quote of £200 per ton. This exceeds the average price of the last 50 years. I should say that, at this price, tin shows in other States of similar value to those in the Northern Territory could be profitably worked. Lack of capital is hindering the development of the Marranboy field. The mines there are working from hand to mouth, with the result that men cannot open up their shows properly. The absence of efficient transport facilities for ore to the battery and foodstuffs out from Darwin is also an important factor in retarding development. The railway, when completed, will be within about 12 miles of the field. All supplies have to come from the south. The railway freight on ore is 36s. per ton and on foodstuffs £4 to £8, and on some goods as high as £12 per ton. Timber for mining purposes is plentiful throughout the auriferous belts in the Northern Territory. There is an ample supply of timber within a 4-mile radius of Marranboy. Carriage to the rail-head is 25 per ton. If capital were available for the development of the field it would be still necessary to insure reduced freight charges. The average wage to miners on the field is 25s. per day. The average value of the ore raised is from 3 per cent. to 4 per cent. At present nothing under 3 per cent. will pay. The average cost of carting to the battery from the field is 6s. per ton. It would depend upon the size of the show whether it would be profitable to have a battery on the spot. If further

capital were introduced it would probably be advisable to make additions to our battery plant. There have been no recent developments in tin mining at Marranboy, but about 12 miles distant in a north-westerly direction, on the King River, an important show has been reported. This would be about 15 miles distant, in a direct line from the railway, and it could be connected with the railway by a siding. The construction of the railway would not of itself insure more capital being available for the development of the field. It is difficult to say just what the future holds in store for Marranboy. There is an ample supply of low-grade ore. Up to the present this low-grade stuff has not been touched. The deepest workings on the field are 105 feet. The average depth is about 50 feet. There is an enormous number of lodges on the field, and there are three main lode systems. I estimate that the area of the field is about 3 miles wide by 6 miles long. Some of the lodges have been worked up to about 15 feet wide. The average width is about 3 feet. The lode being worked by Pearce is from 14 feet to 16 feet wide, and the ore averages about 34 per cent. As far as we know the shoots are from 70 feet to 100 feet long. We have treated about 17,000 tons of ore at the battery, and have produced about 600 tons of tin. At present prices 3 per cent. ore just about pays to produce. The oxide averages from 65 per cent. to 68 per cent. metallic. I have had it up to 72 per cent. The stone, being hard, there is a lot of metallic iron in the concentrates. There is no restriction now on the export of ore. I inspected the new field near Marranboy when it was opened up. The prospector had one lode opened out about 30 feet in length, 9 feet deep, and 3 feet wide at the bottom. The lode was showing about 4 per cent. tin. There are two shows there, about half-a-mile apart, and the prospector assured me that there were three or four other shows in the locality. I have not been interested in any other metal mining in the Territory. I have discussed with the Minister the possibility of opening up the Northern Territory mining fields by the construction of roads connecting with the proposed railway lines. That work would come under my jurisdiction in an advisory way, but it would be constructed under the Department of Works and Railways. At present there are no made roads inland at all, and people cannot get through the country. I am confident that with the construction of roads motor transport would be availed of, and thus make possible the development of the Northern Territory. I would like to see a road from Emungalan through to Camooweal to allow people to come through into the Territory from that direction. Cheap petrol and cheap crude oil should be an important factor in the development of the Territory. There is a plentiful supply of sub-artesian water which rises to within about 250 feet of the surface. If the mining industry improved there would be need for a larger saw-milling plant for the output of timber for dwelling houses. The principal timber is cypress pine, which grows to about 18 inches in diameter, but the average would be from 12 inches to 15 inches. This timber is growing on all the tableland country. I know nothing of any other class of mining that is likely to be developed by the railway construction. Apart from the Marranboy field the only adjacent tin field with which I am acquainted is Euralba. The Mount Wells tin field at Burundie is the only mining proposition which, to my knowledge, is being operated successfully without Government assistance, and that is being worked by Chinese labour. White men took it up some years ago, but evidently they failed.

209. *To Mr. Mathews.*—The Chinese are picking the "eyes" out of the field, but that is not unusual. No man working in a small way can open up these tin shows properly.

210 *To Mr. Blakely.*—I do not think it reasonable to expect any great development in tin mining under existing conditions. At the present rate of tin the gross value of 3 per cent. ore at Marranboy would be about 75s. per ton. The metallic content is about 68 per cent. I have prepared for the Committee a cost analysis of 100 tons of ore treated at the battery, and endeavoured to show what would be the net return to the miner.

STATEMENT SHOWING AVERAGE COSTS INCURRED BY MARRANBOY MINERS IN THE TREATMENT AND MARKETING OF 100 TONS OF TIN ORE YIELDING 3 PER CENT. TIN CONCENTRATES, AND NET RETURN.

Cost of freight, treatment, &c.—	£	s.	d.
Carting from mine to mill, 100 tons at 7s. 6d. per ton	7	10	0
Milling 100 tons at 18s. 6d. per ton	18	10	0
50 jute bags, at 1s. each	2	10	0
20 calico bags at 2s. each	4	0	0
Carting 3 tons concentrates to Emungalan at 8s. 6d. per ton	26	0	0
Freight, Emungalan to Darwin, 3 tons at 35s.	105	0	0
Wharfage, sampling, &c., 3 tons at 20s.	60	0	0
Freight, Darwin to Sydney, 3 tons at 70s.	210	0	0
Total cost	425	10	0
Or £113s. 8d. per ton of tin stone.			
Value of concentrates at 68 per cent. metallic content, and tin at 37s. per unit net—			
3 tons at £25 10s. per ton	76	10	0
Or £25 10s. 6d. per ton of tin stone	76	10	0
Gross value of tin stone	76	10	0
Less treatment, costs, &c., as above	113	8	0
	2	10	0
Less tools, explosives, &c., mining	0	5	0
Amount net to miners	1	10	0

The tin is in lode formation. As I have already stated, the deepest working is 105 feet. That is Pearce Star of the East mine. At the bottom it is 6 feet wide, underlying about 10 degs. At that depth the lode shows 4 per cent. tin—rather better than on the surface. There is no alluvial tin at Marranboy.

211. *To Senator Lynch.*—I have been in the Territory for about nine and a half years. In 1916 I had a bad attack of malaria, but I have been pretty right since then. At that time nearly everybody got malaria and about half-a-dozen people died, but I have seen very little evidence of it during the last two or three years. I should say that the climatic conditions of the Marranboy field are fairly good, but white men working hard continuously on poor food cannot keep up the pace the same as in the southern States. Marranboy is at an altitude of about 600 feet. Darwin, from a climatic point of view, is the least attractive place in the Territory. There is a great deal of humidity in the atmosphere there, whereas inland there is a dry heat for the greater part of the year. Experience shows that children born in the Territory thrive up to the age of six years or seven years, but that it is necessary to send them away until they are past the age of puberty. This applies especially to girls. Generally speaking women enjoy good health, but the heat "touches" up their nerves, and they should go away at least once in three years—often if they can stand the expense to recuperate. The cost of labour is one of the most important factors in the development of the mineral resources of the Northern Territory, and to that extent it may be regarded as an economic question. I have been engaged exclusively in tin mining. I know nothing about gold or silver mines of the Territory. At present tin holds out the best prospects. There are good deposits of wolfram, but under present conditions of production the price is too low to enable it to be profitably worked. I do not think that the number of white men engaged in

Northern Territory mining exceeds 100 at present. I cannot say how many Chinese are engaged in the industry. I think it may be said that at present mining is at its ebb, and under present conditions I see little prospects of any revival, but there is always a chance of an important field being discovered. Not long ago a man who had been over the Murrumbidgee route told me that there was good mineral country out towards the Western Australian border, and that when met he traversed it he would take a prospecting outfit with him to test its possibilities. If mining costs could be reduced there would be some hope of developing the mineral resources of the Northern Territory, because then it would pay to work the low-grade stuff. I do not know enough about the known mineral belts of the Territory to say if it would be profitable for the Government to subsidize deep sinking operations, but it might be advantageous to do so at Marranboy to prove how deep the lodes go. There is only one property—I refer to Pearce's show—where this may be done by private enterprise. That is a very good property. At the surface it has been opened up so as to take in a lot of low-grade stuff, and so the values vary, but at the bottom the percentage of tin is very satisfactory. A white man's efficiency is impaired after a residence of twelve months in the Northern Territory. My experience during 1910 to 1918, when malaria was bad, was that, if a man attempted to keep up the pace for twelve or eighteen months, he became a wreck. Frequently this was due to hard living, but since the construction of the railway to Emungalan conditions have improved. I do not think that the social conditions have much to do with this, but probably if they were improved the efficiency of labour would likewise improve. The new discovery near Marranboy is in the same mineral belt. I have travelled about 35,000 miles in the Northern Territory, but consider that I have not seen much of it yet. I have been down as far as Alice Springs, and out to Arltunga, Winmecke, and the Hermannsburg mission station. Throughout my trips I found indications of mineral-bearing country.

212. *To Mr. Cook.*—I should say that, with railway and road facilities and a higher standard of labour efficiency, there should be a future for the Northern Territory mineral fields. Unfortunately, we do not get the best labour there, and practical miners are very scarce. I can see no prospect of mineral development without roads and railways. There is a plentiful supply of sub-artesian water. We have always struck water wherever we have bored. If machinery were allowed in duty free, the prospects of development would be brighter. I think that if people were assured of a fair deal, they would be induced to put money into Northern Territory mining ventures, but I emphasize that improved transport facilities are essential. I should say that a man's efficiency would depreciate to the extent of 40 per cent. after working two years at Marranboy. I have had ample proof of this decline in efficiency in men who, after eighteen months' of continuous hard work on poor food have become almost physical wrecks. There are eight white miners on the Marranboy field. They all employ black labour. I do not approve of the education of the blacks. My experience is that the more they know the less valuable they become. They get too cunning. I have no time at all for the mission station. If there is a criminal up there, he is sure to be either a police boy or a mission boy. The aborigines stand the heat very well. We have had some Greeks and Russians out at Marranboy. They appear to stand the climate, but probably not better than our own people. I am confident that, if the Marranboy tin-field were in Tasmania, it would be supporting about 2,000 men. There is plenty of timber available

for present requirements. We have been burning firewood at Marranboy for many years, and even now I do not think we have to go more than one and a half miles for it. Comparatively little timber is used in mining—only "toms" or stolls, about 8 inches in diameter. The paper-bark tree is the largest in the Northern Territory, but for general purposes the cypress is the best. For underground work we prefer a hardwood such as the ironwood, wherever it is obtainable.

213. *To Mr. Mathews.*—I have seen paper-bark trees up to 2 ft. 6 in. in diameter and 100 ft. high. It is a splendid timber and, being attractive in the grain, makes good furniture. We have a crushing about once every six months, when we have about 300 tons available, and we average about 11 tons per day. Our largest parcel was 800 tons in 1916. Last year we crushed only about 380 tons. The battery rates for crushing rise with the grade of ore treated, from 17s. 6d. per ton for 2 per cent. ore up to 28s. per ton for 6 per cent. ore. The costs rise up to a maximum of 14 per cent. ore. The battery is not run as a commercial proposition. It barely pays working costs. The loss incurred is about 1s. per ton. Sometimes it is as much as 3s. 6d. per ton, according to the quality of ore treated. There are eight white men mining on the Marranboy field. No Chinese are allowed there. Pearce has sold over £22,000 worth of tin from his property. He is a married man, and has his wife with him. Altogether there are seven white women on the field. Women must go away every two or three years for a complete change. Generally speaking, they maintain their health, provided they have occupation. In the Territory it is necessary to work if you are going to maintain your health.

214. *To the Chairman.*—We have had very little wastage in the transport of petrol, which is handled, not in tins, but in drums containing 8 gallons. This makes petrol more expensive to the extent of 5s. per cask. I think it is advisable to make arrangements for the supply of petrol in bulk at Darwin and to send it down to the various places in tanks, because then it would be possible to keep our drums and have them refilled. I am not sure, but I think the embargo on the export of tin, which was imposed during the war, has been lifted, and that it may be sent anywhere now.

(Taken at Sydney.)

MONDAY, 5th NOVEMBER, 1923.

Present:

Mr. GREGOVY, Chairman;
Senator Lynch | Mr. Blakely
Senator Reid | Mr. Cook.
Cornelius van Der Linde, Managing Director, The Dutch Royal Packet Steam Navigation Company of Batavia, sworn and examined.

215. *To the Chairman.*—I have never been at Darwin. The boats of our company have traded with Darwin, and their expenses there were high owing, so far as I remember, to the expense of labour at Darwin. Our boats traded to Darwin up to 1914, or up to eight years ago, when they ceased calling at that port. There is a possibility of our boats calling at Darwin again on certain conditions. In the first place, we should expect exemption from the payment of duty on ship's provisions and supplies from Darwin and Melbourne. The payment of the duty involves a charge of, say, £200 per trip. I should like to ask, also, whether the Commonwealth Government would be willing to pay us a certain subsidy for the carriage of mails. A third condition would be that shippers trading with Darwin, including the Government, would promise us a fair

share of the cargoes to and from the port. We have not yet made representations to the Commonwealth Government on these matters, but we would be prepared to take up the trade upon these conditions. We found the cost of handling goods on the ship at Darwin was high. At present it is 10s. 6d. per ton. That is the cost of labour in handling goods on board the ship. The cost of this labour in Sydney is from 3s. to 7s. per ton, according to the nature of the cargo. I do not know whether at present Port Darwin is sufficiently lighted. If not, we should have made it a condition of calling there that it should be properly lighted. The present rate of freight from Sydney to Darwin is 70s. per ton. The freight from Sydney to Batavia is at present from 30s. on flour to 60s. per ton. The present rate charged by Buras, Philip, and Company to Darwin is 70s. per ton, and we would charge the same rates as Buras, Philip, and Company. We have an agreement with them. I can tell you straight away that we have written agreement with Buras, Philip, and Company always to quota equal rates with them. We might agree with them that the freight to Darwin should be 60s. or 60s. per ton, but we would always charge the same rates as Buras, Philip, and Company.

216. *To Senator Reid.*—We did not carry very much cargo from Darwin before we ceased running our boats to that port. We brought some ore from the port to Sydney and Melbourne. At that time and from the beginning we had an agreement with Buras, Philip, and Company to charge equal rates of freight.

217. *To Mr. Blakely.*—Whilst we charge from 35s to 50s. per ton from Sydney to Batavia, and, if calling at Darwin would at present charge 70s. per ton from Sydney to that port, although the distance is so much less, it should be mentioned that the rate of 35s. per ton, which we quote for flour from Sydney to Batavia, does not yield us any profit. The boat at present trading to Australia does not pay expenses because of the high rate of freight. We lowered the rate because of the low price of flour in Java owing to American competition with Australian flour. For this reason, and in order to develop trade between Java and Australia, we accept a rate that is not paying us. If we could charge 70s. per ton to Port Darwin it would not be wise to lower that rate, because the charges to be met at Darwin are much higher than ships' charges in Java. In Java we have very cheap labour. We do not pay more than 2s. per ton for labour on board the ship at Java which costs at Darwin 10s. 6d. per ton. When our boats were calling at Darwin they used to call at Melbourne, Sydney, Brisbane, and sometimes also at Townsville and Cairns. We had only one flat rate for cargo between Darwin and other Australian ports. The reason for this was that, if we discharged cargo at Brisbane we could not take up cargo, so we filled the space from Brisbane to Sydney or Melbourne. If we could have taken on fresh cargo at Brisbane or Sydney, we could have quoted lower rates to Sydney and Melbourne.

218. *To Senator Lynch.*—I think there are possibilities of trade between Darwin and Java. We have already had inquiries concerning the shipment of bullocks from Darwin to Java. We have been asked to load sixty bullocks for Java, and if the deal turns out all right there is no reason why there should not be a big trade in the future in live cattle, because we are short of cattle in Java. I think the live cattle trade between Australia and Java is capable of development. The cattle would go to Java, and would be exported from there to other islands of the Netherlands Indies. We get cattle from Dromeo and Derby, and frozen meat from the eastern ports of Australia. No cattle are imported into Java from China. Some are imported from British India, but only for transport purposes, and not for food. Sugar planters in Java would not consider the growing of sugar in the Northern Territory for export to Java because labour in Java is so very cheap, and the sugar prices there are all right. Trade with Port

Darwin in the future might sufficiently increase to warrant our boats calling there without special conditions, but owing to existing difficulties it would not pay us to do so. I agree that it sometimes pays to continue unprofitable trade in order to keep in touch with a particular port, but the competition with other companies must be on the same footing. So long, for instance, as Burns, Philip, and Company receive a subsidy which we would not receive the competition would be unequal, and we could not engage in the trade. If we had to pay £200 in duty on ship's supplies for each call at Darwin, and we could not expect to make a profit of £200 on the trip, it would not pay us to call there. With the exception of trading between ten small ports, called native ports, the whole of the shipping of the Netherlands Indies is open to every one. No special advantage is reserved for Dutch shipping, with the exception of the trade with those ports, and if a foreign shipping company asked permission to call at one of those ports I believe that the Dutch Government would offer no objection. There are more than fifty competing steamers running between the different islands. We started our Australian line in 1905. Our boats called regularly at Darwin for a time. The main reason for discontinuing the service was that we lost too much time owing to the port not being properly lighted. Our boats could enter it only in the day-time, and we very often lost a whole day out that account. The trade did not cover expenses, and we were losing too much money in calling there. The trade prospects at present are better than they were when we ceased running to Darwin. I have said that the cost of labour for handling goods on board the ship at Darwin at the present time is 10s. 6d. per ton, whilst the cost in Sydney is 3s. to 7s. per ton. This, of course, has its effect on the rate of freight to Darwin. Assuming that the average rate for handling goods on the ships at Sydney and Melbourne is 6s. per ton, the difference of 5s. 6d. per ton in the cost of handling goods on the ship in Darwin would have to be made up by an increase in the freight on goods to that port. We can carry goods and passengers from Darwin to other Australian ports, but with that exception we are not allowed to carry cargo or passengers between Australian ports. It would be a good thing in the interests of Australia itself if we were allowed to do so, because at present we have to charge a flat rate to Brisbane, Sydney, and Melbourne, whereas if we were allowed to carry passengers and cargo between Brisbane and Sydney and Sydney and Melbourne, and thus had a chance to fill up space, we could quote a lower rate to Brisbane than to Sydney, and a lower rate to Sydney than to Melbourne. As foreign shipping is not allowed under the Navigation Act to trade between Australian ports, it is exactly the same to us whether we bring goods to Brisbane, Sydney, or Melbourne. To permit foreign shipping to trade between Australian ports would be in the interests of the Commonwealth. Sometimes intending passengers cannot secure accommodation on the Australian coastal boats, because they are full up. That means that they have to get a special permit to travel by foreign boats, and they object to the inconvenience of this. I shall try to make a call at Darwin on my return from Java.

219. To Mr. Cook.—At present we have no understanding with Burns, Philip and Company to charge 7s. per ton freight from Sydney to Darwin, because Burns, Philip and Company's boats are calling there, but if our boats commenced to call there again we would be bound by the agreement with Burns, Philip and Company, which would again become operative. If there were sufficient trade to warrant a reduction in the rate of freight might be considerably reduced. It is difficult to say what rate would be charged if the Navigation Act were amended and foreign boats were permitted to trade between Australian ports. We would have to take into consideration what cargo could be obtained between Brisbane and Sydney, and Sydney

and Melbourne, or between other Australian ports. The operation of the Navigation Act in preventing foreign shipping trading between Australian ports has a tendency to increase freights. If we could carry cargo to Brisbane and load there for Sydney or Melbourne, we could quote lower rates. The total population of the Netherlands Indies is 45,000,000, but only the Europeans eat such meat as would be imported from Australia, and these do not number more than 400,000 in all. The natives eat Buffalo meat, but they could not pay the high prices which Europeans pay for meat. The natives of Java are very conservative in their ways, and would take a long time to change their food. That they may change their food is shown by the fact that during the war when we had not sufficient rice, they ate flour and potatoes, and food which they had never been accustomed to eat before. I have no doubt that if they became accustomed to it, and could get Australian meat at a price they could afford to pay, they would eat it, but it would have to be greatly reduced in price before they would use it. Unskilled labour in Java earns from £2 10s. to £3 or £4 a month. With such earnings it is difficult to expect that they would use Australian meat. The shortage of cattle in Java is becoming more marked every year, and the import of meat from Australia must increase, but, as I have said, there are only between 300,000 and 400,000 people who could afford to pay present prices for Australian meat. We favour the importation of live cattle. We were asked to quote a rate for live stock from Darwin, and the rate would be about 45 per head. We have landed fat cattle in Java from Port Darwin that were fit to kill on arrival. The demand for frozen meat at present is in excess of the cold storage provided for its transport. Burns, Philip and Company who, I understand, get their meat from Jenner and Company, carry it only to Singapore and the Straits Settlements. They should have provided more refrigeration for the carriage of frozen meat. Before I left Java I had a talk with Messrs. Cameron and Powell, the Eastern Delegation of the Australian Meat Council. They told me that it was intended to build cold storage at Batavia and Sourabaya. They wanted to make a contract with me to carry about 300 tons of frozen meat per month. I told them that if they were prepared to sign a contract I was quite prepared to increase the provision for cold storage on our steamers. We would not provide cold storage at the ports of landing. I expect more from the export of live stock than from the export of frozen meat to Java. The people of Java are very much against the use of frozen meat. I am afraid there is very little hope for an extensive trade in frozen meat from Australia, because it would have to be so cheap, and the cost of production would be too high. Both Europeans and natives prefer fresh killed meat. At present the natives would not touch frozen meat. I have said that we carry flour at present from Sydney to Java for 35s. per ton. We reduced the rate from 40s. owing to the competition of American flour. The natives do not eat bread, but they eat flour in cakes. In the future the natives will use more flour, and the trade will increase. At present Australia commands practically the whole of the trade with Java for flour. There is a fair trade with Australia in butter and biscuits. The imposition by the Commonwealth of a duty on bananas from Java has not affected the butter trade. There is a large trade in salt butter from Australia, and a good deal is also imported packed in paper. I have some experience of wharf construction, because during the war time many harbors were built in the Netherlands Indies. Referring to the wharfage facilities at Darwin, I assume from what you have told me that the present wharf has a life of twenty-five years and there is at present only one steamer per month calling at the port. If the State of the wharf, the Royal Packet Company called there, there would be fifteen days between their dates of sailing and those of Burns, Philip and Company's boats. Assuming the estimate of the cost of the proposed new wharf at Port Darwin to be

over £200,000, my experience of estimates of construction is such that I would say that if a work is estimated to cost £250,000 it will probably be found to cost £400,000 before it is finished, even if it is carried out by contract. My opinion is that with the present trade there is no justification for such an expenditure on a new wharf at Darwin. I think its construction would not be in the interests of Port Darwin itself or of Australia. If the Government spend that money on a new wharf at Darwin they must levy very high charges on ships and shippers to meet the expense, and this would involve an increase in freights. We have had experience of that kind in Java, where the Government built some big harbors which they now say must pay for themselves. They have to levy high charges on ships and shippers for this purpose, and in this way the traders of the ports is injured. The best advice I can give you is: Do not make harbor improvements at Darwin before they are wanted. If only one or two ships are calling there per month, and not more than twelve per month is expected to meet the trade in the far-distant future, you should not expend £400,000 on a new wharf there. The present wharf should be quite sufficient for the trade for some time to come, and, if later on the trade develops sufficiently, you could consider the advisability of undertaking a big scheme of harbor improvements. At present the charges at Darwin are very high. We pay from 1s. 6d. to 2s. per ton for work on the ship in Java, and the charge for the same work in Port Darwin is now 10s. 6d. per ton.

220. To the Chairman.—It is difficult without a personal inspection of the wharf to suggest any means to save expense in working, but on the plans you have put before me I ask whether it would not be possible to have small trucks on the wharf to connect the ship with the railway. I cannot say whether our ships, when calling at Darwin, could work at all states of the tide. It should be possible to use transporters with advantage, but in any case what I have suggested would be much cheaper than the scheme proposed by the plan. It should be possible to work with horses and trucks. For only one steamer a month it would be extravagant to provide electric power. In any new scheme provision should be made for a road by which vehicles could get on to the wharf. The freight on sugar from Java to Sydney now is 25s. per ton. The freight on sugar from Brisbane to Inter-State ports averages about 40s. per ton. The actual rates being: Brisbane to Sydney 20s., to Adelaide 37s. 6d., and to Fremantle 60s.

221. To Senator Reid.—The deviation of route in calling at Darwin involves a delay of from 12 to 18 hours. The delay also depends on the quantity of cargo to be discharged and loaded. We would be willing to call at Darwin if we could get exemption from duty on ship's supplies, and perhaps a subsidy, though I do not make a strong point of the subsidy. I would be satisfied with exemption from duty on ship's supplies, and a fair share of the trade. At present about 300 tons per ship represents the Darwin trade, and I would be willing to call there on the conditions I have mentioned if I could get 150 tons of the cargo trade. You see, Burns, Philip and Company are paid a subsidy for trading with Darwin, and they can pay the duty charge on ship's supplies out of the subsidy. Without exemption of duty or a subsidy we would not be competing with Burns, Philip and Company on equal terms. If we were guaranteed 300 tons a trip under existing conditions, paying duty and without a subsidy, we would take up the trade, but that could not be expected, as the total trade of the port now is only 300 tons a month. The officers of our boats are Dutchmen, and the crews Japanese, Dutch or subjects. It is utterly impossible to expect Dutch planters to undertake the production of sugar in the Northern Territory. The cost of production in Queensland is very much higher than in Java, and it would probably be still higher in the Northern Territory. Again, we are growing in Java, more sugar now than we can consume. We are

exporters of sugar. I know of no ports in the East in which sugar grown in the Northern Territory could compete with Java sugar. It can only be competed with in Australia because of the duty imposed here upon foreign sugar. I might say for the information of the Committee that the balance of trade at present between Australia and Java is in favour of Australia. Messrs. Cameron and Powell told me that, with a view to encouraging the frozen meat trade from Australia, the Commonwealth Government was thinking of building cold storage at Batavia and Sourabaya, and they would be prepared to make a contract with our company, because Burns, Philip and Company reserve all their cold storage for Singapore and the Straits Settlements. If the contract were made, the meat would be shipped from Sydney.

222. To Mr. Blakely.—Our company has never received a subsidy from Australia for any Australian cargo. We do not get a subsidy from the Dutch Government, though we get a certain amount of money for the carriage of mails between the islands. We receive only the ordinary poundage rates for mails to Australia.

(Taken at Sydney.)

TUESDAY, 6TH NOVEMBER, 1923

Present:

Mr. GREGORY, Chairman;

Senator Lynch Mr. Blakely
Senator Reid Mr. Cook

Walter Edward Adams, Engineer in Chief to the Sydney Harbor Trust, sworn and examined.

223. To the Chairman.—In considering a proposal for the construction of a wharf at Port Darwin, the first thing an engineer would require to do would be to see the site. He would need to familiarize himself with the physical conditions. He would have to get tide readings, gaugings, and soundings, and ascertain what reaches of wind there were. He should know all the conditions of wind and weather. With regard to dredgings, he would have to take borings to ascertain what the bottom was like. I have seen your plan of a proposed new wharf at Port Darwin, and in connexion with such a proposal the preliminary work should cover the whole area to be dealt with. If I were carrying out such a work, I would require information covering the whole of the proposed works in order that plans should be made with a due regard to future development. I consider it absolutely essential that advice upon such a project should be obtained from an engineer well versed in harbor and wharf construction. According to your plan there appears to have been a certain number of soundings and borings taken. I presume that the cross-sections shown have been prepared from soundings. The word "probable" is used on the plan, but it is customary on engineering plans to use that word because you cannot absolutely rely upon borings. It would be a very risky thing to start any such work without proper borings. I have never seen the return sheeting shown on the plan used for a deep-sea wharf. It does not know of any case of the kind in Australia, though it is commonly used for temporary works. The parts below low-water mark would last a fairly long time, but the parts above low-water mark would need to be protected. The difficulty in protecting them with reinforced concrete is that when the sheeting got rusty it would increase in size, and would burst the concrete off it. There is also such an element of danger in protection with reinforced concrete. There would be no danger in the proposal shown by the plan if the sheeting were properly tied back, but the plan does not indicate how it is to be tied back. Everything would depend on the spacing of the ties along the wharf. The ties shown

on the plan might be 100 feet apart. There is nothing to show how the front wall is attached thereto. The plan does not show how far apart the land ties are, or how they are attached to the sheet-piling. Just building them into the concrete would not be effective at all. The plan does not show how the piles are to be driven, and it shows very long lengths. Some must be 60 feet long, I should think that putting them in would be a very difficult matter. The intention would appear to be to drive the sheet-piling in first, then to apply the concrete, and then attach the land ties, and I presume that when that was finished the portion in front of the sheet-piling would be dredged out to a depth of 25 feet. The plan is not complete, and it is, therefore, practically impossible to criticise it. Sheet-piling can be driven in fairly hard stuff without injury, I think it could be driven into the schist shown in the plan, and if it were driven 5 feet in the schist that would hold it. But the anchorage on the top is quite a different matter. I do not like the type of construction proposed. I would not adopt it. I do not see how the land ties are to be made effective. It is a tremendously high wall that is shown, and there is nothing on the plan to show how the land ties could be made effective. They would have to be very close together. With a rise and fall of tide of from 23 to 27 feet, dredging could be easily carried out with a bucket dredge, but you would require to have a specially long and heavy ladder. The rise and fall of the tide would not prevent continuous dredging, provided the ladder were long enough. The plan shows a great depth of sand which ought to be easily removed, and the dredging of which should not be expensive. I would use a bucket dredge for the work. The chances are that the schist would not be found too hard for a bucket dredge. A moderate bucket dredge will shift what we call loamy rock or soft rock. We find here that it will shift surfaces sandstone. When we get nearer to the rock we come across a clay, then indurated clay, and then a composition between rock and clay, and the bucket dredge will shift all down to the hard rock. We do not do any dredging here comparable with what is proposed in your plan. Our dredges are working in amongst jetties, and you can make no comparison between that and the work to be done at Darwin. I do not know what wages and the cost of coal would be at Darwin, but I do not think that is 6d. per cubic yard would cover the cost of the dredging proposed. I should say that the cost would be nearer 2s. per cubic yard. I do not consider 25 a yard a reasonable estimate for the reinforced concrete work. I would not count more up there. I would not call what is proposed on your plan reinforced concrete work. I would call it a composite construction. It is not genuine reinforced concrete work. What is proposed according to the plan is apparently to protect the steel sheeting from rust. Steel sheeting will have a better life if treated before being put down, but all bitumens and oils are to a certain extent soluble in water, and deteriorate. You have seen some of our piles protected with reinforced concrete. Some of this work has been in existence for five and six years, and it is quite satisfactory. When a pile is driven a group of cylinders is dropped over the top, forming one long cylinder consisting of a number united together. This is forced into the bottom of the bucket of the pile. The water is then pumped out of the cylinder, which is filled with the concrete. I can find no mention in any of the text-books of the galvanizing of reinforcement. The first difficulty is to get a bath long enough for the galvanizing of a long steel rod. The next thing done is to put the rod into a pickle, which takes part of the skin off it. When the metal is perfectly clean, the surface is fibrous, and the galvanizing gets into the fibres, and it adheres very closely, but a rod after being galvanised is diminished in strength, because if you take the skin off a metal you diminish its strength. I think galvanizing is the only safe thing to do in reinforced concrete work. It will take time to finally decide

what the result will be. If the Darwin wharf were built according to the plan, and protected with reinforced concrete, it would be necessary to protect the wharf from the shock of ships bumping by timber fenders outside, because concrete work is not resilient, and it would easily be broken off the steel sheeting if given a heavy shock. We have found turpentine the best timber for piles. We have pulled up thousands of piles in Sydney Harbor, and have found many quite good after a life of over forty years. The piles of the old Pyrmont bridge were standing for forty-eight years, and when they were pulled up the muntz metal with which they were sheathed was still good, and the name "Muntz" could be plainly read upon it whilst the timber was so good that we drove the old piles again. These were iron-bark piles, and they are as sound to-day as when they were first put into the water. Part of the swing span was renewed nine years before the bridge was demolished, piles covered with modern yellow metal sheathing being used, and we found that the metal bolts were destroyed, and the metal sheathing had gone to pieces. If, as you inform me, the existing wharf at Darwin is 45 feet wide, and 550 feet long, and has a life of probably another twenty-five years, I should say that it would more than provide for the trade at Darwin. Without a personal inspection it is hard to suggest what improvements might be made to increase the facilities of the present wharf for the handling of cargo, but, judging from the plan before me, I would suggest the construction of a curved embankment approach from the railway to the end of the jetty, giving a direct line to the ship's side. This would do away with the turn-table, and permit trucks to be taken to the ship's side. Unless labour were very cheap, the curved embankment approach I suggest should not be very costly to construct. I would raise a question now of getting a curve of sufficient radius to connect the railway with the lines on the wharf. If, as I am informed, the wharf will carry an engine, my suggestion would be a comparatively simple way out of the difficulties there. It would be a great improvement on the turn-table and capstans now provided for handling cargo on the Darwin wharf. There would be no room for sorting sheds on the wharf, and they would have to be built on shore. Travellers are clumsy and heavy, and if heavy trucks are used electric power would be required to work them. The suggestion I have made would have many advantages. Empty trucks could be passed in, and full trucks out, and always clear of one another. The curved embankment should not be expensive. It could be built of ballast taken from Stokes' Hill alongside. As there is no river running into the port, I do not think the embankment would lead to silting up, but if there were a tendency in that direction, a gap filled up with pile construction could be made in the embankment. As only small trucks are used at the Darwin wharf, it is possible that a 7-chain curve would be sufficient. Electric capstans would quite well here, but they require continual looking after. Owing to the proximity of the water, the moisture is apt to wet the armature, and it has to be looked after, or it will become shorted. In view of the small trade at Darwin, I would not recommend the use of electric power there, owing to the difficulty of looking after it. Near the water, electrical gear wants constant attention. On all our wharfs the rails are all sunk to the level of the deck. With the rails above the deck on the Port Darwin wharf, there would be no difficulty in putting in switch points for the shunting of trucks from one line to another. On our wharfs, with the rails sunk, switch points are a nuisance, and that is the reason we have put in the traverser you saw at the end of one of the wharfs you inspected. For a switch you require some distance within which to operate, and that is a difficulty in the case of a small wharf, but there would be

no difficulty in that respect at Darwin. The approach could be utilized for vehicular traffic, but a road would have to be formed for that purpose.

224. *To Senator Lynch.*—The Sydney Harbor Trust has a complete scheme of operations for the future, and everything we do conforms to that scheme. Looking at your problem broadly, you have a wharf at Darwin, but the approach is unsatisfactory. You want to use the existing wharf, and, in my opinion, the best thing to do would be to build an approach in the form of a curved embankment as I have suggested, and thus make use of the existing wharf as long as it will stand. If the wharf is not sufficiently wide for handling the traffic it could be widened either on the inshore or the offshore side. No doubt the existing wharf will last a long time. The cast iron piles will last, and if the bracing goes it will not be a difficult matter to substitute fresh bracing. If the bracing shows signs of decomposition it could be replaced with galvanized bracing, and you could look to it lasting for thirty or forty years more. The Sydney Harbor Trust consists of three Commissioners appointed by the Government. The funds of its operations are found by the Government every year. Our estimates are placed before the Treasurer and criticised, and subsequently voted by Parliament. The Trust is a revenue-producing concern, but its income goes into the Consolidated Revenue. Wharfage dues are almost our sole source of revenue. We levy wharfage dues on gross tonnage as the fairest arrangement that can be made with ships. We have a long schedule of tonnage rates according to classification of goods. I could supply the Committee with a copy of that schedule. There is a special vote provided for the Trust. Its estimates are prepared in the same way as those of any other public Department. From the experience of the Trust we prefer timber for wharf construction. Timber is cheap construction, and it lasts in Sydney Harbor for forty years, or forty years, and in some cases up to forty-five years. As it is resilient it stands shocks, and it is easily repaired. The time will probably come when suitably timber will be hard to get. It is beginning to be somewhat scarce now. We can get piles up to 90 feet long at present. Timber is the quickest class of construction you can get. The timber that is becoming noticeably scarce now is ironbark. There is still a pretty good supply of turpentine, but its cost is increasing all the time. A concrete sea wall would be too expensive at Darwin. It would be 60 feet high, and would have to be 20 feet thick at the base. The cost would rule it out. You have the alternative of building with sheathed piles, and the sheathing metal now obtainable is better than it was some time ago. We used to sheathe our piles before we had the experience that turpentine has so many years of life without sheathing. It was not worth while to sheathe piles with metal, which could give only two years' protection. Some sheathing used recently is lasting very well. No timber will stand in the tropics unprotected. The further north you go the more subject timber is to attack, and at Cairns and Cooktown it will not last at all. You have the choice of using timber metal sheathed, which would give you a resilient wharf, and the cheapest wharf you could build at Darwin. Reinforced concrete you would find very expensive construction up there, and it would have to be protected on the outside with resilient timber fenders to prevent the cracking of the concrete. Where you have a heavy current the bumping of a ship is a very serious matter. If muntz metal were as good now as formerly, you could rely upon metal sheathing lasting a considerable time. The cheapest and most satisfactory wharf you could build at Darwin would be a metal-sheathed timber wharf. We have experimented with the carbo-teredo treatment. We have sunk charred and uncharred pieces of timber side by side, and whilst it is certain that charring does protect the timber to some extent, it soon washes off, and the timber is then exposed to attack. I prefer metal sheathing. Our

experience is that unsheathed turpentine piling is the best construction for Sydney Harbor, but I would not recommend it for a place like Darwin. Reinforced concrete would be too expensive, and quite unnecessary now when the quantity of yellow metal sheathing has greatly improved. I have referred to the condition of the muntz metal on the piling of the old Pyrmont bridge. The old muntz metal was produced by a smelting process. Yellow metal sheathing is now electrically produced. The metal produced some time ago would not last, as I have said, nor more than a couple of years, but manufacturers have become wise to the necessity of improving its quality, and some which we have used recently is lasting very well. I do not know how long it will last, but at present it looks quite good. Darling Island is surrounded by a sea wall which must be over 2,000 feet long. The wall is 24 feet thick at the bottom, and cost a lot of money. It was commenced in 1899 before the Sydney Harbor Trust was formed, but the Trust finished it. It cost about £40 per lineal foot, and would cost £120 per foot in these times. I put my faith in a timber jetty in a place like Darwin. You do not want to spend too much money on construction there. I have never seen anything like the proposed new Darwin wharf, and cannot understand any one seriously recommending it. The present wharf is about the most inconvenient wharf I have ever seen. Lateral traversers would enable you to shift trucks more quickly than the wharf. It is possible to drill sandstone rock. We drill 18-in. holes here, and plant the piles in the rock. I should think the schist shown on your plan at Darwin could be drilled more easily than our sandstone rock. Provided the rock is suitable the difference in cost between drilling for driving piles would not be more than 10 per cent.

225. *To Senator Reid.*—Of course, the cost of the curved embankment I have suggested would have to be taken into consideration, but you must have a wharf at Darwin, and I suggest a most effective way in which to make use of the existing wharf. If you required to widen it you could drill for the piles as we do in Sydney, and sheathed piles should last for a number of years there. All the makers of sheathing metal have had before them the problem of improving its quality, and are trying to reproduce the quality of the old sheathing.

226. *To the Chairman.*—With respect to future development I am reckoning that with the curved embankment you could make use of the existing wharf and widen or lengthen it if necessary, with metal-sheathed timber. That would give the most economical result. The proposed new wharf would cost an enormous sum of money. The first part as proposed could not be carried out for £125,000, even exclusive of the dredging proposed. The dredging alone for the proposed wharf would cost a tremendous lot of money. A British Committee has recently been inquiring into sea structures, but I have not yet seen any of its conclusions. Sometime ago an investigation was carried out by the British Institution of Civil Engineers into reinforced concrete construction. The results were anything but reassuring, and I have rather shaken my faith of many engineers in its durability on account of the rusting of the re-inforcement. I do not know why re-inforcement has not been galvanized in the past, because it gives a mechanical bond as well as a bond of adhesion. The carbo-teredo process is simply charring the pile, but it is not thoroughly effective. For metal sheathing, which I say is now manufactured in improved quality, you should get the best advice according to a study of the various brands of metal in the market. Heat is always an element in electrolysis, and the more rapid deterioration of metal sheathing in tropical waters might be due to some kind of electrolytic action.

227. *To Mr. Cook.*—For the improvement of facilities on the present Darwin wharf two traversers worked by horses might be used as suggested by the

Chairman You will have a block at the turntable if it is allowed to remain, no matter what you do with the present wharf. A couple of small trawlers would assist in getting the trucks away. The trawlers might cost from £500 to £600 each.

228 To Senator Lynch.—Muntz metal sheathing gives warning of deterioration, because you can see it between low-water mark and high-water mark. Underneath the water it becomes covered with marine growth, which protects it to a great extent.

229 To the Chairman.—In reference to your request for an estimate of the cost of the small transporter cranes of which I have spoken, I submit the following particulars of the 2-3-ton transporter cranes we have at No 1 wharf, Walsh Bay:—

Price paid—£2,376 each, duty and other charges included. Maximum outreach of hook from front rail—38 ft. 10 in. Total traverse of hook—57 feet. Maximum load—3 tons at 150 feet per minute at outer extremity.

Range—30 feet below deck level to 40 feet above. Longitudinal travel—60 feet per minute. Installed 1914.

(Taken at Sydney.)

WEDNESDAY, 7TH NOVEMBER, 1923.

Present:

Mr. GREGORY, Chairman;

Senator Lynch

Mr. Blakeley

Senator Reid

Mr. Cook.

Herbert Francis Baker, Manager of the Java-Singapore Service for Burns, Philp and Company, sworn and examined.

230 To the Chairman.—I have no personal experience of Darwin, but I have had reports upon it from the masters of the *Montoro* and the *Marella*. We provide refrigerated space on both steamers. It is there to be availed of by anyone who wishes to take advantage of it. Both steamers have been fitted with refrigerated space to give facilities for the opening up of an export trade in frozen meat between Australia and Java and Singapore. The *Montoro* can carry 250 tons and the *Marella* 350 tons of frozen meat. I should like to be allowed to make the following statement to the Committee in reply to evidence given at the sitting held on Monday:—

Yesterday's press reports of Monday's sitting of the inquiry dealing with the freights to Darwin are calculated to create a wrong impression, and we think an explanation of the actual conditions will make the position clearer. Mr. Van Der Lende of the Royal Dutch Packet Company, yesterday referred to an agreement with our company to maintain the same rates; that is only a working arrangement, the same as is in existence between our lines trading to Europe and other countries, and also round the Australian coast, which has been recognised as affording security to the various interests and shippers alike. The impression given in the press was that under the alleged agreement Burns, Philp prevented the Royal Dutch Packet Company from quoting less than the existing rates to Darwin. This is not correct. Under this arrangement, wherever it has been shown that existing rates do not allow shippers to compete with other centres, we have always been willing to meet shippers by making reductions wherever possible, and, in the case of Darwin, we have voluntarily made two reductions during the last twelve months, bringing the rate to 70s. per ton. Mention was also made of the difference in rates ruling for Java and those to Darwin, but those to Java vary from 55s. to 75s., not 35s. to 60s. as Mr. Van Der Lende is reported to have said. I do not know, however, whether Mr. Van Der Lende explained the enormous difference in the cost of handling cargo at the two centres—the average rate per ton of discharging and loading at Darwin, ranging as you are no doubt aware, up to 12s. per ton, this being an actual rate in the case of our steamers during the past twelve months—while that during the same period was worked out as high as 45s. 10d. per ton. Against this the rate of stevedoring in Java is less than one guinea per ton—a guinea being equivalent to 12s. 6d. That I think it will be admitted that the higher rate to Darwin is quite justified, when you also take into account the deviation and delay to our steamers—the call at Darwin involving about three days, which, with our steamers costing about £400 per day, is an expensive item. We can honestly

say that there is nothing in the Darwin trade at the existing rates—which is, apparently, recognised by the various shippers who have used the port to call themselves the Royal Dutch Australian-Oriental, China Navigation, and the Royal Dutch Packet Company—as they have since shown no disposition to return, leaving it to us to carry it on for what is a very high rate to Darwin. The rates for cargo carried to Darwin from Melbourne, Sydney, and Brisbane is only about 27s. tons to 300 tons, and the quantity brought south only from 50 to 75 tons, which is not sufficient to warrant an agreement to make the call; but, being under small contract with the Commonwealth Government, we do so. The proposed rate, however, is much better by going away with a good deal of the delay that at present exists, and so reduce the working cost.

The reason for the present rate of freight to Darwin is primarily the heavy working cost at Darwin. Of course the deviation from the route of the steamer has also to be taken into account. The mail subsidy paid to our company is £250 per month. Something might be done to reduce freights by the payment of a subsidy. (That is the proper practice to adopt. If it does not pay a shipping company to develop a trade the Government should give assistance. We have always shown a disposition to assist development wherever possible. We have to pay light dues at Darwin, as they become due, as we do at other Australian ports. We pay both Commonwealth and State light dues, and they are very heavy. We have to pay tonnage dues at Darwin. We have to bear the cost of lifting the cargo out of the ships and placing it in the trucks. That is not borne by the consignee. Out of the freight rate of 70s. per ton, we have to pay the cost of discharging the cargo from the ship. In loading cargo we pay the cost of loading from the wharf on to the ship, and stacking in the hold. We do not pay for the labour employed in handling and receiving goods on the Darwin wharf, excepting the difference between the ordinary and overtime rates, when overtime is worked.

In Sydney we have labour on the wharf to take cargo off the carts, which is charged to the ship. This labour is employed in taking goods off the lorries on the wharves and loading them into the ship is a charge against the ship. Once goods are lowered on to the wharf from a ship the charge is the consignee's. The usual practice is from ships, slings to ship's slings. In Sydney, cargo, when landed, is stacked and sorted in the shed, and the consignees take delivery from the shed.

231. To the Chairman.—Captain Donaldson, Master of the *Montoro*, is strongly in favour of the proposed new jetty, on the lines submitted by Admiral Clarkson. It fits in absolutely with his ideas. As a matter of fact, he said that the question was discussed with him before the proposal was made, and Admiral Clarkson's plan accorded with his ideas. If the existing wharf were left until the second portion of the proposed new wharf was erected we would have to leave it to the masters of our vessels to say whether they could come into the side of the proposed new wharf facing the old wharf. They like to have plenty of room to navigate, and the matter is one which would have to be referred to them. I have been associated with stevedoring work. We have a stevedoring department of our own that attends to the loading and discharging of the cargo. We have no objection to say what they could do. All our goods are brought by lorry to the wharves, and delivered straight into the sheds. Meat is delivered in the same way. It is brought down by lorries alongside the ship and loaded straight into the freezing chambers from the lorries. The use of trawlers on the existing wharf at Port Darwin would facilitate the working of the wharf. From your account of the working of the wharf at Port Darwin I do not see why there should be any grave delay. Probably there is more labour employed at Darwin than there should be. We do not employ any more labour in Sydney than is sufficient for the work to be done. I cannot see

no difficulty in that respect at Darwin. The approach could be widened for vehicular traffic, but a road would have to be formed for that purpose.

232. To Senator Lynch.—The Sydney Harbor Trust has a complete scheme of operations for the future, and everything we do conforms to that scheme. Looking at your problem broadly, you have a wharf at Darwin, but the approach is not satisfactory. You want to use the existing wharf, and, in my opinion, the best thing to do would be to build an approach in the form of a curved embankment as I have suggested, and thus make use of the existing wharf as long as it will stand. If the wharf is not sufficiently wide for handling the traffic it could be widened either on the upshore or the offshore side. No doubt the existing wharf will last a long time. The cast iron piles will last, and if the bracing goes it will not be a difficult matter to substitute fresh bracing. If the bracing shows signs of decomposition it could be replaced with galvanized bracing, and you would look to it lasting for thirty or forty years more. The Sydney Harbor Trust consists of three Commissioners appointed by the Government. The funds for its operations are found by the Government every year. Our estimates are placed before the Treasurer and criticised, and subsequently voted by Parliament. The Trust is a revenue-producing concern, but its income goes into the Consolidated Revenue. Wharfage dues are almost our sole source of revenue. We levy wharfage dues on gross tonnage as the fairest arrangement that can be made with ships. We have a long schedule of tonnage rates according to classification of goods. I could supply the Committee with a copy of that schedule. There is a special vote provided for the Trust. Its estimates are prepared in the same way as those of any other public concern. From my experience of the Trust we prefer timber for wharf construction. Timber is cheap construction, and it lasts in Sydney Harbor for thirty or forty years, and in some cases up to forty-five years. As it is resilient it stands shocks, and it is easily repaired. The time will probably come when suitable timber will be hard to get. It is beginning to be somewhat scarce now. We have a class of construction you can get. The timber that is becoming noticeably scarce now is ironbark. There is still a pretty good supply of turpentine, but its cost is increasing all the time. A concrete sea wall would be too expensive at Darwin. It would be 50 feet high, and would have to be 20 feet thick at the base. The cost would rule it out. You have the alternative of building with sheathed piles, and the sheathing metal now obtainable is better than it was some time ago. We used to sheathe our piles before we had the experience that turpentine has so many years of life without sheathing. It was not worth while to sheathe piles with metal, which could give only two years' protection. Some shippers do not sheathe their piles. The further north you go the more subject timber is to attack, and at Cairns and Cooktown it will not last at all. You have the choice of using timber metal sheathed, which would give you a resilient wharf, and the cheapest wharf you could build at Darwin. Reinforcement of timber with very expensive concrete is not to be recommended here, and it would have to be protected on the outside with resilient timber fenders to prevent the cracking of the concrete. Where you have a 5-knot current the bumping of a ship is a very serious matter. If muntz metal were as good now as formerly, you could rely upon metal sheathing lasting a considerable time. The cheapest and most satisfactory wharf you could build at Darwin would be a metal-sheathed timber wharf. We have experimented with the carbonized treatment. We have sunk charred and uncharred pieces of timber side by side, and whilst it is certain that charred does protect the timber to some extent, it soon wears off, and the timber is then exposed to attack. I prefer metal sheathing. Our

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Herbert Francis Baker, Manager of the Java-Singapore Service for Burns, Philp and Company, sworn and examined.

230. *To the Chairman.*—I have no personal experience of Darwin wharf. I have had reports upon it from the masters of the *Montora* and the *Marella*. We provide refrigerated space on both steamers. It is there to be availed of by anyone who wishes to take advantage of it. Both steamers have been fitted with refrigerated space to give facilities for the opening up of an export trade in frozen meat between Australia and Java and Singapore. The *Montora* can carry 250 tons and the *Marella* 350 tons of frozen meat. I should like to be allowed to make the following statement to the Committee in reply to evidence given at the sitting held on Monday:—

Yesterday's press reports of Monday's sitting of the inquiry dealing with the freights to Darwin are calculated to create a wrong impression, and we think an explanation of the actual conditions will make the position clearer. Mr. Van Der Lunde, of the Royal Dutch Packet Company, yesterday referred to an agreement with our company to maintain the same rates; that is only a working arrangement, the same as is in existence between all lines trading to Europe and other countries, and also round the Australian coast, which has been recognised as affording security to the various interests and shippers alike. The impression given in the press was that under the alleged agreement Burns, Philp prevented the Royal Dutch Packet Company from charging less than the existing schedule rate to Darwin. That is not correct. Under this arrangement, wherever it has been shown that existing rates do not allow shippers to compete with other lines, we have always shown a disposition to meet shippers by making reductions wherever possible, and in the case of Darwin, we have voluntarily made two reductions during the last twelve months, bringing the rate to 16s. per ton. Mention was also made of the difference in rates ruling for Java and those to Darwin, but those to Java vary from 35s. to 75s., and those to Darwin from 15s. to 25s. It is reported to have been explained the enormous difference in the cost of handling cargo at the two centres—the average rate per ton of discharge and loading at Darwin, ranging, as you are no doubt aware, up to 17s per ton, this being an actual rate in the case of our steamers during the past twelve months. The rate at the Western Australian steamer *Bambra* during the same period has worked out as high as 45s. 10d. per ton. Against this the rate of stevedoring in Java is less than one guinea per ton, and being equivalent to 1s. 8d. per ton, that I think will be admitted that the higher rate to Darwin is quite justified, when you also take into account the detention and delay to our steamers—the call at Darwin by detouring about three days—which, with our steamers costing about £400 per day, is an expensive item. We can honestly

say that there is nothing in the Darwin trade at the existing rates—which is, apparently, recognised by the various other companies that used to call there, namely, the E. and A. the Australian-Oriental, China Navigation, and the Royal Dutch Packet Company—as they have since shown no disposition to return, leaving it to us to carry it on for what it is worth. We contend that the present rate of 16s. is fair and equal compared to the rates ruling to other Australian ports, that from Sydney to Cooktown—only half the distance—being the same as to Darwin. The average cargo carried to Darwin from Melbourne, Sydney, and Brisbane, and only about 275 tons to 300 tons, and the quantity brought south only averages from 50 to 70 tons, which does not offer sufficient incentive to make the call; but, being under most contract with the Commonwealth Government, we have to do so. The proposed new jetty, however, should tend to make working conditions at Darwin very much better by doing away with a good deal of the delay that at present exists, and so reduce the working cost.

The reason for the present rate of freight to Darwin is primarily the heavy working cost at Darwin. Of course the deviation from the route of the steamer has also to be taken into account. The mail subsidy paid to our company is £250 per month. Something might be done to reduce freight by the payment of a subsidy. That is the proper practice to adopt. If it does not pay a shipping company to develop a trade the Government should give assistance. We have always shown a disposition to assist development wherever possible. We have to pay light dues at Darwin, as they become due, as we do at other Australian ports. We pay both Commonwealth and State light dues, and they are very heavy. We have to pay tonnage dues at Darwin. We have to bear the cost of lifting the cargo out of the ships and placing it in the trucks. That is not borne by the consignee. Out of the freight rate of 70s. per ton, we have to pay the cost of discharging the cargo from the ship. In loading cargo we pay the cost of loading from the wharf on to the ship, and stacking in the hold. We do not pay for the labour employed in handling and receiving goods on the Darwin wharf, excepting the difference between the existing and overtime rates, when overtime is worked. In Sydney we have labour on the wharf to take cargo off the carts, which is charged to the ship. The labour employed in taking goods off the lorries on the wharfs and loading them into the ship is a charge against the ship. Once goods are lowered on to the wharf from a ship the charge is the consignee's. The usual practice is from ship's slings to ship's slings. In Sydney, cargo, when landed, is stacked and sorted in the shed, and the consignee take delivery from the shed.

231. *To the Chairman.*—Captain Donaldson, Master of the *Montora*, is strongly in favour of the proposed new jetty, on the lines submitted by Admiral Clarkson. It fits in absolutely with his ideas. As a matter of fact, he said that the question was discussed with him before the proposal was made, and Admiral Clarkson's plan accords with his ideas. If the existing wharf were left until the second portion of the proposed new wharf was erected we would have to leave it to the masters of our vessels to say whether they came into the side of the proposed new wharf facing the old wharf. They like to have plenty of room to navigate, and the matter is one which would have to be referred to them. I have been associated with stevedoring work. We have a stevedoring department of our own that attends to the loading and discharging of vessels. We have no capstans in use on our wharf. All our goods are brought by lorry to the wharves, and delivered straight into the sheds. Meat is delivered in the same way. It is brought down by lorries alongside the ship and loaded straight into the freezing chambers from the lorries. The use of a stevedoring department at wharf at Port Darwin would facilitate the working of the wharf. From your account of the working of the wharf at Port Darwin I do not see why there should be any grave delay. Probably there is more labour employed at Darwin than there should be. We do not employ any more labour in Sydney than is sufficient for the work to be done. I cannot see

no difficulty in that respect at Darwin. The approach could be utilized for vehicular traffic, but a road would have to be formed for that purpose.

234. *To Senator Lynch.*—The Sydney Harbor Trust has a complete scheme of operations for the future, and everything we do conform to that scheme. Looking at your problem broadly, you have a wharf at Darwin, but the approach is not satisfactory. You want to use the existing wharf, and, in my opinion, the best thing to do would be to build an approach in the form of a curved embankment as I have suggested, and thus make use of the existing wharf as long as it will stand. If the wharf is not sufficient wide for handling the traffic it could be widened either on the inshore or the offshore side. No doubt the existing wharf will last a long time. The cast iron piles will last, and if the bracing goes it will not be a difficult matter to substitute fresh bracing. If the bracing shows signs of decomposition it could be replaced with galvanized bracing, and you could look to it lasting for thirty or forty years more. The Sydney Harbor Trust consists of three Committees appointed by the Government. The funds for its operations are found by the Government every year. Our estimates are placed before the Treasurer and criticised, and subsequently voted by Parliament. The Trust is a revenue-producing concern, but its income goes into the Consolidated Revenue. Wharfage dues are almost our sole source of revenue. We levy wharfage dues on gross tonnage as the fairest arrangement that can be made with ships. We have a long schedule of tonnage rates according to classification of goods. I could supply the Committee with a copy of that schedule. There is a special vote provided for the Trust. Its estimates are prepared in the same way as those of any other public Department. From the experience of the Trust we have timber for what is called Sydney Harbor for thirty or forty years, and in some cases up to forty-five years. As it is resilient it stands shocks, and it is easily repaired. The time will probably come when suitable timber will be hard to get. It is beginning to be somewhat scarce now. We can get piles up to 50 feet long at present. Timber is the quickest mode of construction you can get. The timber that is becoming noticeably scarce now is ironbark. There is still a pretty good supply of turpentine, but its cost is increasing all the time. A concrete sea wall would be too expensive at Darwin. It would be 60 feet high, and would have to be 20 feet thick at the base. The cost would rule it out. You have the alternative of building with sheathed piles, and the sheathing metal now obtainable is better than it was some time ago. We used to sheathe our piles before we had the experience that turpentine has so many years of life without sheathing. It was not worth while to sheathe piles with metal, which could give only two years' protection. Some sheathing used recently is lasting very well. No timber will stand in the tropics unless protected. The further north you go the more subject timber is to attack, and at Cairns and Cooktown it will not last at all. You have the choice of using timber metal sheathed, which would give you a resilient wharf, and the cheapest wharf you could build at Darwin. Re-inforced concrete you would find very expensive construction up there, and it would have to be protected on the outside with resilient timber fenders to prevent the cracking of the concrete. Where you have a 5-knot current the bumping of a ship is a very serious matter. If muntz metal were as good now as formerly, you could rely upon metal sheathing lasting a considerable time. The cheapest and most satisfactory wharf you could build at Darwin would be a metal-sheathed timber wharf. We have experimented with the carbo-treated treatment. We have sunk charred and uncharred pieces of timber side by side, and whilst it is certain that charring does protect the timber to some extent, it soon washes off, and the timber is then exposed to attack. I prefer metal sheathing. Our

experience is that unshathed turpentine piling is the best construction for Sydney Harbor, but I would not recommend it for a place like Darwin. Reinforced concrete would be too expensive, and quite unnecessary now when the quantity of yellow metal sheathing has greatly improved. I have referred to the condition of the muntz metal on the piling of the old Pyrmont bridge. The old muntz metal was produced by a smelting process. Yellow metal sheathing is now electrically produced. The metal produced some time ago would not last, as I have said, for more than a couple of years, but manufacturers have become wise to the necessity of improving its quality, and some which we have used recently is lasting very well. I do not know how long it will last, but at present it looks quite good. Darling Island is surrounded by a sea wall which must be over 2,000 feet long. The wall is 24 feet thick at the bottom, and cost a lot of money. It was commenced in 1899 before the Sydney Harbor Trust was formed, but the Trust finished it. It cost about £40 per lineal foot, and would cost £120 per foot in these times. I pin my faith to a timber jetty in a place like Darwin. You do not want to spend too much money on construction there. I have never seen anything like the proposed new Darwin wharf, and cannot understand any one seriously recommending it. The present wharf is about the most inconvenient wharf I have ever seen. Lateral traversers would enable you to shift trucks more quickly on the wharf. It is possible to drill sandstone rock. We drill 18-in. holes here, and plant the piles in the rock. I should think the schist shown on your plan at Darwin could be drilled more easily than our sandstone rock. Provided the rock is suitable the difference in cost between drilling for driving piles would not be more than 10 per cent.

235. *To Senator Reid.*—Of course, the cost of the curved embankment I have suggested would have to be taken into consideration, but you must have a wharf at Darwin, and I suggest a most effective way in which to make use of the existing wharf. If you required to widen it you could drill for the piles as we do in Sydney, and sheathed piles should last for a number of years there. All the makers of sheathing metal have had before them the problem of improving its quality, and are trying to reproduce the quality of the old sheathing.

226. *To the Chairman.*—With respect to future development I am reckoning that with the curved embankment you could make use of the existing wharf and widen or lengthen it if necessary, with metal-sheathed timber. That would give the most economical result. The proposed new wharf would cost an enormous sum of money. The first part as proposed could not be carried out for £125,000, even exclusive of the dredging proposed. The dredging alone for the proposed wharf would cost a tremendous lot of money. A British Committee has recently been inquiring into sea structures, but I have not yet seen any of its conclusions. Some time ago an investigation was carried out by the British Institution of Civil Engineers into re-inforced concrete construction. The results were anything but reassuring, and have rather shaken the faith of many engineers in its durability on account of the rusting of the re-inforcement. I do not know why re-inforcement has not been galvanized in the past, because it gives a mechanical bond as well as a bond of adhesion. The carbo-treated process is simply charring the pile, but it is not thoroughly effective. For metal sheathing, which I say is now manufacturing in improved quality, you should get the best advice after a study of the various brands of metal in the market. Heat is always an element in electrolysis, and the more rapid deterioration of metal sheathing in tropical waters might be due to some kind of electrolytic action.

227. *To Mr. Cook.*—For the improvement of facilities on the present Darwin wharf two traversers worked by horses might be used as suggested by the

ports. The lack of facilities for handling cargo on the heavy wharf contributes to the high cost of handling goods there. Captain Mortimer, of the *Marella*, as well as Captain Donaldson, of the *Montoro*, favours the proposed new jetty. The masters of these vessels would not take into consideration the cost of constructing the new wharf. The *Marella* has had trouble on several occasions in berthing at the existing wharf. In heavy weather she has damaged her gangway. On the trip before last, both her gangways were damaged through the heavy swell whilst she was alongside the wharf. Probably better facilities would be provided for the handling of goods on the proposed wharf which, perhaps, would not be built quite so high as the existing wharf.

34 To the Chairman.—The conditions of working at Darwin are different from those at Queensland ports. At Brisbane our ships go alongside a wharf, where we have shed accommodation. It is the same at Townsville. We do not call at Cooktown. We call only at Brisbane, Townsville, Thursday Island and Darwin. The wharfage facilities at other ports are better than those at Darwin. From the plan I should say that the proposed new wharf would be better protected than the existing wharf at Darwin. If the Government expended money in the construction of the proposed new wharf, I suppose they would expect to get their money back in some way, and so might increase wharfage charges. In addition, of course, the Government would have to take into consideration the capital sunk in the existing wharf. If shipping companies were charged increased wharfage rates, they would have to recover them from the consignees. As a business proposition, I would say that the Government must recover increased expenditure from some one, and if the construction of the proposed wharf were to make it more expensive for every one trading with the port, it might be better to allow the existing arrangement to stand. Whilst the proposed new wharf would suit us better than the existing wharf, the Government would have to consider whether it would suit all concerned generally well. I do not think that our company would incur an expenditure of £300,000 for the proposed new wharf if we had to meet the cost ourselves. The construction of a curio approach leading directly to the existing wharf should not, in my opinion, cost anything like so much as the proposed new wharf. It would do away with the turn-table and with a great deal of the present trouble. Something should be done to avoid the delays incurred in shunting on the existing wharf. I could not express an opinion about the difficulty or otherwise of berthing a ship on the sea side of the proposed new wharf if the existing wharf were allowed to remain, but I can say that, as a rule, masters of ships always want plenty of swinging room.

35 To Senator Lynch.—The present trade at Darwin, and the quantity of cargo to and from the port, would not require the provision of very much shed accommodation, but it might become necessary in the event of trade developing. It would not require a very big shed to accommodate 200 tons of cargo. The shed to be of any use should be alongside the ship.

(Taken at Sydney.)

THURSDAY, 8TH NOVEMBER, 1923.

Present:

Mr. GIBSON, Chairman,
Senator Lynch Mr. Blakeley
Senator Reid Mr. Cook.

John Boyd Craisic, Chairman of Australian Meat Council, Deputy Chairman of Metropolitan Meat Industry Board of New South Wales, Vice-President New South Wales Graziers Association, sworn and examined.

36 To the Chairman.—I have had thirty years' experience of the pastoral and meat industry in Australia.

As one who took an active part in the opening up of Central Queensland, I was stationed for thirteen years as far back as Longreach and Yarraman, and I can say that the most attractive inducement to the pastoralists there was a longer lease tenure. I doubt very much if you can ever hope to open up the Northern Territory unless the Commonwealth Government provides for fifty of tenure something on the lines adopted by the Queensland Government, under which they should be as penalising as Longreach and Yarraman, except upon an increase in the value and carrying capacity of the leasehold due to some Government work carried out by the expenditure of public money, such as the extension of railways, water conservation, or road-making. If a lessee makes the carrying capacity of his country appreciate by his own efforts in water conservation, ring banking, and other improvements, there should be no re-appraisal of his rent which would penalize him for having done so. If the Government constructs a railway which increases the value of a lease it is entitled to increase the rental. You might in the Northern Territory adopt a zone system, and provide, for instance, that within 200 miles of Darwin leaseholds should not exceed a certain maximum area, and should have a tenure of a certain number of years. Land further back leaseholds should be on a larger area with a longer lease, and another 100 miles back the leaseholds should be still larger and with a still longer lease. You cannot attract a man out-back unless you give him a long lease, because it is much more expensive and difficult for him to complete his improvements than it is for the man inside. It is not fair to the man outside if he has the enjoyment of his lease only for the same period as an inside man who can carry out his improvements in a much shorter time. The length of tenure of a lease is a most important matter, but the most important item of the lot is, I think, the matter of taxation. In regard to that I consider that any man who takes his capital out to the Northern Territory should be taxed as an investor, not as one who is engaged in the carrying on of a business for his occupation of the country for the first twenty years, until the Territory is opened up. If reasonable inducements were offered a number of our wealthier men would, no doubt, invest a fair amount of their capital in the Territory, and within ten years it should be a flourishing part of the Commonwealth. But if men have to pay the same taxation there as upon investments inside in the settled districts there will be nothing to attract them to the back country. If the country within 200 miles of Darwin is very poor pastoral country it might be cut out altogether, and the zone system I have suggested commenced beyond that limit. The rentals of leases should be in accordance with the facilities provided, on the principle adopted by private owners of property in our cities. In order to make settlement in the Northern Territory attractive there should from the very start be a definite policy formulated with regard to railway construction, roadways, and water conservation, so that a man settling out-back would know that a railway would come in his direction sooner or later, and indeed within a specified time. He would know that certain provision would be made for water conservation, so that when he breeds cattle he can travel them to his market by stock routes on which he can be sure of getting water. One of the greatest difficulties in connexion with the meat industry to-day is that although a man may have plenty of fat cattle on his run he cannot get them into the meat-works when they are fat. It may be that by the time the stock routes are open because of natural water, his cattle are poor again, and he misses the season. I have never been through the Northern Territory. If it has not already been done I would recommend that a survey of the lands of the Territory should be made. The quality of the land in regard to its carrying capacity should be ascertained, travelling stock routes should be laid down, and the spots at which water conservation should be provided should be indicated. In this way a

man selecting a property out-back would know something of its carrying capacity, and that he would have a particular stock route on which to travel his stock to a particular railway which he might expect would be constructed within a certain period. I do not think there is a possible hope of ever settling the Northern Territory successfully unless we take advantage of the lessons taught by the failures in the different States which are now successfully settled. Before any definite policy is formulated and adopted by Parliament, I recommend that a survey should be made by a Commission of five practical men. One should be a pastoralist who has had experience in settling wide areas successfully. Another should be a good engineer to deal with railway construction and water conservation. A third should be a man competent to deal with harbor and wharf construction, and with a knowledge of necessary wharfage accommodation and freights. There should be on the Commission also a good financial and commercial man who could advise with respect to market prospects and costs, and a good man with a knowledge of coastal and inland farming, competent to report on the whole scheme as a commercial proposition. I consider that five such men, acting absolutely unitedly, would, after investigation, listening to discussions, and taking evidence, be in a position to formulate a policy of progressive development for at least thirty years. It should not be for less. So that an intending settler would know that a definite progressive policy was to be carried out, and that within say, ten years, he would have a railway reasonably handy to take his production to market. The necessary survey and investigation by such a Commission would take at least two years, and would involve considerable expenditure, but it would be justified if, as a result, a progressive policy of development of the Northern Territory for the next thirty years was formulated. To give effect to such a policy would absorb a vast amount of money, and I have to say that under existing conditions for marketing wool and produce to distant markets the Territory is not justifiable. Unless we organize our markets in a better way than we have done up to the present, I do not think we can properly settle the Territory. Largely increased production must result from its settlement, and we must find a market for that production. In making my recommendation I am looking at the matter not from the point of view only of a cattle man, but of the interests of the whole of Australia. I think the expenditure of the necessary money would be justified if it were spent in the execution of a programme such as I have indicated, which would make settlement successful. There are large areas of Queensland quite as good as a lot of the Northern Territory which are under cattle to-day, and could be converted to sheep. Notwithstanding the fact that sheep prices have advanced, their numbers in the Commonwealth have not increased in the last period of ten, twenty, or thirty years. Losses due to the blow-fly pest have been very serious, and on large areas in Queensland it is much more costly to run sheep to-day than it was ten years ago. The further back you go the more difficult it is to get sheep on country, and the more difficult it is to get shearers and proper labour for handling sheep. Because of the blow-fly trouble there is a tendency to go back to cattle instead of sheep. The Barkly Tableland has been spoken of to me as magnificent sheep country. I have never seen it, nor have I ever heard a practical sheep-man say that he would run sheep on the Barkly Tableland. To put sheep on country there must be highly improved. I do not know of one station in Queensland that runs sheep to-day that is not wonderfully improved country. I would say that, with proper stock routes, sheep can be successfully run on country within 100 miles of a railway. In travelling sheep you want a good stock route, with watering places much closer together than is necessary for cattle. In a dry time you can get no more than sheep when you travel cattle. You can get no more than 6 miles a day out of sheep, but you can get 10 miles a day out of cattle

Watering places must be provided on stock routes, which must be of sufficient width. Stock routes, as presently are utilized, which seasons are bad, and if it has not plenty of area a stock route is useless at any time. In New South Wales stock routes are often in such a state that they are practically useless. We need extra space on the railways for the transport of stock, and in New South Wales the Railways Commissioners have recently granted stock producers one of the greatest benefits for the transport of stock, by increasing the speed of stock trains by 33 per cent. The journey from Bourke to Sydney, which used to take forty-four hours is covered to-day in thirty-one hours. You can imagine what the last thirteen hours' travelling in a truck meant to a bullock, especially if he was a fat bullock. I should like to stress the fact that the New South Wales Railways Commissioners, before they built the last trucks for the transport of stock, conferred with the Graziers Association, of which I happen to be vice-president. They asked us to look over the blue prints of the trucks they proposed to build. We suggested several alterations, and they immediately fell in with our views. In order to test them, they got six trucks altered in accordance with our suggestions, and ran them for six months to note the result. The results were so satisfactory that the present model has been adopted with very great benefit. The railway authorities have no knowledge of what the producer wants in order to get his cattle to market in the best condition. This applies also to insulated trucks used in a warm climate. Recently we have taken this matter up with the railway authorities here, and an impressing upon them the necessity for a better insulated truck than that at present in use. The insulated truck now used on our railways can scarcely be called an insulated truck at all. If you take the temperature of the truck, say, at 75 degrees, and put a certain amount of ice into it, it is doubtful if you can lower the temperature by 10 degrees. It is usual when we are sending meat from the works to a ship to pre-cool the trucks in which it is carried so that we can load now into the trucks before we use them. We use all the snow of the brine pipes for this purpose. The truck is about 20 feet long, and at each end there is a special place which we load up with snow. This may reduce the temperature by 10 degrees. The great thing is to get the beef or mutton down to as low a temperature as possible before loading, and then the truck is packed as full as it can be, to express all the hot air out, when it is sealed it will retain the cold. It would probably be difficult to pre-cool trucks sufficiently at Darwin unless you had a proper tunnel system, as they have in America, which is extremely expensive. Really, the pre-cooling of a truck is a misnomer. If I put snow at each end of a truck with a temperature of 75 degrees, it would possibly not bring the temperature down more than 10 degrees. It would be a great advantage if the trucks were stood in a shed for a time until the timber was cooled. The iron-work and timber of a truck left standing in the sun must get hot, and no amount of ice put into it will reduce the temperature very materially. When I am informed that Vestey Brothers complain that the trucks supplied to them can be used only at night, which is an additional cost of 50 per cent., whilst at Wyndham the meat works load during the day-time, I should like to know the difference in the time that elapses from the time the meat leaves Vestey's works until it is put into the hold of the steamer at Darwin, as compared with the time occupied in transferring the meat from the Wyndham works to the steamer. I have perused the report by Mr. Henderson on the insulated trucks at Darwin, and the test he made. He gives the temperature of the frozen chamber of the meat works as from 8 to 10 degrees. That would not suit me. I should want the meat lower in temperature when it left the store. Our meat never leaves the store at over 4 degrees, and I should like it lower than that at Darwin. Still, meat at the temperature of from 8 to 10 degrees put into

a truck with a temperature of 75 degrees, should not, if the truck were fully loaded, have become soft after the truck has stood for four hours and twenty minutes. I have pointed out to the Commission that our insulated trucks are not what they ought to be, and they are prepared to discuss the matter in connection with the building of new trucks. The Victorian truck is different from ours, and is a better truck than the New South Wales one. I take it that the insulation of trucks used in the Northern Territory should be much better than that of trucks used in New South Wales. When trucks are exposed to the burning heat of the Northern Territory, the heat may get through, and soften the top meat in the truck without affecting the lower meat at all; but if the top meat is soft the engineers will not take it. Probably the difficulty could be overcome by having a little more insulation on the top and sides of the trucks. In a place like Darwin I consider that the meat should be frozen to lower than 32 or 35 degrees before leaving the store. Speed in loading is of the greatest importance in dealing with frozen meat. A variation of temperature is dangerous, and is dangerous to the meat, which is very fat. The Queensland refrigerated truck is a very fair truck for Queensland climatic conditions. The killing at Townsville finishes about September. I do not know what the date of the Darwin killing is. At Townsville in September the outside is fifty very degrees. Neither the galvanised iron nor the ice used in New South Wales refrigerated trucks. Possibly zinc lining is used in the Northern Territory trucks to prevent a fungus growth which sometimes appears on wood. Here, frozen meat is brought to the wharf in railway cars. There are no works in New South Wales that deliver the meat direct to the steamer. We run out trucks in from the country in winter time, and the trucks are left on the rails for thirty hours before the meat is loaded. There are no works in the Territory that deliver directly the truck is opened. I am speaking now of trucks loaded with mutton, which softens more easily than beef. I have had a wide experience in the shipping of frozen meat. If on the Darwin wharf a ship is working four holds, and means are not provided by scissors crossings or cross-overs to take ship's trucks away, any delay in the removal of an empty truck must affect the whole of the load. The use of traversers on the wharf would give the same result as scissors crossings, but these would be cheaper to work. With scissors crossings you could move the trucks about with horses, just as you could move the traversers. Cross-overs or scissors crossings could be very easily worked on the wharf, so that there need be no hitch. You could have a cross-over opposite every hatch. I do not know why the electric capstern provided at the Darwin wharf were not used. The men may not have known how to use them, or may not have wished to use them. They are worked everywhere. The whole of our works are electrical. I would certainly prefer scissors crossings to traversers. They are more economical and more efficient, provided that the wharf is laid out properly. With four sets of rails it should not be difficult to carry out the work at Darwin. We handle the whole of the traffic at our works—sometimes 700 tons a night—with only four sets of rails. I would much prefer a straight run down to the ship's side to the turn-table arrangement on the Darwin wharf. The whole of the loading and unloading is regulated by the weakest point, and at Darwin that would be the turntable. The approach should give a direct entry for the railway on to the wharf. With a direct run on to the wharf, there should be no delay whatever in the loading of a vessel at Darwin.

237. To Senator Lynch.—Railway extension has the finest effect on the settlement of lands served by the railway, but I will qualify that by saying that railway extension is useful only when; by the provision of water conservation on roads leading to it, stock can be taken to the railway. There are districts in New South Wales to-day, within fifty miles of a railway, where settlers

cannot get lambs from the station to the railway because there is no water or feed on the stock route. I have heard many different tales about the Northern Territory. Only the other day I noticed that a man stated that the Barkly Tableland country will carry a sheep to the acre. But he told me that in New South Wales there is no district that will carry a sheep to the acre, year in and year out. I do not believe the statements made about the Barkly Tableland, but if it were correct it would be extremely valuable country. In central Queensland, if country has a carrying capacity of one sheep to three acres it is regarded as very valuable country. Country that will carry one sheep to five acres is a lot better than most of the country in South Australia. In that State there are men sheep-farming on country carrying one sheep to fifteen acres, and that is all wire-netted country. I doubt to-day whether you can improve country properly unless you can get a carrying capacity of one sheep to three acres. I would say that a capacity of one sheep to five acres would be the limit that would pay a man to graze sheep on the land. It would pay taxation and other charges to the same extent as a man has to pay in New South Wales. I attach very great importance to the change of occupation from horned stock to sheep. All pioneering in this country must be done with cattle. It is done in every other country in the world. Sheep follow cattle, but not until the country has been improved. After sheep comes closer settlement. Horned stock always prepares the way for sheep. When you inform me that the best pastoral country in the Northern Territory is 200 miles from Darwin, I say that it is almost the same distance from Sydney to our pastoral lands in New South Wales. It would not be possible to use the Victoria River country you have told me is railway communication to it. You should take into consideration the cost of improvements in that country. I have said that the profits from a railway is the limit beyond which sheep production is not profitable; and in the case of the Victoria River country you would have to take your wire netting for fencing over roads after it left the railway. In the early days I know that casing for horses was carried to dozens of places from Longreach, but that could not be done to-day with the cost of carriage as high as it is now. Railway communication within at least 150 miles is necessary to enable proper improvements to be carried out on country to permit of the grazing of sheep. Freight charges are practically 100 per cent. higher to-day than the pre-war prices. I do not think there is much prospect of bringing them down very much more, especially from a place like Darwin that is so unfavourably situated. The freight charged right round Adelaide to England is the same. Victoria pays the same as Townsville, and a ship had to wander right up the coast to pick up meat at Townsville. Wyndham pays a surcharge of, I think, one farthing per pound beyond ordinary rates, to get steamers to go up there to the ordinary rates of the Commonwealth line will go there to load beef, because of the conditions they have to go without any loading between points. I think that price in the London market to-day is practically the same as in pre-war days. The position is that the price obtained for the product in England is the same as that obtained in pre-war days, although the costs in connection with the production and export of the meat have increased by 100 per cent. I think we could improve the markets, though not to any great extent, by co-operation, organization, and advertisement. I think that if we could get our products going on larger lines we could easily get lower freight charges. The trouble is that there is not sufficient production to load the ships properly. A ship calls at Townsville, and has often to go to Victoria to complete its load. That is not economical. I think the position will be improved in the future by bringing about the co-operation in loading between the meat works themselves, instead of having vessels, as at the present time, standing round the coast and loading from individual works. I do

not think there is the slightest chance of any reduction in production charges, or of any lower costs of treatment in meat works. In this respect I think we are now right down to bed rock. If we do not secure relief by organizing our markets or in transport charges, the necessity will still continue for some form of relief, such as the meat export bounty or other assistance of the kind, to keep the industry on its feet. As Chairman of the Australian Meat Council I approached Mr. Bruce in connection with the last subsidy, and he said it would be useless to come to him again. If we do not derive some benefit from the improvement of conditions in the London markets, a large number of our cattle producers will have to go out of the industry, and production will be reduced to a point at which there will be no exportable surplus at all, until we get markets established in the East, as we are endeavouring to do at the present moment. I look for some assistance in the last legislation passed by the Argentine Government. I think it will give us more relief than any measure, even including the subsidy, which has been before us for the past three years. The Argentine Government has recognised that producers in their country have been carrying on for the past three years without any profit at all, and they have framed legislation now which will compel the meat trust to pay a certain price for their beef. They look for an increase of three-farthings per pound on the London market price for frozen meat, and it would be better for us to get the reflection of that increase of three-farthings per pound than the present Commonwealth subsidy of one-eighth of a penny per pound for our meat. Whilst it is possible that a very large sum of money might be involved in the construction of a new wharf at Darwin, and its expenditure would not be justified by the present trade, you have to take into consideration its bearing upon future development. If it is a question only of putting money into a wharf, that will not help the Northern Territory at all. There must be a comprehensive policy of wharf, plus railway extension, plus roadways, plus water conservation, plus the wharf, if created, must be only part of a comprehensive policy. It is the practice here to pre-cool every truck by putting into it a certain amount of snow, but I, personally, do not think it has any appreciable effect. It would not be a good practice to cool meat below the necessary degree in order to counterbalance the inefficiency of the insulated trucks at Darwin. I do not think it is a good practice to get meat below zero at all. Our practice is to cool the meat to four degrees above zero.

238. To Senator Reid.—If, as you say, meat trucks in Queensland are provided with a double roof and the Darwin trucks are built on the same plan, then if necessary still another roof should be put on the trucks used at Darwin. I know the Redbank, Ross Creek, and Burdekin meat works. The trucks at Darwin may be insulated in the same way as the Queensland trucks, but I would not express any opinion as to their efficiency unless I carried out a test of them myself. If there is no delay on the wharf and the run from the meat works to the ship's side is only 2½ miles, I do not think the trucks should make the slightest difference. If the works are only 2½ miles from the wharf, and if, as you inform me, the trucks can be put over the turntable more quickly than they can be supplied from the works, I cannot account for any delay. But from my own experience, or the way the work would be done, if I knew how long it is from the time the first truck leaves the works until the meat on the last truck is put into the ship, I could say whether the meat was too long in the trucks. You have to calculate the time from the time the first truck is loaded at the works until the last truck is loaded into the ship. If the trucks are brought to the wharf in rakes of eight, and they carry 6 tons each, that would be only 40 tons for each rake of trucks, and it ought not to take long to unload that quantity of meat into the ship. Here they can do 20 tons per hour per batch.

From the meat works' point of view, I cannot understand why they should ask for better trucks at Darwin if they can get a good service in to the steamer. The ship's engineer is the controlling factor. He accepts or rejects the meat, and so long as the Darwin meat works people get their meat on board, I should say that is all they are concerned about. It must be really moving the trucks up and down the wharf by hand. On the facts put before me, I do not see why Vestey's should not load meat into the ship in the same way as at a place with a big rainfall and a humid climate there may be delays through showers as there are sometimes in Queensland, and even here. We have to stop loading immediately a shower comes on, and may in consequence be delayed for four or five hours. I assume that Vestey's do not load meat in the rainy season at Darwin. If there were a direct approach from the railway to the ship's side on the existing wharf at Darwin, there is no reason why that should not give as quick loading as would be provided by the proposed new wharf.

239. To the Chairman.—From my knowledge of the climate of Darwin, I could not say what should be the maximum time occupied from starting to load at the works until the meat is unloaded into the ship, to prevent injury to it. But I can say that we have brought frozen meat from Brisbane to Sydney in August, and delivered it frozen into stores here, although it had to be unloaded and loaded a second time at Wollongarra.

240. To Senator Reid.—If the meat is soft when it gets to the ship at Darwin the trucks must be wrong. The trucks must be dry. The trucks may be properly built, but may not be kept in proper order. Our trucks here have to be frequently repacked. In a climate like that of Darwin, where there is heavy rain, refrigerated trucks would require to be closely attended to. If such a policy for the development of the Northern Territory as I have suggested were adopted by the Government, I think you would have a very big improvement there within ten years, especially if due consideration were given to the matter of taxation. If it were put to me as a matter of business, I would not spend £200,000, either on railways or wharves, in the Northern Territory unless in pursuance of a determined settled policy. If there were no settled policy for dealing with the land, railway extension, water conservation, and road making, I would not spend any money there at all. I might improve existing conditions, and leave it at that. If there were a determined settled policy adopted, either of the proposals before the Committee might be adopted as a part of it, but the curved approach giving a direct line on to the existing wharf would, in my opinion, be sufficient. I would spend the balance of the amount necessary to build the proposed new wharf, in excess of the cost of the suggested curved approach to the existing wharf, in railway extension or water conservation, whichever I considered would give the best results. When you say that you have been informed that the Barkly Tableland never misses a wet season, I can only say that that cannot be said of any other part of Australia, and even with that condition it would not carry a sheep to the acre. The Moree district is the best pastoral district in New South Wales. It has the most regular rainfall, and yet, even in good years, it does not carry a sheep to the acre. Again, if there is an exceptionally high rainfall on the Barkly Tableland, and it gets it every year, there is going to be a good deal of sour country there. A drought is not always a disability, believe me. American meat companies do not exercise the slightest control in the meat industry of Australia. They have legitimately traded for some years in Queensland, and have not affected the Australian meat industry in that State in degree. Without having one works in Australia, they could, by securing control of the shipping accommodation for

frozen meat, hold up our industry to-morrow. Anxious coming here to do business, and becoming amenable to our laws, will never affect the Australian meat industry. The only way in which they could do it would be by buying up the cold storage space available and holding it against us. I was attached to Queensland meat works for six years. I have been all over the world in the meat interest, and in touch with the industry for twenty-five years, and I know of no instance where there has been no change in our meat industry due to any pressure brought to bear by Americans or other outsiders. Without the Commonwealth subsidy, none of the Australian meat works would have carried on, and the result would have been a tremendous amount of unemployment. Trouble may come this year, because I do not believe the meat works will open, unless the Argentine Government are successful in their efforts and there is an improvement of the London market. I should like to say, on the question of the reduction of freight, that heavy pilage and port charges are given to us by the ship-owners as a reason for the high freight. In my opinion, the Australian Meat Council is the only hope for the organization of the meat industry. We shall endeavour, as far as possible, to load a ship with a minimum of travelling between ports. That will mean less to pay in pilage and port dues, which are exceedingly heavy. I think that is a form of concentration of work which we can bring about. It is a matter to which you might direct attention. The Meat Council will disseminate information as to prices and costs, and the shipping interests must recognise the absolute necessity of lowering charges. We will help as far as possible by the concentration of loading.

241. To Senator Lynch.—Harbor charges are levied by the Federal and State Governments. Notwithstanding the fact that the Federal Government has taken over the whole of the lights on the South Wales coast with the exception of one little light on South Head, the lighting charges of the port of Sydney remain the same as when the State Government had charge of the whole of the lights. That is unfair. The Australian Meat Council has given consideration to the installation of facilities for the loading of frozen meat. Mechanical conveyors which can load in wet or dry weather have been found to be a big improvement. Their use enables the meat to be conveyed continuously from the sheds down into the vessel's holds. Of course, electric power is necessary for this. I am an Australian, and my interests are all in Australia. I have been connected with the pastoral and meat industry for the past 30 years, and I say that the only effective way to make a closer settlement policy successful in any of the States is to link up with the export of meat trade. Otherwise it must be a failure. I am referring, of course, to the closer settlement of pastoral lands in all of the States. The New South Wales Government admits in the statistics it has published that it costs 4s. 2d. per bushel to produce wheat, and with wheat selling at 4s. per bushel, wheat-growing is not an attractive proposition for closer settlement.

242. To the Chairman.—Differential freight rates under which freight from Adelaide to Fremantle is higher than from London to Fremantle, and sugar is carried from Java to Sydney at 25s. per ton, whilst the freight is 40s. per ton from Brisbane to Sydney, have, of course, to be taken into consideration. The freight to Japan on Queensland frozen meat is 14s. per lb., and we are questioning the possibility of taking the whole of the bone out of the meat, thus reducing the weight by 33 per cent., and cutting the freight to 1d. per lb. These are points to be considered tending to efficiency and economy. Prior to the earthquake in Japan we had inquiries in that country for the whole of the shipping accommodation for months ahead. I may be allowed to say that I hope that the Federal

Government will make every use of the Australian Meat Council. The Council will be prepared to help in every way possible.

The witness withdrew.

Charles Conroy Bradley, Railway Surveyor, in the employment of the New South Wales Railway Commissioners, sworn and examined.

243. To the Chairman.—I was employed on the Northern Territory railway. I went to Darwin in November, 1913, and I left in September, 1915. I conducted the first surveys when the scheme of improvements was proposed in 1914. I went as draftsman on the Pine Creek to Katherine River survey, and continued with the party when it went south to Bitter Springs. I was employed on the railway to Vestey's meadows, 2 miles out of Darwin, and then I was on surveys in connection with the jetty. There were several wharves built at Darwin before the present cast-iron pile jetty was constructed. There was the old Guinara timber wharf from Port Hill. The *teredo* destroyed it, and it collapsed. There was a second timber wharf off Stokes Hill. It ran in a south or south-west direction from Stokes Hill. When I was there the wharf utilized was the present wharf, but since my departure some alterations have been made, and the turntable has been altered into a transfer table, and the jetty has been widened on the inside. The facilities for working the wharf when I was there were most unsatisfactory. This was due to the unsatisfactory and wholly inexplicable design. Trucks going on met trucks coming off the jetty head. The turntable was at the corner of the jetty, and trucks were pushed on by the engine. There were three roads running to the end of the jetty head, where there was a traverser. I am certain there was a traverser on the inside. The empty trucks were run up a ramp, and were pushed by a couple of men. The shunt was as near to the turntable as possible. There were crossovers on the wharf, but not too many, and later on in 1915, when I was on the permanent way, additional crossovers were put in. I have seen traversers used in the railway yards here. They are worked here by electricity, and will take a whole carriage. I cannot say whether horse power was ever used in working the traverser at Darwin. I was on the Pine Creek-Katherine-Bitter Springs survey until September, 1914, when I left it with the intention of enlisting. I did not enlist, and was subsequently engaged by Mr. Evans, then superintendent of railways, to locate a line of railway to the site of Vestey's works. No start had been made with the meadows then. I put in the line. Mr. Hobler came up in about December, and one of the things he was to look into was the provision of better facilities for getting on and off the jetty. He instructed me to make a survey to run a line around the eastern side of Stokes Hill. That was suggested by Mr. Davies, construction engineer at Pine Creek. He suggested a curved approach to the jetty around the eastern side of Stokes Hill. I was asked by Mr. Hobler that that was impracticable, as it would involve a reorganizing of the whole of the Darwin yard, which would have been an expensive matter. He abandoned that scheme, and I went on with the scheme which was adopted. I made a survey of an approach from the southern end of Stokes Hill to the wharf on a reverse curve of 7 chains radius. That was the best alignment I could get. With a 3-chain radius, it would be possible to have a 3-chain curve, but I did not think that would be worth adopting. The length of the approach could be shortened by using a shorter curve, but there should be nothing under 5 chains radius. Mr. Bell, who was then Commonwealth Commissioner of Railways, would not consider any curve of less than 7 chains. I did not make a survey of the cost, but only a rough one. I made out the plans and handed them over to Mr. Hobler. No

estimate of the cost of the approach was made in Darwin, but I believe it was estimated in Melbourne that it would cost £70,000. I saw official correspondence which showed that it was to be put down in reinforced concrete. A sum of £30,000 was put on the Estimates, and a warrant issued for the use of it in Darwin. I was then working for two masters, Mr. Bell and Dr. Gilruth, the Administrator of the Territory. Things were rather chaotic at the time, as no man can serve two masters. In 1916, Mr. Bell engaged a Queensland Harbors and Rivers engineer, named Elliott, to report on the matter at New South Wales, and I went up there. Inter-State jealousies were somewhat marked. I thought I would see if I could not make a suggestion myself. I drafted a report, and had it in hand when Mr. Elliott came up. I thought it might be considered improper to make suggestions when big men like him were about. I handed him a copy of my report, and asked him if he could make use of any of my suggestions. He said, "Certainly"—and that was the end of it. The following is a copy of the report I drafted. It is dated 6th June, 1916, and was addressed to the Administrator, Dr. Gilruth:—

I beg to place before your Excellency the following notes relative to alterations and improvements to the jetty and shipping facilities at Darwin. There are three schemes in existence in connection with same:—

(a) A curved approach 36.3 chains long, which leaves the southern end of the station yard skirting the north-west side of Stokes Hill and passing through some in a cutting of maximum depth of 60 feet, reverses on to the jetty head with the inside road as a ramp. The location is surveyed by myself in January, 1915. No extensions for berth accommodation were allowed for. Present approach was to be used for vehicular and pedestrian traffic only.

(b) A transfer table to carry 25 wagons on one regenerating car. This was designed by Commonwealth Railways owing to the shortage of steel for carrying out scheme (a).

(c) A jetty extension from north-east corner of jetty head 650 feet in an easterly direction, with an approach on a curve of 7 chains radius from present approach, and though providing for two additional berths, necessitates the erecting of at least 10 chains to the present berth. This scheme was submitted by Messrs. Vestey Brothers, and was designed, I believe, in Engineering Lines Office, New South Wales Railways. Length, 15 chains.

As scheme (b) is under way inasmuch as that material is now on the water, I would respectfully beg to suggest that scheme (c) be revised and considered in conjunction with scheme (d). Further, that scheme (c) be not entertained at all. The jetty as proposed is only an elongated shunting Y, ending more or less in a dead end, and, being incapable of further extension, can form no part of a general scheme of harbor improvements. Also, it must be noted that the tidal current is almost the normal to the line of the proposed jetty. To the present jetty it is at an angle of 45 degrees, and at a king tide it is quite a common occurrence for a stern or a forward line to snap under severe strain. It is questionable whether the jetty as proposed is a safe structure, and could be considered sound engineering. The natural extension of the present jetty is in the direction of Port Hill and then along shore towards the wharves. The South Australian engineers had this in view when placing the Palmerston Station yard originally on the esplanade sea front, and reference to early town plans shows that wharves extensions along the beach were considered tangible. Further, I beg to draw your Excellency's attention to the fact that Frances Bay, with its low shores and proximity to the railway line, is undoubtedly the Darling Harbor of Port Darwin, and such a scheme as submitted by Vestey Brothers management would settle its fate for all time. From information obtained from the Mercantile Steamers and Motor Vessels Branch, and from local shipping agents, I have compiled the attached list showing gross tonnage, length, breadth, and draught of steamers which trade regularly or have traded with this port. Also a list of ships carrying in the Australian frozen meat trade. Reference to the list shows that the largest ship at the jetty to date was the rail boat *Kerevas*, 5,263 tons, and length 410 feet. Of the regular liners four are of the following tonnage: *Termin*, with 5,623 tons and length 400 feet. The list also shows the *White Star* liner *St. Albans* with 12,531 tons and length 550 feet. This steamer is a regular Australian trader, and of a class, I take it, identical with Messrs. Vestey Brothers ships. Possibly the *Argyllshire*, with 10,225 tons and 426 feet length, which is engaged solely in the frozen meat trade, would be a

more suitable boat to take for comparative purposes. How ever, to accommodate the latter on the main line and the *Hobson* and *Tasman* on the outside berth (and allowing bow or stern) to overlap on the inside berth and both on the outside berth), a minimum length of 770 feet would be required—of £230,000 cost. An addition of 50 feet on the south-west end would give an inside berth of 570 feet, and an extension of 172 feet on the north-east end would give a berthing of 770 feet on the inside. An extension on the north-east end would considerably increase the efficiency of the jetty as one hold could always be worked on that side of the turntable. The jetty as proposed would form a 'T', and that was the aim of the original design.

With regard to the widening of the jetty, I would submit that with the suggestion of the present extension, the use of the neglected side road under Stokes Hill, as well as the removal of the set of points at the end of present approach, backwards 20 feet or so (to enable the class V engine on the "Standby" to shut over to the other road, the matter could be left over for some time. When two ships are in at the present jetty a great deal of delay is occasioned by shunting all inward and outward cargo and supplies over the main line as far as the scissors crossing on the stone embankment. This could be obviated by bringing meat wagons and all outward cargo, as well as supplies, through the scissors crossing at the old store on to the inside road, and by that road to the jetty. If drawing trucks, the engine could cross over to the other road and return to the yard with any inward cargo or empty meat wagons. Thus, by keeping No. 1 road for exports and supplies and No. 2 road for imports, traffic could be more expeditiously transacted to 50 per cent. improvement at least could be effected. With regard to the loading of the frozen meat, 3,500 quarters would weigh about 240 tons and represent 31 wagon loads at 10 tons per wagon, which is the capacity of the Queensland meat wagon. A rake of, say, eight wagons would be about 240 tons long, or a third of the length of the inside berth. On entering south last year I noted that the *St. Albans* handled 350 tons of frozen meat in 33 hours in one hatch, partly by slings and partly by chutes. Darwin jetties itself are naturally to quick despatch by the latter system. The frozen meat ship has at least four, but preferably six hatches. I would submit that there should be no delay in despatching frozen meat if existing facilities are improved on the lines, and that it would be a rapidity of construction of importance, I would suggest that the extensions be carried out to a design adopted by the New South Wales Public Works Department and by the Sydney Harbour Trust. This comprises a timber pile—ironbark or turpentine—with an outer covering of Monier pile armour—a reinforced concrete jacket to protect the timber from the weather, and also from rust and other marine borers. This armour is manufactured by the New South Wales Slato Monier Pipe and Reinforced Concrete Works, Sydney. The design has, I believe, proved very successful. The curved approach could then be carried out as shown on plan attached. I might here say that 7 chains was the minimum radius for a 3-ft. 6-in. gauge which Mr. Bell, Engineer-in-Chief of the Commonwealth Railways, would consider when the approach was set out originally, but that curves of 5-chain radius are not uncommon in yards of 4-ft. 3-in. gauge, for shunting purposes, and the South Australian Railways Working Time table, at page 219 mentions a curve radius of 6 chains on a 5-ft. 3-in. gauge. By adopting a 6-chain curve on the proposed extension, the approach over the water would be reduced considerably. Further extensions, as shown in dotted line on the plan might also be considered.

It would beg to emphasize the fact that any scheme of alterations or improvements to the jetty and shipping facilities should involve only the very best ideas, and be carried out on a uniform basis, and in a definite plan, so that each portion carried out from time to time would be co-ordinated and form a homogeneous whole.

On account of the recent alterations to the jetty, it may not be possible to carry out all the suggestions outlined above. If my suggestion were adopted, it might be rather a problem to provide for the export of live cattle. I did not give any consideration to the export of live cattle when dealing with the matter. Before I went to Darwin there had been one or two trial shipments of live cattle. Dr. Gilruth was interested in the matter, and he sent the Railway Superintendent and Resident Engineer, Mr. H. V. Francis, to Wyndham to see what they did or did not think. My scheme would not interfere with what was going on in the present arrangement for the export of live cattle. I never saw any estimate for carrying out the scheme I suggested, and I did not make one myself. Mr. Hobler was rather in favour of going round the eastern side of Stokes Hill, and Dr. Gilruth also favoured that. The curved approach proposed

should not cost over £50,000 under skilled supervision. There was no meat exported when I was in Darwin. I was there prior to the export and again in April, 1920, after the meatworks had ceased operations. Increased efficiency could be secured by extending the wharf as I suggested. There would be a lot of trouble if horses were used on the jetty, as the rails are set on top of the deck, and not flush with it, as at other places. The roads are very narrow, with centres of 11 or 12 feet, and with passengers going and coming I do not think you could work cargo with horses there. I know it was intended to put up capstans electrically worked, but I understand that they were not a success. I do not think you could use horse-power on that wharf. I think that the use of electric power would be justified with a trade of 37,000 tons a year. Manual labour is very expensive at Darwin. There is too much manual labour on the Darwin jetty. I was there for two years, and knew the trials and troubles on the wharf owing to the congestion at the corner.

244. *To Senator Lynch.*—In my suggestion I proposed to take off on the main line level, and that would have involved a circular approach at the same rail level as on the jetty. A 5-chain curve would be possible, but I do not think it would be good business, although they are putting in 6-chain curves now on the New South Wales railways, with 4-ft. 8½-in. gauge on small branch lines. If the Northern Territory railway were changed to the standard gauge, a 7-chain curve such as I proposed would serve the purpose as well as it would the existing gauge, and that is why I adopted it. In my time both sides of the existing wharf were used freely. I think the biggest ship that came to the inside wharf was the *West Australia*, of 5,000 tons. It was not considered dangerous to go to the inside berth if the tide was high. If the outside berth were occupied when a ship arrived it would go inside. I never in such circumstances saw a ship wait outside. I never saw a mishap on the inside berth, but I have seen a boat crash into the jetty on the outside. Naturally, masters of vessels would go to the outside berth if it was clear. In my time there was undoubtedly a general feeling of dissatisfaction with the jetty because of the awkward way of handling goods. It was a common thing in those days to see the turn-table jam with an unloaded truck, and to see ten men struggling to push it round. I think the present wharf has a long life ahead of it. A lot of the piles were cleaned down. At the time I thought it would have been better to have left the sea growth on them. When the piles were cleaned down it was seen that they were in perfect order. It is a good job. Some of the work above the water was carried out in steel, and was rusted through, especially the approach spans, but the cast-iron work was perfect. I think that steel sheathing on piles will last longer below than above the water, but I am not justified from my experience in expressing a definite opinion about it.

245. *To Mr. Blakely.*—I think the traverser used at Darwin would take only one truck. My memory of the matter is a little hazy. I know there was a traverser there, but when it was working I could not say. There are too many cross-overs on the Darwin wharf, in my opinion. The jetty, as at present designed, calls for the employment of a considerable amount of manual labour. I do not think they ever thought of employing horse power there. There was no scissers crossing on the wharf when I was there; they were all plain cross-overs.

(Taken at Sydney).

FRIDAY, 9th NOVEMBER, 1923.

Present:

Mr. GRAYSON, Chairman,
 Senator Lynch | Mr. Blakely
 Senator Reid | Mr. Cook.

George James Edwards, manager Australian Investment Agency, Sydney, sworn and examined.

246. *To the Chairman.*—Owing to the shortness of notice to give evidence, I have not been able to prepare a written statement, but I should like to be permitted briefly to review some of the history of the proposed new wharf at Darwin. I go as far back only as the report of the Public Works Committee in 1922. It took long and exhaustive evidence, chiefly on the question of the North-South railway, but also on other matters connected with the Northern Territory. The Committee reported in favour of the extension of the Northern Territory Railway to Daly Waters, and, as you are aware, the Government have accepted that recommendation and are going on with the work. The Committee made further recommendations, one of which I quote from page xxviii of its report. In paragraph 108 of the report, the Committee says—

"The Committee agrees with the report submitted by the Sectional Committee that, under existing conditions, there is nothing to warrant any large expenditure on the Darwin wharf, but that with the reopening of the Meat Works and the return to normal trade conditions it is imperative that the working conditions of the wharf should be improved.

"The Committee accepted that portion of the Committee's report, and referred the construction of the matter to the present Public Works Committee. The Committee also made recommendations in paragraph 111 of its report dealing with the making of good roads. The Government have accepted that portion of the report. The Committee reported in paragraph 114 that the provision of telephones would be of great benefit, and the Government has accepted that part of the report also. I do not know that it is going to provide telephones, but I am quite sure that the Government is going to provide communication. The Committee reported in paragraph 118—

"In conclusion, the Committee expresses the hope that a definite progressive developmental policy, extending over a period of at least twenty years, will be at once entered upon and pushed vigorously. Suitable areas should be offered on favourable terms to any individual or company who would undertake to comply with the provisions of a carefully thought-out scheme, in accordance with the policy of development decided upon.

I wish to say that the Government have accepted all these recommendations of the Public Works Committee. In these days we hear that after valuable research and work is undertaken and reported upon, the report is put away in a Government pigeon-hole with red tape about it, and nothing more is done, but the present Federal Government has not treated the Public Works Committee's report from which I have quoted in that way. I wish to give this Government credit for attempting to do more for the Northern Territory than any other Government of which I have knowledge. I slightly misunderstood the object of the present inquiry. I rather thought that last year's inquiry settled the matter of the wharf, and the present inquiry was only to see whether the proposal submitted by Admiral Clarkson was the best. Evidently I was wrong in coming to that conclusion. I have read more than once the whole of the evidence accompanying the previous reports of the Public Works Committee, and the evidence, so far as I have received it, taken by the present Committee. I wish to give an opinion in general terms about it. I wish to say that, generally speaking, the whole of the evidence submitted is in favour of something being done to the wharf, except that submitted by or on behalf of the Commonwealth Railways Department, which is antagonistic to anything being done. I should, therefore, like to deal with some of the evidence given

by or on behalf of the Commonwealth Railways Department. I have been supplied by the Secretary to the Committee with a copy of the minutes of evidence taken by the Committee, and I assume that the report is substantially correct. Starting with page 109 of the evidence, I find that on the 16th October Mr. Hobler, Chief Engineer of Ways and Works, made the following statement:—

"All the frozen meat from Vestey's works was carried by the railway, and loaded in a condition satisfactory to the ship. That is a half truth. It was done at an absolutely prohibitive cost to the works, because it was all done at night, and time and a half rates had to be paid for it. Mr. Hobler says further:—

"One provision of the agreement was that such alterations to the accommodation and conveniences on the jetty should be made as would enable railway trucks containing frozen meat to be discharged alongside a vessel at the rate of 2,500 quarters per day of eight hours.

I was not present when Mr. Hobler gave that evidence, but I think he must have been reading, and not quoting from memory. I wish to protest strongly against the way in which that evidence was given. It is in correct evidence. I produce to the Committee the original agreement for establishing frozen meat works in the Northern Territory between the Minister of State for External Affairs and Vestey Brothers, of 24th June, 1914. Clause 4 (g) reads—

"The Commonwealth will, before the completion of the erection of the said Works, make such alterations to the accommodation and conveniences on the railway at Darwin as shall enable railway trucks containing frozen meat to be discharged directly alongside the vessel at a rate which will enable three thousand two hundred (3,200) quarters per ordinary working day of eight hours to be loaded on the vessel.

You will notice that the agreement contains the words "as shall enable railway trucks containing frozen meat to be discharged directly alongside the vessel." I very much protest against Mr. Hobler giving evidence before you in that way. He says it is to be discharged alongside the vessel; and the agreement says "discharged directly alongside the vessel." I do not think it is fair that the Government servant giving evidence and reading from a document should omit a vital word from the portion he reads. If I did such a thing I would consider that I was misleading the Committee. Later on Mr. Hobler said:—

"I may suit Mr. Conacher to demand the erection of a particular type of structure.

I take exception to that. This type of structure would have been required if Mr. Conacher had never been born. The present wharf was objected to before Vestey's ever went to the Territory. It was an obstruction in 1912, when there was very little trade, and it will be an obstruction to the end. If you take the evidence given by every one in the Territory, and not only by Mr. Conacher, you will find that it demands some improvement to the Darwin wharf. I rather resent the personality of these remarks. Mr. Hobler said—

"If the Government had spent about £50,000 or £70,000 in dealing with the curved approach, it would have been paid in rather an awkward position when Vestey's works closed down. . . . We might have been involved in a similar loss had we incurred an expenditure of £50,000 or £70,000 upon the jetty.

I should like to put that in a little better perspective. The capital cost of the railway is, in round figures, £1,700,000. Four per cent. on that amount is £68,000. So that if they paid £68,000 for the curved approach, that would have meant an addition to the capital cost of the railway of only 4 per cent. I put it to you that if you had a house worth £100 which you could not let and could not use, because it did not have a front door, and a front door would cost you £4, you would put it in the door. If after that expenditure of £4, when your capital in the house became £104 you could not let the house, you might fret about having £100 of capital idle, but having an extra £4 idle would not worry you very much. That, in small figures, puts the position. You have a railway costing £1,700,000. It is running

once a fortnight, and so is virtually idle. Grass is growing along the whole track, yet I have not seen any record anywhere of any desire on the part of the Commonwealth Railway authorities to get the wheels turning again and bring that £1,700,000 railway into profitable use. They worry about £4 lying idle, but the fact that for three and a half or four years they have had £100 idle does not seem to concern them one scrap. If it can be shown that one constructive proposal has been made to get the railway running again, I will withdraw what I have said.

247. *To Mr. Cook.*—I do undoubtedly infer that if money were spent to put the wharf into a perfect condition, that would start the railway running again. I go further; and, while I cannot speak for 1923, I say if £200,000 had been spent, as proposed, the Meat Works might not have been closed in 1920. It did not want very much to start the works then. Mr. Hobler went on to say—

"We carried out our agreement with Vestey's to build 64 miles of railway.

"We" did nothing of the sort. The man speaking was a Railway servant. Vestey's had no agreement whatever with servants of the Commonwealth railways. It had an agreement with the Minister for External Affairs, and he, and he only, is entitled to say what "we" have done. In the next sentence Mr. Hobler says—"And for several years Vestey's have not sent one beast over the line." That is absolutely untrue. I produce a note of some of the cattle that I know were sent over the line in this very year, 1923. The total is 3,014. There may be more. In order to be perfectly fair to Mr. Hobler, I have subdivided the figures to show that, at the time he spoke, 2,533 had been shipped, and the balance after he spoke. Those figures cover a definite period, and I did not go back to 1921 and 1922. Mr. Hobler said further—

"The Government has done its share, and it has received no encouragement from Vestey's to proceed with public works in the Territory.

I want to know who authorized this Government official to talk for the Government? You who are members of Parliament know that the Government talks for itself. Mr. Hobler had no authority from the Government, or any branch of it, to make an assertion like that. Further, it is not true. Senator Pearce has been before the Committee, and has told it what the Government policy is. Mr. Hobler said—

"I cannot agree that the existence of the turn-table or the non-provision of a curved approach has any influence in keeping Vestey's works closed.

I speak for Vestey's, and not Mr. Hobler, and I say that the non-provision of a curved approach and the existence of a turn-table are amongst the factors that keep Vestey's works closed to-day. He said further—

"I do not admit that the turn-table involves a loss of 10 per cent.

On this point I would direct your attention to some other evidence which has been submitted to you. I refer you to Mr. Bell's evidence at page 23 of the minutes of evidence. He said—

"With improved facilities probably a saving of from 3s to 4s. per ton would be effected. Mr. Bell is Mr. Hobler's chief, and yet Mr. Hobler says that he does not admit that a saving would be effected. On page 28 of the minutes of evidence Mr. Nelson, quoting Captain Mortimer, said—

"The present iniquitous system of handling cargo on the Darwin wharf is responsible for 40 per cent. decrease in the capacity of the labour.

Mr. Tindale, Engineer to the Western Australian Government, at page 40 of the minutes of evidence, is reported to have said—

"There is not a possibility of working the jetty economically with the turn-table on it.

The evidence of Mr. McGhie, manager of the Wyndham Meat Works, will be found at page 44 of the minutes of evidence, and he said—

The lay-out of the Darwin jetty is hopeless for the handling of frozen meat.

Lower down on the same page it will be found that he said—

The present Darwin wharf was never intended for meat traffic, which means large ships wanting quick despatch and loading general cargo and frozen produce simultaneously. I quote next from the evidence of Captain Wyles, master of the s.s. *Dumbara*, on page 55. He says—

The principal need of today is to abolish hand shunting on the jetty and allow the locomotive to haul the trucks. That can only be done by abolishing the turn-table.

I quote now from the evidence given by another railway man, Mr. Milliken. He is a man who for years was in charge of carriages men working the railways, the wharf, and the turn-table. At page 60 of the minutes of evidence it will be found that he said—

If the trade of the port increased the present wharf would be expensive to operate. The turn-table is the principal obstacle. The most necessary improvements are the removal of the turn-table.

Again at page 62 he is reported to have said:—

If general cargo could be unloaded direct from the ship into a sorting shed and the turn-table dispensed with, a saving of 2s. 6d. per ton in handling would be effected.

That is in contradiction to Mr. Hobler, who says that he cannot admit that there would be any saving in doing away with the turn-table. I quote Mr. Milliken again from page 63—

It is only on account of the extra expense it involves that I recommend the abolition of the turn-table. If the Department had larger insulated cars, and a direct approach to the wharf, further economy in respect of shunting might be possible. The reduction of shunting would mean quicker and more efficient delivery. I realize that the greatest efficiency and despatch on the jetty are necessary in order to facilitate the most-export trade.

To which I add "Hear, hear." At page 66 Mr. Milliken again says—

I regard the complaints in regard to the turn-table as justified.

If you want anything more than that from a man who was handling the turn-table I cannot understand it. He said further, on the same page—

There would be a 20 per cent saving of time if the sorting shed were on the jetty.

His evidence is that if the turn-table were taken away and larger waggons were used, the time lost in shunting would be much less than at present, and there would be a 50 per cent saving of time if the sorting shed were on the jetty. All this Mr. Hobler has denied. I quote now from the evidence of Mr. Callinan, a railway porter in the service of the Government, who is engaged in shunting the trucks. He commenced his evidence—it will be seen at page 71—by saying—

My principal work is shunting on the jetty. In my opinion the high cost of handling goods is entirely due to the turn-table system.

Lower on the same page he said—

I have been employed on the Northern Territory railways for many years. The turn-table is responsible for delays in making trucks available for loading and discharging cargo.

This is a witness whose statements should carry weight. Later on in his evidence he criticises Mr. Milliken. He said—

Mr. Milliken says that the present wharf facilities enable him to keep a vessel fully supplied with trucks without any delay occurring, he is wrong.

Mr. Kelsey, who has been forty years in the Territory, said at page 81—

The existing jetty can be only a make-shift, which must add to the cost of handling all goods.

Again, at page 84, he said—

Admiral Clarkson's scheme would mean a saving of 6s. 6d. to 8s. per ton in the handling of cargo and would give conveniences that are not provided now.

I have taken all this time and trouble, and I hope have succeeded in convincing you that Mr. Hobler, in giving evidence before you, that he did not admit that the turn-table involved a loss of 10 per cent, was ignorant of the real conditions, because every witness from whom I have quoted, and none of whom is in the service of Vestey's, contradicts that statement of Mr. Hobler's. To return to Mr. Hobler's evidence, he is reported on page 110 to have said—

I do not know how Mr. Conacher prepared his estimate of a loss of fifteen minutes in every hour.

There again is the personality coming into the business. I might quote from a few other witnesses who gave evidence as to the loss per hour. I have numerous references to evidence taken by the Committee in which witnesses estimated the loss of time. Amongst those who did so were Mr. Nelson, Mr. Milliken, Mr. Watis, and others. At page 110 Mr. Hobler is reported to have said—

The Government have done their part to build up this industry, and it remains for Vestey's to do theirs.

Once again I have to protest against this Government servant speaking for the Government. The Government are not satisfied that they have done their share for the industry, or we should not be here to-day. At the bottom of page 110 it will be seen that Mr. Hobler said—

I do not know of any small pastoralists in the Northern Territory.

I presume that that statement was made in answer to a question, and without intention to deceive. I wish to tell the Committee that there is a very able little body in Darwin known as the small Settlers Association, which is doing very excellent work. It is clear, therefore, that there are small pastoralists in the Northern Territory. I would say that the men who class themselves as little men are men holding comparatively small areas and grazing a comparatively small number of cattle. I would consider a man with less than 2,000 head of cattle a small settler in the Northern Territory. I know Mr. Byrne, and I consider him one of the small pastoralists. At page 111 Mr. Hobler said—

If the small man did exist he would benefit from Vestey's operations, but so far as I know he does not exist, and many years must elapse before he can be brought into existence and produce stock for Vestey's to treat.

The small man does exist in small numbers, and the whole object and policy of the Government is to increase the number of small settlers. Mr. Hobler thinks that it is impossible to have small holders in the Territory, but the Government does not think so. It has to be borne in mind that the small holders at that time could get a better market for their meat than in Darwin Works, because there was a large population in Darwin at the time, including the men who were building the Meat Works, constructing the railway, and working at the Meat Works. There was a fair population in Darwin, and the local butchers were taking all the stock they could get at from £8 to £10 per head, a price that could not be got elsewhere.

Mr. Whitford was in Darwin at the time and knows that there is a thriving place, where hundreds of men were earning good wages, and there was a large local consumption of meat.

Again, at page 111, Mr. Hobler said—

The Commonwealth spent £800,000 upon a 64-mile extension of the railway in accordance with the agreement made with Vestey's.

I produce an official letter written by the Secretary of the Commonwealth Railways, in which he quotes the capital cost of the railway extension from Eimo Creek to the Katherine as £440,143. The letter is dated 11th June, 1920. I was not sure that there might not have been some error in that, and I turned up the annual report of the Railways, where I find the statement is confirmed.

The letter gives the total cost of the Northern Territory Railway extension as £1,700,000, and the annual report of the Department for 1923 gives the cost as £1,642,000, a trifle

loss. That brings the evidence on that point right up to date. This includes the line into the works, which cost twice what it is worth, £18,000. Vestey's did not pay for the sidings on the extension. That was the responsibility of the Department.

Mr. Hobler was unconsciously or otherwise exaggerating when he said that the Government built 54 miles of the railway in accordance with the Vestey's agreement. The date of this agreement is June, 1914, and this railway extension was passed by the Commonwealth Parliament in 1913. I admit that its construction was expedited because Vestey's were going to build. I do not admit that it was constructed because Vestey's were going to build. That extension would have been constructed, anyhow. At page 111 Mr. Hobler says—

There is no delay to ships, because the turn-table can handle all the waggon traffic as necessary to enable ships to load and discharge continuously.

There is ample evidence before the Committee by other people to say that they are not of the same opinion as that expressed by Mr. Hobler. At page 80 of the evidence it will be found that Mr. Nelson said—

Mr. Bell may say that the turn-table is not an impediment to the progress of the work done on the wharf, but I speak from experience on the wharf when I say, what the shipping people will confirm, that sometimes for an hour it has been impossible to get empty trucks on to the jetty owing to the congestion on the single line of rails on the approach.

248. To the Chairman.—I think that even with the finest administration on earth it would be absolutely impossible for any set of men to operate the existing wharf at Darwin satisfactorily in a busy season. I absolutely believe that the conditions on the wharf are responsible for what Mr. Nelson has said. You have been in Darwin, but may not have seen ships loading and discharging. You have not seen, as I have, two ships, the *St. Albans* and the *Broadmount*, at the jetty at the same time, one on the inside loading frozen meat, and the other on the outside loading fertilizer and general cargo. That may be an exceptional case, but we will have to meet exceptional circumstances. There will be many thousands of tons of rails and material imported by the Government for the railways, and if at the same time the export of meat is to be carried on the thing will break down. I say that the wharf is the key to the opening of our works. It is impossible to handle meat under the conditions on that wharf. When the two steamers were in the whole wharf was congested. There are certain psychological effects to which I should like to direct your attention. I believe the matter has been mentioned to the Committee before. With the wharf as it exists at present there is ample evidence before you to show that, when loading four hatches, if the fourth truck has to wait until the first, second and third get clear over the turn-table, a serious psychological effect is produced by the delay. Men are not contented to work while others are standing idle, and if you are loading meat in the holds and there is a stoppage of the work for ten minutes, you cannot get any body of men to resume the work on the eleventh minute. The same effect is produced on the men working in the holds of the steamer, and if they believe there is going to be a ten-minute stop they will go up on deck for a smoke. Before loading can be resumed they have to be got back to the hold again. It is, of course, possible to make wonderful tests of the time actually required to load a certain tonnage, but it is always found in actual practice that the ten minutes of the test runs into twenty or thirty minutes. It is not strange that there should have been two boats in at the one time. A meat boat may be at the wharf when other boats come along.

It took seventeen days to load the *Broadmount*, which took over 3,000 tons. The loading of the frozen meat was not done in the day-time, but at night. The *Broadmount* was at the wharf for more

than seventeen days. The loading of the vessel was done from 6 o'clock in the evening until 8 o'clock in the morning.

249. To Mr. Cook.—I should say that the alleged inefficiency of the men is very largely due to the proved inefficiency of the turn-table. That is to say, I do not really think that the men are quite so bad as they are painted.

249. To the Chairman.—I do not say that it took seventeen days to load the *Broadmount* with 3,000 tons of frozen meat. She took away, in addition to the frozen meat, general cargo, fertilizer, hides, and bones. The total tonnage loaded at the time, I think, would be approximately 5,000 or 6,000 tons. I could give actual particulars, but I am not consciously exaggerating. I wish you to believe that, in my opinion, the turn-table is responsible for more than half of the delay. I believe that by the abolition of the turn-table we would avoid nearly, but not all, of the delay. The delays which are caused by the turn-table are the cause of delays in other ways. I am not an engineer, and I have nothing to say as to the design of the proposed new wharf submitted by Admiral Clarkson. I have seen the general plan and lay-out, which enables trucks to be pulled right up alongside a steamer without the intervention of the turn-table. Mr. Hobler says there is no delay, but we know the hard facts show that there are delays with every boat. I would like to call your attention to a number of other statements in Mr. Hobler's evidence which are demonstrably wrong, but I refrain. A quarter of frozen meat would weigh about 150 lbs., and 3,200 quarters represents, approximately, about 214 tons. When you ask whether I contend that the use of the word "directly" in paragraph 4 (g) of the agreement meant that there should be such alterations to the wharf as would enable trucks to be taken on and up the wharf without a turn-table, I must say that I am not able to give evidence as to what was in the mind of the parties to the agreement, or what transpired between Sir Wm. Vestey and the Government of Australia in 1914, but I can say that when South Australia owned the Northern Territory, the Government for years wanted some one to establish a meat works in the Territory, and for the purpose offered an export bonus and thousands of acres of land up there. In connection with the agreement with Vestey's, I do not say that I think the Government has quibbled in the matter, but I do think that the Railway Department has done so. The Secretary of the Department of External Affairs wrote to us on 2nd August, 1916, in these terms—

The Commonwealth Railways Commissioner states that every thing possible will be done to have the wharf widened and the turn table installed, but is of opinion that the question of the curved approach and extension of the wharf should await the result of the first year's operations.

The agreement was made in 1914, and there was a serious war on in 1915, when it was very difficult to get material or men. I infer from the letter I have quoted that it was intended to try out the turn-table, and there was an assurance that in the event of its failure something else would be done. It is my opinion from reading the correspondence that under the agreement the alterations to the wharf, which the Government promised to undertake, would be a direct approach to the wharf. The word "directly" was put into the agreement by the Government. I put the matter in this way: Even if the Government has done everything it should under the 1914 agreement, we still look for more, because without more our industry cannot survive, and without our industry we think that the cattle industry of the Northern Territory cannot survive.

It is my opinion that the undertaking in the agreement to provide necessary convenience for the loading of 3,200 quarters of frozen meat per working day of eight hours would mean, with four hatches working, loading at the rate of only 7 tons per hatch per hour, but it is not possible to do that now at Darwin, and it has never

been done there yet. I do not think we charge the Government with breach of faith. I think that in our statement, much of which I prepared and for which I accept the responsibility, and which was prepared on information given to me, I merely put our case as strongly as I knew how, in the hope that the Government would listen to it. You have evidence from the man who was in charge of the electric capstans that they would not work. At page 65 of your evidence you will find that Mr. Millican said—

The electric capstans have not been used; they were found to be a failure before I came to Darwin. I made a practical test of them, and I found that they involved increased delay. There is Mr. Millican's own evidence, and he quotes some previous evidence given by the Department. You have before you, also, the evidence supplied by the fact that for the last two years the Railway Department has been handling the wharf itself, and it has not used the capstans. I have seen electrical capstans working satisfactorily on other wharfs. If these particular capstans had been installed in a proper manner in the first place, it should have been possible to make use of them. There is no doubt that if properly installed an electrical capstan will do the work it is intended for. I am of opinion that the installation of the capstans was a merely temporary measure of relief, and they were not intended as a final and satisfactory solution of the Darwin wharf problem. The delays have been partly due to labour, but a considerable amount of delay has been due to the lack of proper conveniences on the wharf. We are to-day paying men on the Darwin wharf 5s per hour. That is the way we look at the matter, but the men regard it from a different point of view. They are earning, I suppose, not more than 80s. per week, and that is the way they look at it. I believe that if the proposed new wharf were erected there would be much more shipping coming to Darwin, there would be more cargo to be handled there, and the rate of 6s. per hour would come down. I understand that in practically every port in Australia, with the exception of Windham and one or two very small ports on the coast, wharf labourers do wharf work and very little else. I would not lead you to believe that we in Darwin are going to be the pioneers to alter industrial customs in Australia. We cannot do so. We cannot say that at Darwin one man may do two jobs. I regard the Windham agreement as a very excellent agreement, but there is only the one industry there, and it is a much easier port to work. We would not be opposed to the conditions of labour at Windham, but, on the other hand, would in every way endeavour to bring about a similar arrangement in Darwin, but we do not consider that under existing circumstances industrial demands at Darwin are unjust. Wages of from 30s. to £2 8s. per week for wharf labour at Darwin cannot be considered unjust.

250 *To Senator Lynch.*—The correspondence shows that we complained of delay in carrying out the agreement because we had to use the wharf with all its disabilities. We complained of the lack of wharf facilities, and I say that the attitude of the Government at the time was simply one of postponement. In 1916, owing to the war, everything was being postponed. In the earlier years I do not remember any definite refusal by the Government to use the proposed approach. If there had been such a refusal it would have brought matters to a head immediately. We say in our statement, at page 5—

Allegations were originally demanded on account of (a) the factor of time, and (b) the factor of cost. Even if they can deliver 2,200 muttons per day and thus save demurrage (which is denied), they can only do so at a prohibitive cost to us. It is we who pay for the two men operating the turn-table and the many men who do nothing but man-handle the trucks, and the men who stand in all the holds, batches, &c., and on the wharf, while trucks are being put over the turn-table.

The two men operating the turn-table are paid 7s. 6d. per hour each, but while trucks are being put over the

turn-table there are many men, as our statement indicates, standing idle. Even though the Government were carrying out its obligations under the agreement to the letter, it involves a waste of time and money. I may explain the foundation for the statement for which I take responsibility. The Darwin meat works were to all intents and purposes abandoned, and the Minister asked our representative, Sir Phillip Proctor, what was necessary in order to get them started again. The Minister wished to know what was keeping the works closed, and in the statement we have told him that it is a question of time and money, and we stand on both grounds. For instance, the use of the turn-table involves a waste of time and a waste of money, and if you abolish the one you will abolish the other. I am not at present in a position to compare the cost of loading frozen meat at Darwin with the cost in other tropical parts of Australia. I am located in Sydney, but if the Committee could have waited until next week when I expect the managing director of the meat works to be down, I would be in a position to supply figures which at present are in Darwin. If you look through the evidence given on previous occasions to the Public Works Committee, you will find many figures of costs in 1917, 1918, and 1919, when the conditions were not normal. I point out that the figures for 1923 would also be figures for conditions that are not normal, because there is so little trade now at Darwin. Darwin is not now in a normal state. It should be a fairly active place with the meat works going in the season, public works under way, and no men willing to work looking for a job. Mr. Elliott was sent up to Darwin by the Government. I could not say whether that was at the request of Vestey's. The cost of Vestey's Meat Works was £963,000. We usually refer to the cost in round figures as £1,000,000. The terms of the agreement certainly resulted in the works being much larger than they would otherwise have been. Estimating the cost of the works at £1,000,000, the interest on this amount at 6 per cent. would be £60,000, and if that figure is divided by 365 it will be seen that there is to-day a loss on the meat works in interest alone of £165 per day. The loss to the Government on the railways must be nearly double that. The works have a larger capacity than would otherwise have been provided for but for the terms of the agreement. No doubt there is a compensating advantage under the agreement in that Vestey's were getting stock carried at lower rates than would ordinarily be charged. The whole arrangement was a compromise. If Vestey's had foreseen that one-third of the capacity of the works would not be availed of in accordance with the terms of the agreement they would undoubtedly have reduced the works. The managing director of the works has said so frequently, and I may be permitted to repeat what he has said. To-day the works have a capacity of one-third in excess of the company's requirement, and the stipulation of the agreement that one-third of the stock would be supplied by the public has not been complied with. I have given evidence to-day commenting adversely on what Mr. Hobler has told you. I think that the attitude of the Railways Department has throughout been unreasonable. A very important matter which has not yet been dealt with is the improvement of the refrigerated trucks. In that matter the Department has been most unreasonable. We have no complaint on the score of the general railway service, which has been to our satisfaction.

251. *To Mr. Cook.*—I have been in Darwin, but I have not been to the McArthur River. I think it is perfectly clear that Darwin is a more suitable place for the meat works than the McArthur River. The Commonwealth Government intended to build meat works on the very site that is now occupied by the Darwin meat works. In 1914 the Government had 150 miles of

railway, and a settlement at Darwin, whereas there was nothing at the McArthur River, and that is the present thought yet. Governments do not always do the right thing; but I think the present Federal Government is doing the right thing. The Administrator is established at Darwin, and there are 200 miles of railway communicating with the port, which is one of the finest harbours in Australia. At the McArthur River there is nothing. You could put everything there, of course, but there is nothing there yet. The principal reason why the meat works are not working to-day is the cost. Whichever way you look at it the costs are too high. You might put it the other way round, and say that the price of beef is too low. Very rough calculations, which are in the process of being extended, have been made to show what the saving to us would be if the alterations proposed were made. So far as we have gone at present we estimate that Admiral Clarkson's wharf would save us 10s. per ton on cargo in, and out, and would save the ship 5s. per ton. That is a rough calculation. It is not yet complete, and that is one reason why I requested that, if possible, this Committee might delay my examination. The game has not been played with us by the Railway Department. I do not accuse the statement of not playing the game. We have put all our cards on the table, and we tell you our difficulties. We can sell every ounce of meat we can produce at the Darwin Meat Works, and so far as I know, it compares favourably with frozen meat produced elsewhere. The meat works are second to none in Australia as an efficient machine for refrigeration. You will never have an efficient wharf until the turntable is abolished. The great difficulty is the lack of direct communication by truck with the ship.

252. *To Senator Reid.*—I imagine that other meat works in Australia are paying or they would not be working. Our meat works are not working, because they would not pay if they were. The whole beef industry of Australia is in a precarious position, and at the moment is in receipt of a subsidy from the Commonwealth Government. Our works would, of course, have the advantage of this subsidy, but there are special conditions applying in Darwin that do not apply to other meat works, and other existing conditions we must inevitably be left to get going. This difficulty standing in the way are the bad facilities for handling cargo at the wharf, and the fact that the refrigerated trucks supplied compel us to load meat at night instead of in the day time. If the wharf and trucks are brought up to our expectations we have given certain undertakings to the Government. I do not propose, as this is not the place, to repeat them here, but in those circumstances we have given undertakings which, I believe, are satisfactory to the Government. It is impossible to say whether the company would have been operating this season if the difficulties had been removed. The works are closed at the present time in continuation of a policy arrived at in 1920. In that year, we intended, and had authority to re-open the works, but they were not re-opened for the reason that we could not get steamers to take our meat away. That was one of the aftermaths of the war, when refrigerated steamers were controlled. We asked the Commonwealth Government if they could guarantee us despatch and they did so. Admiral Clarkson, who was Shipping Controller, said he could not guarantee ships to take up coal, to take our meat away, or to take our men away after the season finished. In consequence of this, a decision was made not to re-open the works in 1920, and they have remained closed ever since. These difficulties have passed away, but other difficulties have taken their place. We are now faced with increased cost of production and reduced value of the product, and in connection with every other manufacturer we have had to revise costs since 1920. I do not think that any of the Queensland works are making money at the present

time. Another view of the matter besides that of the meat works requires to be taken into consideration, and that is the position of those already paid meat and produce costs the more we can pay to the producer for his cattle. The Government have subsidized the meat export industry, not for the benefit of the meat works, but to assist the producers of cattle. If everything that we ask for in our statement had been provided, I do not think that our works would ever have been closed since 1920. I have already said that we have given undertakings to the Commonwealth Government as to what we will be prepared to do if they remove existing difficulties.

253. *To Mr. Bakely.* The difficulty of the lay-out of the wharf is the turntable. If there were no turntable there would not be very much complaint about the wharf. What we want is to be able to run trucks direct to the ship's side. There might still be some difficulty in getting trucks away from the holds, but it would be nothing like that which is experienced to-day. I have never counted them, and I cannot say from personal experience whether four trucks in five minutes or forty-eight trucks per hour can be handled by the turntable. I deny that the turntable can efficiently handle sufficient trucks to keep four hatches going. Experience has shown that it cannot do so. That is not merely my statement, but a statement quoted from an independent expert, Captain Bryant, as the result of his observations. He was sent to Darwin specially to observe the working of the wharf. Refrigerated steamers were at the time difficult to get, and from the meat works' point of view it was imperative that they should be got away with the utmost despatch. I am not able to give suggestions at the moment to meet the difficulty arising from the fact that if there is a stoppage in the loading of a truck at one hold the loading at the other hatches is delayed, but I am willing to undertake to observe what is done in Sydney, where loading facilities are efficient, and to report as to how far the conditions here would suit at Darwin. I am quite certain that it would be satisfactory if we could get the same service there as is given in Sydney. The lack of facilities on the Darwin wharf and the turntable are factors in the high cost of handling frozen meat there, and in influencing a decision as to whether the company will start operations again. As an illustration, if the price of a bullock's products were £10 the costs normally should be £6, and we could then give the producer £4; but if the difficulties at the wharf increase the cost from £6 to £8 we can then give the producer only £2. We could start operations if the price that would be obtained would be sufficient to enable the whole of the balance only that can be handed to the producer. The company has decided not to have a season in 1924. It is not an early decision that has been come to, but a very late decision. It was made in November, and we start killing in April. We cease to treat meat in August or September. I should like to remind you of some of the things that have to be done before the meat works can decide to have a season. The running of these works is really a triumph of organization. Cattle have to be brought from a distance of 200 or 300 miles, and they must come to the rail-head on time. Drivers require to be on the spot on time, and forty or fifty horses are required for a droving party. They must be selected from Queensland and brought to the Territory. We must get foremen, who are scattered all over Australia. We must have a manager and an assistant manager and temperature-keepers. To drive our machinery we must have 8,000 tons of coal and goodness knows how many thousands

of pounds of stores and most wraps. The official announcement on the subject was made in November, and I defy any one to decide in November to open the works in April. It could not be done in the time. The saving which I have estimated roughly would be brought about by the adoption of Admiral Clarkson's scheme would be due to a saving of time and labour. There are two men on the turntable and two slunners to each hold. If four latches are working that accounts for ten men at 7s. 6d. per hour who could be done away with, and the operations could be carried on more quickly. You can do anything more quickly if you remove an obstruction. The quickness of loading affects us not only at the wharf but at the works. I am not aware that if we could take 15s. off the cost of handling goods at Darwin we should reach a lower cost than prevails in any other port in Australia. You are no doubt referring to figures given by representatives of the Railway Department. They give you an approximate cost of something like 12s. 3d. a ton, and I understand the Department has said that it is prepared to do the work at 10s. per ton. That is not a normal figure. The Department could not do the work for 10s. per ton when Darwin is in activity. I do not wish you to understand that we calculate that we would save the whole of the 10s. on the wharf, but we would save it on the whole operation. We might save half of the amount at the works. We have nearly as many men at the works loading meat into refrigerated trucks, and we would save costs there. We would save time, because we could get a larger quantity of meat loaded in an hour, and the men would be practically twice so much for the wages they were getting. I estimate that there would be a saving of 5s. per ton to the refrigerated steamers. I consider that the increased quickness of operations would lead to that saving. I do not assume that the industry will pay the cost of the new wharf. The whole object of our request is not to add to the cost of the industry, but to relieve it from costs. At the moment, I do not think that our industry should pay interest on the cost of the wharf. At the present time it could not do so, and unless it is relieved of some existing costs I do not think it will remain. To relieve us of 10s. per ton costs in one direction and load us to the same extent by calling upon us to pay interest on the cost of the wharf would be of no use.

254 To the Chairman—Under normal conditions of loading we would not load frozen meat into four batches, at the same time. Frozen meat would be loaded into two batches and general cargo into two batches. In that case four latches would be worked, and there must be more than one line on the wharf to deal with the trucks. I am not sufficient of an engineer to say whether it would be wise to have travellers at cross-over on the wharf. I am glad that you have called my attention to the evidence given by Mr. Bell to the effect that Mr. Millican said that trucks could be passed over the turntable at the rate of one every 14 minutes, and that he estimated that he could put 100 tons per hour over the turntable. That is a typical example of what I considered the rotten way in which evidence is put before you by the officers of the Railway Department. Mr. Bell says—

Mr. Millican—Our officer in charge in Darwin, estimates that he can put 100 tons an hour over the turntable. I now refer you to Mr. Millican's own evidence at page 16—

We are able to deliver 30 tons per hour over the turntable. That is typical of the departmental evidence all through. There now to Mr. Tobler's evidence, at page 103, and you will find that he says—

Working at the rate of 10 tons per batch per hour, with a maximum of four batches, approximately 1,000 tons a day could be discharged and put round the turn-table.

There are three sets of figures for you. At the rate of thirty tons per hour only 700 tons could be dealt with in twenty-four hours. The answer, of course, to those statements is: It never has been done, and it cannot be done, with existing conditions at the wharf. There has been a big reduction in the cost of handling the goods since the Railway Department took over the works. I estimate that it will be necessary to get back to something more like the old figures if we are going to start operations, because under present conditions in Darwin there is practically no work for the men who are there. You have two gangs pitted against each other. There is one gang at work and another unemployed waiting to jump the job. That is not a normal condition of industry, and that would be the position if the meat works were in operation. You would not then have an army of unemployed people waiting to take any job that was offering. If the Railway Department would come to us and say that they were prepared to load all our meat in the day-time at a guaranteed rate of, say, 200 tons per eight hours, and at a reasonable price of so much per ton, that would certainly have very considerable weight with our people. Mr. Conacher told you in evidence that he had no desire to handle the wharf again. If the Railway people will do that work so much the better for us. Our job is at the meat works. We were forced to undertake the work on the wharf because no one else would. I should be very glad if the Railway Department would quote an exacting price at per ton for taking our meat from the freezing chamber right into the ship. That would save us a lot of bother, and would make a great deal of difference in our negotiations. A telegram from Sir Owen Cox appears at page 4 of the statement with reference to the Darwin Meat Works, from which this is an extract:—

Quite true I authorized Conacher to state impossible send further controlled refrigerator steamers to Darwin unless they were materially improved, as we are charged with making the utmost economic use of steamers, both in regard to space and time, and facilities at Darwin are so inadequate compared with the facilities elsewhere.

It was there undoubtedly referring to the turntable. Upon the reports made to him he sent Captain Bryant up to Darwin to observe the conditions on the wharf. Nothing happened between our company and Sir Owen Cox to warrant him in coming to his decision. At the time all the meat stores in Australia were chock full of frozen meat, the property of the British Government, and intended for the troops. All the works were waiting for refrigerated tonnage to get it away. If a steamer could fill up at Darwin that port would be closer to the United Kingdom than any Queensland port. But as Darwin cannot fill a steamer, she has to go round to a Queensland port, a long way out of her way. We could fill one and a half big steamers per year with at least approximately 6,000 tons of meat. We could load 4,000 tons into one steamer and half fill the following steamer. Sir Owen Cox's statement—

As would appear little probability of improving the conditions of labour, position must be overtake by improving facilities at the port. Our operations have resulted in enormous loss. For the three years during which we worked we made enormous losses. Captain Bryant is the foreman of the stevedoring department of Birt and Company, and that is why he was sent to Darwin to observe operations there. His recommendations would be made to Sir Owen Cox.

I should like to make a short statement on the subject of the refrigerated trucks. It was years ago that there were no refrigerated trucks on the Darwin wharf, because there was no need for them. When we came along with a proposal to build meat works there it was obviously necessary that we should have insu-

lated waggons. The Commonwealth Government, in the agreement of 1904, agreed to provide them. The wording of the agreement was "including properly insulated waggons for frozen meat." The works were first operated in 1917, and the question of the refrigerated trucks was not a live one until then. I submit that the only point at issue is: Are these trucks efficient? There have been a great many allegations made which I can neither prove nor disprove as to what Mr. Brennan agreed to or did not agree to, or asked for or did not ask for. I confine myself to the question: Are the trucks supplied efficient? The manager of the Darwin Meat Works had previously been employed in meat works in Queensland. He knew the Queensland trucks, and knew that they were satisfactory. He wanted something of the same kind, but the trucks, in order to be suitable for Darwin, would have to be four wheel instead of eight wheel trucks, because of the difficulty with the turntable. I could not say whether the Department made the trucks after consultation with the manager of the works. We started killing in 1917. When we commenced using the refrigerated trucks to take the first shipment away tests were made. I am not able to give you as many details on the subject this week as I would be in a position to give a week or two later, when papers will arrive from Darwin. I know that records are filed, and that Dr. Gilruth has seen them. One official test was made in this way. The truck was put into the sheds for two days before loading. They started loading at 11.31 and finished at 12.8. The truck was run into the sun until 4.30, thus getting four hours and twenty minutes exposure. When that truck was opened the meat was soft. Many representations were made after that. It was at that stage that we said we could not possibly load trucks in the day-time at Darwin, and would have to do the loading at night. That was in November, 1917. The results were conveyed to the Railway Department, probably through the Administrator, and Mr. Bell sent his chief mechanical engineer, Mr. Henderson, to Darwin in June, 1918. I have here a copy of Mr. Henderson's report, or of an extract from it dealing with the test he made of a refrigerated truck. It is curious to notice that Mr. Henderson must have been an extremely fair man, because anyone who reads his report will see that he must have tried to reproduce the conditions of the test made in 1917 as closely as he possibly could. He did almost the same thing at the same time of the day. He exposed the truck for 4 hours 24 minutes instead of 4 hours 22 minutes before opening it up. He tried the meat before he put it into the truck. He tested it with a knife and found it thoroughly frozen. He took the temperature and, in order to be fair, suspended the thermometer 2 feet 6 inches from the side of the truck. After 4 hours and 24 minutes had elapsed the truck was returned to the store and the meat removed. I cannot say definitely that the truck was fully loaded, but I think it is clear from Mr. Henderson's report that it was fully loaded. When the meat was inspected after the truck was opened Mr. Henderson reports that:—

In a number of instances the thin-ribbed portion of the crop showed decided softening. In one or two instances, the joint left marks on the floor. The flanks of the hindquarters also, in many instances, were soft, and in one instance the knife was pushed in for at least 3 inches. I am of opinion that the softening shown should not have occurred, with the fairly low temperature of the sun, with well insulated trucks.

To show how fair Mr. Henderson was, in order to make his test he took a truck which had been standing on the siding in the locomotive yard. That is the substance of a report by one of Mr. Bell's chief engineers, who went out of his way to make a fair test of the trucks, and after 4 hours and 24 minutes they failed. In my opinion, they would have failed in 3 hours and 24 minutes. So far as I know it is not the practice in Queensland to pre-cool trucks before taking in meat. If, as Mr. Bell has contended, Mr. Henderson's test

was made under conditions which were neither fair nor reasonable, then I do not know what he would consider a fair test. Mr. Henderson could make what test he liked, and he chose his own time for the test. He gives the sun temperature as only 92 degrees, and the shade temperature as 82 degrees when he made the test. When I was in Darwin the shade temperature was 93 degrees. It is difficult to convince Mr. Bell, with the report of his own officer did not convince him. I think the conditions of Mr. Henderson's test were fair and reasonable. Mr. Henderson's test only followed a long series of other tests, all of which gave the same result. I mentioned a test made in November, 1917, and there were other tests at which Dr. Gilruth, Mr. Evans, and others were present. There were tests by people at the works long before we started to complain of the refrigerated trucks. The result of the tests of the trucks was that we had to load meat from the Darwin works at night, at very excessive costs. We were constantly demanding that we should be given efficient trucks, and I can show you any number of records of such complaints. I sent the Secretary to the Committee a copy of a letter to Dr. Gilruth on 22nd April, 1918, which reported tests or observations made of refrigerated cars at Townsville. I mention this because Mr. Bell says that the Darwin trucks are as efficient as those in use in North Queensland. At the test to which I refer an officer of the Commonwealth Railways was present, and he reported, as will be seen on page 7 of our statement, in the following terms:—

My personal observations and inquiries were as follows: The meat waggons were loaded early on Friday morning and brought to the jetty. Some of them were unloaded that day. Owing to heavy rains, worked ceased that evening, and the remaining waggons were not opened until the next day. The meat was practically in the same condition as that which was unloaded on Friday. The frost was still adhering to the cloths from all appearances, it could be judged as just coming from the freezer, although it had been in the waggons for 24 hours. The waggons were of the double bogie type, with a capacity of twice the amount ours contain. Probably the large quantity of meat may have assisted to keep down the temperature in the waggons. The weather was very hot and muggy during the time we were alongside, in fact, similar to Darwin heat during the wet season.

I cannot say what difference there is between the Darwin trucks and those used in Townsville, because I have not seen Townsville trucks. I can only tell you the difference between the work they accomplish. A small truck would need better protection from the heat than would a larger truck. In connexion with the report made by the officer of the Commonwealth Railways to which I have referred, I may quote from a report by Mr. Conacher, who was present at the same time, and, if I remember correctly, our chief engineer was also there. Mr. Conacher reported:—

The *Montoro* arrived at Townsville early on Friday, 8th February, and amongst other cargo, was to take in the neighbourhood of 200 tons of frozen meat and sundries for Singapore, ex Q.M.E., at Ross River.

I interpolate here that the *Montoro* is not a meat steamer, and 200 tons is only a small shipment of frozen meat. Mr. Conacher said further:—

I was at Ross River that afternoon between 3 and 4 o'clock, and they were at that time loading sundries into the refrigerated trucks, having previously loaded the beef. The sun was bright and hot. On inquiry at the works, I learned that the trucks used had not been pre-cooled and were not kept specially under shelter, and, in fact, had been used for general cargo, and some considerable time had elapsed since they had been regularly used for refrigerated cargo, as was the case with the *Montoro's* refrigerated products had been shipped some months previously. It was the intention of the boat to load through the night, but before 6 p.m. work was knocked off. As the rain continued for some hours, loading was definitely stopped until the next morning when it was resumed after 8 a.m. When loading was resumed, it was cloudy, but very close and sultry weather. As frozen sundries are more likely to become soft, and put out of shape in storage, they were loaded before some of the beef. The last of the beef was on board about 4 o'clock. I examined it personally, and in company with my chief engineer and Mr. Evans. I found the beef perfectly hard. There was no thermometer there, but I

should say it was in the neighborhood of 18 degrees. I was informed on the wharf that some of the last trucks to be unloaded were amongst those which must have left Ross River on the previous day. Owing to the night being hot, some of them must have been unloaded for a minimum of eighteen hours, and if my information on the wharf was correct, some of them were not unloaded for close on 30 hours.

The Commonwealth Railways Department speak of trucks being unloaded in Queensland for twenty-six hours, but whichever figure is taken it is shown that the Queensland trucks are highly efficient in view of the splendid results they give. Yet they are supposed to be the same as those supplied to us at Darwin. We have never opened the trucks to see how they are constructed. We are not railway engineers. What we have to deal with is, not the construction of the trucks, but the work they do, and though it is said that they are constructed in the same way as the Queensland truck, they do not do the same work. On the question whether the use of the zinc lining in the trucks would make any difference, I can only say that metal is a good conductor of heat, and you want material that is a non-conductor of heat in a refrigerated truck. I have here a memorandum from Mr. Bell to the Secretary of the Department of Works and Railways, dated 1st February, 1921, and apparently for submission to the Minister. Mr. Bell recapitulates a great deal of previous information, and goes on to this effect:

There is no justification whatever for the statement that these waggonas necessitate night loading. The sole reason why night loading is resorted to at Darwin is that the ships are not prepared to open up their holds during the heat of the day, as the sun beats directly into the batches. The sun is overhead at noon at other places besides Darwin, including Townsville and Wyndham, and you know from the evidence you have taken that ships take in meat at Townsville and at Wyndham in the daytime. I know that the ships would prefer where possible to continue loading during the whole twenty-four hours. Mr. Bell's statement is not justified. I have not brought evidence that boats load at Townsville in the day time, because it is common knowledge, but I have evidence that ships are prepared to open up their holds during the heat of the day in Wyndham. There is no reason why they should not be just as willing to open their holds at Darwin in the day time. No ship asked us to do our loading at night time. If the trucks supplied to us had been effective we would have done all possible loading in the day time. It is unreasonable to suggest that we prefer to load at night when the work has to be done by the light of a few kerosene lamps and men have to be paid time and a-half for decreased efficiency.

255. To Senator Reid.—Mr. Henderson's test was made in June, the coldest portion of the year. We shipped our meat by five steamers. They took the three years' output. The meat was shipped in the months of October, November, December, January, and March. We should endeavour to do what is done at Wyndham and have the last of the meat out of the store within a week or two of cessing killing, which would be, say, the middle of September.

256. To Mr. Blakley. I believe that the present trucks could be made more efficient by more insulation. I do not know whether our engineers consider that the use of zinc in the trucks gives bad results. Some of our chief officials come from Queensland, and they knew

the Queensland trucks well before they went to Darwin. The Darwin Cold Store is kept at a lower temperature than any other cold stores in Australia. I produce for the inspection of the Committee a batch of original engineers' logs covering a period of three months. They give the temperature reading of the various thermometers in the different rooms taken throughout the day. These are signed by the engineer. Three men are employed to do nothing else but take temperatures. Their work is most important, because if anything goes wrong we may lose a whole year's product. You will see that the log for 31st October, for instance, gives readings from zero to 2 degrees below zero. On 12th September there were readings of 3 degrees, 5 degrees minus 2 degrees, which is 2 degrees below zero, and so on. Here are readings of 1 degree and minus 1 degree on the 10th October. Here is the log for the 11th November, when we were loading out from the stores, and you will see that our readings go from minus 3 degrees to 1 degree. According to Mr. Henderson, when he made his last the store temperatures were 9 degrees, but that is not unusual unless we are loading out when the store temperature is brought down. You have seen from one of the logs that when we were loading into the refrigerated truck in November the temperature of the store was kept down as low as minus 3 degrees. The normal temperature of cold stores in the South when loading out is from 12 degrees to 14 degrees. All the insulation of the stores at Darwin was tested by engineers having a knowledge of the relative values of insulating material. We had in our Darwin stores 22 inches of insulation. If 12 tons were loaded in eight hours that would be only 19 tons an hour, or four 5-ton trucks per hour. We used to run three trains, one at the works, one on the way, and one at the wharf. The works can discharge meat at an enormous rate. There is very little manual labour employed except for packing the meat in the trucks. The delivery to the truck is by shoot. I could not say whether more money is lost through loss of time owing to the turntable than through night loading. The night loading was due entirely to the insufficient insulation of the trucks. There were very few rejects of beef from the Darwin works. The meat went on board the steamers in as hard a condition as achieved in any works in Australia. That result was effected in two ways. First of all, we kept our temperatures far below normal, and extremely low temperatures were maintained in the store for days before the arrival of a steamer. I might say that just as it takes approximately twice as much coal to run a steamer 12 knots an hour as it takes to run her 10 knots per hour, so for every degree of cold below 10 degrees or 12 degrees the cost is relatively very much more in coal and money to produce. We got our beef to the steamers in excellent condition. That was our job. We complained that the conditions of the agreement with regard to fees we got at Admiral Clarkson's wharf we may be able to swap the present refrigerated trucks, put in sufficient large-sized trucks, and overcome all the difficulties.

(Taken at Melbourne.)

WEDNESDAY, 6th FEBRUARY, 1924.

Present:

Mr. Gurnooy, Chairman;	Mr. Cook
Senator Barnes	Mr. Jackson
Senator Lynch	Mr. Mathews.
Senator Reid	
Mr. Blakley	

George Alexander Hobler, Chief Engineer of Way and Works, recalled, and further examined.

257. To the Chairman.—I prepared the estimate which has been sent to the Committee of the cost of an approach giving direct communication to the wharf at Darwin. The estimate is for a curved approach of 7 chains radius, to permit of a 4-ft. 3½-in. gauge ultimately being laid upon it. The cast-iron and steel bridge work is estimated to cost £78,408; earthwork, £10,662; track work, 3-ft. 6-in. gauge, £860; total estimate, £89,930. I produce a plan, dated 26th January, 1924, showing the proposed curved approach. The plan shows that, up to the beginning of the bridge-work, provision is made for a double line of track. A previous estimate submitted for £137,293 provided for a double track on the bridge-work. We have no working plans prepared for the proposed approach, but a calculation has been made as to the approximate amount of cast-iron cylinders and steel girders, and of the timber decking, and from that has been obtained an approximate price per lineal foot. The estimate is an approximate estimate only, but is within reasonable bounds of what might be anticipated would be the cost. I have not the particulars with me, but I can let you have a statement showing the amount of earthworks involved in the cutting through Stokes Hill, with an estimate of the cost.

258. To Mr. Mathews.—The estimated length of the bridge-work is 890 feet. The earthwork runs to about 3½ chains of embankment, and about 6 chains of cutting, because the double road still remains through the cutting, and a siding for storing waggonas is necessary. The ironwork starts approximately at low-water mark, and continues round to the beginning of the jetty. It would not be cheaper to fill this portion in, because the water there is too deep and the tide too strong. From low-water mark, an embankment is proposed until the intersection of the formation level with the surface of Stokes Hill is reached. From that it is cutting. The double line is left through the cutting and on to the embankment because there will be sufficient spoil from the cutting to make the extra width. If we carried the double line right round, including the steel bridge portion of the work, it would add probably 50 per cent. to the cost of the steel bridge. The double line proposed is required for a siding for shunting purposes and for storing waggonas.

259. To the Chairman.—With a single line for the bridge-work we would be able to give a sufficiently good service. A double line on the bridge would give more siding than would be actually required for the working of the wharf. A double line throughout would make it possible to get waggonas off the wharf a little more quickly, and it would make shunting somewhat easier, but it would not be worth the extra expenditure involved of approximately another £30,000. If these plans were approved, I consider that a single line over the water would be found ample for the time being. It would be possible later on to add to the construction and make provision for a double line; but that would, of course, entail some extra expense if the work were left to be done later. The plan proposes that the earthworks should be carried approximately to low water, but that would be ultimately

decided when a section was taken and the ground properly examined. No special provision has been made to guard against any movement of the embankment proposed. When I am informed that very considerable subsidence took place in connexion with the original embankment, I am disposed to think that the material must have been washed away by the tide and waves before the bank was finished and the stone facing put on it. I was not aware that any subsidence had taken place which required an additional 10,000 cubic yards of earthwork, as stated in the early records you secured from Adelaide. The subsidence which then took place may have been due to the fact that there were heavy deposits of silt at the place, and that when the section was taken out, sufficient allowance was not made for the heavy bank sinking a certain distance into the soft ground. In connexion with the embankment proposed for the curved approach, there will certainly be subsidence in the ordinary way through the weight of the bank; but where that embankment will be constructed there is rock on the foreshore, and the ground will probably be very much harder than that on the site of the embankment to which you have referred. The old bank is nearer to the bay which always had a certain amount of silt deposited in it by the backwash from the tide. If this plan is adopted, borings will have to be taken to test the ground, and if it is found to be soft and likely to cave in, the necessary steps will be taken to meet that difficulty in the construction of the embankment.

260. To Mr. Mathews.—No borings have so far been taken at this place.

261. To the Chairman.—We have done nothing further so far than to make a bare survey of the original 5 chains curved approach. The estimate submitted has been framed without the investigation which would be necessary to enable working drawings to be made should the proposal be adopted.

262. To Mr. Mathews.—It is reasonable to say that it might be found that the estimate of £99,000 might be increased or decreased to the extent of £10,000.

263. To the Chairman.—With respect to the class of pile to be used, probably cast-iron cylinders very similar to the present bridge would be adopted. They would probably have to be sunk with air-lifts. Before de-signing, we would investigate the utility of sinking screw piles or cylinders; but, in the case of the curved approach, the spans of bridging would require to be so long that they would require cylinders instead of screw piles. Power of them would be used, but they would be of greater diameter than the screw piles. There are screw piles in the present main wharf, but there are cylinders in the approach. There are no cylinders in the main wharf. Some of the piles have been screwed, but some may have been set in cement. Where the rock was too hard, they had to set them in cement. I could not say how many were set in that way. We have given consideration to the use of reinforced concrete piles. At the present time, harbor engineers are not too keen on this method of construction. There have been failures of reinforced concrete works in salt water. In Queensland, they had some trouble with reinforced concrete in salt water. The concrete is reinforced with steel, but the steel, notwithstanding it is covered with concrete, has rusted, and fractured the concrete.

264. To Senator Reid.—This may not have been due to inferior work in constructing the piles. It is generally known amongst harbor engineers that, for some time, there has been doubt as to the efficiency of reinforced concrete in salt water.

265. To the Chairman.—I could not, at the moment, say at what ports reinforced concrete piles have been proved to be a failure. I know there was one report by Mr. Cullen, the Queensland Engineer for Harbors

and Rivers. He wrote some papers on the subject, giving his own experience. Without perusing his papers closely I could not say what his recommendations were, but I know that he drew attention to the failure of reinforced concrete in salt water. Our Department made the additions to the present wharf at Darwin. When I am informed that, according to the South Australian records, karri piles sheathed with copper were affected by the teredo, and did not last more than four or five years, I must say that I cannot understand how it was possible for the piles to become ineffective in five years under those conditions. If the teredo got into them, they could not have been efficiently sheathed. As a rule, the sheathing absolutely protects the timber. We have found the timber we put in is lasting very fairly. We used turpentine piles, and they have been in for six or seven years. The timber was not sheathed, it was charred. You inform me that Mr. Andrews has reported that:—

When iron piers were decided on for the new jetty, experiments were tried with various forms of screws to see whether they could be screwed down into these shales, but it was found impossible to get them down; and the plan ultimately adopted was to pitch a light cap on the place where the pile was to go, and to drill an annular hole in this cap with a circular cutter to the depth required, leaving a solid core of shale in the centre. The cutting tool was then withdrawn from the cap, and a cast-iron pile with a serrated edge slipped into the hole and given a few turns to embed it properly. The water was then forced out of the pile by air pressure, and concrete dropped into it to completely fill the pile.

That is practically equal to setting the piles in cement. I understand that some of the piles on the Darwin wharf were screwed down, but where they could not get them through the rock they set them in cement the same as you would a timber pile. If we built the bridge as proposed on the plan, we would use cylinders, because it would have longer spans than the spans on the wharf. I have perused a report showing the strata met with in the sinking of wooden piles; and, in view of the material shown, it is quite possible that, as the report states, many of the piles buckled up. Admiral Clarkson proposed to use steel sheet-piling to form the sheathing of his proposed wharf. According to his plan, the depth of that sheeting would have to be about 65 feet. Personally I do not approve of sheet-piling at all. It would have to be driven very truly so that the grooves would fit one into the other; and, in view of the strata disclosed by the reports you have submitted to me, it is very doubtful whether it would be possible to drive that length of sheet-piling into it at all. If hard quartz leaders were struck, it would not be possible to carry out that work. Personally, I would refrain from designing sheet-piling in such ground. I would prefer to adopt some other method of securing the front of the wharf. Assuming that the proposed curved approach would cost £100,000, the cost of handling goods at Darwin would be increased, and not decreased. Six per cent. on £100,000 would represent an annual interest charge on capital cost of £6,000 a year. At present, we are handling approximately 6,000 tons a year. In our best year so far, we handled 37,000 tons, assuming that the trade reached 40,000 tons a year, the interest charge would represent an additional 3s. per ton. In addition to that, there would be the maintenance of the extra steel work, which in my opinion is very heavy. I have not so far heard anything of a new process adopted in New South Wales for preventing the erosion of iron or steel in salt water. If anything has been reported on the matter, we will get it in time, but we have, so far, not received such a report. I have said that the proposed curved approach,

assuming that it would cost £100,000, would in interest alone add 3s. per ton to the cost of goods, assuming that 40,000 tons were handled each year. There would also be the additional charge for the maintenance of the steel work, and there would be an increased distance to be covered for shunting. Every trip an engine made down to the wharf and back, she would run 18 chains, or practically a quarter of a mile, further than at present. The engine would go only to the end of the wharf; she could not shut on the wharf, because there would be no room, and there would still have to be hand shunting of the waggons on the wharf to and from the hatches of the ship. You could only get delivery at the end of the wharf where the turn-table is at present, so that the engine could hook on to the trucks and take them away from there. At the present time, to manipulate the turn-table is costing us 10½d. per ton, if I remember correctly. So that if we built that jetty approach we should have to be prepared, even if our tonnage increased to 40,000 tons a year, to pay an additional expense of quite 3s. a ton over and above what it is costing us now. If the tonnage did not increase to 40,000 tons a year, we should, of course, have to pay still more. I think you might say that the apex of the curved approach, added to the cost of extra haulage, would about equal the present cost of the turn-table, and in addition to that, you would have to pay an extra 3s. per ton if the tonnage increased to 40,000 tons a year to meet the interest on the capital outlay. I do not think that the proposed curved approach would make any appreciable difference in the shipping of frozen meat from Darwin. Whilst the present wharf and jetty remain I do not think anything should be done to improve the present handling of goods. I have dealt with this matter very fully before, and my opinion of the Darwin wharf is that we should use the present wharf as long as possible. Then when trade develops sufficiently to warrant a better wharf and better facilities, a proper investigation should be made by competent engineers, who could lay down a proper scheme for a harbor at Darwin, and we would commence to build that, probably a portion at a time, according to our wants. I think it is quite advisable that, at an early date, there should be a proper investigation made and a proper design prepared for harbor and wharfrage at Darwin. This work should be referred to the Commonwealth Railways Commissioner, and such an investigation should be made before any decision to build a new wharf is arrived at. I am not myself alone prepared to recommend any scheme.

266. *To Senator Lynch*.—The proposed curved approach would serve the purpose of a 4-ft. 8½-in. gauge. The curvature proposed is such that the gauge could be widened to 4 ft. 8½ in. whenever required. The bridge-work would be designed to carry the same load as our standard main-line bridges—a 22½-ton axle load. The bridge-work would be built of sufficient strength to carry our standard broad-gauge load. I have made no separate estimates of the cost of the work in concrete and in steel. Within the last two or three years, Mr. Cullen has reported some unsatisfactory results of the use of reinforced concrete in salt water. I may explain that there has been left in the minds of engineers some doubt as to whether the saving in using concrete with reinforcements rather than steel might not be seriously reduced through having in future to use more concrete to protect the reinforcement. You inform me that Mr. Tindale, Engineer of Public Works Department, Western Australia, says that as long as the concrete is dense enough—about 2½ parts of sand to 1 of cement—and the workmanship is thorough, the results are satisfactory. He says that, whilst the engineer of the Sydney Harbor Trust is not favorable to reinforced concrete, reports from Queensland, Auckland, and Wellington are very reassuring; but I say that a doubt has arisen recently as to the efficiency of reinforced

concrete in salt water. It is felt that it may be necessary to increase the amount of concrete used to such an extent as to do away with the comparative cheapness and utility of reinforced concrete as compared with the use of other material. You will notice that Mr. Tindale qualifies his statement. He says, "If the concrete is dense enough," and so on. You must know the circumstances in each case to be able to decide in such matters. I should like to say that whatever structure might eventually be adopted in building the curved approach, before finalizing estimates would be made of the cost of the adoption of various methods of construction, and these would be compared so that it might be decided, on the latest information, which was the best method to adopt. I have already given some evidence on the respective merits of steel and concrete girders. Concrete girders are very heavy, and they are very expensive. The only girders that were renewed on the Darwin wharf were those at the end next to the approach. The necessity for renewing them was due to the excessive drenching of spray through the waves breaking on the abutments. There would probably be a considerable amount of erosion on the first set of girders of the proposed steel structure on the curved approach for the same reason. Two girders on the Darwin wharf next to the approach were renewed after twenty odd years, but the other girders are still in the wharf, and will last for a number of years yet. You could not fairly judge the life of the steel girders in the bridge by the life of those at the end of the abutment. You inform me that Mr. Millican stated that the turn-table was responsible, apart from delay, for an addition of something like 1s. 10d. for each ton of goods passed over it. That was on a tonnage of 6,000 tons. I say there was no delay caused by the use of the turn-table. There would still be the extra cost of upkeep of the curved approach to be considered. The steel work would have to be painted pretty often. It is expensive to preserve steel over salt water. When comparing the curved approach with the existing conditions, I took into account, apart from the interest on the cost of construction of the curved approach, the extra cost of its upkeep and the extra run of the locomotive. It would have to travel an additional distance of 18 chains for every trip to and from the wharf. If the curved approach were constructed, the locomotive would run, as now, down to the end of the jetty. You could not take the engine on to the wharf, as there would be no room on the wharf for shunting with the engine. The shunting on the wharf would still have to be done with horses or by hand. The wharf is strong enough for shunting with the engine, but there is no room for it. To shunt waggons with the engine on the wharf would cost ten times as much as with men or horses. There is no object in getting the engine on to the main wharf. The only object is to get the waggons taken away from the end of the wharf as quickly as possible. There might be a ship at the wharf with four hatches working, and waggons at each hatch; then there are all the cross-overs to consider, and an engine could do nothing with waggons on a wharf like that. Of course, the engine could do the shunting on the wharf, but it would take such an immense deal of time that it would be altogether too expensive.

267. *To Senator Reid*.—The number of waggons which an engine could take on the wharf would depend on the class of engine used. The little shunting engine we have there could take four or five. Larger engines could take ten, twelve, or perhaps twenty; but there is not room for an engine to work her waggons on the Darwin wharf. She would get them all jammed up.

268. *To Senator Lynch*.—I am not prepared to say whether traversers would do for the Darwin wharf. It would be quite possible, if we were building a new

wharf there, to have those things put in, but I do not think they could be put on the present wharf.

269. *To the Chairman*.—They could not be put on the present wharf because there is no room for them there. You would have to sink them down on the wharf, and it would cost a good deal to put them there. There was a traverser on the Darwin wharf at the far end, but it was taken up when the extra roads were laid.

270. *To Senator Lynch*.—I do not think that much would be gained by putting traversers on the wharf now. It is hard to say whether a traverser could be used there effectively or not. When you tell me that you have seen traversers working on the Williamstown wharf, you are speaking of a very big wharf, where there is plenty of room and an enormous quantity of cargo to be shifted. It costs a good deal to put traversers in, and it is questionable, in my opinion, whether it would pay to put them in on the Darwin wharf. I said that I could not remember the cost of the working of the turn-table, but I thought it was under 1s. per ton. Even if the cost of working the turn-table were 1s. 9d. per ton, it would cost a good deal more than 1s. 9d. extra per ton to handle cargo if we built the curved approach. If the curved approach were built, and we continued to handle only 6,000 tons of cargo a year, the extra cost would be £1 a ton or more. If we were handling 40,000 tons of cargo with the turn-table it might pay us to put in an electrical winch to work it, and that would reduce the staff required by one man. It has been shown that there is no waste of time due to the turn-table. Thirty-six thousand tons have been handled in a year with the turn-table. If there were any waste of time in using it, that could not have been done. It may reasonably be assumed that if the curved approach were built the same operations must continue on the wharf, but the working of the turn-table would be eliminated. With the curved approach an engine could not push a rake of trucks up to the ship's side. She could only push the trucks on to the beginning of the wharf, because there would be loaded waggons in front of the different hatches. All she could do would be to put the waggons on a siding and leave them there, when they would have to be handled to suit the working of the different hatches. On her first trip, after a boat tied up, the engine, with the use of the curved approach, could put a few more waggons on the wharf and place them a little better than they could be placed with the use of the turn-table; but she could not continue to do that when loading was in full swing, because waggons would then be distributed all over the wharf.

271. *To Senator Reid*.—I should have to prepare working drawings before I could give you any idea of the relative cost of the construction proposed, in steel and in concrete. Concrete construction is very often adopted not because it is cheaper than steel construction, but because it has a longer life and involves less cost in maintenance. The relative cost depends greatly upon the class of structure for which each method of construction is used. When we cannot drive a pile into rock, we generally do what is called "plant" it. Mr. Andrews followed that principle of planting piles where they could not be driven. I think you will find that, since Mr. Cullen's report, if they have carried out concrete construction in Queensland, they have altered the dimensions of their concrete to give a better covering to the steel work, but that, of course, means increased cost. The adoption of concrete all depends on the design of the structure. Sometimes it pays to put in cast-iron cylinders. Doubts as to the efficiency of concrete in salt water have been expressed, not only by Mr. Cullen, but in different parts of the world. Within the last few years, its efficiency in salt water has been questioned. It has not been the success it was expected to be, and engineers are now more careful about using it.

272. *To Mr. Mathews.*—The cost of the turn-table would remain the same, even though an increased tonnage were handled. If the curved approach were built, the greater the amount of tonnage handled the lower the charge per ton would need to be to meet the interest on the cost of construction. The cost of the turn-table would remain practically the same, whatever tonnage was dealt with. I think it might be possible to reduce the cost of the turn-table by installing an electrical winch if the tonnage to be handled justified that, because it would reduce the staff by one man.

273. *To Mr. Blakeley.*—By installing an electrical winch, the cost of the turn-table could be reduced, because one man could then do the work at the turn-table which is now done by two men. At present two men are required to place a truck in a certain position and to shoot a bolt into a slot to keep the turn-table in that position, but one man could work the electric winch and shoot the bolt at the same time. A steam winch could be used to do practically the same work, but it would be more cumbersome and not as convenient to work as an electric winch. No matter what Admiral Clarkson's report on the proposed new wharf at Darwin might be, before any work was started upon it, harbor engineers of experience would have to go over the whole ground. It is not the practice of the Railway Department to intrust work to men without the necessary qualifications. We endeavour to get the best men we can to report upon any proposed work. I think that I visited Borroloola several months after Admiral Clarkson's visit to Darwin. All I know of the matter is that his report was referred to me for consideration. I had his report with me on my visit of inspection, and really checked his report. I could not say how the Wyndham wharf is worked. I consider that traversers would not be suitable for the Darwin wharf, because they would have to be specially placed. You could not set a traverser down on the wharf; it would have to be set in the wharf. There are several designs of traversers. I think there is a better foundation for the embankment of the proposed curved approach than there is at the present embankment. No borings have been taken at the place, and it is hard to say whether the outcrop visible there would continue. If it were decided to build the curved approach, proper borings and surveys would be made before final working plans were prepared. I could not personally say anything about documents received by the Railway Department from the South Australian Government. It could probably be found out from the records in the office what drawings or plans were sent over from South Australia. There should be a report of borings at Darwin if one were made for the South Australian Government. If all their plans were sent to the Commonwealth Railways Office, particulars of these borings should be there.

274. *To the Chairman.*—I understand that a concrete jetty is being built at Onslow, in Western Australia. It is hard to say what method of construction we should adopt at Darwin. It would be wrong for me to make any decision upon the subject at the present time. I can only assure the Committee that if it should be decided to build the curved approach, very careful consideration will be given to the different methods of construction when working plans are being prepared. You could not put reinforced concrete piles under an 80-ft span. I hesitate to say what would be done until working plans of the proposed approach have been made.

(Taken at Sydney.)

WEDNESDAY, 20TH FEBRUARY, 1924.

Present:

Mr. GREGORY, Chairman.

Senator Barnes	Mr. Dinkley
Senator Lynch	Mr. Coon
Senator Reid	Mr. Jackson.

Engineer Vice-Admiral Sir William Clarkson, recalled and further examined.

275. *To the Chairman.*—A copy of the report obtained by the Committee in connexion with the building of the first wharf at Darwin has been brought under my notice. I have perused the evidence given by engineers in regard to the proposal. The evidence obtained from Adelaide in regard to the strata at Darwin in no way affects my opinion of the carrying out of the work. The information given is not very clear. Reference is made to depths, but the report does not say where they are taken from. I presume the depths are taken at low water, spring tide. There is nothing down to 40 feet which would in any way affect the driving of the steel piles which I propose. The Committee, apparently, heard a lot of evidence regarding the difficulty of driving piles, but the witnesses were all talking about timber or reinforced-concrete piles. The difference between these piles and steel sheet piling is very great. The difference between driving those two classes of piles is equivalent to the difference between driving a steel nail and a wooden peg into a hunk of timber. The steel sheet pile, if driven with a steam pile driver, would drive where a timber pile could not be driven. The class of material through which the pile is being driven also has something to do with it. It is only with the greatest difficulty that a timber pile can be driven into sand. A great deal has been said in the evidence about the so-called "rock" that is found at Darwin. Geologists call it a pre-Cambrian schist. The man in the street would call it a hard clay, and would not recognise it as a rock. One can cut a groove in it with one's walking-stick. Geologically speaking it is a rock, but to a man who is not a geologist it is a hard clay. It certainly has fine veins of quartz running through it, and it also contains hard quartz pebbles. Boring in material of that description is a very difficult operation, for when the boring tool strikes the quartz and pebbles, it is liable to glance off. I can understand that in boring at Darwin they had considerable difficulty, but I do not consider that similar difficulty would be experienced in driving steel sheet piles. I think it was Mr. McKenzie who said that before anything could be done it would be necessary to bore on the site to ascertain the nature of the material. I know that this is the usual practice before works of this description are undertaken. Boring, however, is not entirely satisfactory. At Singapore Harbor contracts were let on the result of bores, and considerable trouble arose. The work cost, I believe, millions of pounds more than was calculated. The results of the trial bores proved quite misleading. If boring is undertaken it is necessary, therefore, to be very careful and cautious in drawing conclusions from it. If it is considered necessary to make quite sure that the steel piles can be driven, it would cost very little to send a pile to Darwin and drive it. It would cost very much less than boring. It is essential that the piles should be driven with a steam pile driver. If it is found that piles can be driven to the depth that I say they ought to be about 120 feet, the reason why the work should not be driven, there is no doubt, is that the piles are 60 feet, but they are easily joined. They can be made any length. If the first one is driven straight there is very little trouble with the others, because the one guides the other. They are 15 inches in width, and they interlock. Boring is not worth the cost of it. I have been all round that country, and I see everywhere the same class of strata. Even as far

as Point Charles, up the peninsula, the strata is similar. In places the limestone capping is thicker than in others, but it is all the same class of country. There is no necessity to go to great expense for boring, because it is difficult to get any true results from it. It is not feasible that a pile would drive in one place and not in another. I do not think there is any danger of a pile striking the quartz veins and being turned aside. The piles are chisel pointed, and will cut through such material. I have never seen any quartz veins there 6 inches or 9 inches in thickness. They are usually two or three inches. I am quite certain that it would be impossible to disclose from a bore whether the quartz veins were 2, 6, 9, or 12 inches in thickness, unless a diamond drill was used and a solid core brought up. With ordinary boring one can see the class of material brought up, and one has to judge whether it is hard by the way the drill works. The piles are joined by bolting plates on each side of them. There will be pressure against the side of the sheet piling, but not on the top of it. The pressure would tend to burst it outward, but that has been carefully calculated. In the original approach to the Darwin wharf the filling sank into the mud and more filling than was anticipated had to be put in. The same conditions do not apply all over the area. Where the new wharf is proposed the ground seemed to me to be fairly firm and solid. One section of the original approach slipped, but I do not anticipate similar trouble with the new wharf. The Committee heard some extraordinary evidence regarding dredging. One witness said that a bucket dredge could not be used because barbed wire that had been thrown overboard would strip the buckets off the dredge. A bucket dredge is not quite such a toy as that. The first question is whether a bucket dredge would shift that material. I have received an account of the removal of Porpoise Rock in the Tamar River. That rock is basalt, and there was an old wreck, the *Merion*, on it. They had to get rid of the wreck as well as the basalt. They made provision for a Lobnitz rock-breaker, which was designed on the Clyde. In deepening the Clyde they came across very hard, solid rock which they had to remove, and the Lobnitz dredge-builders designed a rock-breaker. It has a derrick which is moored over the rock, and a heavy steel bar is lifted up and punched down. One of these rock-breakers was obtained, was moored over the Porpoise Rock, and was set to work to break it up. Later, when a dredge was got to work to remove the smashed-up rock, they found, to their astonishment and delight, that it would dredge the basalt without preliminary breaking. The rock was eventually removed without the assistance of the rock-breaker. The dredge "walked" into the basalt. I do not want to be misunderstood. It was not solid, hard basalt, but columnar basalt. The bucket dredge shifted that. Where the dredge could not lift it the boulders were lifted with wire ropes. The probability is that a bucket dredge would deal with the hard clay material and quartz veins at Darwin. If it would not, then there are other means than using tons of explosives, which some witnesses said would be necessary. The rock-breaker could be borrowed from the Queensland Harbor Board. That would not add very much to the cost. Before I sent in my report I obtained information from a friend in Queensland, who was engineer to several harbor works there. He told me that at Timaroo they had to deal with hard, schisty clay. From his description the material would be very similar to that at Darwin. In it were heavy boulders up to 5 tons in weight. That work was done in 1907, and the cost never exceeded 8d. per yard. I put the cost down at 1s. 6d., and I thought I had made ample provision. I have not the slightest doubt in the world that a bucket dredge can work in that material. It would be a poor dredge that would not do 1,500 yards a day, and at 1s. 6d. a yard that would be £112 per day. The bucket dredge yard that was working at Flinders cost £27 a day, including repairs and maintenance, but not interest and depreciation. Suppose a dredge at Darwin would cost

£50 a day. There will have to be two hopper barges attending on the dredge. They can be put down at £20 a day each. That would make a total of £90 a day, as against £112 for which I have provided. Surely that is an ample margin. In comparing the cost of dredging at Darwin with the cost at Albury and Bunbury, it is necessary to consider how far the spoil had to be taken at those places. It probably had to be taken a long distance. At Darwin the spoil can be dumped close by. It is necessary to know in connexion with other undertakings, how the work was laid out, whether there were sufficient hopper barges, and whether the dredge had to wait for the barges. Towards the end of the work at Darwin it will be possible to dredge only at half-tide, but I do not think that the tidal differences will be particularly great. In the Tamar River there was a strong tide to contend with. If there is a sufficiently long ladder to reach to the bottom the depth will not matter much. It would be interesting for the Committee to ascertain the cost of the work done in the river at Port Adelaide. They had a lot of difficulty with limestone crusts and other hard material. I think their average cost was between 6d. and 7d. a cubic yard. Prices have gone up since, but that does not account for the high cost of some recent undertakings. Muddle, want of organization, and lack of suitable and sufficient plant have had a lot to do with increasing costs. My estimate of 1s. 6d. a yard is stating the cost too high. I still think that the figure is ample with proper organization and lay out, and suitable plant. The Government can muddle away as much money as it likes if it does not get those essential things, and I do not pose as a harbor engineer. To use steel sheet piling is not mine. It is a scheme which has been carried out, and is being carried out in various parts of the world. It was carried out in the new deep sea port of Richborough. I have received the following letter from the people who made the piling:—

12th September, 1923.

Admiral Sir William Clarkson, 91 Herbert street, St. Kilda, Victoria.

Dear Sir,

Your favour of the 26th July has been passed on to us by Mr. R. B. Carr, and although this reply will naturally be some time after you have had the matter up for decision, we would like to say that the lines on which you suggest building the wharf are perfectly sound, and would give a first class and economical job.

In this country, where a number of wharves have been put up without even covering the piling above low water level and leaving it exposed to the air, notably the Melbourne Wharf, which was built during the war, and in spite of the fact that it has been up for a matter of some years, it is still in a perfectly good condition, and practically no engineer. The same place. We prefer, however, if possible, to keep the piling covered where exposed to the air, and this procedure we follow in all the wharves on the River Thames, of which the Thames Conservancy have put up a very large number, and have, in fact, at the moment, five being constructed in different parts of the river, amongst which are Kingston-on-Thames, Hampton Wick, and Wallon. The water level is very constant, and the piles are driven to water level, after which the concrete wall is built on the top of same and the ground filled in at the back.

We enclose herewith drawing and photographs showing one of these wharves.

Permanent wharf work has also been carried out in Calcutta, at the Crossport Shell Factory, illustrations of which are given in our large catalogue dated 1913, page 72, of which Mr. Carr has a copy, although we are unable to send you a copy, same being out of print.

We have also carried out wharf work at Port Elizabeth, where they used the steel piling for the protection of the pier-head as permanent work. So long as the material is not exposed to wind and water no fear of corrosion need occur, and the steel is being used more and more frequently for this class of work in every part of the world with most excellent results.

If there is any further information we can give you we shall be pleased to do so on learning from you meantime would say that we have just shipped a quantity of piling for temporary works for Messrs. Duke & Orr's dry docks at Melbourne.

With regard to rolling the material from the Broken Hill property, we are already in communication on this subject and Mr. Carr will be able to give you all the information in connexion therewith.

Assuring you of my careful attention at all times,
Yours faithfully,

for The British Steel Piling Co.,

W. B. GARVIE, General Manager.

There are several very good bituminous compounds on the market for preventing the corrosion of steel in water. It would be well to cover the piles with some such preparation to the effect, I cannot agree with the evidence tendered to show that great corrosion of steel takes place in salt water. The best example to the contrary is the *Maine*, which was sunk in tropical waters at Cuba. She was down for fifteen years, and was raised by the Americans and taken out to sea and sunk. There was practically no corrosion except where brass or copper was present, and then there was galvanic action. Round the coast of Australia boilers may be seen lying about which have not corroded. An old ark at every tide for years, and have not corroded. An old hull has been lying at Darwin for a number of years under the worst possible conditions. Another instance is the *Nelson*, in the Tamar River. My experience with cast iron is that it does not stand sea water for any length of time. I have seen propellers and fittings of condensers on board ship which have been exposed to salt water. They could be cut with a knife. They may look all right, but their strength becomes very materially reduced.

276 To Senator Reid.—I have read the evidence given by other engineers. I see no reason to change my mind. Those engineers were placed in a rather difficult position in that the scheme submitted to them was not finalized. Before the Public Works Committee was asked to consider this matter detailed plans should have been drawn up and the proposal submitted properly as a finished scheme. I could have done that, but I was not asked to do it. When I gave evidence I returned from Darwin only about three weeks previously. I worked very hard during that three weeks, and I had no opportunity to prepare detailed plans. It was not my job, anyhow. A timber pile can always be driven to a standstill, even in soft material. I am sure that the steel pile would get through even where iron-shod timber would not. Steel sheet piling has been used in the new naval base at Rosyth. It went through very hard material there. In other places I have heard of piles being driven through concrete. Piles cannot be driven successfully with a ton monkey and a hand winch, with considerable intervals between the blows. A steam pile driver is necessary. With the slow method the ground has time to set between the blows and the pile gets knocked to pieces. The ties to hold up the front of the wharf will be strong enough. I have calculated the strength. There is concrete back and front. I would cover them with concrete so the wharf will stand is a matter of calculation. The method proposed is well known. It is not by any means my idea. It is mentioned in all the books on civil engineering and harbor works, and has been largely used in different parts of the world. Unless something of that kind is done it will be necessary to have a wall which will stand by gravity. At Darwin, where there is a 23 ft. 6 in. rise and fall of tide, and 30 feet of water is required at low tide, a big height of material would have to be supplied. The alternative to the rods is to have a tremendous base. 60 or 70 feet would be needed at the base, and solid concrete up to three or four feet in width at the top. That great weight of material can be avoided by tying the wall back to support it. It will not be so solid as a monolithic structure, which would last for probably thousands of years. The cost of the latter would be terrific. The sum of £120,000 estimated for the pro-

posed structure could be multiplied by ten, and then it would be below the mark. One witness said that the wall should be 100 feet further out. If that were done my proposed method could not be adopted. It would then have to be a gravity wall.

277. To Senator Lynch.—Steel sheet piling system has been in use for ten or fifteen years. It is being used more and more every day. I suggest that the piling should be covered with concrete. I should construct a gantry from the shore and let it project over the water 50 or 60 feet. On that I would mount a grab crane and dig a trench through the soft material. When I got down to fairly solid material, which I do not think would be very far, I would start to drive the sheet piles. I would put the forms round the sheet piling and run the concrete. I would then run the gantry out and do another 60 or 60 feet. Forms of timber or steel would hold the concrete in position. The forms would be removed and used on the next 50 feet. I would rely on the adhesion of the concrete and the reinforcement to keep it in place. The concrete would be locked in the sheet-piling. One pile goes up the full height, but the next is less than the full height. I believe such a wharf would withstand the buffeting of ships coming alongside. The reinforcement might be unnecessary, but I would put it in. I cannot cite any instance in which sheet-piling has been used for wharfs in Australia, but it is being used at Duke and Orr's dock, Melbourne. That dock is now being repaired. Timber was used previously, but they are now using the steel sheet-piling. The length of the piles is probably very great, because there is no foundation there. I adhere to my opinion that the sheet-piling can be successfully driven at Darwin. A timber pile shod with iron will not drive anywhere like so well as a steel sheet pile. The difference is comparable to driving a wire nail and a butcher's skewer. An iron point might be placed on the skewer, but it would not drive like a wire nail. There is harder material in Sydney Harbor than exists at Darwin, but it would not be wise to test the driving of misleading information. Quarts and bobbles are difficult to deal with in a bore. The late Engineer-in-Chief of South Australia, in his evidence, had in view a gravity wall between Stokes Hill and Fort Hill. He would certainly have had in his mind a gravity wall, because the other methods of construction had not then been proposed. I would have to make some calculations to determine the difference between the cost of my proposal and of a concrete wall. Roughly, a concrete wall would have to be 60 or 70 feet wide at the bottom and over 60 feet high. The bottom would have to be dredged level. I do not anticipate any trouble from silt and mud. I have not the slightest doubt in that regard. Cast iron corrodes wherever it is immersed in salt water. I expect galvanic action takes place between the carbon and the iron. The iron seems to disappear and leave the graphite behind. I was at Darwin when the quarantine boat came alongside, and the whole wharf worked backwards and forwards. It was worse when the *Montoro* came alongside. If a big meat ship came alongside with any way on her it is doubtful whether the jetty would be removed. The estimate of 1s. 6d. per cubic yard for the removal of earth is a very low one. I adhere to my estimate of £120,000. If the work is properly laid out and modern plant is obtained, that amount should easily cover it. If wheelbarrows and picks and shovels are used instead of steam shovels, steam pile drivers, and modern plant, as much money can be spent as is necessary. I am optimistic regarding the proposal. I am a talker with people who came to see Senator Pearce, and I cannot say without omission that if the place had a chance it would develop into something big. I could not imagine that everyone I spoke to was telling lies about the potential mineral wealth there. That wealth must be considerable, but it cannot be got at. The existing railway

has had no effect in developing the country, simply because there is no approach to the railway. It might as well be in a tunnel the whole distance. A railway is not sufficient to develop any country. The complement of a railway is roads. Communication with the railway is needed. I had a look at the country as far as I was able. Mr. Urquhart had been all over it. He went to the McDonnell Ranges a year or two ago. Mr. Playford has been all over it. These people assured me that for six months in the year, at any rate, the roads would carry any country. The hills were knocked down and the creek crossings made passable. The amount of money required for that would be very small. With cheap petrol, transport could be greatly improved. Petrol might be landed in bulk at Darwin for 9d. a gallon. When cheap transport is obtained the problem of development is solved. Much delay is caused at present by the type of wharf in use, and the turntable. Good arriving by ships to-day cannot be obtained for a week, and then probably it has been pillaged. I went about 40 miles into the Territory. I notice that Dr. Gilruth, in a recent letter, does not speak optimistically about the Territory. He mentions the Barkly Tablelands as a place where sheep-raising has decreased. On the Avon Downs station there were 50,000 sheep ten years ago, but there is not one to-day. The explanation is to be found in the enormous cost of supplies.

278. To Mr. Mkeley.—I had to report on harbor facilities for Port Darwin and on the possibility of opening up a port in the Gulf. It did not include making plans and specifications for the work, but I was asked to make an estimate of the cost. To that I had made a certain estimate. I was merely sent to advise the Minister. Some other authority than myself will have to take on the construction work. Harbor engineers would have to be employed on that job. I assumed a level for the silt. I guessed it from the lie of the land. I did not make any investigations from the South Australian authorities or Dr. Jensen. I had no time. There is no guarantee that the silt is so faulty at that place. Before that could be definitely stated boring would have to be done. I do not know that even boring would show a fault. The difficulty of boring in such country is very great, and the results may be quite misleading. Misleading results have been obtained from boring in other harbor works in other parts of the world. The present wharf is used for large ships. The piles are only twelve-inch, and they are stayed across with very small stays clamped on to the piles. The structure is not sufficiently solid to stand a bump from a heavy ship. The *Eastern*, which has called there, is not a large ship. She is not one-fourth of the size of the ships that will load meat there. I made a thorough examination of the capacity of the turn-table on the wharf. Senator Pearce and I went into it together. We took the times. Not much cargo can be handled on the wharf.

279. To Mr. Cook.—I gave some details of my estimates in my first evidence. The piles could be rolled by the Broken Hill Company, but the locking bars would have to be imported. The labor for the rolling of the wharf would have to be taken from the South. Not very much labour would be required. Probably about fifty or sixty men would be sufficient. I cannot say that I have had considerable experience with concrete piles, but I have seen a lot of work done with them. In some places they have failed. They have failed in sea water, but it is admitted now that their failure was due to faults in mixing or bad cement. The present wharf would last for twenty-five years if £2,000 a year were spent on its maintenance. The life of the wharf recommended by me would be indefinite. I am in favour of Darwin being thrown open as a free port. That would break the back of principal reasons for the Territory does not go ahead is the high cost of transport and of living. If these are cheapened private enterprise will do the rest. The

Territory needs a new wharf. With a free port residents would be able to get their machinery free of duty. Before anything can be done to develop the mining industry, a lot of machinery is needed. The cost of food and clothing would also be materially reduced if the port was made free. Food would not go to Darwin from the South, but from Singapore and the East. I do not think it is necessary to make roads in the Territory. People do not want to travel in the wet season. All that is necessary is to develop the hills and make concrete crossings in the rivers. Notwithstanding the evidence given to the contrary I lay out in the last altered my opinion.

280. To Senator Barnes.—I was asked to report on harbor facilities at Port Darwin, but I found I could not do so without considering the question of the development of the Territory. I had to inquire whether the trade and prospects of the Territory would justify my recommendation. I knew the capacity of the wharf for handling goods, but I cannot remember the figures. Everyone admits that it is a most inefficient wharf. Whatever they are doing up there at present can be done much better elsewhere. To handle 35,000 tons of goods a year on the existing wharf is out of the question. It could only be done at very great cost. Only a few hundred tons can be handled economically. Because they can handle twenty or thirty tons at a certain cost, they cannot necessarily handle a thousand or six thousand tons at the same cost. Immediately the quantity of goods going over the wharf is increased the expenditure is increased. There is not enough area on the wharf for working cargo. They put a couple of trestles beside each hatch with a few planks on top. The goods are dumped down, dragged to a truck and stacked in it. The trucks are turned at the turn-table, and has to wait for an engine, which drags them to a sorting shed half a mile away. In the sorting shed they are again stacked up. The system is archaic. I am sure South Australia is better arranged for getting fodder into the ark. I did not have any tests made of the material into which the steel piles will have to be driven. I merely had to stand on the surface and use my judgment. If my judgment is not regarded as sound I suggest that the Government should send a pile up there and drive it. I did not know that any evidence was in existence. I had a conversation with the foreman who was responsible for driving the piles for increasing the width of the jetty, and he said he had no difficulty whatever. I also questioned him about dredging. He told me that a grab-dredge dug the stuff quite easily. I did not see the reports of wharf construction carried out in the Territory by the South Australian Government, but I was in South Australia when the new part of the wharf was constructed. I knew the engineer, Mr. Slade, intimately, and discussed the Port Darwin wharf with him. I knew of all the difficulties that were experienced. I know that they had difficulty in getting some of the piles down. I lent them one of my naval divers, who did most of the diving for them, and he gave me a full report when he came back.

281. To Mr. Jackson.—I am quite certain that anyone going to Darwin would get a wrong impression of the Northern Territory. Most of the troubles of settlers would vanish if they could get cheap transport and cheap food. If a man keeps sober there is no reason why he should not be able to work in that climate. I never felt better in my life than when I was there. The conditions to which women are subjected are awful. To take a woman up there is cruelty. The conditions are better inland, where women can get help from gins. I have never seen a real tropical house in Australia. I have not seen any attempt to make conditions better for women in the home. The kitchens expected to cook food, keep her house clean, make clothes, and bear children, in a place like that, I do not know. It is inhuman to expect women to work in such conditions.

282. To Senator Lynch.—It would be very costly to retain the present wharf and make a curved approach from the existing line. It would be wasteful to do it. It would be better to spend a little more money and get a good wharf. The proposal would get over the difficulty of the turn-table; but what is wanted is a wide wharf to carry a shed. I cannot express an opinion about the cost of the proposal, but I have heard of an estimate of £98,000. Such an expenditure to get over the difficulty of a turn-table appears to me to be a waste. I would suggest a survey by competent engineers to find out the best way of utilizing the water front area. I would certainly get the best advice possible. Something should be done as quickly as possible. That was why Senator Pearce rushed me over there. For constructing the new wharf it may be necessary to import a harbor engineer with modern knowledge.

(Taken at Sydney.)

THURSDAY, 21st FEBRUARY, 1924.

Present:

Senator Lynch, in the Chair;

Senator Barnes	Mr. Cook
Senator Reid	Mr. Jackson.
Mr. Blakeley	

Albert Brown, Stationmaster, Darwin, sworn and examined.

283. To Senator Lynch.—I have been connected with the Railway Department for about eleven years. I have been four years in my present position. I am familiar with the working of the wharf at Darwin. The want of facilities at the wharf do not lead to any considerable delay. The whole of the cargo from the wharf passes through the station. We can handle 40 wagons an hour, which is sufficient to keep a ship working at four hatches. While the Northern Agency Company was working the wharf a lot of trouble was experienced with labour. No one knew how to work the wharf properly. The delay in handling was due to the inefficiency of labour and want of proper supervision. The Department has experienced a good deal of trouble with labour owing to strikes. Everything is satisfactory now. The present system is satisfactory. I cannot suggest how it could be improved. Handling charges are now 11s. 6d., which covers 6s. 6d. for the wharf, and 5s. for the shed. We have nothing to do with the ships. That work is done by the agents through a stevedore. The charge of 6s. 6d. covers labour from the ship's slings on to the trucks on the wharf. There is 1s. 6d. for shunting from the wharf to the shed, which brings the total cost to 13s. There is also wharfage. The charge at one wharf was 25s. The Department had nothing to do with the wharf then. The extra man employed on the turntable could be dispensed with, and his work could be done by one of the shunters. I support the statement that 1s. 9d. is the extra cost involved by the turntable. The men working the turntable receive 5s. an hour for ordinary time, and 7s. 6d. for overtime. Two men are sent to each hatch are employed shunting on the wharf. With four hatches unloading eight men would be shunting on the wharf. The men working on the different hatches give one another a hand in moving the wagons. The shunters do not handle the cargo. If the turntable was dispensed with, and engines were used for shunting, it would save two men at each hatch. The capacity of the trucks is from 8 tons to 10 tons. Ten tons is the maximum. Most of the trucks hold 6 tons. When we use 10-ton wagons there is a large saving in shunting. There is less disorganization of the work with the larger trucks. It is not the turntable that delays ships. Ships have not been delayed since I have had charge of the wharf. I have not received or heard

of complaints by shipmasters regarding delay in handling cargo. I am on the wharf from the time a ship is moored until she sails. The erection of a goods shed on the wharf would effect a large saving. In many other Australian ports the sorting sheds are some distance from the wharf. There was a traverser at Darwin, but it is now dismantled. I have never seen it worked. I have not seen traversers working at Geelong or Melbourne. It was not operated by electric power. I cannot say whether the use of a traverser would be an advantage. I have seen the insulated cars used by Vestey Brothers at work. They give satisfaction. Vestey Brothers may have complained of their unsuitability, but as far as I know they are all right. I have not known meat to be returned to the freezer because of its soft condition after being in the trucks. I was at Darwin while Vestey's were operating. If we tried to dispense with a man on the turntable the other men on the wharf would probably object. It could be done, however, without injustice to the men. I have some knowledge of the mineral deposits in the Territory. There are three or four mines working at Murrumbidgee, two at Pine Creek, and two at Brock's Creek. There is room for great development in the mining industry. The development of that industry would materially assist the railways. Very few minerals have been carried by the railways in the last twelve months. That was due to the unsatisfactory price of tin. At the present time the Territory is very stagnant. The Migration Act has nothing to do with that, nor has insufficient wharf accommodation. I do not think there will be much activity for the next two years. If Vestey's works re-open it will improve matters. That would be of the principal life-springs of the Territory. Most of the people are looking forward to Vestey's re-opening. There were 60 to 80 men working there recently, but they were put off. The present wharfage accommodation is sufficient. In the event of Vestey's starting again the meat could be taken away fast enough to obviate any complaints. Vestey's have never been delayed by us. We have always been waiting for them. I have had nothing to do with any working large ships. I have not heard any complaints from officers about the danger of knocking the wharf over. I do not approve of spending £120,000 on a new wharf. The trouble about the present wharf is that if one ship is at the outside berth a second ship has to wait until the first one is clear. Big boats will not take the inside berth. Four men work under my control. They give general satisfaction. The pay is 2s. 8d. an hour in Sydney or Melbourne. They receive 2s. 8d. an hour. I did not know that Vestey's paid the railway something in addition to what they received from the Department. Vestey's to my knowledge paid the railway men the difference between what the Department paid them and what Vestey's employees received.

284. To Mr. Blakeley.—The turntable will handle 40 trucks, on and off, per hour. That is equivalent to 240 tons an hour under ordinary working conditions. A four-hatch ship would be capable of absorbing 40 tons an hour. That allows a sufficient margin for breakdowns, holidays, &c. It would not be wise to make a new wharf merely because of the turntable. I have not seen any automatic arrangement for working the turntable. Wharf charges on the new wharf would have to cover interest on a capital expenditure of £120,000. I cannot say how much per ton that would involve, but it would be considerable. Where organization and supervision are bad labour becomes inefficient. If men are compelled to cease work because of lack of cargo, it is a waste of money. The cause, in that case, is want of proper supervision.

285. By Senator Reid.—It was in 1922 that the Railway Department took over the wharf. I have not known of any delays with the meat trains. There have been no delays through a meat train not arriving on the wharf. I am on the wharf during loading operations. Now that the Department controls the wharf

we do not expect delays while waiting for trucks. I have received no complaints of delays from the general public or business people. The duty of the extra man on the turntable is to put the pins in the slots. The man who brings the truck down could do that. No danger would arise from the operation. The extra man was put on in the time of the Northern Agency. It receives 5s. an hour, and is paid continuously time whether the turn-table is working or not while the ship is working.

286. To Senator Lynch.—The present wharf and its approaches are adequate. I have wondered whether traversers would be of any assistance. I had nothing to do with the suggestion made to Admiral Clarkson regarding the approach to the wharf. As far as I can remember now, there were four to eight meat trucks in a train load. When loading we had an engine running backwards and forwards, and another on the wharf. It needs two engines for the job. No improvements can be made on the wharf at the present time.

(Taken at Sydney.)

MONDAY, 25th FEBRUARY, 1924.

Present:

Senator Lynch, in the Chair;

Senator Barnes	Mr. Cook
Senator Reid	Mr. Jackson
Mr. Blakeley	Mr. Mackay.

Charles William Davy Coscher, Managing Director of the North Australian Meat Company Limited and the Northern Agency Limited, re-called and further examined.

287. To Senator Lynch.—I would like to make a preliminary statement regarding the position my company's works occupy in this matter. There seems to be an impression of the kind of bringing the improved wharfage facilities at Darwin is that the meat works will make a profit, even in the face of the certainty that the railways will make a loss. I will deal with these two ideas separately. The meatworks suffered heavy losses even during the three years of operations. The losses then totalled £220,000. This excludes interest, but includes depreciation. The meatworks have given up all idea of making a profit at least for some years, and although they may be the voice calling for these improvements, yet the real pressure comes from the pastoralists, who agitated for years to get a meatworks at Darwin. In converting cattle into beef and putting it on the market, there is only one thing beyond the power of Australia and Australians to control, although they can influence it by sending good or bad quality, and that is the price realized overseas. Out of the price realized have to come freight, meatworks charges, railway charges, and, in fact, every other cost appertaining to the business, and the balance is available for the pastoralist. If there's any waste of time or money throughout the whole transaction it is the pastoralist who is most affected, and the real reason why the meatworks are not operating to-day is because the costs would swamp all, or practically all, or even more than all the price resulting from the sale of the product. It may be that some time in the future cotton or some other product is going to be a great success in the Territory, but the fact remains that cattle are now grown successfully, and have been produced successfully for many years. The pastoralists know that they can continue to produce these cattle, and in increasing numbers. There is ample room for many other settlers to come there, and they will most certainly come if they see that those already there are making money. It is likewise true that neither the existing nor the new settlers can produce cattle to sell for anything. Every saving of money that can be achieved by means of an efficient wharf must inevitably come to the cattle-grower, and the whole pro-

blem of the Territory's development is, in a nutshell, to make cattle-growing a profitable occupation. Dealing now with the railways, they are owned by the Nation, and are intended primarily as a means of development. It might be that by closing the railway entirely, discharging every man, and not running a single train, the loss shown would be even less than it is to-day. It is probable, and, indeed, very likely, that if the railways were to get busy again, employing many men and running trains frequently, the loss in figures would be bigger than it is to-day, but I submit that such a test of profit or otherwise closing the railway is entirely incorrect, as it overlooks the fact that at present you have one and three-quarter million pounds invested which is not performing its proper function, either of transport or development. As a matter of fact, there is no reason why the railways should lose if only they can get a sufficient volume of traffic. It may not pay them to run for a kill of 30,000, but neither will it pay the meatworks and the whole object of all concerned should be to increase the numbers of cattle so that finally a profit can be achieved both by the meatworks and the railway, and a fair price paid to the growers. In every annual report of the Commonwealth Railways complaint is made against the South Australian Government for not making their lands along the East-West railway available for occupation. They are criticised year after year for being responsible for the small local revenue derived by the railway. The criticism seems certainly well merited, but why is the same railway administration not a little more helpful with its Northern Territory line where the country on either side is already occupied. I wish to protest very strongly against the present system of railway administration in the Northern Territory which stonewalls every proposal for development. I have lived there for eight years, and I know what I am talking about. The average Territorian who has anything to do with the railway is heartbroken, and does not bother bringing his grievances up because he knows by experience that he will get no redress. I have refused to lie down under this treatment. I have not been there long enough to have my heart broken, and I am now apparently heartily disliked by the officers of the Department in Melbourne. I am sorry for this. I like them personally, and have the greatest admiration for their efficiency as railway builders and administrators, but what I fall foul of is the system which enables them to say, "If effect were given to Admiral Clarkson's proposal, and a new wharf costing £120,000 were constructed, the present charges would have to be increased in order to return interest on the capital expenditure." If this were the policy animating the men who have built Australia we would have no hot harbours, no water scheme for Kalbarri, no Yarru Irrigation works, no hydro-electric schemes, no Tasman, and none of the other big schemes which have enabled trade and industry to be developed. You might as well send a bill for board and lodging to the baby in its cradle. The Postmaster-General's Department is showing a more reasonable attitude, they do not obstruct business, but say how much they will find and how much they think the Department for the Territory should find. I have previously quoted to the Committee examples of small expenditures which the Railway Department has refused to make for the benefit of the development of the Territory, and I give another recent case where they refused to depart from their strict departmental attitude of trying to make the line pay. I had in the following correspondence with the Commonwealth Railways in December last re a shipment of live cattle to Java:—

The Secretary, Commonwealth Railways,
Melbourne.

Live Cattle to Java.

Dear Sir,

After repeated efforts extending over some years, we have at last received an order for a sample lot of

Darwin cattle to go to Java. Shipping has been not the least of our difficulties, but the K.P.M. Company have agreed to put the *Houtman* into Darwin about 27th inst. She can carry only 50 to 60 head, and the freight on such a small number will nothing like pay the expenses of putting the steamer into Darwin. On our part, the expense of mustering, driving, and shipping a small number, and providing an escort for them to Java, will mean that we practically give the cattle away.

2 However, these efforts, if successful, will benefit the Territory, and we hope the Commissioner will assist this venture by granting a concession rate. It is impossible to make a train load as the vessel cannot carry them. We should like to hear what he will carry this sample lot at the rate per head applicable to a full train load. They will probably be trucked at Fountainhead.

3 As this was being written, we hear Java has prohibited the importation of Australian cattle owing to the outbreak of rinderpest at Fremantle. We shall go ahead with our arrangements in the meantime in the hope that this prohibition will be lifted.

Yours faithfully,

The Australian Investment Agency Limited,
(Sgd.) G. J. EDWARDS, Manager.
Commonwealth Railways.
Melbourne, 14th December, 1923.

G. J. EDWARDS, Esq.,

The Australian Investment Agency Ltd., Sydney.

Dear Sir,

I am in receipt of your communication of 7th inst., stating that arrangements have been made to ship between 50 and 60 head of cattle from Darwin to Java by the *Houtman* about 27th idem, and that the cattle will probably be trucked at Fountainhead.

2 Your application for a concession in respect of the freight charges has been submitted to the Commissioner, who regrets that he is unable to authorize any departure from the ordinary public rate from Fountainhead of £9 14s. per truck.

3 I am further desired to say that it would be impracticable to run a special train for the conveyance of such a limited number of cattle, and it would be necessary, therefore, to attach the trucks to the fortnightly mixed train leaving Fountainhead on 21st December.

Yours faithfully,

(Sgd.) E. SIMS, Secretary.

You will see from this that if the steamer arrived a few days late for one fortnightly train it would have to wait until the next one. We thought the shipment would lead to a regular monthly business. Even the Dutch Shipping Company was willing to lose money to start the business, but our own railway would do nothing. We would have lost money on the experiment. It does not pay to ship under 400- or 500 head of cattle.

253. *To Mr. Mackay.*—The reduction in the rate would have amounted to 6s. or 7s. a head to us or to other cattle people who sent the shipment. It was not definitely arranged who would send the shipment. *Propos* of the function of a railway in a new country. I had in an extract from the *London Times* of 18th October last, giving the gist of a memorandum issued by the London Chamber of Commerce in regard to the development of certain British dependencies. A lot of the suggestions of this hard-headed body of business men can be applied *en bloc* to the Northern Territory:—

TROPICAL AFRICA.

Development of British Dependencies.

The London Chamber of Commerce has issued a memorandum adopted at a joint meeting of

members of the West African Section and the East African Section of the Chamber, and forwarded to the Private Enterprise Committee sitting at the Colonial Office.

It is pointed out that the governing sentence of the terms of reference reads:—"To consider whether, and if so what, measures can be taken to encourage private enterprise in the development of the British Dependencies in East and West Tropical Africa." This opens the inquiry to the widest grounds of consideration. The succeeding sentence directs special attention to existing and projected schemes of transportation, but transportation is in itself only one of the factors influencing the development of these territories. Its purpose is to promote the only sound economic basis of all private enterprise and development in those territories, viz., the increase of economic production by the inhabitants.

"We are convinced," it is stated, "that the only stimulus that, whether in stages or still more in the long run, can become permanently effective is that of keeping down to the lowest possible figures the expenses that fall upon the economic products before they reach the world's market. We submit, with every respect, that it is sometimes overlooked by the Governors and other administrative officers that it is impossible for traders dealing in the products of these countries to call the tube as to their eventual selling value on the world's markets, because unultimate values are determined by world conditions, and it is only by deducting from world values in the consuming markets the ocean freights, insurances, African railway charges, export duties, and other burdens that fall upon the products before they can reach these markets, that it is possible to arrive at the price which it is economically possible to pay to the native producers at the point of production. As regards the East African group of countries, and even the white settlement area of Kenya, precisely the same conditions arise. The price realizable by the coffee and sisal planter or the maize farmer, is fixed by the world's price for his commodity in the consuming markets, less the charges just enumerated."

"We submit that the lowest possible railway rates and the abolition of export duties are absolutely essential to increased production—that is to say, to the rapid development of the territories concerned. Other factors in the inducement towards increased native production, which, we think, require more attention, and, indeed, more expenditure than they have yet received, are—(a) Education on sound lines; (b) medical services, sanitation and hygiene, more particularly with the object of lowering the infantile death rate. We might mention that in 1922 the rate for London was 61 per 1,000 births, and for the Gold Coast it was 254 for 1,000 births."

Proposals with regard to roads, railways, and harbours are then outlined. As regards trunk lines and their branches, it is argued that the administration of them by the State requires a drastic change of system, both financially and administratively. They should on no account be regarded as earners of revenue for the support of the local Treasury. An attempt should be made to devise the best scheme of associating the best commercial elements of the colony with the running of these organizations.

An efficient wharf, whether new or remodelled, will mean in non-sorted cargo—

- (a) Saving labour at turntable (two men).
- (b) Saving labour in shunting (two to six men).

(c) Saving time, as a direct shunt right on or off with a locomotive is quicker than one interrupted by a turntable and partially performed by hand.

(d) Therefore saving time at high wages of all hands working a ship.

(e) Therefore reduced handling costs.

(f) The ship's stay is reduced by (c).

(g) A combination to justify reduced freights.

All these things would save time and reduce running costs. The stay of ships in port would be reduced, and the tendency would be to reduce freights. I saw the head of the Burns Philp Line on Friday last, and he authorized me to say that his company was prepared to take into immediate account in fixing freights any reduced cost of handling, or reduced time in port resulting from improved wharfage facilities. I think that line could be persuaded to make some concession when it is definitely announced that the work is being proceeded with. With sorted cargo (which covers all supplies for the community) an efficient wharf will mean—

(h) All the above from (a) to (g).

(i) Saving a considerable amount of railway running staff labour, largely overtime at present incurred when a ship is discharging, as all the goods for town would not go into trucks, and those for the country could be put in trucks in ordinary hours just before the up country train leaves.

(j) Reducing chances of pilferage and losses due to faulty stowage trucks.

(k) Reducing chances of weather damage.

(l) Reducing cost of tarpaulins and labour expense in using them.

The present loading and unloading arrangements at Darwin are a vicious circle which gets the Territory nowhere. Efficient arrangements would be a beneficent progression, leading the Territory to prosperity. The turntable, with the present improved labour, can just manage to feed and relieve two hatches. There is delay with three hatches, increasing rapidly as the number of hatches increases. Very little effort will make the Territory require a capacity of at least four to six hatches—perhaps not every week—but at least very frequently. The Government's policy of increased shipping means this. Even with the present attenuated trade there were at least two occasions in the limited time that I was in Darwin last year, when overseas boats were seriously delayed by inability to get into the wharf. Had they been able to get in, and the labour been available to work four hatches, they would have had the experiences which their captains (Mortimer and Donaldson) had previously had in regard to turntable delays. When the works were operating it happened repeatedly that six hatches were being worked on two shifts. When we tried to operate four shifts the delay was terrible, and the expense fearful. The day after the Public Works Committee left Darwin, a Naval collier, the *Biloela*, arrived. She went to the outer berth, and began to discharge coal. The next day Burns Philp's ship, the *Marella*, arrived, and the Naval boat would not leave the outer berth, although she could have gone to the inner berth, until instructions had been received from Melbourne. The *Marella* went outside the Naval berth and tried to work her cargo across the *Biloela*. After working for more than a day that way the *Biloela* got instructions to pull out. The *Marella* rapidly finished her work, and the *Biloela* came back again. By Saturday she had not finished the discharge of her coal, having lost practically two days through the clash with the other boat. She received instructions to return South with 800 tons of coal on board that she had brought from the South. The system resulted in a loss of forty-eight hours to the *Marella* and forty-eight hours to the *Biloela*. That kind of thing happened repeatedly when we were operating. When the captain of the *Biloela*

tried to go back to the wharf he was manoeuvring from 10.30 until 2 o'clock trying to get alongside. This was due to the set of currents across the wharf. The new wharf should be constructed with a view to minimizing the effect of that cross current. I believe some of the steamer captains have referred to that difficulty at the present wharf. I have seen them in difficulties repeatedly. Sometimes they bump into the wharf, and sometimes they overshoot it, it being impossible to calculate the effect of the current. They usually come in at high water. At present only the Burns Philp line is calling at Darwin. But for the rinderpest outbreak in Fremantle causing the Dutch Government to put an embargo on Territory cattle, the Royal Dutch Mail would have called in December, and this would have been the thin edge of the wedge of a regular service being resumed by them. It is reported that the Commonwealth proposes to subsidize a steamship line to facilitate Australian trade to China, and that this line will call at Darwin. It has also been proposed to induce a line to extend to Darwin from the New Guinea direction. Some of these things may not eventuate for some time, but Darwin's geographical position in Australia in relation to the East, and in relation to the valuable country behind it, all point to its importance as a port of call sooner or later—soon if the present hindrances, mainly artificial, to the development of the Territory are removed. Apart from its commercial importance it is likely to be a Naval calling place of considerable significance. Lighthouse vessels frequently call. It will undoubtedly be on the route of any aerial service from Europe to Australia. Its importance as a quarantine centre will be increased. All these activities, quite apart from the immense influence of direct railway communication with the other States, should justify a very liberal view being taken as to the establishment of the most efficient means of handling goods in and out. These considerations are quite apart from the effect of continued operations at the meatworks. I submit the following memorandum:—

THE CIRCULATION OF MONEY IN AUSTRALIA DUE TO THE OPERATIONS OF THE DARWIN MEATWORKS.

Senator Pearce, the Minister for Home and Territories, in giving evidence before the Federal Works Committee, in its inquiry into the wharfage facilities and other matters in the Northern Territory, brought forward some very interesting figures which show clearly what a valuable asset the Darwin Meatworks is, not only to the Northern Territory, but also to Australia.

The figures refer to the produce exported overseas from the Northern Territory for the six years ended 30th June last year. For the individual years they are as under:—

Year ending June, 1918	£308,410
" " " 1919	377,258
" " " 1920	277,627
" " " 1921	402,304
" " " 1922	14,706
" " " 1923	5,036
" " " 1923	14,846
	£34,634
	£957,938

These figures show that the exports for the first three of these years total £923,304 as against £34,634 for the last three years.

This is accounted for by the fact that the Darwin Meatworks operated in 1917, 1918, and 1919, and exported produce overseas during these years. The value of the meatworks' exports overseas accounted for £205,847. Therefore, outside the meatworks' products, only £17,457 worth of other goods were exported.

In addition to the figures quoted by Senator Pearce, the meatworks shipped to southern States products valued at £112,600, besides disposing locally of £10,924 worth. The total produce of

the meatworks during those three years amounted to £1,029,271. Australia is therefore better off to this extent for the operations of the Darwin Meatworks.

Nearly 70,000 cattle were treated in Darwin for which the meat company paid £288,313 to pastoralists and the Hres to the Railway Department's share being about £20,000.

All this money was spent in Australia. The pastoralists spent in wages, droving, &c., £100,000, and also spent £50,000 in permanent improvements to their runs. The meatworks' employees received in wages £400,000, and the steam-ship companies £45,000 in fares to take these men to and from the Northern States. A considerable portion of the men's wages was spent in the Territory, with the result that local business people flourished and Government Departments benefited by the added receipts from income tax, &c.

In the operation of the works, materials to the value of £174,000 were used, nearly all of which were purchased in the Southern States, and necessitated big freight bills being paid to shipping companies. The material used consisted principally of coal, salt, hessian, stockinette, tarpaulins, canvas, stationery and printing, benzine, oils, ammonia, pumps, piping, packing cases, casks, leather goods, butchers' utensils, scrubbing brushes, paints, lacquers, horse shoes, soap, soda, tar, rope, engineers' supplies, electrical fittings, &c.

Taking Senator Pearce's figures for the last three years, £16,000 of the total amount of £34,000 is accounted for by shipments of live cattle. This shows that, apart from the pastoral industry, the overseas trade did not exceed £3,000 per annum. This would be principally minerals, and therefore not likely to increase in any considerable quantity until better rail or road facilities are provided. It seems, therefore, necessary and essential that the cattle industry should be encouraged, as without it the Territory must fall to pieces.

It is interesting to note that during the three years that the meatworks were in operation the imports into the Territory from Southern States totalled 66,859 tons, for which the shipping companies in those years received freights exceeding £200,000.

At present the imports do not average 4,000 tons per annum.

It is claimed that if the pastoral industry can be got on a sound footing by means of re-opening the meatworks first, a large amount of the payments to pastoralists will be used in increasing their production by improving their holdings, which will absorb more labour and material from the south. Secondly, a large proportion of the savings of the workers will go into small holdings and subsidiary and other industries, as was happening when the meatworks had to shut down. Thirdly, opportunities will be given to present settlers to supply the demand for locally-grown products arising from the increased population caused by the meatworks' operations.

In short, if this industry can be put on its feet, it will also largely solve the problem of the empty north, and at the same time open a large market for Southern products and manufactures.

From that memo. it is evident that the pouring of such sums of money into a country by an industry capable of being doubled within ten years must result in the stimulation not only of that particular industry but of all sorts of subsidiary industries, such as the growing of fruit, vegetables, and fodder, pigs and poultry raising, milk production, building, brickmaking, timber getting, quarrying, horse, donkey, and mule raising, and supplying food, shelter, and transport for the increased population directly and indirectly required for cattle raising and meat production. The latest official figures show that the population of the Territory when the meatworks were operating was, in 1917-18,

4,908, which has steadily declined to to-day's figures—3,600. The figures in regard to the Darwin area would be even more striking. An extra population of 1,500 (i.e., 40 per cent. on present figures), especially a population making some money, is not only a substantial contribution to the problem of getting a community in occupation, but is an active factor in further development, particularly as in the present case a large number of the meatworks' employees are employed about six months per annum. This means that many men will be searching for useful occupations for the rest of the year. Some will engage in those subsidiary industries already indicated to provide food, shelter, and transport; others will go in for other industries, such as coconuts, cotton, &c.; others would take up fishing, for there are numerous valuable tropical marine products; the production of high-priced tropical agricultural products, such as camphor, vanilla, and kapok, which are grown in similar soils and climates elsewhere; and others would prospect for minerals. The value to the Commonwealth cannot be exaggerated of having such a large body of resourceful men and women, as the majority of people who go to the Territory are actively engaged in searching for fresh outlets for their energy, and backed by the certainty of "part-time" work in one important industry, as they would be if the pastoral industry was firmly established.

In regard to the pastoral industry itself, I have stated that it could be doubled within ten years. I can point to several stations in the Northern Territory and Western Australia that have doubled their brandings in the last seven years. If the pastoralist can make enough money to provide for his own meagre requirements, with a little over, he will put that little into (a) improvements that will reduce the mortality on and increase the fattening capabilities of his present herds and enable him to carry larger herds; (b) new blood that will increase his brandings and weights, and give him more immunity to disease. This is the case in the coastal area, which is pre-eminently smallholders' country. As the present occupants make good, they, or their sons, would take up unoccupied country further east and break that in; and so the process of thoroughly settling the country would proceed. I attach copy of a memo. presented to Senator Pearce by the Smallholders' Association in May, 1923:

DEVELOPMENT OF COASTAL AREA OF NORTHERN TERRITORY AND OPENING OF DARWIN MEATWORKS.

(Statement Presented to Senator Pearce, Minister for Home and Territories, at Darwin, 16th May, 1923, by Representatives of Pastoralists in Northern Portion of Northern Territory.)

1. The area of the No. 1 Pastoral District of the Northern Territory, which this deputation more particularly represents, is over 67,000 square miles. Of this 16,200 square miles, or 24 per cent., is taken up under pastoral lease, permit, or grazing licences.

2. In this area there are about 27,000 head of cattle; the owners of 23,000 head are present or represented here to-day.

3. Most of the country taken up was taken up twenty or more years ago. Some of the representatives present have been connected with this part of the Territory for 30 to 40 years. Others have been land-holders for over 30 years. Probably the average of all those represented is over twenty years. That means that there has been very little new blood introduced for over 20 years.

4. There must be a reason for this stagnation. The reason is that there has been only a very limited outlet for the stock; that limited outlet has barely sufficed to keep present holders going. It has not been such as to attract new settlers.

5. That the country is good is well demonstrated by the tenacity with which practical men have held on—men who have had experience of

other parts of Australia, and who would be free to become interested in those other parts did they not like the Territory better.

6. They have been buoyed up from year to year in the hope that some permanent market would develop. An occasional flash in the pan has induced them to carry on for still another spell, only to be followed by another disappointment, until now, when the rest of the cattle industry in Australia is depressed beyond all records, we find that we do not even have their outlets—we have no outlet at all.

7. A fair percentage of cattle in former years went to local butchers. This outlet has practically ceased.

8. This year the port has been equipped to ship cattle, and 2,534 had been shipped. We are at a disadvantage as compared with Wyndham. It costs five to seven times as much to ship a beast from Darwin as from Wyndham. The Government Secretary was supplied with full details on the 18th January.

9. Eventually, however, Darwin should be a much more important meatworks port than Wyndham because, whereas the cattle from which Wyndham draws are at their best from May to August, Darwin taps a similar area and also a further area where the cattle are at their best from September to December.

10. Darwin, with its present costs, can never compete effectively with Derby and Wyndham as a live cattle shipping port. We are, therefore, driven back to the fact that a meatworks is the most economical outlet for our products. A meatworks has been urged for over 30 years; now that there is one we are told that artificial difficulties, in addition to the great natural difficulties, prevent this works from operating. It seems to us from a consideration of the facts that these artificial difficulties are, or were, more or less caused by former Governments, and rather than this northern portion of Australia should drift further back to nature, we urge that the Government should remove those artificial difficulties.

11. Had the company asked for assistance because of other difficulties, its claim would be worthy of consideration; but, as there is no doubt it is only asking for such assistance as will help it to cope with these artificial difficulties, we think there should be no hesitation about giving it the necessary assistance, and in the interests of this northernmost section of Australia we urge that this be done, and done quickly, so that we may know where we are.

12. The area we more particularly represent is sometimes described as useless. We agree that it is useless, but only to the big holder, and in proof of that we mention the names of concerns (some well known) who failed to make a success in this area.—Fisher and Lyons, Goldsbrough, Mort, and Company, Dr. Brown, Eastern and African Cold Storage Company, Northern Territory Pastoral Company Limited, Ararua Cattle Company.

13. On some of this country small holders are now settled, and if they could only get an outlet for their stock they would be doing fairly. It is country which can only be developed by the residential owner, who can give it personal attention.

14. A nucleus of settlement has been formed around the railway line (although it is mostly inferior country, but it is nearest an outlet), and if a certain outlet was provided settlement would steadily spread to those parts further west, which are at present unoccupied. The aboriginals, who have been troublesome in the previous attempts to settle that port, would be gradually absorbed into useful occupations.

15. It is an ideal small man's country, as it is well watered and in many parts can be economically fenced. It requires personal attention in regard to burning off grass at different times of the year. It is also suitable for the farms of agriculture which have been proved successful as far as production, but require reduced transport costs and certainty of outlet to insure their establishment. A pastoralist making some return on his cattle would be certain to turn part of his attention to such matters.

16. As far as we know, only five stud bulls have been imported into this area in the last twenty years, because we have been unable to afford them. One of the first things most of us would do if we could sell our cattle, and had a certain outlet ahead of us, would be to import bulls to increase the weight of our cattle and the quality of the meat. Every cattle-man knows how herds deteriorate if no new blood is introduced, yet in spite of this the average weight of fats at five years would be well over 600 lbs. Even now there are small lots which average a good deal more. A bullock that averages 600 lbs. near the railway is more valuable than the beast that weighs over 700 lbs. 400 or 500 miles back.

17. The rainfall in this area can be relied on to be from 40 to 60 inches every year. A drought is absolutely unknown. The more stock are put on the country the better it will become; the grass will improve, and as the timber is cleared they will become thicker. We estimate that the present area held could carry four times its present herds, that is, at least 100,000 head, and if all the available country is taken up, No. 1 district will carry 300,000 head. We confidently assert no other part of the Territory can show such satisfactory possibilities.

18. Earlier we referred to stagnation, but the position is worse than that—the country has actually started to slip back. We understand that in the last two years 27 pastoral leases, totalling 8,502 square miles, have been surrendered.

19. There has been a great deal said about the shipment of live cattle to the East. We think this may be a good way of introducing these people to Australian beef, but we consider that is wrong—just as wrong as sending out any other raw material instead of manufacturing it as far as possible. The export of live cattle results in the minimum of employment of labour and the minimum circulation of money. Even if we did not get as good a price from the meatworks we would prefer to sell to them, as we and the country generally would benefit by the increased population resulting from the increased circulation of money.

20. We are of the opinion that an increased population would solve many of the difficulties which at present surround us. It would bring more enterprise and small capital into the country in the shape of men who, in the off season, would be prospecting or experimenting in growing various agricultural products. It would bring more shipping to the port, thus reducing the isolation.

21. The effect of the circulation of £120,000 for cattle purchases, and a similar sum or more for wages on top of the other benefits mentioned in the preceding paragraph, would have an immediate effect upon this section of the Territory, and, if maintained or increased year after year, would practically solve "the problem of the north" without any further calls on the Government.

22. We had proposed to raise various other subsidiary matters, but it is no use going on with them if there is not to be any better outlet for our cattle, and we would like to hear something definite from you regarding this. If you are not in favour

The circuit breakers for the above capstans, we understand, are in the cast-iron box below deck, and consider the breakers should be removed to the convenient position above the wharf deck for a repeated attention they are likely to require. The circuit breakers must be properly adjusted so as to carry the maximum amperes permissible without injury to the motor.

A manilla rope should be used for hauling purposes, and the permissible number of coils around the capstan head ascertained and recorded so as to reduce wear down to a minimum.

There are troubles with those capstans, but as skilled labour is easily available they are soon overcome. I quite agree that the railway could handle 60,000 tons of cargo per annum, that is 10 tons per hatch for two hatches, ten hours a day, for 300 days in a year; but I do not think the railway is going to have things organized as nicely as that. It is nearly as neat as a Ford motor car plant. It should not be many years before there is 60,000 tons going over the Darwin wharf, but the wharf is not going to be called upon to handle it at the rate of 1,200 tons every week. Some weeks there may be five or six times that and other weeks nothing. We have lost so much money by shutting down to demonstrate to the Government that the position of Darwin was impossible (and it will take some more money to get the wheels moving again), that we do not feel like re-starting unless we see the way clear to go right ahead and develop the business to the utmost. We certainly do not see that with the present miserable wharf. I admit it is good enough for Darwin now that Darwin is dead, and it may not be much worse than some wharfs provided for "one-horse" places elsewhere that are likely to be "one-horse" places for a long time; but we are only interested in Darwin if it can be pulled right out of that category and made an efficient port not only for the receipt and despatch of goods, but for their transport. I say this not so much from the viewpoint of the meat-works, but because as soon as it is not before, the railway goes through to Darwin, Darwin will be a terminal port for some shipping lines from the East, and cargo will come for transhipment if it can be handled economically. Darwin will then need much more than the two efficient berths which, I maintain, are essential now for the immediate future, which holds the extension of the railway to Daly Waters and the re-opening of the meatworks. When I recall the confusion and waste of time, and therefore of money which used to occur when the Railway Department was only building 50 miles of railway and we were building the works, I am surprised at that Department now so stubbornly opposing any improvement to the wharfage facilities when they are planning to build the bridge over the Katherine River, the biggest bridge between Darwin and Adelaide, and are further 200 miles of railway to Daly Waters, and are suggesting that we should re-open the meat-works. When we were building the works trucks were usually so short that material had to be loaded from the boat on to the trucks and thrown out on the railway yard half a mile from the wharf, so that the trucks could be sent back immediately to the boat. When the boat had left the material had to be loaded again into the trucks and taken to the works. We paid the cost of that, and lost tens of thousands of pounds by it. Even when we had the trucks at the works the engine would wait for them to be emptied so as to take them back to the steamer. Instead of being able to organize the distribution of material we had to unload it hurriedly wherever the trucks happened to be landed. That occurred both before and after the improvement of the turntable. They have now sent more trucks up, but if the railway to Daly Waters is to be built, trucks will have to be sent the full length of the existing line, and further, it will be necessary to make efficient use of every available wheel. It can be imagined that the single line from Darwin to Emungalen and the exist-

ing rolling-stock will be kept busy with three empty cattle trains going down every day and three full ones every night, plus the railway construction traffic, the increasing passenger and goods traffic, and the supplies to and the exports from the meat-works. The maximum service will be wanted out of every wheel without any being employed between wharf and sorting shed and being held up through break-down of mechanical gadgets on the wharf. I protest most vehemently against a repetition of the iniquitous system of make-shifts and narrow margins against which private enterprise has struggled ineffectively in the past. I have never heard of the wilful destruction of armatures to prevent the use of electric power on Darwin wharf. A new electric power plant was installed about 1918 to operate the turntable and capstans. After constantly breaking down and causing losses of hundred of pounds to the steam-ship owners and consumers through keeping highly paid men idle, it was abandoned, and recourse was had to steam, as had been suggested by us on 2nd July, 1917, as being more efficient. I hand in a memorandum *re* the genesis, &c., of the present turntable on Darwin wharf:—

MEMORANDUM *RE* PRESENT TURNTABLE ON DARWIN WHARF.

17th March, 1916.—Railway Department advised owing scarcity steel not putting curved approach jolly, but putting large turntable to carry two four-wheel waggon.

30th March, 1916.—We strongly protested requesting curvo. Also protests in person by our Sydney representative in Melbourne.

27th June, 1916.—Department state will probably install two turntables.

30th June, 1916.—Mr. G. F. Elliott, Brisbane Harbor Engineer, reported one turntable not as satisfactory as two, and advisable at no distant date bring trucks on and off with engine.

6th July, 1916.—We agreed Elliott's suggestion, provided it was only temporary and that a curvo connexion be proceeded with at an early date.

6th September, 1916.—Department advised that it proposed to install only one turntable.

5th September, 1916.—We protested and formally notified it that we would claim any loss through failure to give facilities according agreement.

6th January, 1917.—Department advised that it had finally decided only one turntable.

2nd July, 1917.—Installation turntable nearly completed, but no power in sight, we suggested using donkey-engine. One available.

13th July, 1917.—We advised that it took five men to move turntable, and they cannot always move two full trucks; handling goods slower and more expensive than ever before.

17th July, 1917.—We sent in account for costs of operating turntable as these never previously been incurred.

27th July, 1917.—Department declined pay.

27th July, 1917.—Again wrote urging use steam.

27th July, 1917.—Commissioner advises of opinion unnecessary install steam.

30th July, 1917.—Returned accounts asking them to be paid, and that Government provide labour to operate, as they had failed to provide power.

October 1917.—Steam installed.

May to September, 1918.—Electricity was being used, but so uncertain steam kept up in boiler (and kerosene lamps in reserve for lighting).

May to September—16th September, 1918 (or thereabouts).—Electricity abandoned and steam used since.

This clearly shows that the turntable was only intended as a temporary device.

Mr. Henderson's report on "Capstans, Turntable, and Power Plant," in 1918, would be valuable to the Committee. He was Chief Mechanical Engineer to the Commonwealth Railways for some years. He has Scotch, Indian, and American, as well as Australian experience, and enjoys a very high reputation as an engineer and a practical man. He is now, I understand, in private practice in South Australia. If the position of the capstans is altered, and they enable the number of men now employed shunting to be reduced, and this reduction is not off-set by the cost of running the plant and an allowance for upkeep and depreciation, then, of course, the cost of handling cargo would be reduced, but I should doubt if it would be "materially reduced." If the capstans are electrically run, there is always danger of a break-down, especially when there is a shortage of skilled men, as there is in Darwin, to operate such things. One of the reasons given for not providing an oil engine emergency railway carriage on the Darwin-Emungalen line is the difficulty of getting reliable motor-mechanics. This is said to have been the trouble with the various motor-boats in the Government service in recent years. These things look all right on paper, but my experience as a business man is to play for safety, especially in out-of-the-way places where skilled labour is scarce and ordinary labour is dear. We have already had quite enough misery lost through the breaking down of electrical gear on the wharf. There was a traverser on the wharf. It was presumably removed within the last six or seven years. I assume that it was not found effective. It was used on a steamer that brought the first load of railway material for the construction of the railway extension from Pine Creek to Emungalen. I cannot say whether it was of the same model as that which is in use at Port Melbourne. I do not know why it was considered unsatisfactory. It was before my time. Horses were not tried by us on the Darwin wharf because it would not have been necessary to have at least three or four of them to handle the long shafts that were sometimes worked when things were broke, and to have a man always looking after them. The cost of all this would not have shown any marked saving on man-shunting. It costs at least 20s per week to feed a draught horse in Darwin, and a stableman would get £6 to £7 per week. It was not possible to get horses from outside, as just when the horses were wanted on the wharf would be the time that the contractors would be busy carting goods from the ship. The Railway Department have no doubt also considered horses uneconomical during the three years they have had control of wharf operations, as they have not used them. I am told that on the Darwin wharf nearly forty years ago, when they had horses working on the wharf, they got foul of trucks in turning round, and two were thrown overboard and drowned. To use horses to the deck of the wharf should probably be planked level with the rails, and, anyway, I do not see how horses could get trucks on to the turntable. The fact that it is being made for the retention of the turntable and capstans is just an example of what is always apt to happen when a stop-gap policy is followed. That the installation of the turntable and capstans was a stop-gap policy is shown by the memorandum I have handed in *re* the turntable, and more particularly by Mr. Elliott's report, dated 30th June, 1916, where he says—

If the additional width can be built by next March, I consider that, pending construction of curved approach, two smaller transfer tables (as shown on helio), capable of taking one refrigerating car each, would cope with the traffic more satisfactorily than the proposed 38-ft. table, and in the event of the electric power failing at any time they could be worked by hand. Failing the extra widening, there would be barely room for two tables, and possibly one would be more convenient if not made too heavy. In any case, the

electric capstans suggested by you would certainly expedite the movement of the trucks on the wharf, and with their use it is possible that the stipulated rate of 400 quarters, or, say, five trucks per hour, could be maintained when the meat steamer only is at the wharf; but, considering the rate per hour at which cargo has been handled on this wharf during the past year, I am very doubtful if the rate can be maintained with another vessel working cargo at the same time without considerably delaying the latter, and to satisfactorily cope with the probable trade, i.e., both meat and general cargo, it will, I consider, be advisable at no distant date to make provision for bringing the trucks on and off the wharf with the engine.

I have underlined "suggested by you" because Mr. Elliot had no personal knowledge or experience of capstans, and was only going by what the Commonwealth Railways Department had told him. Mr. Elliot showed his practical knowledge of traffic conditions, and the wisdom of leaving out weak links or safeguarding them, when he suggested two turntables instead of one, and reiterated more than once the need of "bringing trucks on and off the wharf with an engine." The Department concerned will not admit that an error has been made and naturally they do not want to have gear thrown on their hands that they cannot use elsewhere. It should be a warning now to make for safety and efficiency in the key to the Territory, even if the first cost is more. As the wharf proposed by Admiral Clarkson would in the first place only be, I understand, 600 feet long, and as the two boats now calling at Darwin, the *Marella* and *Montoro*, are respectively 326 feet and 360 feet long, only another very small boat could be accommodated when either of them was alongside. Most meat boats are over 500 feet long. If the present wharf cannot remain as a stand-by when the new wharf is built, then it would be necessary to extend the new wharf to provide two berths. It is a minimum requirement for any development at Darwin that there should be berthage facilities for two steamers. It will be not only a meatworks port, but a railway terminus, and probably an aeroplane and hydroplane terminus, the only one in the Territory, agricultural country, and an important port of call for the Navy and the lighthouse service. I should hope that it would be found practicable to retain the present wharf for emergency purposes. Ship masters have given evidence that if the wharf were placed in the position proposed by Admiral Clarkson they could still get into the old wharf. There is a doubt whether it is practicable to put the wharf in the position proposed. The inner berth cannot be used at present. Some boats have been moored there, but the captains do not like it, even when the boats are small. Nothing whatever will be gained from a new wharf which can only accommodate one ship at a time, and which will not materially reduce costs. I contend that the new wharf will materially reduce costs. The Railway Department contend that any counterbalancing saving in labour. Wharfage rates have given us a good deal of concern, and we have tried to get an explanation of the anomalies in existence at Darwin. The wharfage rate for frozen beef is double the rate for frozen mutton, but there is no frozen mutton landed at Darwin. While the rate for beef is 6s. 3d. per ton at Darwin, it is only 1s. 6d. at Sydney. I wrote to the Secretary to the Commonwealth Railway Department on the subject the other day, and the following correspondence resulted:—

22nd January, 1924.

The Secretary, Commonwealth Railways, Melbourne.

Dear Sir,

Can you advise us the basis on which the rate for wharfage on frozen beef is made? We notice that at Port Augusta the beef rate is 4d. per

quarter, equal to about 5s. 3d. per ton (which is also the Darwin rate) as against 2s. 4d. per ton for frozen mutton.

Yours faithfully,

THE AUSTRALIAN INVESTMENT AGENCY LIMITED,
(Sgd.) W. G. MIDDLETON,
Secretary.

Commonwealth Railways Department,
Melbourne, 30th January, 1924.

The Secretary, The Australian Investment Agency Ltd., 79 Pitt Street Sydney.

Dear Sir,

With regard to your request to be advised the basis of wharfage rates on frozen meat, I have to say that it is not the practice of railway administrations anywhere to supply such information to their customers, and it is regretted, therefore, that a departure cannot be made in your case.

Yours faithfully,

(Sgd.) E. SIMMS, Secretary.

When two hatches are working, the chief delay is due to hand shunting of trucks; when more hatches are working it is due to the turntable. Even if labour were up to the best of the industry standard, and the present rate of wages was reduced, the extra cost of the above handicaps would help to reduce the return to the pastoralist or other primary producer. The Northern Territory pastoralist has already so many extra costs which are unavoidable that if he is to exist every obstacle, however trifling, which is removable should be removed. The same applies to any other industry which may be started. As a business proposition in a difficult situation, I would have nothing to do with such complications as captains, traversers, and horses. I would make the first loss the worst, and get down to a business-like basis. The money that has been spent on this wharf by the Government since 1916, plus the cost of delays to the pastoralist and to the community in the same time, would have gone a long way towards paying for a new wharf. In considering whether the rates of wages now paid on Darwin wharf are fair, one has to look at the question from two points of view. From the men's point of view, they are not making a living wage at even the present high rates; but that is the fault of the union regulation which is said to require that a waterside worker shall take no other work. This may or may not be a reasonable provision in Sydney or other port with a constant succession of steamers, but in Darwin it has a throttling effect on enterprise. Then there is the other, the Australian, point of view as against the narrow union point of view. We are depending upon getting the rest of labour reduced all round as well as more efficient wharf and railway facilities. It comes down to the question stressed in the report by the London Chamber of Commerce. We have to meet in competition in London the products of Brisbane and Townsville, and any increase in our costs above those of other places results in a reduction of the return to the pastoralist available. I have handed the report to his Minister, and he is already penalized by the high freight he has to pay on his supplies. I have been asked what tests were made of the insulation of trucks to indicate that they were not suitable for day loading. Such tests were made in November, 1917, by our own officers, and again by them shortly afterwards in the presence of Mr. Gilruth. No doubt, his report to his Minister is available. I have handed the Secretary a copy of my letter to Dr. Gilruth in this connexion. Our experience in loading the *Shropshire*, our first meat steamer, proved further that the trucks could not hold meat for many hours even at night, and meat was returned from the ship on that occasion too soft to be taken on board. It is not true that constant use of the trucks would improve their cold holding capacity. While the *Shropshire* was being loaded, I have a report on the temperatures taken before the trucks were loaded, when loaded, and, in one case, the temperature

on arrival at the wharf. The temperature of every truck was not taken, but by chance it happened that truck No. 304, which had been used from 18th November right on to 2nd December, had its temperature taken twice on both those dates. The following are the particulars:—

Date.	Truck No.	Time Loaded.	Temp. When Loaded.	Temp. When Unloaded.
16.11.17 ..	304	8.15 p.m.	81°	70°
2.12.17 ..	304	12.15 a.m.	77°	70° (taken at wharf)
2.12.17 ..	304	6.16 p.m.	80°	70°
2.12.17 ..	304	2 a.m.	74°	67°

We had so thoroughly tried the trucks that there was no necessity for us to test them again. If you had a bucket that leaks you do not keep trying it every few weeks to see whether, by some supernatural influence, the leak has been mended. The Railway Department, however, were not satisfied with these tests, and sent Mr. Henderson, their chief mechanical engineer, and the gentleman to whom I have already referred, to make a test in 1918. The result of this test has only been recently made available to us, and, in confirmation of what the trucks are inefficient. I understand that Mr. Bell contends that Mr. Henderson's test was made under conditions which were neither fair nor reasonable; that the meat was loaded first on the steamer when the temperature registered an average of 9 degrees into a wagon which prior to the loading had been standing in the sun, the temperature in which just prior to the loading was 75 degrees. He complained that no attempt was made to precool the wagon. In reply to this statement, the facts are that it is not the custom to precool meat wagons in Queensland. It is not the custom to bring the storage temperature below 4 degrees in Queensland. The Australian Meat Export Company have two works in Queensland. These works are controlled by Swift and Company of Chicago. There is no concern in the world that has a better name in the world's markets for their meat products than Swift and Company. They have carefully studied the finest points in their business. No detail is too small for them. Their Brisbane works hold their chambers at 12 degrees when loading direct to the ship; at Townsville, where the meat has to be trucked 21 miles, the chambers are brought down to 8 degrees. I have the fullest confidence in Mr. Henderson's ability as an engineer. If he had had any doubt as to the proofs of inefficiency demonstrated by his test, he would have made other tests. I am under the impression that he did make other tests with blocks of ice obtained from the Government Freezer. Great stress seems to be laid on the fact that the trucks were built to the Queensland design. We are asked to accept this fact and be satisfied with these trucks. It is like an ironmonger refusing to entertain a customer's claim for a leaking bucket because it was made to a certain design. We are not interested in the paper drawings of these trucks. All that we want is that they will do the work which Mr. Bell himself says such trucks do in Queensland. If Mr. Bell was not satisfied with Mr. Henderson's test there was plenty of time for him to make other tests made in 1918 and 1919. Great stress has been laid on the fact that in all cases the steamer gave "hard-frozen" receipts for all our refrigerated goods. Our instructions to the works and the ship were that we must have hard receipts for everything, and that if anything came along for which the ship would not give a hard receipt, they must refuse to take it, and we would take it back. This is only a business precaution, because we do not want the steamer to give us a receipt for any meat soft it may be stretched to cover much more meat than was concerned originally, and would tend to invalidate any claim we might have had against the ship or the insurance company for meat rendered soft by the inefficiency of the steamship machinery. I know, in a general way, that meat too soft to ship was returned from practically every

steamer. To get details I asked the chief engineer of the Darwin Meatworks to give specific cases when meat was returned to stores too soft to ship. He replied as under:—

Orari, 10th October, 1918, 19 trucks returned. *Bradmont*, 17th November, 1919, 2 trucks returned; *Abadesa*, 4th March, 1920, 4 trucks returned; *Andadesa*, 7th March, 1920, 4 trucks returned.

I do not say that these were all that were returned. I only asked for specific instances. The meat is handled exclusively at night. The trucks should be able to stand 48 hours without any serious deterioration of the contents. Mr. Bell admits that a wide margin must be allowed for contingencies. Delay might be caused through a breakdown on a ship or a storm. It is not a business proposition to try and load meat with trucks that can hold it safely for not more than four hours. No Queensland meat-works is asked to run this risk. Why should the Commonwealth Railways not give as efficient service as the Queensland Railways? We did not ask for the trucks we now complain of. We asked for small size meat trucks which would hold about eight tons, as against the four tons which the present trucks hold. The Commissioner for Railways, in writing to the Secretary of the Department for Works and Railways on 3rd February, 1921, quotes from a communication received from the chief mechanical engineer of the Queensland Railways as follows:—

The contention that the wagons constructed by us for the Northern Territory are of a similar type to our four-wheeled butter wagons is partly correct, but the type was agreed upon by the Commonwealth authorities, and the insulation is the same as our eight-wheeled wagons carrying frozen meat, galvanized iron lined throughout and with a sun roof over the insulated part. Butter wagons have no sun roof, are light throughout, and very often used for the conveyance of frozen meat.

Apparently the wagon sent to the Territory was a hybrid. It differed from a butter wagon in having a sun roof and having not more than the floor lined with galvanized iron. We are not concerned with the proper name of the wagon, but only with its efficiency. I hand in copies of correspondence just exchanged with the Railway Department re a test they propose making at Townsville:—

Commonwealth Railways,
Melbourne, 18th Feb., 1924.

The Manager,
Australian Investment Agency Ltd.,
Sydney.

Dear Sir,

I have, by direction, to advise that arrangements have been made to forward one of the Northern Territory railway refrigerator wagons to Townsville for the purpose of conducting a series of tests.

While the Commissioner is satisfied that these wagons are quite capable of efficiently handling frozen meat from the meat-works at Parap to the wharf at Darwin, he has deemed it advisable to have these tests carried out in view of the statements made from time to time that the wagons are not as efficient as reported in North Queensland, thus necessitating night loading at Darwin. In making these tests, consideration will have to be given to the fact that four-wheeled wagons were supplied at the special request of your company.

If there is any particular manner in which your company thinks the wagon might be tested, my Commissioner will be prepared to carefully consider any suggestion from you, or should you desire to have a representative present, and will advise the name and address of such representative, arrangements will be made for him to be notified in due course of the dates on which the tests will be carried out.

(Signed) E. SIMMS, Secretary.

AUSTRALIAN INVESTMENT AGENCY'S REPLY, DATED
23RD FEBRUARY, 1924.

The Secretary,
Commonwealth Railways,
Melbourne.

Dear Sir,

We have your letter of 18th inst., and note you have arranged to forward a Darwin truck to Townsville for testing and invite us to participate in those tests.

We have tested them so often and with such uniformly unsatisfactory results that we have no faith in any fair test giving a different result. So, while we should like to be advised of the above, we do not at the moment expect to be represented.

If after the initial test the Commissioner is still satisfied that the trucks are as efficient as he stated in his letter of 21st January, 1918, and will hold meat for 48 hours in perfect condition, we might reconsider the position. We should then regard it as fair that three trucks be tested, to be chosen in a manner to be agreed, repairs and alterations to them to be subject to supervision, and the tests conducted by a neutral person to be nominated, we suggest, by the Federal Works Committee.

We note you propose, in making these tests, to give consideration to the fact that four-wheel trucks were supplied at our special request. We do not agree to this, and while you have repeatedly made this statement you have never proved it. You appear to be preparing to suggest that because you say we preferred the small trucks (which, owing to the smaller quantity of frozen meat they hold in comparison with the larger trucks may be consequently less efficient), that we are in some way partly to blame for their poor efficiency. Even if it had been agreed to use smaller meat trucks than usual in Queensland, why think it was a matter for the designer to take that reduced capacity into consideration and increase the insulation accordingly to maintain their efficiency. You will remember that consistently since 1916 we have expressed our opinion that just as we put more insulation to the Darwin Meatworks than Townsville did, so did the Darwin trucks need more insulation than the Townsville one.

Yours faithfully,

THE AUSTRALIAN INVESTMENT AGENCY LIMITED,
Managing Director.

The cost of living is so high in the Territory that some drastic action will be necessary to bring it down, not only to enable the meat industry to live, but to enable any other industry to get a footing. I have prepared a memorandum of the cost of living which I attach:—

MEMORANDUM RE COST OF LIVING IN THE
AREA OF THE NORTHERN TERRITORY.

1. The cost of living and its effect on the cost of production is a problem all over Australia, particularly where there is an industry dependent for its principal outlet abroad, and, therefore, meeting the competition of the world.

2. Any locality that is appreciably higher than the average of the rest of Australia is, therefore, to that extent, handicapped. Any handicap unless set off by some equivalent advantage in another direction is, in these days of very narrow margins, likely to make an export industry impossible in such a locality.

3. In his award in the industrial dispute in the Northern Territory (No. 42 of 1914) delivered 15th March, 1915, Mr. Justice Powers said p. 21 "Mr. Skewes found that the extra cost of living at Darwin in July, 1912, was 37 per cent. over the southern average rate." Mr. Skewes, then an inspector of the Public Service (p. 16), was sent to

Darwin to inquire fully, on the spot, "into conditions of employment of artisans and labourers in the Northern Territory, and the cost of living compared with the Southern States, with the object of arriving at a determination as to a fair and reasonable wage." (p. 17). Mr. Justice Powers also states (p. 24) "Mr. Lightfoot (Commonwealth Statistician's Office) estimates the extra cost of living at Darwin in July, 1914, if increased at the same rate at Darwin as elsewhere at 46 per cent." The Judge fixed the minimum rate for labourers at 1s. 9d. per hour (p. 30), equivalent to £3 17s. per week (p. 24), or £200 4s. per annum. This was 6 1/2 per cent. above the Australian average cost of living of £132 in January, 1915, according to the Commonwealth Statistician's estimate. Mr. Lightfoot stated in his evidence that the cost of living in Darwin in January, 1913, food and groceries only, was 40 per cent. above the Australian average (p. 17). Since January, 1913, and before the war (July 1914), the average Australian cost had increased by 6 per cent., and in November, 1914, the date of the last estimates based on rent and food ration to 4 per cent. (p. 17), apparently a net increase of 44 per cent. The Judge evidently added a further percentage for the probable rise since November, 1914, to the date of the commencement of operation of his award (4th January, 1915). He fixed the next rate, builders' labourers, at about 43 per cent. over the southern rate.

In spite of these percentages Darwin meat-works wages have always been agreed at 33 1/2 per cent. above the rates current in Brisbane.

5. Meat-works rates in Australia are, on account of the seasonal character of the work, always higher than ordinary rates. The unions in Darwin attempted—in some cases successfully—to bring rates outside the meat-works up to the meat-works level, and, therefore, much above the 33 1/2 per cent. over such outside rates in Brisbane. Some of these rates still continue, e.g., on the wharf, and in the Government offices.

6. At the moment the meat industry is the only large scale industry that there is any possibility of in Darwin. Cattle raising is a large industry at present in the Territory.

7. At present in Queensland labour costs on the works constitute fully 25 per cent. of the value of meat when it is placed on the ship. This does not include the labour in raising the cattle and bringing them to the works. In most industries the proportion of labour is relatively high.

8. It is, therefore, apparent that it is impossible for any industry to be permanently established on the extra cost of living in Darwin disclosed in paragraph 3. An industry may be started in the hope that the adverse ratio will be materially reduced, but the promoters would clearly not be well advised to do so unless they had some very definite understanding how and when the reduction would be effected.

9. There does not appear to be any industry which can claim (as suggested to be necessary to paragraph 2) any great advantages that are peculiar to the Territory, as a set-off to its handicaps.

10. On the other hand, in addition to the actual cost of living in the Territory itself, there are the following handicaps to an industry there:

- Freight on fuel and other supplies for the industry.
- Fares and travelling time of employees (or a percentage of them).
- Reduced efficiency of employees owing to climatic conditions.

11. In consideration of a problem of this kind, reference will naturally be made to similar situations elsewhere. The nearest approach to a parallel case in Australia is at Wyndham, where the

Western Australian Government operate a meat-works at a heavy annual loss (total loss, 1918-1923, probably £500,000, actually from 1915 to 1920 it was £235,000). Practically the whole of this meat-works employees are brought to Wyndham from Perth at the beginning of the season, and are taken back when the season is over. They are catered for as one unit by means of a contractor, who supplies board at 25s. per week. He is enabled to do this by the meat-works supplying meat to him at 4d. per lb. and other concessions. There is practically no increase of the permanent population of Wyndham itself as a result of the meat-works operations.

12. In Darwin the case is entirely different. There was a considerable and increasing local population, a large proportion of which was engaged at the meat-works. While it would be easy for the management of the Darwin-works to subsidize as in Wyndham, the cost of living for the men living in the company's quarters, the company could not do it for the community at large, and the problem of high costs would still remain for a large proportion of their own employees and for the rest of the permanent community.

13. Population of Darwin (excluding aboriginals) from 1911 to 1922 is set out below. Based on the assumption that the population of the rest of the Northern Territory has been more or less steady at the 1,750 mark (it was 1,734 in 1920), 1911 has been taken as unity in the comparative figures:—

Year.	Population.	Comparison.
1911	1,580	1.000
1912	1,725	1.091
1913	1,722	1.216
1914	2,223	1.408
1915	2,813	1.780
1916	3,017	1.909
1917	3,158	1.998
1918	3,031	1.918
1919	2,956	1.870
1920	2,955	1.613
1921	2,117	1.339
1922	1,804	1.141

14. The problems of Darwin and Wyndham differ radically because of their respective futures, for example:—

- Darwin is on one of the finest natural harbours in Australia, and is destined to become an important commercial and strategic point. Wyndham must always be a difficult place for large steamers to reach and get away from, and will never accommodate more than a few at a time.
- The site of Darwin is admirably suited to a large and sanitary city. There is no room for expansion at Wyndham.
- The climate of Darwin, though it is three degrees further in the Tropics, is much more agreeable and healthy. The surroundings are more pleasant, and there are convenient facilities for recreation which cannot exist at Wyndham.
- The immediate hinterland of Darwin offers more varied opportunities of development, agricultural, mining, pastoral, by both small and large enterprise. If oil, for which boring is proceeding 200 miles inland is found in the neighbourhood of Wyndham, it is more likely to result in a new port fixed by its accessibility to a pipe-line. A purely oil port is not under existing pumping conditions a large-labour employing factor.
- The Commonwealth wants to settle the Territory because it recognizes that this area unoccupied is a temptation to, outside nations, and, therefore, a menace to Australia. The Wyndham area is not so attractive to outsiders, and meantime the Western Australian Government is prepared to abandon Wyndham after each meat-works season.

tractive to outsiders, and meantime the Western Australian Government is prepared to abandon Wyndham after each meat-works season.

- Western Australia, for various reasons is content to let Wyndham's hinterland remain a cattle area because of the reasons mentioned above (c). The Commonwealth must have other means of closer settlement than cattle alone.
- The Wyndham example means single men living in barracks, whereas, what the Territory needs is married men living in homes.
- Wyndham is on the "single" man basis, but the Northern Territory should be on the "family" basis, therefore cost of living, fare, etc., affects five individuals (on Commonwealth Statistician's basis) in Northern Territory as against one in Wyndham.
- Wyndham meat workers get jobs in Perth, etc., during the off season, but there should be jobs for Darwin meat workers in the Territory during their off-season.
- Wyndham, although it opened up 40 years ago, has practically nothing but the cattle industry, whilst the Territory already has mining, pearling, tramping, a little agriculture, and a railway.
- If the Commonwealth did what is being done in Wyndham, it is doubtful if the railway, actually opened, will ever pay.

15. The example of Wyndham (paragraph 11), though the best in its present circumstances, is not applicable to Darwin, if, as is assumed, it is the desire of Australia that a sound basis should be established, and so that encouragement may be given to all the subsidiary enterprises that are likely to come into being as the result of (a) one big industry, and (b) deliberate attempts to occupy the time of the workers not fully occupied in that industry.

16. It is, therefore, necessary to consider (a) the causes of the present high cost of living in the Territory, and (b) how they can be dealt with on broad lines, so that the whole community can benefit and enterprise be attracted.

17. Since Mr. Skewes' inquiry in 1912 no detailed examination of the cost of living in Darwin has been made. Mr. Justice Powers was there in 1917, but had only a few days at his disposal, and based his decisions on previous investigations, plus increase proved since. The following may be taken as the principal local prices of 1914, which, being standard, are fairly easy to compare:—

	1914	1915	1916	1917	1918	1919	1920	1921	1922	Darwin 1922 over Sydney
(a) Bread, 2lb. loaf	0 0 6	0 0 6	0 0 6	0 0 6	0 0 6	0 0 6	0 0 6	0 0 6	0 0 6	35
(b) Flour per lb.	0 0 2	0 0 2	0 0 2	0 0 2	0 0 2	0 0 2	0 0 2	0 0 2	0 0 2	20
(c) Sugar, doz. lbs.	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0	100
(d) Butter per lb.	0 1 11	0 2 0	0 2 0	0 2 2	0 2 2	0 2 2	0 2 2	0 2 2	0 2 2	13
(e) Eggs per doz.	0 1 10	0 2 6	0 3 0	0 3 0	0 3 0	0 3 0	0 3 0	0 3 0	0 3 0	64
(f) Milk per gal.	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	4
fresh milk 1st.	0 1 0	0 1 0	0 1 0	0 1 0	0 1 0	0 1 0	0 1 0	0 1 0	0 1 0	80
(g) Potatoes, 7 lbs.	0 1 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	100
(h) Cabbage, each	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	100
(i) Meat, average beef	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	100
(j) Tea, 14-lb. block	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	100
(k) Soldier, ton	7 10 0	7 10 0	7 10 0	7 10 0	7 10 0	7 10 0	7 10 0	7 10 0	7 10 0	87
(l) Kerosene per tin	0 7 0	0 7 3	0 7 3	0 7 3	0 7 3	0 7 3	0 7 3	0 7 3	0 7 3	3
(m) Electric light Unit	0 0 4	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	0 0 8	100

Of the above, all are imported except eggs, cabbage, meat, tea, and electric light. In course of

time butter, milk, potatoes, and fodder should also be locally produced, though this is not in sight yet. House rent has not been dealt with, as when Darwin was busy a large proportion of people were living in "humpies." To them rent was low, but accommodation bad. Those who had houses had (apart from Government and meat company's employees) to pay very high rents for them. If the cost of building material and labour comes down with the cost of living, as it naturally will, then the tendency will be to build more houses, and rents will fall.

18. The items making up Darwin costs, apart from the first cost are:—

- Freight, £3 10s. per ton.
- Insurance, 12s. 6d. £100 value.
- Handling on wharf and sorting shed, 15s. 9d.
- Cargo, sorting shed to retail store, 5s. to 15s. per ton.
- Retailing charges.
- Retailer's profits.

- In (c) is reflected—
- The high cost of living
 - High wages of clerks and shop assistants.
 - Their fares and travelling time
 - High municipal rates and lighting
 - Bad debts and slow payments owing to the stagnation of the country

- Fillerages, which once very heavy are now down to a minimum.

- Lack of shipping, and isolation.

- It is probably high on account of small turnover. There is one white-owned and staffed general store (A. E. Jolly and Company) and several Chinese-owned and staffed. The latter do not comply with Arbitration Court awards or early-closing regulations, and whilst this is manifestly unfair to the "white" store, the enforcement of them would not help the ordinary consumer, whilst probably the fixing of their prices by the Chinese exercises a restraining influence on those of the "white" store, it is evident a price returning the latter a bare profit would mean a handsome profit to the former.

19. The items calling for particular attention are:—

- freight;
- handling on wharf, sorting shed;
- cartage, sorting shed to retail store;
- fares and travelling time.

(a) It is necessary to find out what requires to be done to bring them back to the pre-war level. *Inter alia*, it may be mentioned first that the cost to the ship of discharging a ton of cargo at Darwin in 1922, fell from 18s. 4d. in 1921 to 10s. 9d. in 1923; and, second, that whilst the freight of flour to Darwin is 70s. per ton, the freight to Java is 35s. per ton, deducting the cost of discharging at Darwin (70s. 9d., and Java, say 2s. 6d., we have respectively 59s. 3d. per ton and 32s. 6d. per ton to pay the ship-owner for loading and carrying 1 ton 2,684 miles and 4,008 miles. It would appear that there is a room for a reduction to Darwin, provided the ship-owner felt moderately

certain of an increased traffic and continuance of economical handling.

- (b) Cost of handling on wharf and sorting shed would be greatly reduced by modern arrangements at these two points. But their chief effect would be to reduce the cost of ships in port, which should be reflected in further reduced freights.
- (c) The cost of cartage would be reduced if the Government's proposal to provide cheap motor fuel is carried out.

- (d) The Government gives its employees a three-years' engagement, and pays, in addition to the high wages, a sum of from £108 to £128, or more, every three years, made up of £25 for a first class return fare, or £30 for a second class return fare, and three months' holiday, £75, plus month for travelling, £26. This is equivalent to 4.7d. to 5.2d. per hour on a week of 44 hours, or 5.4d. to 6d. per hour on a week of 38 hours. Private employees, for a management suit, and in the case of an individual setting up in business this sum must apparently be laid aside before he is on the basis that would be in the South.

The burden is correspondingly heavier for a man spending his money for a management suit with a wife and family. This burden is a direct deterrent to enterprise, and till there is quicker and cheaper communication with Darwin (i.e., by railway) it would seem necessary for the Federal Government to carry a portion of the burden, say, by paying 50 per cent. or more of women and children's return fares after three years' residence.

20. The development of the Northern Territory, if left to follow the normal process, would mean it would only be occupied when the pressure of closer settlement in the more temperate portion of the Commonwealth forced population there. If it is desired to anticipate this normal process, which would not result in effective occupation for many decades, such anticipation must necessarily take some money, not necessarily, say, huge sums, but moderate sums judiciously applied.

21. It is not generally recognised how the cost of living affects the development of the North, and how easily it can be dealt with, and that is the reason for the amount of detail in this memorandum. It is desirable in these matters to have a standard in view, and in this case it is suggested that the cost of living in Townsville be that standard.

22. One very hopeful feature in the situation is that the bulk of the people who have once lived in Darwin—and it must be remembered that Darwin is in the coastal belt, which is the worst part of the Territory climatically—like it, and are ready to go back to it. There is no doubt that if favourable opportunity offered, a large number of Australian families now in the south would make their homes there. Not the least successful workers there have been men and women who have come directly, or almost directly, from the Old Country.

I submit a map showing the number of new houses erected in the Darwin area between 1916 and 1920. There were 102 altogether. Directly or indirectly they were all due to the new works. Many of them are now empty. Many people are remaining there because they like the climate. The 102 houses referred to were real houses, although some might be as small as two rooms with verandahs. In addition, hundreds of "humpies" were put up in certain areas, notably at Salunka and Port Said. Regarding the question of a free port, I am advised legally by the Constitution the Commonwealth Government can create in the Territory any free port that it chooses. It is given plenary power. I have submitted that opinion to the Minister for Home and Territories, who in turn passed it on to the Crown Law Department. Officials of the Crown Law Department have stated that they do not consider that the Commonwealth Government can create a free port at Darwin. The opinion obtained by us was as follows:—

"FREE" PORTS FOR THE NORTHERN TERRITORY.

(1) I am to advise whether in the existing state of the Federal Constitution, Darwin can be made a "free" port—that is, free from Customs duties.

(2) Territories are governed, as Mr. Justice Isaacs points out in the *King v. Bernasconi*, (1916) 19 Commonwealth Law Reports, at 637, not as constituent parts of the self-governing body (the Commonwealth, formed of the six States), not fused with it, but rather as parts annexed to the Commonwealth and subordinate to it, under section 122 of the Constitution.

(3) In the case of the Seat of Government, there are also the powers given in section 52 (1), but this case I need not now consider.

(4) The Commonwealth Government has from time to time, since the Northern Territory became a Territory of the Commonwealth, spent money over and above the moneys derived from the Territory itself, on the Territory, and I am of opinion that it will be lawful to abrogate the law relating to the imposition, &c., of duties of Customs, so far as relates to this Territory, which will practically amount to a further such expenditure.

(5) This, I think, can be done under the plenary powers of section 122 by an appropriate law thereunder. The law relating to such customs as existing in the Territory must, in my opinion, be regarded as a law made or continued in force hereunder and by virtue of section 122, rather than as a law under section 51. It exists by virtue of section 122 and can be withdrawn under that section. See also section 7 of the Northern Territory Acceptance Act, section 13 of the Northern Territory (Administration) Act, and section 111 of the Federal Constitution.

(6) I know of nothing in such Constitution to prevent such withdrawal. This Territory is not a State or part of a State. Section 51 (1), nor is it a State or any part thereof within section 99, nor a State within section 117. Sections 88 and 90 refer, in my opinion, to the Commonwealth proper—i.e., the six States forming the Commonwealth—and these sections do not control or limit the powers under section 122.

(7) I have heard that the administrator Gilruth did not pay any duties of Customs on his importations from overseas, and also that the Eastern Extension Company Limited have similar privileges, or, if they pay duties, that the same are repaid to them. I know not if these things are so. No doubt, the method could be adopted of having entries passed, and then returning the duties, if desired, for bookkeeping purposes; but I consider that it is competent to free the port of Darwin and the country altogether, and that any bookkeeping objection to that method ought not to prevail. The accounts of the Northern Territory are not now kept entirely separate—for instance, by a

law convenient to the public, stamp duties may be paid by means of Commonwealth postage stamps as well as by Northern Territory duty stamps, and so far as they are paid in the former manner they are not traceable separately.

(8) I draw attention to the above-mentioned case and to the case of *Buchanan v. The Commonwealth* as the leading High Court cases on the government, &c., of Territories under section 122. Bernasconi's case was from Papua, and Buchanan's had to do with the Northern Territory.

(9) The following telegram is suggested as shortly embodying my opinion in this matter:—

Mallam advises that duties of Customs may be completely abolished so far as relates to the Northern Territory under the Constitution as at present existing by means of an appropriate law under section one two two and that neither section fifty-one-sub-section two nor section ninety-nine nor section one one seven nor eighty-eight nor ninety nor any other provision of the Constitution prevent such abolition stop his written opinion posted.

(Sgd.) R. I. D. MALLAM,

Darwin, N.T., 24th November, 1923.

The Secretary, Northern Agency Limited, Darwin.

I am inclined to think that the Crown Law Department has based its opinion on the belief that the Commonwealth cannot differentiate in favour of the Territory. The Crown Law Department say that although the Territory is a territory outside the Constitution, it is still part of the Commonwealth. That argument seems to imply that the Commonwealth is a geographical entity, which it is not. It seems to me that the question probably hinges upon whether the Territory is part of the Commonwealth, and whether the Commonwealth is a geographical term.

It has been pointed out in the preamble to the Territories are governed not as constituent parts of the self-governing body, the Commonwealth, but rather as parts annexed to the Commonwealth, and subordinate to it under section 122 of the Constitution. If an opposite position is taken, I think it must be because the Commonwealth is considered as a geographical term, and the Territory as part of the Constitution it says the Commonwealth is "an indissoluble union of the people." It is therefore not a geographical term. On being taken over by the Commonwealth the Northern Territory was formed into a Territory, and ceased to be part of the State of South Australia. As such it lost various advantages it formerly enjoyed. It lost its representation in Parliament. That has now been partially remedied, but the Northern Territory has not yet been brought into line with the other communities forming the Commonwealth. It was part of the State of South Australia, and, therefore, part of the Commonwealth, before 1911, but since 1911 it is tributary to, or subordinate to, the Commonwealth. The Constitution gives the Commonwealth full power to do whatever it likes in regard to such territories. The restriction on the Commonwealth which prevents it from discriminating between different States or parts of States does not apply to the Territory. The point that the Commonwealth is not a geographical term is interesting. Personally I do not regard it as a geographical term. We talk about people arriving at or leaving the Commonwealth. That is not correct according to the Constitution, or according to Webster's Dictionary, which says that the Commonwealth is "a body politic." Constitutionally speaking, the Northern Territory is not part of the Commonwealth; geographically it is part of the continent of Australia, politically it is part of the Commonwealth of Australia. It is just as much outside the Commonwealth as if it was across the water. The Crown Law Depart-

ment has maintained that the Commonwealth cannot give an increased cattle bounty to the Territory because that would be discrimination against the other States, but the fact is that the Commonwealth is to-day doing all manner of things for the Territory that it is not doing for the States. The question of a free port is important not only in regard to commodities which may be imported from abroad, but also in regard to the question of the discrimination which exists at present against Darwin as a port for overseas steamers, by reason of the fact that an overseas steamer going from Sydney and Brisbane to Darwin on its way to the Orient has to pay Customs duties on all materials consumed for its upkeep and the upkeep of its crew and passengers between Brisbane and Darwin. In the case of the Dutch boats this amounts to £200 or £300, and is sufficient to swing the balance against them. That discrimination applies all round the coast, but more particularly to Darwin, which is twelve days from Sydney by sea. It increases the Darwin rates of freight on goods which are already high in price in the South. Darwin to-day is subjected to a double form of duty. Making Darwin a free port would include making ships' stores free between Darwin and other Australian ports. I have a memorandum in regard to the high cost of materials for improvements on stations in the Northern Territory. It shows the effect of the high cost of transport. I have taken the case of cement, which is the principal material required to be imported for making cattle dips. The first thing that requires to be done in a cattle country like the Territory, where tick is prevalent, is to install cattle dips. In the Western half of the Territory there is not one cattle dip. That is economically wrong, but the reason is not far to seek. It requires about 10 tons of cement to make a dip, with draining pipe, &c. Ten tons of cement can be obtained in Sydney for £40 to £50. By the time it gets to a station in the Victoria River district it costs £360. The statement I have had prepared is as follows:—

NOTES RE THE HIGH COST OF MATERIAL FOR IMPROVEMENTS IN THE NORTHERN TERRITORY.

1. For the Territory to advance it is essential that improvements be carried out on the inland stations to a far greater extent than has been done up to the present. The cost of getting the materials on to the stations with which to make these improvements is now the greatest deterrent.

2. The installation of dips is in the mind of every cattle owner as soon as he can afford it. The use of dips, in addition to minimising the worry and loss of weight due to ticks, quietens the cattle, and thus increases their weight and ability to carry weight on the road, and enables them to mature at an earlier age.

3. It takes about 10 tons of cement to make a dip and draining pipe, &c. This quantity of cement in Sydney or Melbourne would cost, say, £50. The cost on the inland stations, say, Wave Hill, would be at least £364. The details of this cost are:—

	Percentage of Total.
(a) 10 tons cement f.o.b. ...	50 0 0 ... 13.6
(b) Freight to Darwin ...	30 0 0 ... 7.4
(c) Insurance ...	0 10 0 ... 0.1
(d) Handling in and out of Darwin ...	15 15 0 ... 4.3
(e) Freight, Darwin to Victorian Railway Depot ...	85 0 0 ... 23.3
(f) Handling and storage at Depot ...	10 0 0 ... 2.9
(g) Wagon cartage to station ...	168 0 0 ... 46.2
Total ...	£364 5 0 ... 100.0

4. Every item of the above charges requires scrutiny in the interests of the development of the Territory, and the rapid putting into force of those factors making for improvements.

5 The freight from South (b) has been doubled since 1914, and is directly affected by the cost of loading and unloading a ship at Darwin wharf and the time detained there. Moreover, the handling charge (d) is probably inflated to more than 50 per cent. of what it should be, owing to there being no sorting shed on the wharf and the double handling consequent thereon. A material reduction of (b) and (d) would have a great effect in reducing the largest charge (e), for then the roads and crossings (for which cement is necessary) could be improved, add more efficient, and less costly, transport introduced.

Already representations to Jolly and Co. have caused a reduction of £1 per ton on the charge (e), and it is hoped that with the acceptance of the new tender for the coastal service this will still further be considerably lowered. This service is at present not subsidized.

Item (f) covers the expense of receiving the goods from the boat, looking after them (placing perishables under cover) until the wagons arrive, and delivery to the wagons.

6 These charges seriously affect the closer settlement of the Territory, and until they are materially reduced, even those settlers close by the present railway line are prohibited from improving and developing their holdings.

The wharf is a comparatively small item in those figures. Bullock cartage is the largest item. There is a vicious circle operating. To improve the road, re-inforced concrete crossings are required at the rivers, and to provide them cement is required. Owing to the high cost of getting the cement there a saving of it is employed.

In the area of which I am speaking, there are only two decent crossings in 250,000 square miles. One was done the year before last, and the other last year; and we are now negotiating with the Government for another. We are going ahead at the rate of one a year. If we can get the roads made we can reduce the cost of transport. We should then be able to use motor wagons instead of donkeys and horses. We shall be able to take goods from the railhead in our own conveyances or by contract carrier. We have used concrete on the King River crossing because it is the most economical thing to do. There is a natural rock bar there. We are endeavouring to use those rock bars wherever we can find them. There are some places where we shall have to make a corduroy crossing, which is liable to be washed away. Labour is one of the biggest items, and we therefore try to make the crossings permanent. The crossing of the King River cost £250. Pastoralists subscribed about £50 and the Government £180. Road transit is the heavy item in the cost of improvements. In Western Australia there are 30 miles of sand, known as Cockatoo Sands, between Wyndham and the back country, and teamsters pass through it at the average rate of 1 mile per day. It is on the Wyndham-Hall's Creek Road. When Senator Pearce was in Darwin, in May, 1923, he asked me the question embodied in the following cable to London:—

Minister asks us in the event of Government (a) agreeing to make, before the end of 1924, new wharf estimates at £120,000 giving direct access to locomotive trucks ships side including sorting shed; (b) rendering present refrigerated trucks efficient; (c) supplying oil fuel not cost from Naval tanks as required by motorwags; (d) freight allowance 5s. head according his letter of 26th March; (e) pushing communication back country; would you agree or reopen?

Inform Minister willing agree proposal provided 1914 agreement in entirety five years original wharfage rate restored this subject substantial reduction coastal freight and reasonable arrangements labour (stop) Proposal still involves operating heavy loss but appreciate evidence Government desires facilitate reopening.

If we had agreed outright it would have tied our hands in negotiating with the shipping companies and labour unions. They would have considered it unnecessary to make any effort to enable us to better as we should have undertaken to do so if the Government did certain things. We would like to see steamer freights to Darwin down to their pre-war level, viz. 35s. per ton Sydney to Darwin, and if the Government provide efficient wharfage facilities and labour gives a fair deal, I do not see why the shipping companies should not reduce freights and fares to the pre-war level. This, in conjunction with other efforts, should bring the cost of living to not more than the Townsville level, and in that case wages should be no higher than Townsville. I do not think for a moment that my principals would wait until all these things had been actually accomplished before they reopened, but they would wish to have some substantial reductions, and to be assured that all parties concerned were seriously trying to effect reductions to bring costs into line with those at Queensland works. Otherwise the return to the pastoralists, when considering their other disabilities, would not render cattle-raising sufficiently attractive to increase the necessary settlement in the Territory. I suggest that the officer in charge of the railway in the Territory be empowered—

(a) To transact most of his business with Melbourne by telegraph. You will never get a rail move on in the Territory until you abolish the delays at present incidental to its geographical position. In my business we only use the mails to confirm telegrams and to convey formal matter and matter that cannot be telegraphed, and even the posting of such matter is usually advised by telegraph. The necessity of using the telegraph needs to be recognized by all Government Departments with branches up the Territory. The expense is only a bookkeeping entry between the Postmaster-General's and other Departments, and the apparent cost can be minimized by simple but effective codes. At present everything is done by mail, and it often takes three months to get a reply.

(b) To do, practically at cost, in his workshops such work for outsiders as cannot be done by any private concern. It is customary to charge a heavy per centage for overhead charges. These charges would be borne by the ordinary railway work, and it should not be necessary to saddle local enterprise with such extra charges.

(c) To run motor trolleys or other small vehicles at cost in case of sickness or accident and at a small per centage over cost in other cases when called upon. Ninety per cent. overhead was charged in case of sickness and accident on previous occasions.

The Department charged nearly £30 to bring in from the head of the line a man who was suffering from fever. The wife of one of the station managers had a daughter who was sick, and they wanted to charge her £34 for a special motor trolley. No one will ride in one of those motor trolleys unless he has to. Considerable discretion has been given the officer-in-charge recently in regard to detaining the fortnightly trains to get a southerly mail arriving shortly after the train's usual time of departure. Until the local community sent in a petition with reference to the matter the train would start on schedule, even though the boat was in sight. This meant in some cases that people out back had to wait two weeks longer for their southern mails. Even now, when one of the six-weekly mails is delayed by floods, &c., and misses the train to Darwin which should carry his mail, the Railway Department and the Postmaster-General's Department refuse to send a motor trolley with the mail. This means the people out-back are delayed six weeks in getting replies to their letters to Darwin. I can show correspondences in regard to such an incident which occurred a few days ago. The motor trolley could do the journey in eight hours. It was stationed at different places. There is one at Pine Creek and probably one at Emungalan. They are using

them for the felling gangs. The Department have certain overhead charges, which, as a matter of accounting, they distribute over the work done in the fitting shops. In one case they charged 30 per cent. for overhead expenses. When a special job of this sort comes along why should they not put out the overhead charge? They would have to carry it anyway. They have a very good man in charge now. More attention should be paid to the recommendations of the man on the spot. I could illustrate what I mean, but it might lead to censure, or worse, for a public servant. Immediate attention should be paid to labour difficulties when they arise. In the past there have been endless delays leading to friction, going-slow strikes, &c., with disastrous results to the community. We are out of pocket over £28, which we paid in November, 1918, on account of the Railway Department. This was money which the officer in charge admitted was due to the men, but although the matter had been outstanding for months, the men could get no settlement, and were going slow on a Burns Philp steamer to force a settlement. It is believed that the officer in charge now has more powers than formerly, but the efficacy of these cannot be judged until there is something doing in Darwin. The officer in charge probably knows a week or two in advance when the boat with the mails will arrive. He makes it as widely known as he can that the boat will be a few days late, and the people who come in for supplies have a chance of knowing. If the mail was to be delayed at the railhead on the spur of the moment it would inconvenience people all along the line. For such an emergency it is better to have a vehicle that can carry a few bags of mails. At present they work the business very well and show great consideration for the people out back. This has not been done as a result of the pressure applied. In reply to the statement that the works are falling to pieces and that it would take them a considerable time to be ready, the facts are:—

(a) All concrete work throughout the job is in very good order.

(b) All important roofs are in very good order. Cornice gutters and down pipes need to be replaced. Most of them are already made, and are waiting to be placed in position.

(c) All the power plant and machinery of every sort at the works is ready to run a few minutes after their wrappings and coverings can be got off. They are all heavily greased and otherwise protected. The important machines have been moved at regular intervals.

(d) The men's kitchen and diningroom have been replaced since the fire. I can produce photographs taken in January showing the work nearly completed.

(e) Quarters for over 160 men can be arranged on a week's notice (in coopers, shift quarters, and cottages). Beds would probably need to be sent from the south, and this would require six or eight weeks' notice.

(f) It is our intention to proceed with certain preparatory work, chiefly painting and cleaning, during the forthcoming winter.

If we knew by October that we would operate, we could be comfortably ready to re-open next year. But the things that take the time are not under our sole control—wheat, trucks, oil supply, shipping, and labour. I should certainly like the decision regarding wharf, &c., by April, as I leave for London in May, and would like to have negotiations for labour and shipping well in hand before I leave. I would also require to know when the wharf and fuel supplies were likely to be ready. After our costly experience of railway department delays, I doubt if my principals would be prepared to go ahead until they were satisfied that the promised facilities were ready. I submit the following

statement regarding the bruising of cattle in railway trucks:—

MEMO. RE BRUISING OF CATTLE IN RAILWAY TRUCKS.

1. In preparing meat for export, the most scrupulous care should be taken in regard to such apparently trivial points as:—

(a) Resting cattle for 36 to 48 hours before killing with no food but plenty of water.

(b) Spraying with cool water before killing.

(c) Carefully constructed races and knocking pens sometimes padded to obviate bruising.

(d) Killing done by a skilled "knocker" without exciting the beast.

(e) Skinning done by a skilled tradesman to keep the "bloom" on the beef.

(f) Proper wiping by heated damp clean wipers, and drying in such a way as to remove any blood stains, but to retain the bloom. In the most recent practice as little water as possible is used in wiping over the carcasses. Heated damp cloths give the very best results.

(g) Gradual chilling and thorough freezing to avoid meat leaving the boner at the cut edges, and to insure thorough preservation.

(h) Careful double wrapping of the whole quarter, including the shank, to prevent any part of it becoming soiled in transit.

2. Neglect of any of these points will result in a reduced price being paid by the distributor.

3. All these points are under the control of the meatworks, and all well-managed works spare no pains to do the best possible at each point.

4. By now paying a price of 100 lbs. dressed weight the Queensland works have got the pastoralist more than ever interested in taking every care of the cattle, and while they are in his hands he nurses them carefully along the roads, through gates, into yards, &c.

5. The weak link in the chain is the railways. The fact that the Gladstone Meatworks, most of whose stock is travelled into the works on the hoof, has the best reputation of any Australian works, is eloquent testimony as to what the absence of knocking about means. Wyndham meat has also a first-class reputation in London owing to the absence of bruising. There is no railway to Wyndham.

6. The points needing the attention of all railway departments are:—

(a) Soundly constructed trucking, and un-trucking yards with no projections or corners.

(b) Sound trucks with no loose boards, &c., where a beast can get its hoofs or horns caught.

(c) Employment of careful engine-drivers who will start the trains steadily and avoid jerking, sudden application of brakes, or sudden stops. Only specially experienced drivers should be selected in handling stock trains.

(d) A good system of brakes is essential to this, probably air-brakes.

(e) Also a well ballasted track with a reasonable radius of curves and reasonable grades.

7. All the care bestowed whilst fattening and droving to the trucks can be nullified in a few hours after trucking.

8. The bruising is usually worst on the hind-quarters. It means a loss of anything from 2 to 3 lbs. up to 20 or 30 lbs. of meat, and the trimmed quarter is immediately relegated to a lower grade,

meaning a loss of up to 1d. per lb. over all. No amount of skilful trimming will deceive the eye of the Smithfield or other experienced buyer. One trimmed quarter will often make a buyer suspect a whole shipment, and reflect on the brand for years. Every meatworks aims to get such a reputation that it can sell its brands at full prices without inspection. Only in this way can it get the best out of any market.

9 The Committee on Bruised Live-stock, Chicago, four or five years ago estimated that an average 1.87 lbs. per head of cattle slaughtered in United States, America, was removed on account of bruises. This is apparently a small figure, but on the year it totalled up to 3½ million pounds, sufficient beef for 63,000 Americans for one year.

It can safely be assumed that the percentage loss in Australia is much higher.

10. It should be possible by very stout padding of the trucks about hip high to materially reduce the bruising here generally.

11 I particularly watched a shipment of cattle in Darwin last October. They had been in the trucks under eight hours, and had travelled about 100 miles, but every rump and tail was chafed, and many were bleeding.

12 In addition to (10), the Darwin railway can greatly improve its present service by ballasting the track from Pine Creek to Emungulan, and by installing a better braking system.

13 I saw cattle at the Newmarket stock yards, Melbourne, on 13th February, 1924, that had been trucked 150 miles beyond Adelaide, and had, therefore, travelled over 630 miles. They were only slightly damaged compared with those mentioned in paragraph 11.

I have prepared a statement regarding the labour conditions on Darwin wharf from 1913 to 1923. The suggestion seems to be that when the wharf was under our control we were unnecessarily lenient or kindly to the men, and that the Railway Department, since it has taken over, has increased the efficiency of labor, and deserves great credit for the way it has handled the men. The facts are, that when we took over the wharf the work had been entirely dropped by a stevedoring company which carried on the work for a year or two prior to 1916. The shipping companies approached us, and asked us to take it on. We did so because there was no one else to do it, and we did it for several years. We were quite willing to give it up at any time, but no one else would take it on. We carried it on from 1916 to 1921, through the war years, the post-war years, and until the meat works had closed down. The following is the statement referred to:—

LABOUR CONDITIONS, DARWIN WHARF, 1913-1923

After the Railway Department discontinued working the wharf in 1913 (1) the work of handling cargo on the wharf between steamers and trucks, and the shunting of trucks over the turntable, was performed by contract labour.

The steamers' crews worked the cargo on the vessels, and on the wharf two men received the cargo from each hatch, and shunted the trucks over the turntable.

At times, the rate of discharge ran to as high as 30 tons per hatch per hour.

The first rate paid to the contractors for wharf work was 9d. per ton, which rate was raised successively to 1s., 1s. 3d., and finally to 1s. 6d. per ton.

The contract system lasted until about the end of 1914, after which local labour was employed both on the vessels and wharf, at hourly rates.

The first vessel to be worked exclusively (ship and wharf) by local union labour was the s.s. *Karema*, which arrived from Middlesborough in December, 1914, with a cargo of railway iron.

Rates paid to Waterside Workers

Prior to 1916, 2s. 8d. (Cairns, 2s. 1d.).

Prior to 1916, 2s. 6d. (Cairns, 2s. 2d.).

Prior to 1917, 3s. (27th June), eighteen months' agreement providing if Cairns or

Townsville rate-raised to 3s. or more; then Darwin's rate would be raised to 2d. above the other.

Prior to 1919, 3s. 6d. (15th March). Permanent agreement, three gangs (47 men); 26

per week. Rate for casual hands 3s. 6d. per

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(b) That the present system of casual labour on the wharf is not conducive to utmost despatch.

(c) That if the waterside workers had security in their employment and a guaranteed weekly wage they would concentrate on giving vessels the utmost despatch.

That was the origin of the famous waterside workers' agreement, which was made in March, 1919. They had to work so many hours per week. I believe the agreement effected a slight improvement in the output, but all sorts of difficulties arose. The quarantining epidemic and the shipping strike occurred at that time. It was decided that the meatworks would not reopen in 1920. The agreement terminated at the end of February, 1920, and was not renewed. It was then that the 5s. per hour rate, which is now being paid, was started.

That 5s. rate was first paid by the Government for casual labour in removing a tree for the Ross Shilling landing. There are no meatworks, other than those at Darwin, where purely white labour is employed in a similar climate. The nearest case is Cairns or Townsville. Some of the Territory labour troubles are due to the temporary character of the employees. An effort should be made to encourage people to stay there. The chief difficulty is that there is very little for them to do when the meatworks are not operating. Co-operation between the Government, the men, and enterprises like ours might help to bring about a larger permanent settlement. A large number of people would like to go there if they could manage it. If the cost of living is lowered it would be easier for them. I have dealt with these factors at considerable length in the memorandum on the cost of living. Special consideration needs to be given to the effect on women and on children. In all houses except the Government, and in all houses that the Government permits other people to erect, careful consideration should be given to the design of the kitchens, so that they are made as cool as possible and easy to work in Darwin is one of the worst places in the Territory to live in. The farther one goes inland the better the climate becomes. Special consideration should be given to electric current for light and power at a reasonable rate. If possible, also, ice should be provided. I know people, however, who have access to ice at the works, but they never use it. Ice is not so important as electric light and power. The women's difficulties are the hardest to solve. The setting apart of one-third of the capacity of the plant at the works for the treatment of stock sent in by other producers was a stipulation made by the Government. The company would receive the benefit of handling the additional quantity of meat. The company was not free to start operations in the Territory without approaching the Government and entering into an agreement. The Government was preparing to build works. A site had been selected, plans had been prepared, and preliminary arrangements had been made with a work's manager. When negotiations were opened with a private concern the Government immediately abandoned the idea of building its own works. That was in 1913 or 1914. The Government protected the cattle producers in the Territory from the possibility of exploitation by a monopoly. A monopoly did not exist in Queensland, but the Government had been very nervous about it. The company presumably could have started the works without reference to any one. They could have bought land and gone ahead. That, conceivably, might not have been the best for the country. Queensland, and Australia generally, is suffering from too many meatworks. The company would have had to face various difficulties if they had proceeded with any arrangement with the Government. There might have been a difficulty in getting land. We were free to avoid responsibility by doing nothing. If we had applied for land for the purpose of building a meatworks it might have been withheld. In the lease of the land we occupy it is specifically laid down that it shall be for a meatworks. The principal part of our agreement with the Government is embodied in the lease. Portion of our

land is freehold, but the bulk of it is leasehold. Out of 70,000 head of cattle the works treated 500 for small owners. Mr. Thoenemann said, among other things, "We were the only people who had our cattle frozen through Vestey's. We did it against their advice, and the result was disastrous to us owing to the high cost of the shipping season. They did everything to assist us and showed they had the paternal interest of the country at heart by cutting their charges as much as possible." The charge of 10s. from the railroad to the works was based originally on the actual Queensland charge. I do not know how it compares with the Queensland charges now. It might have been considered a losing proposition by the Railway Department at the time. They may have considered that the loss was justified in order to get the industry going. The company has put up meatworks and the Government has not fulfilled its obligation regarding the provision of wharf facilities. We can do anything at a cost. Mr. Hoibler is a servant of the Railway Department, he is not competent to say impartially whether his Department has fulfilled the agreement or not. The contention about the rate of loading frozen meat is manifestly in addition to the ordinary trade of the port, but at no time was there another boat working while a meat boat was there. The total of 50,000 head of cattle represents what we can do in the works. We could not give that turnover from our own stations; we would have to rely on the loading of other stations. The annual surplus from our stations is between 20,000 and 30,000 a year. We expected to receive the balance from other stock-holders. The delay of a quarter of an hour in every hour in handling goods over the wharf applies when there are more than two hatches working. There is practically no time lost when only two hatches are working. I am looking forward to conditions, as we hope they will be, when four hatches will work for four hatches with two boats at one time. The delay with four hatches would be 20 per cent to 30 per cent. If eight hatches were working the delay would be greater. The Railway Commissioner charges 4s. a ton freight for taking meat from our works to the wharf. We could do it cheaper on camels. Camel transport does not cost 4s. per ton for 21 miles in Central Australia. We have never been able to come to any arrangement with the Commonwealth Railways which would mean them losing a penny piece. I have not much confidence in my powers to do so, as the railways are at present run. I am on good terms with them, but I do not call on them because it is a waste of time. They are not interested in the development of the Territory. They say so themselves, and they have demonstrated it. I would like to think they were interested in the development of the Territory. When the Public Works Committee was in Darwin I spoke of a crane that the Department had refused to put at the head of the line. Mr. Bell has said in evidence that it is not his function to develop the Territory. It has been on the spot often when steamers were loaded with frozen meat. Three trains are used, two of eight trucks each and one of six trucks. One train is filled at the works some hours before work begins on the wharf, and immediately that train is finished the second train is filled. It takes from three to five minutes to despatch a full train and get in an empty one. It takes about sixteen minutes for the train to get to the wharf, and the rest depends upon the speed at which the ship can take the cargo. An ordinary track engine and a small engine known as the "sand fly" used to be employed. I do not know what the engines do between the trips. There may be more engines than I have stated. I have quoted an instance in which I know that one engine was doing all the work of bringing trucks to the works and taking them back again. A trainload would keep men at the ship working for two hours. If they could do it with one engine I believe they would. The average time of loading at the works is eight minutes. I do not pretend to be able to give authoritative information about engines, but I know that when one engine was working there were delays.

(Taken at Sydney.)

TUESDAY, 26th FEBRUARY, 1924.

Present:

Senator Lynton, in the Chair;

Senator Barnes	Mr. Cook
Senator Reid	Mr. Jackson
Mr. Blakeley	Mr. Mackay.

Charles William Davy Comacher, Managing Director, North Australian Meat Company Limited, and the Northern Agency Limited, recalled and further examined.

289 To Senator Lynch.—I am aware of the position of the railway in the Northern Territory. It neither pays expenses, interest, nor depreciation, and is not likely to do so under present conditions. I am aware that a large sum of money has been spent by the Commonwealth in the Northern Territory. I am not aware that £4,500,000 has been spent in twelve years. A certain sum was handed over to South Australia to cover their accumulated expenditure. I want the Government to spend money judiciously, but not necessarily liberally. I cannot see value there now for £4,500,000. If the money has not been judiciously spent, that is not the fault of the people in the Territory. The sum of £4,500,000 is, I understand, the expenditure for the last 60 years. I quoted the opinion of the chairman of the London Chamber of Commerce with approval. It is not the primary function of a railway in the Northern Territory to pay. Its primary function is to develop the country it serves. If it develops the country, its revenue will come in due course. I do not say that policy should be applied to all rail ways, but it should certainly be applied to railways in remote districts. If they were examined, I might have found that the railways in the remote districts of New South Wales do not come nearer to making a profit than the railway in the Northern Territory. The Territory is in a unique position in Australia, and, as far as I know, in the world. It is a matter of political urgency that the Territory should be occupied. If it is left to be developed in the ordinary course after the more attractive parts of Australia have been occupied, it will be many decades before it is populated. The people of Australia need to make up their minds whether they are going to leave the Territory to be developed in the course of nature by pressure from the south. If that is so, we should let it be known, and put the people who are up there out of their misery. If we wish to anticipate nature, and make an effective occupation earlier than would otherwise be the case, the circumstances must be carefully studied and judicious expenditure incurred in order to achieve that and no extravagant expenditure is necessary. No such huge sums as have been indicated need be spent. I agree that the expenditure of £4,500,000 outside the Territory would give a better result than has been achieved in the Territory. As a taxpayer in the Commonwealth, I object to the small result there is for the money, but the money has gone. It is no use crying over spilt milk. Let us benefit by experience, and make a fresh start. The price of meat in London is about the same as it was before the war. The expenses of production are much higher, and the cost of freight between Australia and London has greatly increased. Apart from the export demand for beef, there is going to be a demand in Australia. At the present time we export only 25 per cent. of our production of beef, and it will not take much increase in population to absorb that 25 per cent. We are hopeful, along with the other works in Australia, that further economies will be effected in the transport of beef. In the last two or three years great improvements have been made in the handling of it, and we are hopeful that when the position in Europe is stabilized slightly higher prices will be obtainable. That is a reasonable thing to expect. I should accept a statement by Mr. Crumsey, chairman

of the Australian Meat Council, as correct. I have examined the figures of the return for meat shipped from Wyndham last year, and I find that the price per head, c.i.f. London was £11 8s. 4d. Exchange amounting to 3s. 10d. per head was deducted from that. The exchange position is very much worse to-day, and the amount that the producer in the Northern Territory or Western Australia would now lose would probably be 7s. per head. It is the producer who loses on account of the exchange. The Government subsidy amounted to 8s. 7d. per head. The total amount realized for a bullock was £12 9s., including the Government subsidy of 8s. 7d. Out of that £12, £3 7s. 3d. was paid in freight. The grower received £3 17s. 6d., and out of that he paid 10s. 10d. for droving; so that the net receipts on the stations were £3 5s. 7d. per head per bullock. Roughly, the producer gets for four or five years' attention to his beast the same price as the steamship owners get for carrying it from Australia to London in six weeks. The weight of a bullock is about 650 lbs. Estimates of the cost of producing a bullock in the north of Australia vary. It is impossible to get down to absolute costs. A bullock costs from 20s. to 25s. a year, and a four-year-old costs quite 25 by the time interest on the money is reckoned. Beef is the one commodity which is now sold at about pre-war price. We know that beef-raising is one of the oldest industries in the world, and the demand for beef tends to increase. The industry is affected by the economic chaos in Europe at the present time. We in the industry have to take a long look ahead. I do not think that I take a hopeful view. I said that we had lost heavily, and did not expect to make money for a number of years. I think the industry has touched bed rock in regard to profit. I still think that the Commonwealth Government has not fulfilled its obligations under the terms of the agreement. The consequence is that it costs us more to handle our supplies in remote districts and our producers suffer over the wharf. Mr. Millicien's figures regarding the wharf are approximately correct. I went into them with him at Darwin. I believe he telegraphed a slight correction. All these book figures are apt to be on the optimistic side. It must be within the experience of every person that calculations made beforehand are not always realized in practice. It is very difficult to say what money loss is occasioned by the turntable. The cost on the ship and wharf for inward goods is, roughly, 21, and of that 25 per cent. at least would be saved if the turntable could be abolished. There would be at least a similar saving on export goods. The saving on export goods would probably be even more than that, because larger gangs are employed in handling frozen goods. In addition to the loss actually of the wharf, any delay in working a ship is reflected at the works. If there is a delay of an hour or two at the wharf, there is a corresponding delay of an hour or two at the works. We would not bother about making this fight for a new wharf if there was not something solid in it. The Committee has had evidence from every one except the Railway Department regarding the waste of time caused by the present wharf. Our meat leaves the store at under 9 o'clock in the morning, Mr. Bell remarks, and by 11 o'clock, First, he says we asked for the trucks he has supplied. I say most emphatically that we did not. We asked for small meat trucks. There are two types of meat trucks in Queensland; one carries 16 tons, and the other 8 tons. We asked for a small meat truck, and we have been supplied with a truck which carries about 4 tons. It does not matter to us how many wheels a truck has, that is purely a condition affecting railway running arrangements. When meat was returned to the works from the ship it was night time, and it was in small trucks. The second point he raises is that the ships gave hard receipts for everything. We would not take any other receipt from the ships, and we told the ships to return any meat for which they could not give us a hard receipt. They did actually refuse that. I was there, and Mr. Bell was not. At Townsville they bring their temperatures down to 8 degrees before shipping

meat. They are 21 miles from the ship's side. In Brisbane they bring the temperature down to 12 degrees. They are almost alongside the ship. Our practice at Darwin was to bring the temperature down to zero, or less, so as to make up for the inefficiency of the trucks. When Mr. Henderson made his test in Darwin, in June, 1918, I pointed out to him that, under shipping conditions we would bring the meat down to zero, whereas his test was made at between 5 and 10 degrees. I pointed that out in order to act decently to him. I directed his attention to the fact that he was testing under conditions which were not those under which we worked when shipping. Actually, however, the temperature in our stores when his tests were made was quite as good as the temperature in the stores in Queensland. Because I pointed out that the temperature was not the same as we employed when shipping, that is now being used as a point against me. As a matter of fact, we may be unwise in bringing our temperatures down to that low point. It may have an undesirable effect on the meat. The fact that the Americans do not bring their meat down below 8 degrees makes me feel that we ought to look further into that question. When Mr. Henderson made his tests it would have taken us a week or two to reduce our temperatures to zero, and would have cost us a lot of money. The temperatures, however, were quite in line with the practice in leading Queensland meat works. I have not given any consideration to a scheme for running a line round the east side of Stokes' Hill and joining up with the wharf. The wharf is not purely a makeshift question, but has to be considered in relation to the future of the Territory. While I, as a meatworks man, would be satisfied with a wharf which would give us two efficient berths and a sorting shed of the wharf, the sum expended to give that accommodation would be wasted if in ten years the Commonwealth found it necessary to have accommodation for three or four ships. It is fundamentally necessary to have minimum berthing accommodation for two ships, and direct access to the ship's side, and sorting sheds. That might be achieved by a curve on to the existing line, but when it became necessary to provide a third and a fourth berth it might be necessary to scrap the whole of the existing scheme. Even in the very brief career we had there it was not unusual to have two ships alongside when another came in. That happened in spite of the agents' attempts to prevent it. It also happened when we did not load 1 ounce of meat in the winter time. The Western Australian Government has spent £100,000 for a new wharf at Beidson Point, a splendid outlet for the Ashburton district. Surely it is worth the Commonwealth Government's while to consider a fairly substantial expenditure to make the conditions in Darwin really efficient. Personally, I would rather see the Government spending the money on a wharf than on a railway. I do not want the Government to spend huge sums of money in the Territory. A railway will not settle the problem of the north. There is too great a tendency to hope that by some move of a magic wand the problem will be settled. I cannot see how a railway of itself will settle the problem. I cannot see that it will be any cheaper for the individual to get from Brisbane to Darwin by railway than by boat. The railway journey will take him five days instead of ten days, but it will be more expensive. I have my calculations upon the charge made for railway travelling in the south, and particularly on the East-West line. The wharf is really more important than the railway.

290 To Mr. Cook.—The pastoral industry is the only industry in the Territory which is doing any good. The figures from mining have steadily dwindled. The meat was loaded for nothing at Darwin in a fortnight, but I expect it at present prices. There is certainly pay to be expected from Wyndham. Wyndham works enjoy the reputation of being one of two works that send the best meat from Australia. Although the price returned to the producer does not pay him, it

is keeping him alive. The Western Australian Government is showing great foresight in running the works without demanding any return for interest or depreciation. After paying expenses of running, the balance is paid to the producer. I do not say that an industry that will not pay should be subsidized indefinitely by the taxpayer. No industry, generally speaking, should be subsidized indefinitely, but the meat industry is passing through a special phase at the present time, and in the interests of the whole of the Commonwealth it is desirable that it should be maintained and prevented from disappearing. I have been in the meat business for about twenty-seven years. The Government can do nothing towards exploiting the meat market. It can assist private enterprise to a slight extent in carrying on during these particularly lean years. One of the points in the remarkable experience that Australia is now having with wool is that, owing to the phenomenally high price of wool, and the big return wool producers are getting, the general trade of the country is kept more or less moving. If we had not had this remarkable luck we would have been in the same economic depression that is visiting other parts of the world. That extreme pool fortune in regard to wool is preventing us from looking in regard to other industries. In the meat industry we have about reached rock bottom in production costs. Trade commissioners have not been of any value to the meat industry. They have told the people in Australia what the people in Australia already knew. The Meat Council is an excellent organization, but it should concentrate its attention on fewer things, and these things should be mostly inside Australia. They might consider the better production of the finished article, and might study the conditions that are interfering with that better production. Personally, I have not been obliged to study the shipping question, because I have had nothing to ship, but I suggest that we ought to get together with the shipping interests and find out exactly why rates are being kept up. We should study them in their cost list, and see if we can do anything to reduce it. The shipping companies say that our harbour dues have gone up, and they must protect themselves with increased freights. They say that our navigation legislation is costly to them, and that if we want these luxuries we must pay for them in the shape of increased freights. Every impediment placed in the track of the shipping companies is unloaded on the shipper. What else can they do? They are not in the business for their health. It all comes back to the primary producer, who gets only what is left. The minimum holding of the best land in the Northern Territory when unimproved is probably 2,000 or 3,000 square miles. It would, perhaps, be 1,000 square miles in the coast country, where there is more water. Some Australians put my company's troubles down to its being financed by English capital. They say that if it had been Australian capital we would have had a political pull that would have got rid of most of our troubles. It is generally known what are the conditions that attract capital. Capital needs some return and fair security for the future. It is a blessing rather than otherwise that we have British capital there. I represent British capital. It may be prejudiced, but I believe the best advertisement the Territory could have would be the announcement that the Darwin Meat works were operating again. English capitalists know exactly what is happening there. Men interested in mining and other industries are watching events, and they know the difficulties. If the difficulties were removed they would know that industry would expand, and they would be encouraged to invest their money. I believe industrial troubles in the Territory can be overcome. We have passed through a difficult phase, which was owing largely to the inexperience of the people there. I am not losing any sleep over the suggestion that if the meatworks have to re-open, there will be a claim for back pay while they have been closed. Whether we shall ask for a guarantee or continuity

for a season or year will have to be considered very carefully. Something of that character would probably have to be done. My feeling is that every one concerned will be only too anxious to make everything go well. On the last occasion we had meat contracts with the Imperial Government none of our losses was made good. We lost £220,000 during the three-years that we had army contracts. We did not work on the Townsville basis. We paid one-third above Brisbane rates. It would be sufficient to warrant that re-starting if the railways would guarantee to cope with the output, and load the meat, provided they would do it at a price. The price would largely guide our people in re-starting. Between 12s. and 15s. a ton would be the price. There are other factors to be considered. There is the traffic coming in. I am bound to say that that would not help the rest of the Territory. We are anxious to have something done that will help not only us, but everybody. The more people there are there the better it will be for us. The cost of raising a bullock is about the same as Hall's Creek as at Wyndham. Various things have to be taken into account, such as interest and depreciation. I am speaking of a station using white labour to a great extent. I have a comprehensive knowledge of the Northern Territory, and I feel that the re-staffing of the Meat Works will be the forerunner of a general improvement. I do not like using superlative language, but I say that the Northern Territory is a good cattle country, and with reasonable development would be prosperous.

291. *To Mr. Jackson*.—The meat industry and other industries have been held back by our troubles. I have looked into the question of the effect of railway connexion with Queensland in facilitating the transport of labour. If a railway went through from about Longreach to Darwin the train journey from Brisbane to Darwin would take five days, which would be exactly half the steamer journey. The fare would be about £23 first class and £16 second class to the Northern Territory. The return fare by steamer is £39 first class and £25 second class. There would be a saving in time by using the railway, but it would be more expensive. I am assuming the existing rates from Sydney to Longreach, and I have calculated the other on the basis of the East West Line. From Brisbane the fare would be about £20 first class and £13 second class, and would be about the same as the boat fare, and would save five days. I should hope that our labour market would be stabilized before the railway goes through, because I do not think the railway will be there in less than ten years. Cattle from the Tablelands go to Townsville. The influence of the extension to Daly Waters would probably reach as far as Brantford. If we were working full speed for the season, the works would probably begin with 30,000 head, and increase to 50,000 or 60,000 head. There is no doubt that we could get all the cattle required for killing. I have indicated in correspondence with the Railway Department that it does not easily give out information. The information referred to by Mr. Henderson's test was not obtained from the Railway Department, but from the Public Works Committee.

292. *To Mr. Blakely*.—Roughly, I should say, the turntable would handle about a dozen trucks per hour. I have not timed it with a stop watch. If everything was ready it would work at the rate of 5 minutes per trip. The trucks hold about 4 tons each. There is a lot of difference between the nominal and actual capacity of a truck. The normal capacity per batch per hour is about 11 tons. I do not say that the turntable is responsible for delay when only two batches are being worked. It is when more than two batches are being worked that the delay begins. There is delay in bringing the trucks up to the turntable, and there is delay in removing them where they have been landed on the other side of the turntable. If there is any hitch in the labour arrangements delay results. There is delay in bringing the turntable opposite the

rails on which the locomotive and trucks are waiting. A signal has to be given, and the locomotive has to start. The engine has to shunt two trucks on to the turn-table at a very slow speed with great care lest they should be pushed over the wharf. The trucks have to be disconnected, and the turntable swung round to another set of rails. The trucks then have to be pushed off. The turntable is really an obstruction as compared with pushing the trucks on to the wharf by a locomotive in one operation. Calculations regarding the capacity of the turntable may sound all right on paper, but in practice delays actually occur. If a certain amount of traffic can be handled in a certain time it does not necessarily follow that it will take only twice the time to handle twice the traffic. A traveller would probably assist operations on the wharf. There are a good many cross-overs. A traveller would not do away with hand shunting. When comparing Darwin with Sydney, the turntable, the hand shunting, and the fact that there is no sorting shed for inward cargo have to be taken into account. I have dealt fully with the proposal to keep a horse there. I would like to know how a horse could push the trucks on to the turntable. Why does the Railway Department not use horses? They have had control of the wharf since 1921. I do not know how the Government would finance the new wharf, but I most distinctly say that no additional cost should be put on to the traffic. Personally, I prefer that private enterprise, rather than the Government, should provide steamers to Port Darwin. Private firms have treated us quite as well as the Government.

293. *To Mr. Mackay*.—The Railway Department is not concerned with the development of the Territory. It is the responsibility of the Minister. I regard it as my duty to develop the Northern Territory. The Government can decide to carry meat and cattle entirely free if they choose, but if they so decide I shall make a claim on the Treasury for the loss so entailed. He has told me that frequently. I have urged upon him that when his duty as a Railway Commissioner with his facilities with the wharf, and the rest of the Territory, he should place both views before the responsible Minister for a Ministerial decision as to policy. The Department could help us in many ways without serious injury to its finances. I am on very friendly terms with the Commissioner, but we cannot get these things done. I have referred to the crane which was desired at the rail head. It would have involved an expenditure of £20 or £30. It was so important that we erected a substitute ourselves. In that case the Minister for Home and Territories had requested the Commissioner to place the crane there, and the Administrator had previously made a similar request, but nothing was done. I saw Senator Pearce on his last visit to the Territory. Our interest in the crane question had then ceased, but a previous Minister who visited the Territory had tried to get it and had failed. There have been improvements as a result of Senator Pearce's visit. There has been a great improvement in the prospects. Certain things have been done, but greater things for which he has fought will take time to attain. The wharf is one of them. The Territory has been suffering from the difficulties that I have mentioned during the whole of my experience. The refrigerated trucks are a long-standing grievance. I think they tried the pre-cooling of trucks at Lake Creek, in Central Queensland, but they gave it up. That example was quoted to me some years ago. It is not customary to pre-cool at any of the big Queensland works. The temperature of the Territory is higher than that of Central Queensland, and we steadily urge that the insulation of the trucks should be thicker. We did not wish the Government to lightly incur additional expense in insulation, and I quoted our own experience in our store at Darwin. The outside walls of the Darwin cold store contain 21 inches of pumice, whereas one of the works near Townsville has only 12 inches of cork and the old, and about 14 inches of charcoal. Pumice and charcoal are about equal as

insulators, and have about 53 per cent. of the efficiency of cork. As against 14 inches in Townsville, we put in 21 inches in Darwin, representing 50 per cent. more. The trucks in the Territory are less efficient than those in Queensland. They should be at least as efficient as and, acting on our standard, they should be more efficient, because they have more difficult conditions to withstand. The Government could help us more than the Railway Department. The Government could define where the Railway Administration should function as a carrying utility, and where it should become a developing instrument. My objection is more a condemnation of the policy of the Government than of the Railway Department. It is the system, not the individuals employed by the Railway Department, that is to blame. Those individuals are carrying out their duties according to their instructions. The railways are under the control of a Minister who is not actively interested in the development of the Territory. Perhaps Senator Pearce is meeting with as little success as his predecessors. There is no alteration in the railway attitude. The policy is laid down, and the Railway Commissioner is carrying it out without reference to the Minister. There is a necessity for co-ordination between the Home and Territories Department and the Railway Department. Admiral Clarkson says that his scheme would allow the present wharf to continue in existence. If that is practical, his scheme would meet present needs. There could be one new berth provided with sorting sheds on the wharf, and direct access for trucks alongside ships. That berth would be used most of the time, but in case of emergency there would be another wharf. The difficulties of the old wharf would still remain.

294. *To Senator Reid*.—The use of 8-ton trucks would possibly improve matters. I am inclined to think it would. That is a matter for practical decision. There is a question but that the Townsville trucks are efficient. I have personal knowledge of that, and I have also personal knowledge that the Darwin trucks have failed. The difference in temperature between Townsville and Darwin would not altogether account for the lack of efficiency in the small trucks. Because there is a difference in temperature, and because Darwin is some degrees farther in the tropics, it would have been a wise precaution to have made the insulation on the trucks better than the insulation on the similar trucks in Townsville. That is what we did in our works, but they would not do it in the trucks. The meat returned from the ships would not be more than six or eight hours in the trucks, and probably less. It is loaded probably after midnight, and returned to store about 5 o'clock in the morning. Loading it at the works would take about ten minutes. At Cannon Hill, Brisbane, the temperature of the stores is 12 degrees, and the meat is practically shot into the ship. At Alligator Creek, 21 miles from Townsville, the temperature of the store is 8 degrees. I have heard of no difficulties there. I have seen that the meat has been loaded from Ross River, Townsville, and had been in trucks for 30 hours in very hot, humid weather. When the trucks were opened the snow was dry and crisp on the wrappers, as if it had just come out of cold store. That was strong testimony to the efficiency of those trucks. There was no pre-cooling. If the trucks had been in six days in the wharf, that thing would only have gone ahead where the light powdered snow on the wrappers. If that had gone, I would not have been surprised. As far as I know, 4-ton trucks have not been used in Townsville. The proposed expenditure on the wharf is justified, even when the need for improved railway facilities is considered. Even if £200,000 were spent on the wharf, that would only build 20 miles of railway, and an efficient wharf would be very much more valuable to the Territory than another 20 miles of railway. It is highly important to make some definite progress in the country which the 200 miles of existing railways taps, rather than to go on believing that mere railway construction will open

up the country. If my company owned the Territory, I would recommend it, as a purely business proposition, to put up the wharf rather than build a railway. If I had not sufficient money for both, I would save it on the wharf. To improve the approach to the jetty would still leave the difficulty of getting the goods away from the wharf is a very important factor in the cost of material imported for the use of the community in Darwin. A curve from the existing line to the jetty would get over many of our difficulties. It is very important to have the charges reduced as far as possible for all stores and supplies going into the country. If development proceeds there will be large quantities of improvement materials required, and every few shillings a ton added to their cost will make a difference to the man on the land, especially when it is borne in mind that they are added on top of the high freights which he has to pay from the south. It is for the Government to make up its mind whether it will push ahead with the settlement of the Territory, or wait for the natural development, which will come after the rest of Australia has been occupied. The wharf would help pastoral development by assisting to reduce the cost of running stations and making improvements. We would be operating in April if we had an efficient wharf. Our people are prepared to operate, although the meat market is not good. We have to take long views, and we want to get things going steadily on an ascending scale of turnover. Given a satisfactory wharf, the company would be carrying on now if we could make satisfactory arrangements with regard to shipping and labour. I have no doubt that we could make those arrangements. The arrangements that we would make which would have to be considered. We are anxious to begin at the earliest possible moment. That is why we are going to the expense of keeping everything ready. We have repaired the material part of the damage caused by the fire last July. We would not do that unless we were anxious to commence operations as soon as possible. If the Railway Department would make over the delivery of goods at the works at a satisfactory figure, we would consider the advisability of re-opening. It would be an artificial arrangement which we would not like, but as a temporary device until more is known of the future it would serve a purpose. It cannot be done with the present trucks during the daytime, and it is of no use the Railway Department trying it. They would only meet with disaster. I am speaking only for myself, but I think my company would re-open if the Railway Department would do that. Vestey's is entirely British capital. It has been stated that they are merely dummies for American companies, but the Americans have found that they are pretty solid dummies. They are the only people who are giving the Americans a fight in the British market.

295. *To Senator Lynch*.—I regard a sorting shed as an essential feature of the improved wharf facilities. It will enable goods to be hand-trucked from the ship to the shed, sorted as discharged, and removed immediately by vehicles to the town or country. If it is desired to make a success of the Territory better conditions must be provided there than elsewhere. If there is any doubt as to whether it is a white man's country, the Government must give the white men who are there every assistance that human ingenuity can devise to make their lot easier. When a mixed shipment goes up to Darwin by ordinary steamer there may be, perhaps, 100 tons for us and 300 or 400 tons for other people. All our goods have to go to the sorting shed and, after sorting, have to be loaded into trucks for us. It is a very wasteful procedure. Mr. Hillman who is there at that point. His evidence is fairly sound. Most of his figures are very conservative. The fact that my company has £1,000,000 invested in the Northern Territory, and that we are keeping the works ready to go ahead on short notice, indicates that we would not be unreasonable in the matter of re-opening. I cannot conceive that with better wharf facilities, an oil depot,

and the insulated trucks put in proper order, we would not re-open. Although we would like to give the Government a definite undertaking we could not give ourselves. If we started to negotiate with shipping companies about a reduction of freights, and we had given a guarantee to re-open the works, they would say, "You are going to operate whether we reduce freights or not. You have given your word to the Government." The inducement for us to seize every opportunity to re-open is enormous, having regard to the amount of our investments. I was asked yesterday why my company entered into an agreement with the Government about the opening of the works. That was rather an unexpected question, and I was not able to give any consideration to it except what was possible on the spur of the moment. It is necessary to consider the position as it was then. The South Australian Government for many years had been offering various inducements to private companies to open meat works in the Northern Territory. After the Commonwealth Government took over in 1911, and found that it was essential for the pastoral industry to have a meat works, and that private enterprise was not coming forward, it decided to start a works. When my company thought of building a works there they found that if they did so without reference to the Government, there were various obstacles they would have to overcome. Only leasehold land in sufficient area was available. There were no cattle trucks and no refrigerated trucks available. These two things alone would have been sufficient to make the company go to the Government. The Government might say, "We were going to build these

works, but if you do certain things you can build them." In 1913, when the negotiations were opened, and in June, 1914, when the agreement was finally signed, the Commonwealth Government had every intention of pursuing a progressive developmental policy in the Territory. Their publications at that time showed that this was done and affected these intentions, and the result was that the provision which cost us £300,000 in extra capacity at the works was not required, because the Government had not been able to go ahead with its developmental policy. Part of that developmental policy was the encouragement of the pastoral industry. The Government was saved the expense of embarking upon an enterprise of which it had previously given notice. The agreement with us absolutely protected the primary producers.

295. *To Mr. Cook.*—We are carrying at Darwin the loss that the West Australian Government is carrying at Wyndham, and the loss that the Commonwealth Government would have carried if it had built the works itself. In the event of industrial trouble it would be two or three days before anything would go wrong, except with meat which was actually on the floor or in the paddocks. Labour has learned certain things since we shut down. We would take steps to handle the labour problem. I have in view that we may have oil fuel, which will be very much easier to handle, and it will be possible to safeguard the position with very few men. I do not anticipate any labour trouble. The people would realize that they were cutting their own throats.

The Committee adjourned.