1920-21.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE

RELATING TO THE

SHIPBUILDING CONTRACT

OF

MESSRS. KIDMAN AND MAYOH.

Presented pursuant to Statute; ordered to be printed, 6th April, 1921.

[*Cost of Paper.*—Preparation, not given; 800 copies; approximate cost of printing and publishing, £234.]

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MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Third Committee.

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

Senate.	*House of Representatives.*
Senator Hattil Spencer Foll.*	Llewelyn Atkinson, Esquire, M.P.
Senator George Henderson.†	The Honorable Frederick William Bamford, M.P.
Senator John Newland, Vice-Chairman.†‡	George Hugh Mackay, Esquire, M.P.
Senator Edward Needham.§	James Mathews, Esquire, M.P.
Senator William Plain.*	Parker John Moloney, Esquire, M.P.

* Appointed 28th July, 1920. † Resigned 22nd July, 1920. ‡ Re-appointed 28th July, 1920.
§ Ceased to be a Member of the Senate, 30th June, 1920.

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

No. 99 OF 29TH OCTOBER, 1920.

3. SHIPBUILDING CONTRACT OF MESSRS. KIDMAN AND MAYOH.—REFERENCE TO PUBLIC WORKS COMMITTEE.—Mr. Hughes, by leave, made a statement to the House on the subject of a shipbuilding contract between the Commonwealth Government and Messrs. Kidman and Mayoh, and moved, That the following matter be referred to the Parliamentary Standing Committee on Public Works for investigation and report:—The advisability of complying with the request of Messrs. Kidman and Mayoh to be relieved of the obligation to complete the contract entered into by them on the 4th August, 1919, to build two wooden vessels for the Commonwealth, and the conditions upon which such relief, if deemed advisable, should be granted, and that the Committee be authorized to proceed with its investigations whilst the House is sitting.

Debate ensued.

Question—put.

The House divided—

Ayes, 34.

Mr. Atkinson	Mr. Jackson
Mr. Bamford	Mr. Jowett
Mr. Bell	Mr. Lamond
Mr. Blundell	Mr. Lister
Mr. Bruce	Mr. Mackay
Mr. Donald Cameron	Mr. Marks
Mr. Chanter	Mr. Marr
Sir Joseph Cook	Mr. Mathews
Mr. Robert Cook	Mr. Maxwell
Mr. Corser	Mr. Poynton
Mr. Fleming	Mr. Rodgers
Mr. R. W. Foster	Sir Granville Ryrie
Mr. Greene	Mr. Laird Smith
Mr. Gregory	Mr. Wise
Mr. Groom	
Mr. Higgs	*Tellers:*
Mr. Hill	Mr. Burchell
Mr. Hughes	Mr. Story

Noes, 15.

Mr. Brennan	Mr. Ryan
Mr. Charlton	Mr. Stewart
Mr. Considine	Mr. Tudor
Mr. Gabb	Mr. Watkins
Mr. McDonald	
Mr. McGrath	
Mr. McWilliams	*Tellers:*
Mr. Parker Moloney	Mr. Mahony
Mr. James Page	Mr. Riley

And so it was resolved in the affirmative.

SHIPBUILDING CONTRACT INQUIRY.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SHIPBUILDING CONTRACT.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, to which the House of of Representatives referred for investigation and report the question of the advisability of complying with the request of Messrs. Kidman and Mayoh to be relieved of the obligation to complete the contract entered into by them on the 4th August, 1919, to build two wooden vessels for the Commonwealth, and the conditions upon which such relief, if deemed advisable, should be granted, has the honor to report as follows :—

INTRODUCTORY.

1. During the year 1917 a world-wide shortage of shipping existed as a result of the indiscriminate depredations of the German submarines, and the trade of Australia was suffering in consequence. Coastal cargo was congested, and there were in the Commonwealth immense quantities of wool and metals that could not be shipped as well as millions of tons of wheat which had been sold to the British Government, but could not be lifted.

2. Much adverse comment was indulged in at that time, and the Government was frequently condemned for not realizing that shipbuilding was one of the most important essentials that could be undertaken in connexion with the war. It was emphasized that we had plenty of timber, and that wood construction was not as highly technical as steel construction, which, at that time, was impossible because steel was unobtainable.

3. The Government already had in operation a shipping line of fifteen vessels, and desired to get more in order to carry the freight of Australia. Contracts had already been let for the building of wooden ships in America, and it was then officially announced that offers would be welcomed from any firm that could build wooden ships in Australia.

4. The result was that in 1918 four contracts were let to various firms for the construction of a total of 24 wooden ships. Amongst these firms was that of Kidman and Mayoh, which, on the 6th July, 1918, entered into a contract with the Commonwealth Government to construct six wooden vessels of a dead weight capacity of about 2,600 tons each.

5. The conditions of contract (clause 8) provided that—

"Each of the said vessels shall be completed and delivered to the Commonwealth as early as possible, but not later in any case than the following times, namely :—

(*a*) The first vessel as early as possible but not later than twelve months from the date of commencement which shall not in any case be more than two months from the date of this Agreement PROVIDED HOWEVER that if the Contractors shall satisfy the Chief Executive Officer, that notwithstanding all reasonable efforts made by them the engines for the first vessel were not delivered to them before the expiration of the said twelve months then the time for delivery of the first vessel shall be extended by a sufficient time (not exceeding in any case two months) for the installation of the engines in the vessel so that the time for delivery of the first vessel shall not in any case exceed sixteen months from date of this Agreement :

(*b*) the second vessel as early as possible but not later than fifteen months from the date of this Agreement :

(*c*) the third vessel as early as possible but not later than eighteen months from the date of this Agreement:

(*d*) the fourth vessel as early as possible but not later than twenty months from the date of this Agreement :

(*e*) the fifth vessel as early as possible but not later than twenty-two months from the date of this Agreement :

(*f*) the sixth vessel as early as possible but not later than twenty-four months from the date of this Agreement :

and time shall be the essence of the contract.

6. On the 11th November, 1918, the Armistice was signed. As a result, a large amount of shipping was immediately released, the market price of wooden ships fell considerably, and the need for the ships being constructed by the Commonwealth Government was not as great as during the war period. The Government therefore decided to cancel all the wooden shipbuilding contracts.

7. It was stated in evidence, however, that Messrs. Kidman and Mayoh had made considerable progress with one ship, and fair progress with the second ship, had practically all the material in the yard, and much of it worked up ready to be applied to the completion of the boats, and expressed themselves as very anxious to be allowed to complete these two.

8. A Departmental Committee was appointed to consider the matter, and reported that, as so much work had been done on these ships, the Commonwealth would get them completed at a price which, when credited with their selling value, would be no more than the cost of cancellation of the contract.

9. It was consequently agreed to cancel the contract for the construction of four of the vessels, and, on the 4th August, 1919, a further agreement was entered into with Messrs. Kidman and Mayoh to complete the partially-constructed vessels of a deadweight capacity of approximately 2,600 tons each, at a cost of £26 per ton.

10. In consideration of the variation of the original agreement, it was agreed that the Commonwealth should pay as compensation to the Contractors, Messrs. Kidman and Mayoh, the sum of £52,000, being at the rate of £5 per ton for 2,600 tons in respect of each of the four barquentines not required.

11. In April, 1920, one of the vessels (the *Braeside*) was launched, but subsequent examination showed that, though built with a sag of 9 inches, she had hogged to the extent of about 32 inches ; that is to say, if she were placed on a flat surface her stem and stern would be touching that surface, but the centre of the keel would be about 23 inches above the surface.

12. When it was discovered that the vessel had hogged to this extent, she was placed in dock, let down on an even keel, and an effort made to strengthen her. On refloating, however, it was discovered that the hog had not materially diminished, and, in consequence of this, and the fact that certain of the fastenings were not in accordance with Lloyd's Rules, the Australian representative of Lloyd's Registry, London, refused to grant the ship a first-class classification.

13. The Contractors, at this stage, expressed a desire to be relieved of their contract, and addressed a letter to the Prime Minister's Department, under date 13th October, 1920, in the following terms :—

WOODEN VESSELS.

Dear Sir,

With reference to our contract with the Government for the building of wooden sailing vessels, as you are aware, a number of difficulties have arisen during the past few months which have placed us in a very difficult position.

Without wishing to take up too much of your time, or going into too much detail, we think it advisable that we should outline the matter from its inception.

At the time the contract was entered into, vessels of any description were absolutely necessary, and as a war measure the Commonwealth Government entered into contracts for building steel steamers and wooden sailing vessels in Australia. Four contracts were entered into for the building of wooden vessels, three of which were cancelled in the early stages, leaving only our contract in force.

We have made a very genuine and whole-hearted effort to complete the work intrusted to us, but, unfortunately, we have met with unforeseen difficulties, which have resulted in delays and large increased costs. From the beginning considerable difficulty was experienced in obtaining the large timbers requisite for the building of these vessels. The forests throughout New South Wales were scoured, and even then sufficient could not be obtained to meet requirements. In addition to this, wages in all trades connected with the building of ships have advanced, and also the prices of all materials required for ships have similarly increased.

The result of this is that up to the present we have expended more on the vessels under construction than we estimated they should have cost when completed and they will require a considerable sum of money to be expended on them before they can be completed ready for sea.

In anticipation of the completion of the vessels, the Commonwealth Government some time ago decided to sell them to Messrs. Burns, Philp, and Company. This rather complicated matters, in view of the fact that Burns, Philp, and Company required certain alterations and additional work carried out on the vessels to suit their requirements, and the Chief Executive Officer, Commonwealth Ship Construction Branch, authorized us to carry out this extra work on behalf of Burns, Philp, and Company, which amounted to £13,339.

In addition to the foregoing, the Commonwealth Government decided, before selling the vessels to Burns, Philp, and Company, to dispense with the Diesel engines which were originally specified to be provided in the vessels. This resulted in further complications, as no settlement could be arrived at between the Government and ourselves as to the amount which should be deducted from the contract price on account of the omission of these engines.

Another difficulty which has arisen is that, since the launching of the first vessel, a hog has developed, which in ll probability would prevent us from obtaining Lloyd's certificate, and we, therefore, are forced into the position that we cannot comply with the requirements of the contract with the Government.

We had no previous experience in building or designing ships, but the best available assistance was engaged and plans were prepared by us and approved by Lloyd's, London, and your Mr. Curchin, and to these plans we have built vessels. Lloyd's committee of experts and your own expert having passed the plans, we always thought the vessels would be suitable for a Lloyd's certificate or registration.

We have made a list from Lloyd's Registry of Shipping, and we find that there are not 10 per cent. of sailing vessels which have Lloyd's certificate, and the 90 per cent. are carrying cargoes safely to-day, and are insured in companies other than Lloyd's.

When Lloyd's approved of the plans, they wrote and said they would give a registration if we built the ships to the plans submitted.

In view of all the circumstances, it is desired that the Government would consider some means of relieving us of our contract, and considering the question of allowing us some compensation for the work and time which has been expended in a genuine and conscientious effort to meet the country's needs in a time of great distress.

If the Commonwealth Government took over the work, it might reasonably be assumed that they could complete the vessels to their own satisfaction, and obviate the necessity for protracted delays which must occur to secure a settlement of the many points at present in dispute. Some of these would mean submission to arbitration, and, possibly, litigation.

Further than this, the fact of the Government having sold the vessels to Burns, Philp, and Company has brought about a complication for which we are in no way responsible ; but are, as a result, greatly inconvenienced and put to a heavy expense.

Finally, it is suggested for consideration that if the Government can see its way clear to relieve us of our contract, we would urge that the matter be referred to the Parliamentary Public Works Committee, with a view to their making a report on the whole position, and considering the question of the amount of compensation which might be allowed us.

If the Government can see its way clear to meet our request, we hereby undertake to abide by the decision of the Public Works Committee, whatever it may be.

Yours faithfully,

(Sgd.) KIDMAN AND MAYOH.

DESCRIPTION OF THE VESSELS.

14. As originally specified, the vessels were to be four-masted wooden auxiliary cargo barquentines, each 2,600 tons dead weight, and each fitted with twin 240 brake horse power crude oil engines semi-Diesel pattern. The timber to be used in the construction of the hull was stipulated to be of approved Australian hardwoods, and the masts and spars to be of Oregon pine.

15. The principal measurements of the ship as designed were length 244 feet between perpendiculars, 44 feet moulded beam by 24 feet moulded depth. Permission was afterwards given to increase the length to 250 feet.

16. Subsequently it was decided to omit the engines, and at the request of the Contractors the design of the vessels was altered to five-masted schooners. Later, when arrangements were made to dispose of the ships to Burns, Philp, and Company Limited, the rig was altered, and the vessels became five-masted barquentines.

ESTIMATED COST.

17. The estimated cost of the vessels based on a payment of £26 per ton for two vessels of each 2,600 tons deadweight capacity is £135,200.

In addition to this, clause 25 of the Agreement made on the 6th July, 1918, provided that—

> If the tribunal under paragraph (*d*) of the " General Provisions of the Shipbuilding Agreement " shall after the date of this Agreement increase the rates of wages payable in respect of labour employed in the construction of the vessels the Commonwealth will reimburse to the Contractors the extra amount (if any) which the Chief Executive Officer shall certify has necessarily been paid by the Contractors as wages in consequence of such increase.

and the amount paid by the Commonwealth under this clause has, up to the present, amounted to approximately £8,137.

COMMITTEE'S INVESTIGATIONS.

18. The Committee visited Sydney, inspected on several occasions both the vessel which has been launched (the *Braeside*) and the vessel still on the stocks (the *Burnside*), took evidence at length from the contractors, from officers of the Commonwealth Ship Construction Branch, the local representative of Lloyd's Registry, several of the employees of the contractors, &c., and generally made itself familiar with the contract agreement, plans and specifications, method of construction, &c. Visits were also paid to several of the American-built wooden vessels lying in Sydney Harbor, and evidence obtained from their masters. In addition, the Committee sought and obtained the expert assistance of Mr. R. Farquhar, a member of the Institute of Naval Architects, and at present General Manager of Walker's Limited, Maryborough, Queensland, arranged for him to inspect the *Burnside* on the stocks and the *Braeside* in the water and later in dry dock, and obtained from him an exhaustive report on the vessels.

19. During the progress of its deliberations, the Committee gave consideration to the plea put forward on behalf of the Contractors, that these vessels were built as a war measure, and undertaken from a sense of patriotism by people who had no previous knowledge of shipbuilding, and who were wholeheartedly endeavouring to assist the Empire in its need. For this reason, the Contractors claim that even if the ships are not quite satisfactory, they should be treated with some leniency as having done their best and failed through causes beyond their control.

While admitting that the original contract to build these ships was undertaken as a war measure, the Committee points out that the second Agreement was entered into nearly nine months after the signing of the Armistice. The Contractors had then an opportunity of cancelling the whole of their contract and obtaining full compensation, but elected to build the two vessels on

which some progress had been made. In these circumstances, the Committee does not feel inclined to regard this work in any other light than that of an ordinary contract, and cannot consent to extend to the Contractors any privilege by reason of their claim that the work was undertaken as a war measure.

20. *Hogging.*—Consideration was given to the question of the hogging of the *Braeside*, which first gave rise to any doubts as to her classification by Lloyd's. Evidence was adduced to show that most wooden vessels, particularly those of large size, hog more or less, and that, as a general rule, such hogging cannot be said to impair their seaworthiness. The *Braeside*, however, was built with a camber or sag of 9 inches, and subsequent to her launch was discovered to have a hog of approximately 23 inches, or alteration in form to the extent of 32 inches, and no instance was cited to the Committee of any new vessel having hogged to that extent. However, the latest report received shows that on being placed in dry dock on the 22nd December, 1920, the hog had increased to 28⅞ inches—a total alteration of form of 37⅞ inches. Inquiries were made to discover the reason the *Braeside* hogged, and after a careful consideration of the opinions offered by various witnesses, the Committee is satisfied that there have been several contributory causes, the main ones being:—

(*a*) The launch cannot be considered to have been entirely satisfactory. It was shown in evidence that immediately after launching some slight damage had been caused to the forefoot of the vessel. The day before the launch, it was discovered that there would be insufficient depth of water on the lower ends of the standing ways to safely launch the ship, and an additional length of 30 ft. 6 in. was hurriedly added to the launching standing way, but these new lengths were unsupported for 8 feet from their outer ends; even with this addition the draft of water at the end of the standing way was only 6 ft. 6 in. while the draft of the ship at launch was 11 ft. 9½ in.

(*b*) At the berth occupied by the *Braeside* after launching the depth of water was such that it was shown that the vessel was frequently aground, and a diver's report stated that it would appear that, for some time during each tide, the keel of the vessel had been resting on the ground at the fore end and about 80 feet aft of the forward perpendiculars and about midships, but more especially at midships, while the aft end of the vessel had always been afloat. This report was confirmed by an examination of the vessel in dry dock, when it was found that the bottom of the false keel at about 151 feet from the after perpendiculars and to the extent of 30 inches had been badly crushed.

(*c*) On the day of the launch the hold ceiling on the double bottom was not properly spiked down and most of the diagonals were not in position and the fore and aft peak water tanks were filled, so that the vessel was carrying great weight at her extreme ends.

(*d*) The peculiar and special construction of the vessel with extreme fulness of the middle portion and lack of buoyancy at the ends with correspondingly great weight at these ends; and

(*e*) The lack of essential bolt fastenings in many of the scarphs of the longitudinal timbers, the serious omission of the greater proportion of edge fastenings and the very poor disposition of many of the scarphs and butts throughout the vessel.

21. The fact that the *Braeside* developed an excessive hog and while dry in dock was then let down on an even keel, and on refloating again developed a hog, satisfied the Committee that the vessel was longitudinally weak; and as such would be unacceptable to the Commonwealth.

22. Various inquiries were made as to the possibility of so strengthening the vessel as to eliminate the hog and secure efficient longitudinal strength so as to render the vessel seaworthy, but although certain suggestions were made there was no guarantee that even with the expenditure of an unwarranted sum this object could be attained.

23. *Financial Aspect.*—In the course of its inquiries it was apparent to the Committee that owing to various causes these ships, if completed, would cost considerably more than was originally estimated.

Clause 3 (*b*) of the amended Agreement provided—

"That if the average deadweight capacity of the two barquentines to be delivered to the Commonwealth by the Contractors under the principal Agreement as varied by this Agreement exceeds two thousand six hundred (2,600) tons the Commonwealth will pay to the Contractors in respect of each of the four (4) barquentines aforesaid not now required by the Commonwealth a further sum computed at the rate of five pounds (£5) for each ton by which the said average deadweight capacity of the two barquentines exceeds two thousand six hundred tons. Such payment (if any) shall be payable when such average deadweight capacity has been ascertained."

The Contractors stated in evidence that it was anticipated that the *Braeside* and *Burnside* would average about 3,100 tons deadweight capacity, consequently the amount payable in respect of them would be 3,100 x 26 x 2	£161,200
In this event the amount payable under Clause 3 (*b*) it is mentioned would would be £500 x 4 x 5	10,000
The amount for extra wages, payable under Clause 25 of the Agreement of 6th July, 1918, has up to date amounted to approximately	8,137
The work indicated as necessary to effectively strengthen the vessels is stated to be—in the case of the *Braeside*, ...	28,000
and in the case of the *Burnside*	24,000
So that the amount involved in the construction of these ships totals ..	£231,337

a sum which the Committee considers out of all proportion to the value of the ships.

24. *Plans.*—The plans for the construction of the vessels were prepared by Messrs. Kay, Macnicol, and Company, of Sydney, with whom was Mr. A. C. Barber, Naval Architect, who was mainly responsible for the design. It was originally proposed to build the ships entirely to the requirements of the Navigation Department and the Underwriters' Society, but a few weeks prior to the signing of the contract the Chief Executive Officer (Mr. Curchin) insisted upon the plans conforming to Lloyd's A1 Classification. It therefore became necessary to submit the plans to Lloyd's Registry, London. It is usual, under such circumstances, to send to Lloyd's a midship section, showing the principal scantlings, but in this instance the Naval Architect, Mr. Barber, chose to forward three other plans, one showing the fastenings, another the details of the floors, and another the general profile, so that there might be a clear understanding with Lloyd's as to what was required.

25. In due course, these plans were returned approved by Lloyd's, subject to certain modifications. It then became necessary for the Contractors to prepare the necessary detailed and working plans, and submit same in duplicate for the approval of the Chief Executive Officer in accordance with the Agreement, which also provided that the Contractors "shall not proceed with the construction of the vessels until such plans ..... have been approved by the Commonwealth."

26. Thereafter there appears to have been no systematic method adopted by either the Contractors or the Ship Construction Branch to see that all plans were submitted for approval, duly signed as approved, and copies in duplicate furnished to the Department. Sometimes alterations were indicated by correspondence; at other times, according to Mr. Joseph Mayoh's own statement, he took plans to Melbourne, discussed them with the Chief Executive Officer, and returned with them, and there was nothing in writing to show the decision arrived at.

27. In one important instance a vital plan (No. 706A.) was submitted to the Chief Executive Officer and amended by him in red ink so as to make it conform to Lloyd's requirements. A statement was made in evidence by Mr. Joseph Mayoh that the Contractors, on receipt of the amended plan, did not agree with the amendments, and he personally waited on the Chief Executive Officer, who verbally agreed to waive the amendment which insisted on the placing of edge fastenings in the bilge ceiling. No documentary evidence was produced in support of this contention; no note of it appears in the records of the Ship Construction Branch; Mr. Curchin, who was then Chief Executive Officer, is at present in England, and his Chief Draftsman, Mr. Hewison, insists that no such agreement was arrived at. It should be understood that when plans for these ships were first submitted, it was proposed to have the vessels strengthened by the provision of diagonal steel straps. Steel was difficult to obtain at the time, and Lloyd's agreed to the steel straps being dispensed with, provided the ceilings were constructed of double diagonal planks. The Contractors represented that the construction of the ceilings with planks diagonally fitted was impossible owing to the clamps being then in position, and Lloyd's again agreed to an alteration permitting the ceiling to be constructed of longitudinal planks if increased to 5 inches in thickness and edge fastened from the gunwale to the lower turn of the bilge. The Committee, therefore, does not believe that the Chief Executive Officer gave permission to the Contractors to omit from the ship vital fastenings, which were insisted upon by Lloyd's as being essential to to the strength of the vessel, without even his Chief Draftsman being informed. The fact remains, however, that the amendments made on the plan by Mr. Curchin were not carried out in the construction of the ship.

28. To meet the deviations from the original agreement allowed by Lloyd's in connexion with the omission of diagonal ceilings, paragraph 39 of the Specifications was altered in such a fashion that the Contractors are able to claim that a strict reading of such paragraph would lead to the assumption that edge fastenings are not demanded in the bilge ceiling. This was an obvious error in the re-drafting of the Specifications, but any claim by the Contractors in this

direction was entirely over-ruled by the fact that the Agreement provided that the vessels were to be built to the plans approved by Lloyd's and the Chief Executive Officer, and such plans clearly show that edge fastenings are to be inserted in the bilge ceiling. Only about 20 per cent. in the case of the *Braeside*, and only about 30 per cent. in the case of the *Burnside*, of the edge bolt fastenings required by Lloyd's have been fitted to the main and 'tween deck clamps, 'tween and hold side ceiling and bilge ceiling, and this omission, in the opinion of the Committee, has largely resulted in the present unsatisfactory state of the ships. Furthermore, it is a significant fact that a plan (706B) was prepared by the Contractors and forwarded to Lloyd's, London, after the launch of the *Braeside*. This plan, which shows through fastenings where there are no such fastenings and which also show edge fastenings in the bilge ceiling where they do not exist, clearly indicates that Mr. Joseph Mayoh's statement that Mr. Curchin approved of the omission of the edge fastenings is not to be relied upon. The Contractors were disposed to treat as of little consequence, the omission of these edge fastenings, but the Committee had prepared and tested two models of the side of the ship, one with edge fastenings and the other without, and is quite satisfied that the omission of these fastenings resulted in a serious loss of longitudinal strength.

Clause 5 of the Agreement expressly provides that—

"NOTWITHSTANDING any approval given by the Commonwealth to any plans and specifications the Contractors shall construct and complete such vessels in all respects to Lloyd's highest class under special survey and to meet the requirements of the Navigation Acts, and delivery of any vessel shall not be tendered or accepted until Lloyd's and Navigation Authorities' certificates have been delivered to the Commonwealth certifying that the vessels conform with Lloyd's highest standard and the requirements of the Navigation Acts."

and the Committee desires to lay great stress on the fact that this important part of the Agreement was not complied with.

29. Although the obligation was on the Contractors to furnish the Chief Executive Officer with copies of all plans in duplicate, the Committee cannot overlook the fact that there has been laxity, on the part of the Ship Construction Branch, in not insisting on this being done. One special instance was brought under the notice of the Committee where the Contractors had been asked to forward a clean copy of plan No. 706A which had been amended, and, on this request being overlooked or ignored by the Contractors, no effort seems to have been made by the Ship Construction Branch to persist in its request, with the result that theInspector on the work does not appear to have had a copy of this most important plan.

30. In these circumstances, it is not surprising that the supervision of the work on the ship, cannot be regarded as satisfactory –a fact for which the Department is responsible in a greater degree than the Inspector himself.

31. *Fastenings.*—For the purpose of efficiently fastening the ships the plans approved by Lloyd's, London, demanded the insertion of through bolts and dumps at certain specified places. These through bolts are about 24 inches long and about $1\frac{1}{8}$ inches in diameter with a washer under the head; they pass through the sides of the ship from the outside planking and are clenched on washers on the inside ceiling. Dumps are more in the nature of large nails of a diameter of $1\frac{1}{8}$ inches, but only 12 to 18 inches long, and without washers, and are driven into two or more planks without being clenched.

32. *Dummies.*—The Prime Minister's Department transmitted to the Committee certain communications from Burns, Philp, and Company Limited covering signed statements and statutory declarations made by certain employees and former employees of Kidman and Mayoh to the effect that numerous dummy bolts had been inserted in the ships in lieu of through fastenings. "Dummy" is a term applied to a short length of bolt serving no useful purpose, but having a washer under the head, and made to represent a through bolt which has been clenched on the washer.

33. A number of witnesses were called—both those who had made the statements and others—in regard to this matter, and a large amount of contradictory and unsatisfactory evidence was obtained, principally arising from the fact that many witnesses were unaware of the difference between dummy bolts, which were frauds, and dumps, which might be used for a legitimate purpose.

34. After careful inquiries, however, two of the witnesses, on being requested, undertook to point out to the Committee on the ships the places where dummy bolts had been inserted.

35. These fastenings were all marked in the presence of the Committee, and electrical tests made by officers of the Ship Construction Branch and by the Committee's expert (Mr. Farquhar) showed that the whole of the fastenings marked by one man and 60 per cent. of the fastenings marked by the other man, which purported to be through fastenings, were, as a matter of fact not through fastenings.

36. *Edge Fastenings.* —In addition to this, investigations made by Mr. Farquhar, officers of the Ship Construction Branch and members of the Committee themselves, provided with long thin bladed knives, proved that a great number of the edge fastenings, which should have been fitted in the hold clamps and ceiling from the main deck to the lower turn of the bilge fore and aft at about five feet intervals, had been omitted.

37. It was stated in evidence that it was impossible to fit the vertical edge fastenings to many parts of the clamps and ceiling. These fastenings were specified by Lloyd's, and the Committee cannot agree that Lloyd's would ask the builders to attempt the impossible. Evidence obtained from other sources indicates that, if the ship had been constructed in the usual manner of wooden ship construction, there would not have been the same difficulty in fitting these fastenings. Unfortunately, the builders appear to have gone ahead too fast with the outside planking and shut themselves in, thus making it almost impossible to fit many of the edge fastenings. Had they worked the ceiling and clamps ahead of the planking, the Committee is informed that they would have been able to fit the edge fastenings. In any case it was admitted in evidence that many of the edge fastenings which could have been fitted were not inserted.

38. *Faulty Work.* —A careful examination of the ships disclosed the existence of faulty workmanship, particularly in the *Braeside.* Several bolts through the outside planking and the floor-head keelsons had no washers fitted and were not clenched ; several bolt holes had been bored in same and no bolts were fitted and the holes were not plugged up. A number of washers of the through bolts in the planking and frames were slack and required reclenching. A number of the through bolts were poorly clenched, the clench being very shallow, and, in the event of the ship working and racking at sea, the bolts would be apt to be pulled through the washers.

39. Some of the beam hanging knees were improperly fitted and had pulled away from the beams. The scarphs of the main and 'tween decks clamps were not properly shifted, and were fitted with too few clench bolts. One of the scarphs had no clench bolt whatever and the butts of the ceiling were badly shifted and, like several of the keelson scarphs, insufficiently fastened.

40. Many of the defects that were observed in the construction of the *Braeside* were to be seen in the *Burnside,* although in a less degree. Evidently the builders profited by the experience gained in the building of the *Braeside* and avoided some of the defects of that vessel, although there are only about 10 per cent. more ceiling and clamp edge fastenings in the *Burnside* than in the *Braeside.*

41. *Clamp Scarphs.*—It was further pointed out to the Committee that the disposition and fastening of the scarphs in the 'tween deck and hold clamps are not satisfactory, and have not been carried out in accordance with the Specification Clauses 11, 12 and 36.

42. *Ceiling.*—The shift of butts in the ceiling is not satisfactory, inasmuch as the butts of various planks are on the same frame in alternate strakes with only one strake between. The plan shows that the butts should be 5 feet apart with two strakes of ceiling between.

43. *Bilge Stringer.*—In the bilge stringer the provision of five clenched vertical bolts in each scarph has not been adhered to.

44. *Workmen.*—There is no doubt that the builders had great difficulty in securing a sufficiency of skilled workmen and had to use a certain amount of diluted labour. The number of competent shipwrights required was unobtainable, and they had to utilize bush and bridge carpenters. The majority of these men were good workers, but the special experience and knowledge of this class of wood ship construction appears to have been seriously lacking.

45. The discovery that there were one or two workmen on the ships who were prepared to fit dummy bolts in the bottom of the *Braeside* is very disquieting. Any person instructing a workman to do this, or any workman following such instruction, is a most dangerous man to be in a shipyard, and a menace to the lives of seamen.

46. *Naval Architect.* —On the evidence placed before it, the Committee considers that the plans prepared by Kay Macnicol and Company, as modified by Lloyd's, London, were satisfactory, and it is to be regretted that their Naval Architect (Mr. A. C. Barber) was not placed in a position independent of both owners and builders in carrying out the work, instead of being retained as an employee of the Contractors—practically as a chief draftsman.

47. All the evidence goes to show that Australian hardwood of the class used in these vessels, is suitable for ship construction, and it is much to be deplored that faulty workmanship and the ignoring of essentials through want of knowledge, incompetence and negligence, coupled with the fact that the plans approved by Lloyd's and the Ship Construction Branch have not been faithfully followed, have resulted in this effort at ship construction in Australia not being the success it should have been.

COMMITTEE'S DECISIONS.

48. The Committee realizes the advantage it would be to the Commonwealth if these ships could have been successfully completed, both from the point of view of providing much needed accommodation for certain classes of freight, and the advantage of demonstrating the feasibility of building ships in Australia with Australian labor and from Australian material.

With this end in view—

MR. BAMFORD moved: That the Contractors be relieved of their contract to complete the ships *Braeside* and *Burnside* in compliance with their request, and that the Ship Construction Department be given control, and instructed to complete the said vessels, and, as far as humanly possible, make them fit and seaworthy, irrespective of cost.

Seconded (*pro formâ*) by Mr. ATKINSON.

The Committee divided on the motion—

Aye, 1.	Noes, 6.
Mr. Bamford	Mr. Atkinson Senator Foll Mr. Gregory Mr. Mathews Mr. Moloney Senator Newland

and so it passed in the negative.

49. After a careful consideration of all the evidence placed before it, the Committee is of opinion that the ships have not been built in conformity with the approved plans and specification and Lloyd's Rules, as provided in the Agreement, and these departures have been of such a serious nature that the ships are not seaworthy. Inquiries were made as to whether it would be possible to put sufficient strengthening in the vessels to make them seaworthy, but the work indicated as necessary was very extensive and the rough estimates received for the work, one as high as £24,000 for the *Burnside*, and £28,000 for the *Braeside*, still gave no guarantee that the vessels would be passed by Lloyd's.

The decision arrived at by the Committee in connexion with this matter is shown by the attached extract from the Minutes of Proceedings: —

MR. MATHEWS moved: That in the opinion of the Committee, it is doubtful, even with the expenditure of an unwarrantable sum of money, that the ships could be made seaworthy.

Seconded by Senator FOLL.

The Committee divided on the motion—

Ayes, 7.	No, 1.
Mr. Atkinson Senator Foll Mr. Gregory Mr. Mathews Mr. Moloney Senator Newland Senator Plain.	Mr. Bamford.

And so it was resolved in the affirmative.

50. In view of all the circumstances of the case, the Committee is strongly of opinion that no effort should be made by the Government to strengthen either vessel, and that in no circumstances would the Commonwealth be justified in taking over the ships.

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

Mr. MOLONEY moved: That the Committee, after careful consideration of the reference submitted to it, is of opinion that the request of the Contractors be not complied with.

Seconded by Senator NEWLAND.

The Committee divided on the motion—

Ayes, 7.	No, 1.
Mr. Atkinson Senator Foll Mr. Gregory Mr. Mathews Mr. Moloney Senator Newland Senator Plain.	Mr. Bamford.

APPENDICES.

51. Attached hereto are the following Appendices :—

(*a*) Copy of Report furnished to the Committee by Mr. Farquhar, M.I.N.A., in connexion with these vessels.

(*b*) Copy of the Interim Report submitted by the Committee in pursuance of the following resolution passed by the House of Representatives on the 26th November, 1920, namely :—

> Mr. GREGORY moved, pursuant to notice, That the Parliamentary Standing Committee on Public Works have leave to continue, during recess, its investigations into the matter of the Shipbuilding Contract of Messrs. Kidman and Mayoh referred to it on the 29th day of October, 1920, and to present an Interim Report thereon to the Governor-General.

(*c*) Copy of Report submitted by Mr. Greenlees, of the Ship Construction Branch, after an examination of the *Braeside* in dock on the 20th–22nd December, 1920.

KEY PLAN.

52. To enable some of the technical evidence to be more readily followed, a midships section plan is attached, showing the terms applied to the various parts of the vessels.

53. Two photographs of *Braeside* taken in dock are also attached.

H. GREGORY,
Chairman.

APPENDIX A.

CONDITION REPORT ON THE FIVE-MASTED SAILING SCHOONERS "BRAESIDE" AND "BURNSIDE."

In accordance with the attached copy of resolution of your Committee, desiring that I should undertake on their behalf an examination of the above two wooden vessels, *Bracside* and *Burnside*, now being constructed for the Commonwealth Government by Messrs. Kidman and Mayoh, of 25 O'Connell-street, Sydney.

I left Melbourne on Friday, the 26th November, 1920, for Sydney, for the purpose of carrying out this examination. Messrs. Watson, Hewison, and Greenlees, of the Commonwealth Ship Construction Branch, also Mr. Barber of Messrs. Kidman and Mayoh (the Contractors), accompanied me.

On Saturday, the 27th November, at 2 p.m., I proceeded to Messrs. Kidman and Mayoh's Shipyard, at Kissing Point, together with Mr. Heron, Lloyd's Senior Surveyor, and the abovenamed officials, Mr. Arthur Mayoh, the Shipyard Manager, and two of Messrs. Kidman and Mayoh's foremen shipwrights were also present. I made a preliminary inspection of the *Burnside* on the stocks, more particularly as to the general character of the workmanship, the lengths of the outside planking, clamps, waterways, rails, keel, keelsons, stringers, ceiling, &c., and the disposition of their scarphs and butts and mode of fastening same. The comparative buoyancy of the middle body and the fore and after ends of the vessel at the launching draft.

On Sunday morning, the 28th November, together with Messrs. Arthur Mayoh, Heron, Watson, Hewison, Greenlees and Barber, proceeded to the *Braeside* lying afloat in Sydney Harbour, alongside the wharf, near the large silos, the Contractors, Shipyard Manager, and one of their foreman shipwrights, and also one of their leading shipwrights, being also present, made a cursory examination of the outside of the vessel, port side from the wharf, examined the main deck planking with regard to the working of the butts, also to see if the top and bottom thick strakes of bulwark, also the main and pin rails, were carried beyond the break of the poop and forecastle, or whether they stopped short at these points, made an examination of the vessel inside including the main and 'tween deck clamps, the side bilge and bottom ceiling, the side stringers, bilge keelson, main and 'tween deck beam ends, hanging and lodging knees, the number and disposition of the various scarphs and butts and the nature of the fastenings, &c. While I was thus engaged, Messrs. Watson, Hewison and Greenlees were, with long thin bladed knives, searching for the edge vertical tie bolts, which were intended to be fitted in the hold clamps and ceiling from the main deck to the lower turn of bilge right fore and aft at about 5 feet apart.

The result of the search by Mr. Watson and his officers, and my examination was so disquieting that I requested Mr. Arthur Mayoh to at once instruct the foreman shipwright who had been responsible for the building of the hull together with four shipwrights, to make a thorough search inside the vessel right fore and aft, and from the gunwale to the lower turn of the bilges for the edge vertical clamp and ceiling bolts and mark each bolt as it was located distinctly with a bold chalk line, indicating not only its position but also the length of the bolts, also to get another gang of men to lift and clear away the whole of the hold ceiling on the flat of floor, so as to expose the centre, sister, side, locking and floorhead keelsons, for the purpose of making an examination of the scarphs, fastenings, &c.

On Monday morning by arrangement with the Contractor, I visited the *Burnside* again on the stocks at Kissing Point yard. While I was there Mr. Watson, with his two officers, proceeded to the *Braeside* for the purpose of making an examination of the vertical edge fastenings in the hold clamps and ceilings arranged the previous day to be marked in chalk.

While I was at Kissing Point Yard I inspected the moulds and templates &c., used in the construction of the vessel, and examined the mode of laying the vessels down in the loft, checked the bilges of the vessel in the way of each bilge block on port and starboard sides, with a view of testing whether she had settled down at all on her bilges, and whether they were deformed in any way, found by measurement the bilges in the way of three of the bilge blocks had altered form and come out 1½ inches on each side. Tested by shipwrights maul the condition of the keel blocks and the blocking between the bilges of the vessel, and bilge blocks, and found them very tight indeed, showing that the vessel was coming down slightly on her keel and bilge blocks—more especially at the fore end; had a good look round on deck and inside of vessel, and left very definite instructions with the Shipyard Manager and the foreman shipwright as to marking clearly on the face of clamps and hold ceiling all the vertical edge bolts in the vessel.

In company with Messrs. Arthur Mayoh, Barber, Watson, Hewison and Greenlees, at 2.30 p.m., Monday the 29th November, I again visited the *Braeside* for the purpose of seeing if my instructions, given the previous day, (Sunday) with reference to the marking of the vertical edge fastenings in the hold, ceiling and removal of ceiling on flat of floor had been carried out, and also with the object of testing the correctness of the markings. I was very disappointed on my arrival to find that very little had been done in this respect and that no serious attempt had been made to locate the bolts. In the presence of Mr. Arthur Mayoh, Mr. Barber and their foreman, I expressed myself rather strongly and gave them clearly to understand that unless they at once carried out my instructions in a thorough manner and as quickly as possible, the only conclusion I would come to would be there were very few edge fastenings in the ship, and I would be compelled to report accordingly. It had been raining in the morning and because of this they said they had been unable to get sufficient men for the job.

I spent the morning and forenoon of Tuesday, the 30th November, on board the *Braeside* and the afternoon of the same day on board the *Burnside*. Continuing the examination, with the assistance of Mr. Watson and his officers.

Spent the morning of Wednesday, the 1st December, on board the *Braeside* examining keelson scarphs and fastenings, and searching for edge fastenings, &c. At 11.10 a.m. the same day met the Chairman of the Committee on the Sydney Railway Station on his arrrival from Melbourne, briefly reported to him the result of the examination, so far as it had gone, on the *Braeside* and *Burnside*, and subsequently arranged with him that the Committee should visit both vessels on Thursday morning, 2nd November, and the afternoon of the 1st December, I continued the examination of the *Braeside*.

On Thursday, 2nd December, the whole of the Committee, with the Secretary, visited the *Braeside* and *Burnside*, the following also being present:—Mr. Barber, representing the Contractors, Messrs. Watson, Hewison and Greenlees, of the Commonwealth Ship Construction Branch, the foreman shipwright, one of the leading shipwrights, and several shipwrights, all employed by Messrs. Kidman and Mayoh.

The Committee first made an inspection of the *Braeside*, when I pointed out to them the serious omissions of and the condition of the edge fastenings, lack of fastenings in scarphs, faulty disposition of scarphs and butts of clamps and ceiling, sundry defective bolts in various parts of the ship, and sundry other matters, after which we all, with the exception of the foreman and shipwrights, proceeded to the *Burnside* on the stocks at Kissing Point Shipyard, where the Committee made a similar inspection of the *Burnside*, as in the case of the *Braeside*.

During the nights of the 27th, 28th, 29th, 30th November, and the 1st and 2nd December, I was engaged with Messrs.Heron, Barber, Watson and Hewison, going through the plans with regard to the constructions of the vessels, launching, hogging, &c., and various calculations connected with the *Braeside*.

I left Sydney on the limited express for Maryborough on Friday, 3rd December, 1920, but arranged with Mr. Watson that Mr. Hewison and Mr. Greenlees should continue their examination of the disposition of butts and scarphs throughout the *Braeside*, inside, and report the result of their examination to me.

Before leaving Sydney I took the opportunity of visiting the Selznick Picture Offices, 305 Pitt-street, and had a private view of the film of the launch of the *Braeside*. I got them to put it on the screen twice for me. I also visited the Strand pictures one night when the launch of the *Braeside* was screened.

In response to your telegram of the 14th and 15th December, I left Maryborough, Queensland, on the 18th December for the purpose of inspecting the *Braeside* in dry dock, arrived in Sydney on the 22nd, and in company with Messrs. Heron, Watson, Hewison and Greenlees, at once proceeded by motor launch to the *Braeside* lying in the Sutherland Dry Dock, Cockatoo Island Dockyard.

Made an examination of the vessel outside and in the hold, including the nature and extentof the hog, deformation of the bottom, the bilges and the sides, the condition of the keel and keel scarphs, the bottom planking, the length of planks used in the outside planking, and disposition of outside planking butts, also several sham through hold ceiling bolts, the length of timbers comprising the following longitudinal members, viz., the sister and side keelsons, bilge stringers, clamps, side hold ceiling, 'tween and main deck, waterways and the condition of the vessel generally.

The foregoing is an outline summary of my examination of the hulls of *Braeside* and *Burnside*, also of the plans, diagrams, sundry calculations and papers in connexion with these two schooners, and will now proceed to record the results of my examination and impressions in the order set out in your letter of instructions of 25th November, 1920, and have to report as follows :—

(*a*) The Cause of the Hogging of the Vessel.

Launch of Vessel.—It has been suggested that owing to insufficient water on the ends of the standing ways on the day of the launch of the *Braeside* that the vessel's forefoot came down heavily on the ground between the standing ways at the after end of same and that she travelled for a distance with her forefoot dragging on hard ground before she reached deep water. I endeavoured during my visits to Kissing Point Shipyard to investigate this, but, unfortunately the lower ends of the standing ways used in launching the *Braeside* had been removed and fitted in another position preparatory to launching the *Burnside*; so that it was impossible for me to see if the ways had been damaged or not.

The film of the launch shows two distinct drops as the vessel approaches the lower end of standing ways, the first drop would indicate that the 8 inch packing, said to be fitted between the fore poppet chains and bottom of keel, had been dragged out and that the vessel then fell down on the chains, the second drop indicated, I think, that the vessel's forefoot dropped off the ground into deep water. Whether this unsatisfactory condition of launch contributed to the hogging of the vessel I am not prepared to say ; at any rate it was a condition that should not have been allowed.

On my examination of the *Braeside* on the 22nd December, in the Sutherland Dry Dock, I found the false keel badly bruised just where the fore poppet chains would come during the launch, which indicates, in my opinion, that the packing mentioned above was actually knocked out by coming in contact with the ground. The vessel, I consider, then fell down upon the fore poppet chains and dragged along the ground—this no doubt causing the damage to the forefoot.

Date of Launching.—The *Braeside* was launched on 23rd April, 1920, the draft of water of ship at launch, per Messrs. Kidman and Mayoh's Shipyard Manager, being—forward 10ft. 7 in., aft 13 ft., mean 11 ft. 9½ in., the draft of water at end of standing ways being 6 ft. 6 in. It is to be very specially noted that this vessel was launched practically at the dead of the neaps high water. It was a most extraordinary arrangement. Having regard to the dimensions and draft of water of the vessel, care should have been taken to have arranged the date of launch for high water spring tides. It was, I understand, suddenly discovered the day before the launch that there would be too little water on the lower ends of standing ways to safely launch the ship, and that an additional length of way of 30 ft. 6 in. was hurriedly added to each standing way ; and that these new lengths were unsupported for 8 feet from their outer ends.

Condition of Vessel on the Day of the Launch.—The fore and aft peak bulkheads and sail locker bulkhead were not fitted. None of the mast diagonals under the main deck were fitted. The platform ceiling in hold was in position, but was not fastened. It is a very great pity the above bulkheads and diagonals were not in position and securely bolted, and that the platform ceiling had not been fastened previous to launching the vessel as they would have helped greatly to have kept the vessel in form. Unfortunately, too, the fore and aft peak water tanks were full on the day of the launch, so that the vessel was carrying this needless weight at her extreme ends. This should not have been allowed. Special care should have been taken to see that the after peak tank was empty.

Grounding of the Vessel.—I have before me a report by Mr. Greenlees and Diver Cook, dated 19th July, 1920, with reference to the alleged grounding of the *Braeside* at the berth occupied by this vessel during the greater portion of the period prior to this date, and after the vessel was launched. From this report it would appear that for some time during each tide the keel of the vessel had been resting on the ground at the fore end and about 80 feet aft of the forward perpendicular and about midships, but more especially at midship, while the after end of the vessel has always been afloat. If this report is correct, then, without doubt, this grounding would contribute to the hogging of the vessel. I am very much surprised that a wooden ship of such large dimensions and of such special form and build should have at any time been allowed to touch ground, especially if the ground was of a hard nature.

On my examination of the vessel in the dry dock on 22nd December, I found the bottom of the false keel at about 151 feet from the aft perpendicular, and to the extent of 30 inches badly crushed. This examination supports Diver Cook's examination, and confirms in a measure his conclusions per his report of 19th July, 1920. The bruise on false keel, without doubt, shows that the *Braeside* had been resting on some hard substance, and, without doubt, this has contributed to the hogging of the vessel.

Form and Dimensions of the "Braeside" and "Burnside."—Without doubt, these two vessels are of very special, and, in some respects, of very peculiar construction. They are also long ships, being something like 278 feet overall length. The midship section is a very full one, and is carried well forward and aft. The rise of floor is very small indeed for vessels of this type. The water pressure at this part of the vessel is consequently very great. While the ends of the vessel are very heavy and are deficient in buoyancy at the launch draft, say from the break of the forecastle and from the break of the poop, the tendency is for the middle of the vessel to be pressed up and the ends to drop.

Having regard to the peculiar and special construction of the vessel and the arrangement and dimensions of the material, the extreme fulness of the middle portion of the vessels, the lack of buoyancy of the ends of the vessel and the correspondingly great weight of these ends, the overall length of the vessels, the sudden stoppage of longitudinal material at the break of the forecastle and poop, the omission of essential bolt fastenings in many of the scarphs of the longitudinal timbers and the very poor disposition of many of the scarphs and butts throughout the vessel, taking all the above into account it is little wonder that the *Braeside* hogged.

It should be borne in mind that mostly all large wooden sailing vessels of the class of these two schooners hog less or more. In large wooden ships of this design longitudinal strength is most difficult to secure, and they usually suffer deformation in the bottom, bilges, sheer, and of the sides and deck on account of the very severe hogging stresses they are subjected to. The construction of a wooden ship is so different from a steel ship. A wooden ship is composed of numerous planks and timbers, joined together by scarphing and bolting, and it is impossible to obtain at the joints the same strength or rigidity equal to the solid log plank or timber. This being the case, it is of the very first importance that every piece of timber forming the structure of a wooden ship be well and truly fitted, every scarph and butt be of the proper length and position, that every bolt required should be in its correct position and soundly fitted and clenched, otherwise when the hull is subject to longtitudinal bending forces in a seaway the various planks and timbers have a tendency to slide endwise over one another, accompanied by fore and aft and transverse straining of a severe character, so that if a wooden ship is to answer the purpose for which she was built, then nothing but the best of workmanship and material should be put into the vessel. I regret to say this has not always been adhered to in the *Braeside* and *Burnside*, more especially in the case of the *Braeside*.

(*b*) Whether the Hogging of the Vessel has had the Effect of Fracturing or Straining the Keel, and the Extent of Such Fracture or Strain.

Without doubt the hogging of the vessel has had the effect of seriously straining the keel. On my examination of the *Braeside* on 22nd December, in the Sutherland Dry Dock, Cockatoo Island, I found the vessel resting on her keel on the ordinary dock keel blocks about 8 feet from the after perpendicular and about 6 feet on the forefoot. The remainder of the keel blocks between those two points were made up with packing to suit the hog of the ship's keel The vessel was properly breast shored and carefully supported on her bilges with properly fitted bilge blocks.

I made a careful examination of the vessel's keel as far as I could, but, unfortunately, the metal sheathing on the sides of the keel had not been removed, except in way of the keel scarphs. I could not see any signs of any fracture of the keel or drawing of the keel scarphs, but there were signs that the keel had about reached the limit in this respect.

I made an examination of the hogging of the keel and found this to be $28\frac{7}{8}$ inches at about 146 feet from the aft perpendicular. On 19th July last, the extreme hog was $22\frac{3}{4}$ inches. This shows that the hog of the keel has increased between these two dates by $6\frac{1}{8}$ inches. The dimensions of the hog in both cases were taken from a level straight line.

With reference to the bottom bilges and sides of the vessels, the bottom is very badly hogged and deformed. The bilges on both sides of the vessel are seriously deformed. They are pushed out considerably beyond their original line, and the sides of the vessel in way of bilge deformations have come in between the lower edge of the wales and upper turn of bilges.

(*c*) Whether any Butts near the Keel have been Started.

On my examination of the *Braeside* on 22nd December last, in the Sutherland Dry Dock, I carefully inspected the bottom planking, particularly near the keel, and found one butt on the starboard side on the plank next the garboard strake, and one butt on No. 2 plank next the garboard strake, and two butts on the plank next the garboard strake port side, slightly started. These butts were on the crown of the hog. With the exception of these four butts the other butts appeared to be in order.

(*d*) Whether there is any Evidence of the Existence of Dummy Fastenings or Faulty Work.

As my time was limited and the searching for dummy fastenings is a tedious process, I could not devote any time in an endeavour to locate such fastenings.

I have before me a copy of a report of Mr. Watson's officers, dated 22nd October, 1920, setting out the search they made for dummy fastenings in the outside planking, by means of an electric appliance on the *Braeside*. As a result of their examination of the fastenings from the topsides, outside and inside to below the 'tween deck, these four officers were satisfied that this work had been faithfully carried out in the part of the vessel examined by them.

With reference to the declaration made by one or two of the workmen that they had fitted many dummy bolts in the bottom of the *Braeside*, all I have to say is that any workman capable of doing such a thing is a most dangerous man to be in a shipyard, or to have anything to do with any class of work where the lives and limbs of his fellow men are endangered. If it can be proved that any man, whether by instruction or otherwise, fitted dummy bolts to the bottom planking of the *Braeside* or *Burnside*, that man, in my opinion, should be very severely dealt with.

I had no idea there was a shipwright living who would do such a dastardly thing. This type is so different to the workmen I have had the pleasure of coming in contact with during a long engineering and shipbuilding experience, and if there is a workman of this type living in Australia, he should be put where he would not be a menace to his fellows. If these dummy bolts were put in they were put in by a man who was too tired to put a through fastening in or a good honest dump, and by a man who does not give a hang whether the *Braeside* will sink or swim, or whether the crew goes to the bottom with the ship or not. I cannot believe the builders gave any such instructions.

Since the foregoing was written, on my visit to the *Braeside* in the Sutherland Dry Dock, on 22nd December, Mr. Watson and his officers showed me 106 bolts in the hold ceiling, which had been pointed out to them by two shipwrights, who said they knew them to be dummy bolts, whereas they were intended to represent through fastenings. These bolts had every appearance of through bolts, being all fitted with washers and appeared as if they had been clenched on the washers.

Mr. Watson's officers tested these bolts by their electrical appliance, and found of the 106 only 20 were through bolts. They demonstrated this to me during my visit.

The discovery of these sham bolts in the hold ceiling and the omission of other bolts, referred to elsewhere in my report, throws grave suspicion on the bolt fastenings throughout both the *Braeside* and *Burnside*.

With reference to the existence of faulty workmanship, I very much regret to report that, during my examination, I came across a good many instances of this, particularly in the *Braeside*. Several bolts through the outside planking and the floorhead keelsons had no washers fitted, and were not clenched. Several bolt holes had been bored in same and no bolts were fitted and the holes were not plugged up. A good many washers of the through bolts in the planking and frames were slack and required reclenching. A good many of the through bolts were poorly clenched, the clench being very shallow. During the working and racking of the ship at sea these bolts would be apt to be pulled through the washers. A good many of the beam hanging knees were improperly fitted and had pulled away from the beams. The 'tween decks carlines are badly started and required to be fixed in a more secure manner. The scarphs of the main and 'tween deck clamps are not properly shifted and they are fitted with too few clench bolts. Several of the scarphs have no clench bolts whatever fitted. The butts of the side ceiling are badly shifted and insufficiently fastened. In my opinion, longer and stronger spikes should be used to secure the ceiling on flat of floor. Only about 20 per cent. in the case of the *Braeside* and only about 30 per cent. in the case of the *Burnside* of the edge bolt fastenings required by Lloyd's have been fitted to the main and 'tween deck clamps 'tween and hold side ceiling and bilge ceiling. Several of the keelson scarphs are insufficiently bolted; the bulwark bottom and top thick strakes, also the main and pin rails, are cut short at the brake of the forecastle and poop—in the case of the *Braeside*, they should be carried through into the poop and forecastle and as far forward and aft as possible.

The same defects that have been observed in the construction of the *Braeside* are to be seen in the *Burnside*, although in a lesser degree. Evidently they have taken advantage of the experience gained in the building of the *Braeside* to avoid some of the defects of that vessel, although it is to be noted there are only about say 10 per cent. more ceiling and clamp edge fastenings in the *Burnside* than in the *Braeside*. It is quite evident the builders had difficulty in securing the right kind of labour and have had to utilize bush and bridge carpenters. The majority of these men are good workers, but the special experience and knowledge of this class of wood ship construction appears to have been seriously lacking.

The bad fastening of the scarphs of the clamps and other parts and the failure to fit the edge fastenings in clamps and ceiling is a very serious one, and to properly bolt the scarphs it will be necessary to remove a great quantity of the ceiling and clamps, and in order, also, to compensate for the omission of the edge fastenings, it will be necessary to devise some special and efficient, and I am afraid, expensive means of compensation for this very grave and serious omission on the part of the Contractors.

(*e*) What Steps Should, in Your Opinion, be Taken to Strengthen the "Braeside."

Having regard to the failure to properly fasten the clamp scarphs, the failure to properly fasten the hold ceiling horizontally and vertically and also at the butts, the discovery of sham through fastenings in the hold ceilings, the inefficient manner in which many of the scarphs of the longitudinal strength members have been fastened. The poor disposition of many of the scarphs and butts throughout the vessel, together with the serious deformation of the bottom and the bilges.

In my opinion, it would be a mistake to attempt to strengthen the *Braeside* with the intention of sending her to sea, as I consider the large amount of money necessary to spend in this direction would be a grave error, having regard to the present market value of wood vessels of the type of the *Braeside*, and also having regard to the present unseaworthy condition of the vessel.

Evidently from the manner in which the Contractors fitted the clamps and hold ceilings in these two vessels they were unaware of the important part they played in the transverse stiffening and longitudinal strength of wooden ships. The hold and 'tween deck ceiling particularly being fitted as if it were merely intended to keep the cargo from the frames and planking.

The serious part in this connexion is that in order to properly fasten the clamps and ceiling, it will be necessary to remove the greater part of both the clamps and ceiling. I estimate this would cost approximately something like £5,500 to carry out.

(*f*) What Precaution Should be taken in Regard to the "Burnside" to Minimize the Possibility of her Developing an Excessive Hog after Launching.

It is very important that everything be fitted and secured thoroughly in place in the *Burnside* before the vessel is put into the water, *i.e.*, everything that will help towards stiffening the vessel, such as the fore and after peak and sail locker bulkheads, mast deck diagonal bracings and the hold platform ceiling. These parts are referred to in another part of my report.

To minimize the hog of the *Burnside* when she takes the water, in addition to making provision for the lack of edge fastenings in the clamps, ceilings, scarphs, &c., and dealing with these matters as indicated under (*e*).

It will also be absolutely necessary, in my opinion, to add a considerable amount of stiffening to the vessel in the form of longitudinal deck girders, keelsons and stringers, vertical pillaring to act in tension and compression, bracings, 'tween deck ties, bilge stiffening (the bilges are weak) two strong open framed athwartship bulkheads, one placed near No. 2 mast and one near No. 4 mast, and possibly two partial bulkheads or broad web-frames on each side of the vessel placed midway between the two new athwartship bulkheads mentioned above.

I will be pleased to convey my views verbally to one of Mr. Watson's officers, so that he may set the proposed stiffening out in detail on paper. I have not the time to do this myself, nor have I any officer available.

The proposed stiffening and making provision for the omission of fastenings, &c., and dealing with the clamps and ceiling as indicated under (*e*) will, I roughly estimate, cost approximately £24,000. It will be before the Authorities to decide whether they are prepared to spend this amount on the vessel, but to in any way minimise the possibility of the vessel developing excessive hog, and to make the vessel fit to proceed to sea and carry cargo, it will be necessary to carry out all that I have mentioned above. It must be clearly borne in mind that the securely fastening of the clamps and ceiling, and the adding of this stiffening will not prevent the vessel hogging, but will minimize the amount and make the vessel fit to go to sea and carry cargo.

(*g*) Whether, in Your Opinion, the "Braeside" as She Exists at Present is in a Seaworthy Condition, and if not, What Work is Necessary to place Her in a Seaworthy Condition and What Would be the Estimated Cost of Same.

I am decidedly of the opinion that the *Braeside*, as she exists at present, is not in a seaworthy condition, and is not fit to proceed to sea, and is not fit to carry cargo. In my opinion, it would be much better to sell her gear and fittings and convert her into a coal hulk or store ship, but should it be decided to attempt to make her fit to go to sea, then all the work and stiffening that I have indicated as being necessary for the *Burnside* will require to be carried out, with certain other additions. The approximate cost of carrying out of which would be roughly £28,000. In my opinion, this money should not be spent on this vessel.

(*h*) Your Telegram of the 29th November. "Glad if You will Include in Your Report Information as to Whether, in Your Opinion, Ships have been Faithfully Built in Accordance with Plans and Specifications."

I very much regret to report in several vital and important respects the ships have not, in my opinion, been faithfully built in accordance with plans and specifications, as the following will show: some of the mistakes referred to in my report might have been avoided if an officer had been in charge of the construction of the vessel, possessed of the special knowledge of this class of work, and whose business would have been to see that the proper drawings and instructions were issued to the various foremen before the work was commenced. This special supervision evidently was lacking. I think it is only fair to say that if the serious defects and omissions, pointed out in my Report, had not been in evidence, in many other respects the vessels might be said to be well built. The *Burnside* is a better built ship than the *Braeside*.

Clamp Scarphs.—My examination shows that the shift of the scarphs is very poor indeed, and that the plans and specifications have not been adhered to with regard to same, the ends of two scarphs in many cases come in one beam space, and others overlapping, but in very few cases are the scarph ends more than one beam space apart.

In some cases in the depth of clamps there are five breaks of scarphs in six beam spaces, and six breaks in eight and nine beam spaces. This arrangement does not permit of a proper shift.

The number of horizontal through bolts in the scarphs is not in accordance with plan No. 708A, prepared by Mr. Barber; in many cases the scarphs take only two frames (they should take three frames), thus reducing the number of horizontal through fastenings.

The four vertical clinched bolts in each scarph shown in plan No. 708A in many cases have not been fitted. This is very serious.

The foregoing applies to both 'tween deck and hold clamps.

The horizontal through bolts and dumps in each frame space are covered by the disposition of the scarphs, which, in the majority of cases, are fewer than shown on plan No. 708A, owing to the fact that the scarphs do not take the three frames shown on this plan.

Generally, the disposition and fastening of the scarphs in the 'tween deck and hold clamps are not satisfactory and have not been carried out in accordance with the specification Clauses 11, 12 and 36.

Ceiling.—The shift of butts in the ceiling is not as shown on plan No. 708A, inasmuch as the butts of various planks are on the same frame in alternate strakes with only one strake between. The plan shows that the butts should be 5 feet apart, with two strakes of ceiling between.

A number of the horizontal through fastenings in the ceiling amidships is not satisfactory, and at the ends of the vessel there appears to be quite a number omitted. In the hold ceiling a number of sham through fastenings have been discovered, thus throwing grave doubts on all fastenings.

Twenty per cent. edge fastenings only have been fitted in the *Braeside* and 30 per cent. in the *Burnside*—Please note: It has been said that it was impossible to fit the vertical edge fastening to the clamps and ceiling. Lloyd's did not ask the builders to do the impossible. If the ship had been constructed in the usual manner of wood ship construction there would not have been the same difficulty in fitting these bolts. When I commenced my examination of these ships I was assured by Mr. Arthur Mayoh and his foreman that all the edge fastenings required by the plans and specification had been fitted to the clamps and ceiling with the exception of two planks of the side ceiling. The two statements do not agree. Unfortunately, the builders went ahead too fast with the outside planking, and shut themselves in, in this way making it almost impossible to fit many of the edge fastenings; had they worked the ceiling and clamps ahead of the planking, they would have been able to fit the edge bolts.

Bilge Stringer.—Plan No. 708A provides for five clinched vertical bolts in each scarph, but the arrangement reading from forward as fitted in the vessel is as follows:—

Starboard side:—

No. 1 Scarph not marked.
No. 2. Scarph—Five vertical clinched bolts and one through bolt in frame.
No. 3. Scarph—Three vertical clinched bolts badly spaced and one through bolt in frame and two dumps.
No. 4. Scarph—Four vertical clinched bolts and one through bolt in frame and two dumps.
No. 5. Scarph—Five vertical clinched bolts and two through bolts and one dump all in one frame.
No. 6. Scarph—Three vertical clinched bolts and three through bolts in frame and one dump.
No. 7. Scarph—Five vertical clinched bolts and no through bolts and the scarph does not take two frames.

Port side similar to the starboard side.

I desire to draw very special attention to the fact that the bad disposition of the above butts and scarphs and lack of bolts and the failure to fit the edge fastenings has absolutely made these two vessels unseaworthy.

When the builders found difficulty in fitting these fastenings they should have at once stopped the work, and consulted with Lloyd's and the Commonwealth Ship Construction Branch, instead of which it would appear they simply went ahead without reference to these two Authorities, and merely put the timber up omitting to fit these most essential fastenings.

Planking, &c.—One very objectionable feature in the construction of these vessels is the short lengths of material. used in the outside planking clamps, ceiling and longitudinal strength members. The consequence is that these vessels are one mass of butts, and scarphs, and unless additional and an efficient system of longitudinal and transverse strength be introduced, in my opinion, the vessels would come to grief at sea.

I desire to put on record the fact that Mr. Arthur Mayoh and Mr. Barber rendered me every assistance in connexion with my examination of the *Braeside* and *Burnside* and freely put at my disposal their foremen and workmen to carry out my wishes.

I desire also to say that Mr. Heron, Mr. Watson, Mr. Hewison and Mr. Greenlees gave me very hearty, unstinted and valuable assistance during the whole of my inspection of these vessels.

Please note the amounts stated to put the *Braeside* and *Burnside* in seaworthy condition are only very approximate amounts.

This Report is given in all good faith, and it is to be distinctly understood is not to be used to the detriment of the undersigned in any way. I desire also to make it quite clear that I am not prepared to accept any responsibility, financially or otherwise, through any action that your Committee may take or may be led to take through any statement in my Report. It is also to be clearly understood that I cannot afford to give up any more of my time to this inquiry, as I am very fully occupied with the duties of my position here.

I am attaching an extract from the specification of the *Braeside* and *Burnside* for the guidance of your Committee.

I am, dear Sir,

Yours faithfully,

(Sgd.) R. FARQUHAR, M.I.N.A.,
General Manager, Walkers Limited.

Maryborough, Queensland,
3rd January, 1921.

EXTRACTS FROM SPECIFICATION OF "BRAESIDE" AND "BURNSIDE."

4. *Material and Workmanship.*—All other materials used in the construction of the vessels to be the best of their respective kinds, and to be in accordance with Lloyd's Classification Rules, the Commonwealth Government and the approved plans.

The workmanship throughout to be well and thoroughly executed, and to fulfil the requirements of, and conform to, Lloyd's highest standard for vessels of this class.

11. *Jointing of Material.*—Special care is to be taken to form all scarphs of longitudinal members of construction, as the strains which are likely to come on this vessel at sea have been carefully calculated. It is essential that great care should be exercised by the builders in preparing and forming the scarphs of all longitudinal members of construction in order that the maximum efficiency of the joint can be obtained.

12. *Fastenings.*—To be in accordance with Lloyd's Classification Rules, Commonwealth Government and the approved plans.

All fastenings in contact with water to be galvanized.

36. *Clamps.*—The clamps are to be built in three strakes of 12 inches x 8 inches, selected hardwood, at the 'tween and upper decks, and to extend from the transom aft to the apron forward. To be in long lengths with 6 feet scarphs tie-bolted, with four 1 inch through bolts, each clamp to be fastened with one $1\frac{1}{4}$ inch G.I. through bolt with forged heads and one $1\frac{1}{4}$ inch driving bolt in each frame, the through bolts to be clenched on G.I. washers. The clamps to be bolted fore and aft vertically throughout their full length with $1\frac{1}{8}$ inch through bolts through clamp beam and waterway at each beam. The scarphs to be properly shifted with a view to strength.

39. *Ceiling.*—To have six strakes of 9 inch x $5\frac{1}{2}$ inch each side from margin girder to upper turn of bilge. From the upper turn of bilge to the gunwale, the ceiling to be 5 inches thick 'tween decks and 5 inches in hold, and to be edge bolted.

COMMONWEALTH OF AUSTRALIA.

Parliamentary Standing Committee on Public Works,
527 Collins-street,
Melbourne, 25th November, 1920.

Dear Sir,

In pursuance of a resolution of the Parliamentary Standing Committee on Public Works, I desire to ask that you will be good enough to undertake, on behalf of the Committee, an examination of the two wooden vessels *Braeside* and *Burnside*, now being constructed for the Commonwealth Government, by Messrs. Kidman and Mayoh, of 25 O'Connell-street, Sydney.

Arrangements have been made with the Contractors for their Mr. Barber to leave Melbourne for Sydney, on Friday, 26th November, 1920, to accompany you on your inspection, and give you all the assistance and information at his disposal. Mr. Watson, Mr. Greenlees and Mr. Hewison of the Commonwealth Ship Construction Branch, will also be present, and a telegram has been dispatched to Mr. A. C. Heron, Lloyd's Surveyor, Sydney, asking him to co-operate to the fullest extent.

It is desired that you will make your examination as thorough as possible and submit an exhaustive report to the Committee, particularly as to :—

(*a*) The cause of the hogging of the vessel.
(*b*) Whether the hogging of the vessel has had the effect of fracturing or straining the keel and the extent of such fracture or strain.
(*c*) Whether any butts near the keel have been started.
(*d*) Whether there is any evidence of the existence of dummy fastenings or faulty workmanship.
(*e*) What steps, in your opinion, should be taken to strengthen the *Braeside*.
(*f*) What precautions should be taken in regard to the *Burnside* to minimise the possibility of her developing an excessive hog after launching.
(*g*) Whether, in your opinion, the *Braeside* as she exists at present is in a seaworthy condition, and, if not, what work is necessary to place her in a seaworthy condition, and what would be the estimated cost of same.

I may add that instructions have been issued to have the *Braeside* docked as early as possible, and the Committee feels it would be an advantage if you could see such vessel when in dock. If the docking, however, cannot be arranged early enough for you to see her on your way to Queensland, it is hoped that you will make it convenient to return to Sydney at an early date to inspect her in dock.

Yours faithfully,

(Sgd.) G. WHITEFORD,
Secretary.

TELEGRAM DATED 29th NOVEMBER, 1920.

Glad if you will include in your report information as to whether, in your opinion, ships have been faithfully built in accordance with plans and specifications.

WHITEFORD,
Secretary.

R. Farquhar, Esq., M.I.N.A.,
General Manager, Walkers Limited,
Maryborough, Q.

APPENDIX B.

Dudley Building,
527 Collins-street, Melbourne,
24th December, 1920.

SHIP BUILDING CONTRACT—INTERIM REPORT.

To His Excellency the Right Honorable Henry William, Baron Forster of Lepe, a Member of His Majesty's Most Honorable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor-General and Commander-in-Chief of the Commonwealth of Australia.

MAY IT PLEASE YOUR EXCELLENCY,

In pursuance of a resolution passed by the House of Representatives, dated 29th October, as follows :—

SHIPBUILDING CONTRACT OF MESSRS. KIDMAN AND MAYOH—REFERENCE TO PUBLIC WORKS COMMITTEE.

Mr. Hughes, by leave, made a statement to the House on the subject of a shipbuilding contract between the Commonwealth Government and Messrs. Kidman and Mayoh, and moved, That the following matter be referred to the Parliamentary Standing Committee on Public Works for investigation and report :—The advisibility of complying with the request of Messrs. Kidman and Mayoh to be relieved of the obligation to complete the contract entered into by them on the 4th August, 1919, to build two wooden vessels for the Commonwealth, and the conditions upon which such relief, if deemed advisable, should be granted, and that the Committee be authorised to proceed with its investigations whilst the House is sitting.

and of further resolution passed by the House of Representatives on the 26th November, 1920, in the following terms:—

PUBLIC WORKS COMMITTEE—PERMISSION TO PRESENT INTERIM REPORT TO GOVERNOR-GENERAL.

Mr. Gregory moved, pursuant to notice, That the Parliamentary Standing Committee on Public Works have leave to continue, during recess, its investigations into the matter of the shipbuilding contract of Messrs. Kidman and Mayoh referred to it on the 29th day of October, 1920, and to present an Interim Report to the Governor-General.

I have the honor to present an Interim Report as follows :—

In view of the shortage of shipping existing as the result of enemy action, the Commonwealth Government, in 1918, entered into contracts with several firms in Australia for the building of wooden ships. Amongst these firms was that of Kidman and Mayoh, who, on the 6th July, 1918, entered into a contract with the Commonwealth Government to construct six wooden vessels of a dead weight capacity of about 2,600 tons each.

Following upon the large amount of shipping released as the result of the signing of the Armistice, the need for the ships was not so great as during the war period, and the Commonwealth Government decided to cancel the wooden ship building contracts. Messrs. Kidman and Mayoh had, however, made considerable progress with one ship and fair progress with another ship, and, on the 4th August, 1919, at the request of Kidman and Mayoh, a further agreement was entered into with that firm to complete these two partially constructed vessels of a deadweight capacity of approximately 2,600 tons at a cost of £26 per ton.

One of the conditions of the Contract was :—

That the Contractors shall construct and build such vessels in all respects to Lloyd's highest class under special survey and to meet the requirements of the Navigation Acts, and delivery of any vessel shall not be tendered or accepted until Lloyd's and Navigation Authorities certificates have been delivered to the Commonwealth certifying that the vessels conform with Lloyd's highest standard and the requirements of the Navigation Acts.

In April, 1920, one of the vessels (the *Braeside*) was launched, but subsequent examination showed that, though designed for a straight keel, she had hogged to the extent of about 23 inches—that is to say if she were placed on a flat surface her stem and stern would be touching that surface but the centre of the keel would be about 23 inches above the surface. When it was discovered that the vessel had hogged to this extent she was placed in dock, let down on an even keel, and an effort made to strengthen her. On refloating, however, it was discovered that the hog had not materially diminished and in consequence of this and the fact that certain of the fastenings were not in accordance with Lloyd's Rules, the Australian representative of Lloyd's Registry, London, refused to grant the ship a first-class classification.

The Contractors, at this stage, expressed a desire to be relieved of their contract and suggested that to avoid the possibility of expensive legal or arbitration proceedings, the matter be referred to the Parliamentary Standing Committee on Public Works for investigation and report and agreed to abide by the Committee's decision.

COMMITTEE'S INVESTIGATIONS.

The Committee visited Sydney, inspected on several occasions both the vessel which has been launched (the *Braeside*) and the vessel still on the stocks (the *Burnside*), took evidence at length from the Contractors, from Officers of the Commonwealth Ship Construction Branch, the local representatives of Lloyd's Registry, several employees of the Contractors, &c., and generally made themselves familiar with the contract agreement, plans and specifications, method of construction, &c. In addition the Committee sought and obtained the expert assistance of Mr. R. Farquhar, a member of the Institute of Naval Architects, and at present General Manager of Walkers Limited, Maryborough, Queensland.

A recent inspection of the *Braeside* in dock has shown that the hog has increased to 29 inches.

After a careful consideration of the whole of the evidence, the Committee is satisfied that the ships have not been constructed in conformity with approved plans and specifications, and Lloyd's Rules, as provided in the Agreement. Further, that there have been such serious departures from Lloyd's Rules and from the plans and specifications that the ships are not seaworthy. In the opinion of the Committee it is doubtful even with the expenditure of an unwarrantable sum of money that the vessels can be made seaworthy, and for these reasons it is thought that under no circumstances should the ships be taken over by the Commonwealth.

After careful consideration of the reference submitted to it, the Committee therefore, recommends that the request of the Contractors be not complied with.

H. GREGORY,
Chairman.

APPENDIX C.

29th December, 1920.

K. Watson, Esq.,
Acting Chief Executive Officer,
31 King-street, Melbourne.

Dear Sir,

Braeside Docking Report.

The vessel entered dock on Thursday, 16.12.1920, and while still floating fore and aft sights were adjusted over the sister keelson, the dock was then pumped out until the keel touched the blocks at both ends, and the hog was packed up by divers.

The dock was dry about midday on Saturday, 18.12.1920, and when the vessel had settled on the packing the fore and aft sights in the hold were again adjusted, showing that the vessel had straightened $\frac{3}{8}$".

On Monday, 20.12.1920, the inspection and testing of the fastenings were commenced and completed with Mr. Farquhar's inspection about 3 p.m. on Wednesday, 22.12.1920.

A start was made on the painting of the underwater portion of the hull about 1 p.m., Wednesday, 22.12.1920 and was completed about 10.30 a.m., Thursday, 23.12.1920. The vessel was floated out of dock at about 2 p.m. of same date, and was towed to the Silos Wharf.

One coat of copper paint was put on the bottom to a mean height of 14 feet.

The accompanying blue print shows the hog measured up from a straight line representing the lowest point of the keel, the maximum hog being $28\frac{7}{8}$" plus $\frac{3}{8}$" (the vessel settled on the packing $\frac{3}{8}$"), total $29\frac{1}{4}$".

When the vessel was floated, the sights in the hold showed 22" hog—

Forward sight 86′ 5″ forward	midships Vert. Height	7′ 1″
Midship sight 7′ $4\frac{1}{2}$″ aft	" " "	5′ $2\frac{3}{8}$″
After..		6′ $11\frac{7}{8}$″

With the assistance of the Dockyard Staff, I tested Thro' fastenings in the hold ceiling, from the lower edge of the hold clamps to the bilge keelson, by means of the electrical apparatus described in my report dated 22nd October, 1920.

The bolts tested are on frames—

Starboard Side .. 23–26–27–30–31–32–35–36–39–42–44–48–51–54–57–59
Port Side .. 20–21–23–26–28–30–43–46–47.

These include the bolts marked as "Dummies" by Messrs. Woodward and Clout in the presence of the Committee, and about 60 % of the bolts marked by Woodward and the whole number marked by Clout are not Through Fastenings. A total of 160 bolts clenched on washers representing Through Fastenings were tested, and of this number only 74 were found to be Through Fastenings.

The distortion of the bilges appear to me to have increased since I saw the vessel in dock in July last, and at a point about 151 feet from the after perpendiculars the false keel is crushed, the position of which agrees with my report of the 19th July, 1920, and drawing of the ground in way of berth at Kissing Point, and bears out my contention that the vessel has been aground and resting heavily about amidships while at the fitting-out berth.

The draught marks of the Stem were found to be 4 inches low, and I had new marks painted in both fore and aft—

Draughts—Vessel entered Dock—
Forward 12′ 6″, aft 12′ 9″.
Vessel leaving Dock—
Forward 12′ 0″, aft 12′ 7″.

The white print showing the fastenings tested on 22nd October, 1920, is not among my papers, but if you will have it forwarded me, I shall add the fastenings tested in the underwater portion.

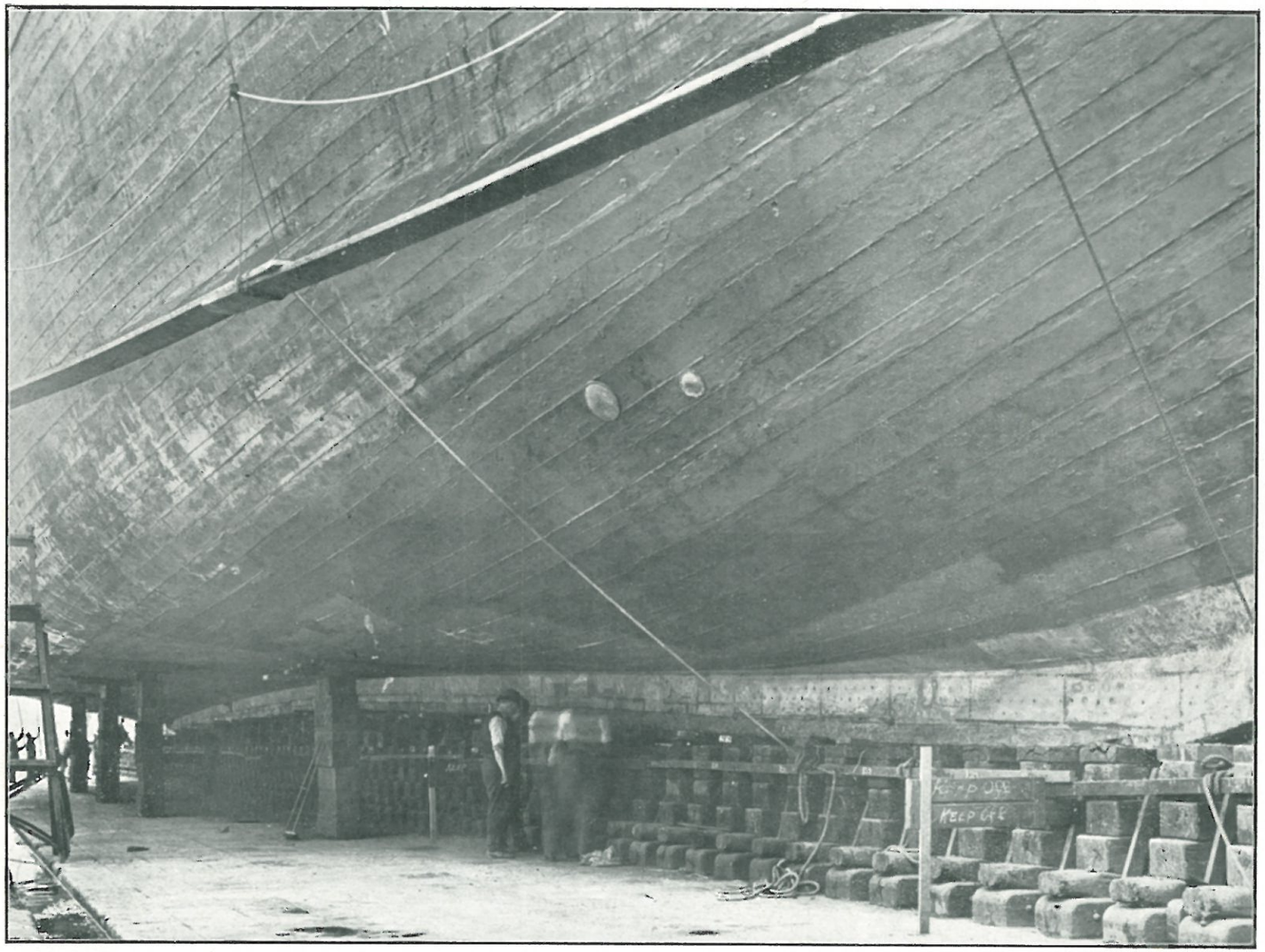
Yours faithfully,

(Sgd.) A. M. GREENLEES.



PORT MIDSHIPS SHOWING EXTREME HOG.

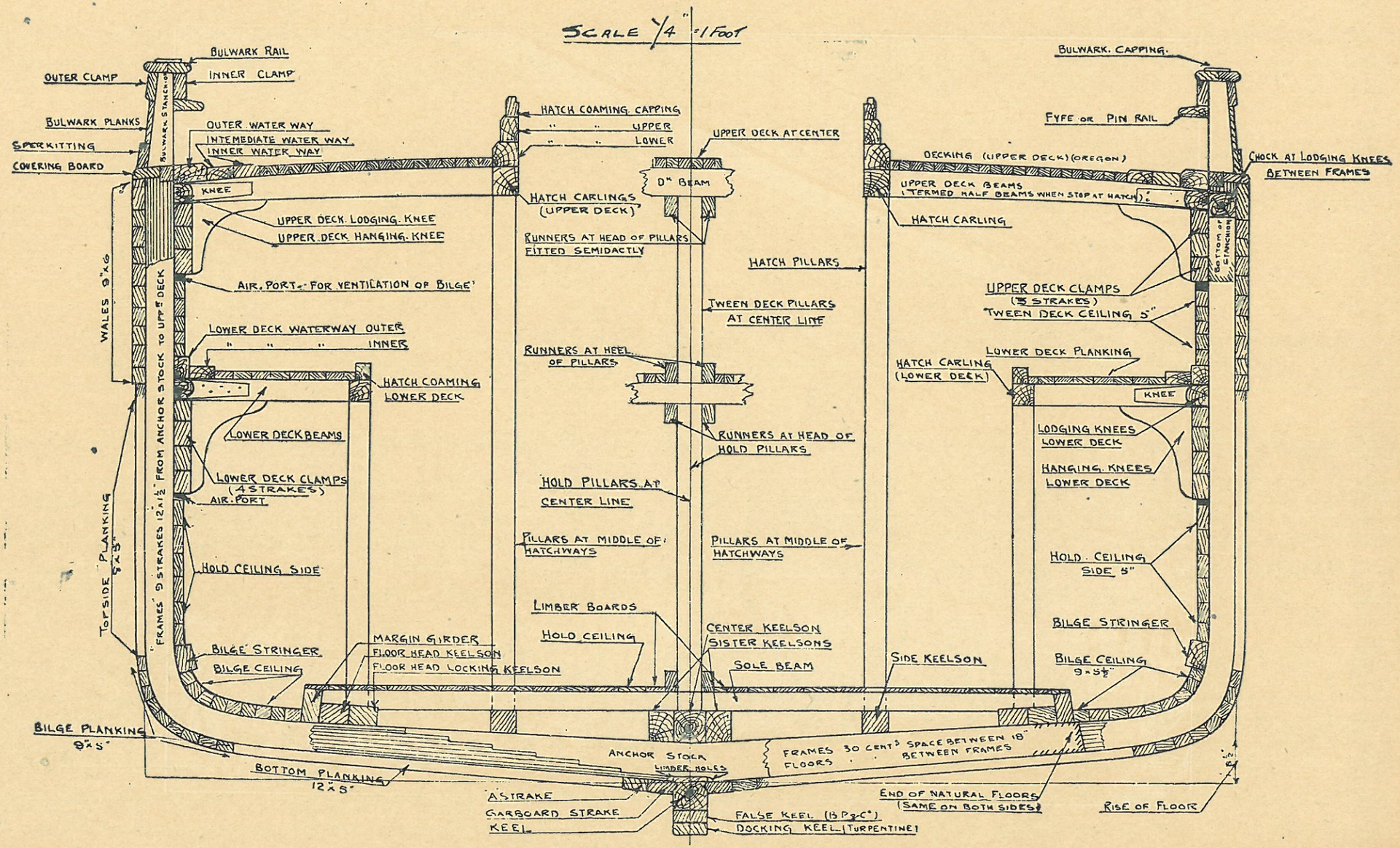
F.19540.—cf



STARBOARD BOW LOOKING AFT.

KEY PLAN.

SCALE 1/4" = 1 FOOT



5-12 20



SHIP BUILDING CONTRACT.

MINUTES OF EVIDENCE.

(*Taken at Melbourne.*)

WEDNESDAY, 3RD NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mackay,
Senator Plain,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

Herbert Charles Brown, Chief Clerk and Accountant, Prime Minister's Department, sworn and examined.

1. *To the Chairman.*—I have been associated with the contract entered into between Messrs. Kidman and Mavoh for the construction of wooden ships, more particularly in connexion with the payment of accounts. That agreement was entered into on the 6th July, 1918, as a war measure, but the war having terminated, the contract was amended on the 4th August, 1919, by reducing the number of vessels specified in the agreement from six to two; *i.e.*, the contract in respect of four vessels was cancelled. As compensation for this variation of the contract, the contractors were paid a sum of £52,000. The reasons for not cancelling the contract in respect of the whole six vessels were that good progress had been made with the construction of two of the ships, and the bulk of the material necessary for their completion had been ordered and most of it supplied. The contractors also were anxious to be allowed to complete the two vessels on which they had made such good progress, because they felt sure that they could make a good job of them, and that they would gain considerable credit for having built wooden vessels of such size in Australia. The Government were of opinion that as already a considerable sum had been expended in progress payments to the contractors, and good progress had been made up to that date, it was desirable that the two ships should be completed. That was why the order was cancelled in respect of only four of the vessels. Up to that stage the contract had proceeded satisfactorily, and the contractors had not experienced any great difficulty in obtaining supplies. Subsequently, however, they met with a good deal of difficulty in getting some of the larger timber, known as anchor stocks, which are bolted crosswise to the keel. These had been ordered earlier, but there was trouble in getting delivery. These anchor stocks are very large sections of timber hewn out of the tree to conform to the contour of the bottom of the vessel. The contractors complained also that subsequent to the contract being entered into the cost of materials had increased beyond their anticipations. They did not submit a written complaint on that ground, but that was one of their reasons for asking that the contract should be cancelled. Variations in the original specifications were made which resulted in a deadlock occurring between the departmental officers and the contractors in regard to the extra payments to be made for the additional work that was carried out, and also in regard to the deductions to be made for work which the Department decided should be omitted. Those alterations were suggested by Mr. Curchin, Chief Executive Officer of the Commonwealth Shipbuilding Branch. The original specifications provided that the vessels should have auxiliary power, and for the installation of Diesel engines. Subsequently, the contractors were instructed to omit the Diesel engines, and all the necessary propelling machinery incidental thereto. Mr. Curchin contended that on account of these omissions £27,400 should be deducted from the contract price. The contractors contended that that amount was excessive, and said that a reasonable deduction would be £19,050. In February of this year an arrangement was entered into with Messrs. Burns, Philp and Company, of Sydney, for the purchase by them of the two vessels when completed, which at that time was anticipated to be within two or three months. This arrangement led to further complications by reason of the fact that Burns, Philp and Company required certain alterations and modifications to the vessels, which had not been specified originally, and which entailed considerable additional expense. Negotiations are in progress at the present time between Burns, Philp and Company and the contractors regarding the amount involved in respect of these alterations. I mention that fact as an instance of the difficulties and complications that have arisen. Subsequent to the launching of the first vessel, what is known amongst seafaring men as a "hog" developed in the hull. Whilst such a thing is not uncommon in wooden vessels, in some cases it is considered a dangerous factor if the "hog" is very great. I understand that, on account of this "hog," Lloyd's surveyor, in Sydney, is not prepared to give the vessel a first-class certificate, and, consequently, Burns, Philp and Company are not desirous of proceeding with the purchase. There appears to be a great diversity of opinion as to what steps, if any, are necessary to remedy, as far as possible, the defect due to the "hogging" of the vessel, and on that point no finality has been reached between the Acting Chief Executive Officer (Mr. Watson) and the contractor. One of the conditions of the contract is that the contractors shall deliver the vessel with Lloyd's highest class certificate under special survey, but, in view of the defect referred to, Lloyd's surveyor is not prepared to give such certificate, and it is, therefore, apparent that the contractors cannot complete the vessel as provided for in clause 5 of the agreement. Perhaps I should qualify that statement by saying that the contractors cannot hand over the vessel in a condition to conform to the requirements of clause 5. That being so, the contractors asked to be relieved of the contract, because they cannot carry it out. The Department would like the Committee to bear in mind the fact that the contractors will cease work and discharge practically all the men this week. If the Committee decide that the contractors ought to be relieved of their contract, and that the Department should complete the vessels, it will be most desirable to retain the present staff of workmen because, if they are once allowed to disperse, it will be very difficult to get them together again. Labour of the type required for this job is not readily obtainable in Australia, and if the men are allowed to be sacked we may not be able to re-engage them. We do not suggest that the Committee should hurry in its deliberations, but we are up against the difficulty I have mentioned, and if we could retain the services of the men

until such time as the Committee is able to report we may be saved a great deal of trouble and delay later. We can make arrangements with the contractor to continue paying the wages of these men, but, as the matter has been referred to this Committee, we think that it would be unwise to make payment to the contractor or anybody else without first, as a matter of courtesy, acquainting the Committee of our intentions. Unless the Committee offers some objection, we are prepared to advance £2,000 to the contractor to be utilized by him only for the payment of wages upon the certificate of a departmental officer.

2. *To Mr. Bamford.*—The specified tonnage of each vessel is 2,600 tons. The completed tonnage will probably be more, probably 2,700 tons, because the vessels have been lengthened by a few feet, but the actual tonnage cannot be decided until the vessels have been completed and equipped.

3. *To the Chairman.*—I hand in a copy of the original contract made by the Department with Kidman and Mayoh on 6th July, 1918, and a copy of the amending agreement of 4th August, 1919. I certify both to be faithful copies. The contract price was £26 per ton. I have not a copy of the specifications, but they may be obtained from the Acting Chief Executive Officer. I should say that the payment of £52,000 to the contractor, as compensation for the elimination of four vessels from the contract will come within the scope of the Committee's inquiry. The contractors say that that amount of £52,000 was paid into the firm's general account, and has been entirely absorbed in the building of the two ships which are now the subject of dispute. So far as I am aware, the only amendment of the original specification has been the elimination of the auxiliary power. However, I ask the Committee to obtain all technical details from the Acting Chief Executive Officer (Mr. Watson). No action has been taken by the Department in respect of the contractors' complaint about the increased cost of material. That complaint is merely part and parcel of the communication in which they ask to be relieved of the contract, but we do know that their statement that the cost of material has increased considerably is true. The contractors complain also of the variation of the contract, but I think it would be preferable if information upon that point were obtained from the contractors themselves, and from the technical officers of the Department. No actual agreement for the purchase of the vessels by Burns, Philp, and Company was entered into. The company wrote offering to purchase the vessels, and the Department wrote an acceptance of the offer. Subsequently, Burns, Philp, and Company advised the Department that in view of the hog which had developed in one of the vessels they did not feel disposed to proceed with the purchase. No deposit was made by the company in respect of this undertaking to purchase. This is the letter in which Burns, Philp, and Company offered to purchase the two vessels :—

[Exhibit 1.]

Burns, Philp, & Company,
Melbourne, 22nd January, 1920.

The Secretary,
Prime Minister's Department, Melbourne.

DEAR SIR,

With reference to the conversations we have had with regard to the purchase of the two (2) topsail schooners now nearing completion, which Messrs. Kidman & Mayoh, of Sydney, are building for the Commonwealth Government, we beg to confirm the agreement arrived at whereby Messrs. Burns, Philp, & Company Ltd. agree to buy and the Prime Minister of the Commonwealth of Australia agrees to sell the two (2) vessels in question on the conditions following :—

The Commonwealth Government undertake—

1. To faithfully supervise and expedite the construction, completion, and delivery in a seaworthy condition of the two (2) schooners strictly in conformity with the plans, specifications, and approved variations as confirmed by the Commonwealth Chief Executive Officer for Shipbuilding and the requirements of Lloyd's and the Commonwealth Navigation Acts.
2. To obtain Lloyd's classification, character A1 under special survey, also over sea going certificate for each of the vessels.
3. To grant preference, as far as lies within its power, in favour of these vessels, so long as they remain on the Australian registry as against vessels not so registered.

Messrs. Burns, Philp, & Co. Ltd. undertake—

A. To take delivery of each of the two (2) vessels as they are completed, furnished, equipped, and are seaworthy and ready in every respect to proceed oversea.
B. To pay therefor the purchase price agreed of £45,000 each on the true and right delivery of the vessels as above.

Yours faithfully,

BURNS, PHILP, & CO. LTD.,
per (Sgd.) F. Wallin,
Island Manager.

To that letter the Department replied as follows:—

[Exhibit 2.]

Prime Minister's Department,
Melbourne, 27th January, 1920.

DEAR SIR,

I am directed by the Prime Minister to inform you that the Commonwealth Government has approved of the sale to your firm on the conditions set out in your letter of the 22nd January of the two (2) topsail schooners now under construction by Messrs. Kidman & Mayoh, of Sydney, the purchase price to be the sum of £45,000 (Forty-five thousand pounds) for each vessel.

Yours faithfully,

(Sgd.) M. L. SHEPHERD, Secretary.

The Island Manager,
Messrs. Burns, Philp, & Co. Ltd., Melbourne.

I refer the Committee to this letter also—

[Exhibit 3.]

(Confidential.)

Prime Minister's Department,
Melbourne, 11th February, 1920.

Memorandum for
The Chief Executive Officer,
Commonwealth Ship Construction.

I desire to advise that the Commonwealth Government has approved of the sale to Messrs. Burns, Philp, & Co. Ltd. of the two schooners now under construction by Messrs. Kidman & Mayoh.

The Government agreed that if Messrs. Burns, Philp, desired any alterations made to the ships, this could be done, provided that it involved no extra expense to the Commonwealth and did not interfere with getting Lloyds certificate.

The matter to be treated as *confidential* for the present.

(Sgd.) M. L. SHEPHERD, Secretary.

At the instance of Burns, Philp, and Company extensive alterations in the vessels were made; I cannot say what they were, except that the rig was altered. It was never intended that the cost of these alterations should be paid by the Commonwealth to the contractors, and then be re-paid by Burns, Philp, and Company. The arrangement in regard to the alterations was made direct between the contractors and Burns, Philp, and Company. The amount that has been paid to the contractors to date on account of work done is £104,193 7s. 3d. as progress payment under the contract, plus an amount of £8,127 5s. 7d., paid under clause 20 of the agreement on account of increased wages. The Department's first intimation that Burns, Philp, and Company repudiated the undertaking to purchase was contained in the following letter:—

[Exhibit 4.]

P.M. 20/1768/1.

Burns, Philp, & Co. Ltd.,
Sydney, 27th July, 1920.

The Secretary,
Prime Minister's Department, Melbourne.

DEAR SIR,

Re Braeside.

Further to our letter to you of the 12th instant with reference to the serious hog and other defects which this ship has developed since launching, we now beg to enclose herewith copies of the supplementary reports of Marine-Surveyors Captain Grainger and Captain Vine Hall, as also copies of those of

Consulting Engineers J. Thompson and J. Macartney, and of Shipbuilders T. F. Morrison and D. Drake, in all of which you will note that there is unanimity of opinion as to the distortion of form, straining weakness, and unseaworthiness of the *Braeside*.

In our letter to you of the 22nd January last, we stated the terms on which we would be prepared to purchase the vessel in question, and one of the terms was that the Commonwealth Government should undertake to faithfully supervise and expedite the completion and delivery in a seaworthy condition of the vessel, and our undertaking with reference to taking delivery of the vessels was in the following form:—

"To take delivery of each of the two vessels as they are completed, furnished, and equipped, and are seaworthy and ready in every respect to proceed oversea."

The copies of the reports which we enclose show conclusively that the *Braeside* is not seaworthy, and that being so, there is no obligation on our part to take over the vessel.

We view the position with very grave alarm and must object to the Government taking over the vessel on our behalf. We consider the *Braeside* to be in such a faulty condition that we could not possibly take her over and put her into commission, as apart from the vessel's depreciated value, we do not think we could obtain a satisfactory insurance on her hull and cargo, and besides we cannot overlook there is a responsibility in connexion with the lives of the crew.

Yours faithfully,

BURNS, PHILP & CO. LTD.,
per (Sgd.) James Burns, jun.

So far as I am aware, Burns, Philp, and Company have not repudiated the liability for the alterations made by the contractors for them. On the other hand, I do not know that they have admitted any liability; I have no correspondence on the subject. The Department anticipates that Burns, Philp, and Company will pay the whole of the cost of the alterations. Apart from the correspondence, I think they are morally responsible for the cost of all work carried out to meet their wishes. Burns, Philp and Company have already paid the contractors a certain amount. Some of the negotiations have taken place direct between Burns, Philp and Company and the contractors, and I know nothing of them, although they may be within the knowledge of the constructing officers. Although there is nothing on the file to support what I say, I know that Burns, Philp and Company purchased in Melbourne some timber for the making of foremasts, which they wanted square-rigged. The timber could not be obtained in Sydney, and it was bought in Melbourne by Burns, Philp and Company and sent to Kidman and Mayoh. So far as I know, Burns, Philp and Company have not repudiated their liability in respect of alterations to the vessels, but legal action between them and the contractors is pending. In a letter to the Department, on the 8th October, the contractors say—

[Exhibit 5.]

Kidman and Mayoh,
25 O'Connell-street, Sydney,
8th October, 1920.

The Secretary,
Prime Minister's Department, Melbourne.

DEAR SIR,

As you are aware, we have an action in the Supreme Court against Messrs. Burns, Philp & Co. Ltd. for recovery of moneys for work done on the two ships we are building for you.

We enclose you herewith copies of pleas and other documents served herein, and if you will kindly peruse same you will find very serious allegations made by Messrs. Burns, Philp & Co. You will see that they charge us with being guilty of fraudulent practices in the building of the ships.

These pleas will account for their method in endeavouring to persuade our workmen to make false statements to them regarding the fastenings in the ships. Three labouring men were called upon by Mr. Snellgrove and Captain Maxwell on Saturday last, and were offered good situations if they would give them any information regarding the fastenings in these ships. The workmen told them that they were not aware of any fastenings such as Mr. Snellgrove described being put in the ships. On the contrary, they said that everything was done in a satisfactory and workmanlike manner so far as they were concerned.

We wish to again advise you that the fastenings in this ship are faithfully put in, and many thousands of steel fastenings are in the ship beyond those called for by Lloyd's rules, and we are quite sure that Mr. Heron and your own officers will vouch for the accuracy of this. It is an untrue and libellous statement to say that any scamped work has been done on these ships. We are prepared to produce every workman in our employ, who will testify that everything has been done honest and straight and in a workmanlike manner.

We should like you to make, as early as possible, your own investigations regarding the allegations made, and come to a conclusion. We raise no objection to any one in the employ of the Government being present at these investigations, and we ourselves will employ outside representatives to be present to testify to the accuracy of our statement.

We feel sure that you will agree with us that the practices adopted by Burns, Philp & Co. are anything but straight, and will not be countenanced by you as owners of these vessels.

We shall be glad if you will see that the investigations are made without delay, and if possible we should like Lloyd's to be represented.

Mr. Heron has been employed by us to make a special survey of the construction of the vessels, and he has made a weekly visit to the works, and has seen for himself that the work is satisfactory because he has never advised us to the contrary, and he would be remiss in his duties if he were now to advise that the work has been scamped. It also looks bad for your representatives, and we think you will agree with us that the charges Burns, Philp & Co. make are dishonest and ridiculous.

We may say that we have put in between 8,000 and 10,000 steel fastenings 1¼-in. diameter, whereas we were only entitled to put in wooden treenails as called for by Lloyd's rules. If you will ask Lloyd's representative, and your own officers, they will vouch for this statement. The cost of this work has been several thousand pounds, and we propose to make a claim upon you for the cost of same, as Mr. Curchin had no right to insist upon this when Lloyd's rule does not ask for same.

Yours faithfully,
(Sgd.) KIDMAN & MAYOH.

Although I have a copy of the defendant's reply, I have not a copy of the plaintiff's pleadings in the action, and, therefore, cannot say what is the nature of the claim. The contractors would be aware of the nature of the purchase arrangements made between Burns, Philp and Company and the Department, although, so far as I know, they have never been advised in writing. They may not know the whole of the conditions under which the sale was effected, although they have been officially advised verbally of the sale. The following letters throw light upon that point:—

[Exhibit 6.]

Ship Construction Branch,
31 King-street, Melbourne,
18th March, 1920.

Memorandum to
The Secretary,
Prime Minister's Department.

I discussed with Mr. Mayoh, of Messrs. Kidman & Mayoh, and Mr. Wallin, of Messrs. Burns, Philp. & Co., the question of the alterations and additions to the specifications which the owners of the vessels being built by Messrs. Kidman & Mayoh may require, and arranged for them to deal direct with one another. These arrangements I confirmed as per letters attached hereto on my return to Melbourne.

Mr. Mayoh called at this office yesterday, and I gathered from him that he is averse to proceeding with the alterations in the rig required by the owners until the question of the amount to be deducted for the omission of propelling machinery is decided. I pointed out to Mr. Mayoh that I considered his attitude unreasonable, and I am endeavouring to bring the matter to a satisfactory conclusion as early as possible.

Mr. Eva, a member of the Committee deputed by the Minister to deal with this matter, is out of town at present, but I have arranged to discuss the position with Admiral Clarkson this afternoon.

(Sgd.) H. W. CURCHIN,
Chief Executive Officer, Ship Construction Branch.

[Enclosures.]

12th March, 1920.

Messrs. Burns, Philp & Co.,
Bridge-street, Sydney.

DEAR SIRS,

For your information I enclose copy of letter I have this day addressed to Messrs. Kidman & Mayoh.

Yours faithfully,
(Sgd.) H. W. CURCHIN.

12th March, 1920.

Messrs. Kidman & Mayoh,
25 O'Connell-street, Sydney.

DEAR SIRS,

I beg to confirm the arrangements come to between us, viz., that any additions or alterations to the specifications required

by Messrs. Burns, Philp & Co. will be discussed and agreed to between yourselves and Messrs. Burns, Philp & Co.

I shall be pleased if you will kindly keep me informed of the arrangements made.

Yours faithfully,
(Sgd.) H. W. CURCHIN.

I cannot say the exact date upon which the hogging of the vessel was discovered, but it would be shortly before the date of Burns, Philp and Company's letter declining to proceed with the purchase. The agreements in regard to the construction of the vessels were prepared by the Attorney-General's Department, but I do not think that the sale to Burns, Philp and Company was submitted for legal opinion. At times it may be necessary to refer a matter involving only a very small sum to the Crown Law Authorities, but in other instances the issue may be so clear that no such reference is necessary, even though the amount involved is very large. I admit that it might have been advisable to consult the Crown Law Department in regard to the arrangements for the sale of the vessel to Burns, Philp and Company. In the event of the contractors being relieved of the contract and the vessels being completed by the Department, no attempt to remove the hog from the first vessel will be made, but plans have been prepared for inserting more timber, which will strengthen the vessel and prevent any further movement. I do not expect that we shall be able to get a first-class certificate for the vessel, no matter what is done. A week or two after Lloyd's surveyor took a serious view of the hog in this vessel, there was another vessel in Sydney Harbour which had the same defect, and I believe that the captain made a statutory declaration that the hog was in the ship when she started on her first trip. The Acting Chief Executive Officer is of opinion that the only way in which the vessels can be completed is for the department to do the balance of the work. The contractors cannot complete the job, because they cannot comply with the condition which requires a first-class certificate from Lloyd's. The estimated cost of the two vessels was £135,200, but the department is of opinion that that amount should be reduced by £27,400 on account of the elimination of the auxiliary power. If that is done the contract price for the two vessels will be reduced to £107,800.

(Taken at Melbourne.)

THURSDAY, 4TH NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mackay,
Senator Plain,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

Kenneth Watson, Acting Chief Executive Officer Commonwealth Ship Construction Branch, sworn and examined.

4. *To the Chairman.* — I have been Acting Chief Executive Officer since 12th August this year. Prior to that date I was Chief Engineer on the same staff. As Chief Engineer I was brought into contact with the contract with Messrs. Kidman and Mayoh, in so far as the machinery was concerned, but that machinery has since been dispensed with. I was only in association with the construction of the vessel so far as construction was necessary for the machinery. Mr. Curchin was in charge prior to my taking the position of Chief Executive Officer. Mr. Curchin was here during the whole period. The contract was entered in on the 6th July, 1918, when Mr. Curchin was in charge. He came out to Australia, I think, at the end of 1917. When Mr. Curchin left I immediately took over the position of Acting Chief Executive Officer, and I have since taken control, and have examined the papers relating to the contract, so far as I have had time. I think I know the position pretty well as it stands to-day. I have been over to Sydney, and made investigations and reported. I am aware that it has been suggested that these vessels should be handed over to the Commonwealth for the purposes of completion. I have perused the terms of the contract, and, in my opinion, the responsibility for the completion of the work lies with the contractors. They have to complete the vessels to our satisfaction and to Lloyd's satisfaction. What I mean by "Lloyd's satisfaction" is that the vessels are to be in such condition as to obtain Lloyd's certificate for seaworthiness when completed; that is the first-class certificate. That is the usual standard for Lloyd's for new construction. None of the vessels has been completed; they have not reached the stage at which any request can be made for a first-class certificate for any one of them. Lloyd's would not grant a certificate to the vessels in their present condition; that is my opinion, after a discussion with Lloyd's chief surveyor out here. There is no trouble with the second vessel, which is on the stocks, and, apparently, all right. The second vessel is the *Burnside* and the first vessel is the *Braeside*. The *Braeside* is nearly complete; but since, or during her launching, she developed a very considerable hog of about 23 inches rise in the keel throughout her whole length. When completed, and as she stood in the water, she might possibly have had a slight hog, which is not at all an unheard of thing. She is designed for a straight keel, and she hogs to the extent of 23 inches; if she were on a flat surface her stem and her stern would be touching the ground, with a concave to the extent of 23 inches. She will be considered seaworthy with that hog if she is properly stiffened, and I think it probable that Lloyd's would grant her a first-class certificate to go to sea; at any rate, I have no reason to doubt that.

5. *To Mr. Mathews.*—I think she would get Lloyd's full certificate—a first-class certificate.

6. *To Mr. Bamford.*—I cannot say whether Lloyd's grant A1 certificates for wooden ships.

7. *To the Chairman.*—I am reasonably satisfied that if the vessel were placed in charge of the Department, and the stiffening were carried out, she would get her certificate. We cannot forecast these things with absolute certainty; but I see no reason to doubt it. There are plenty of wooden ships at sea without Lloyd's certificate—ships that are not built under Lloyd's survey. It is quite a usual thing for ships of wooden construction to trade without a certificate from Lloyd's.

8. *To Mr. Mathews.*—I think that probably would affect the insurance.

9. *To the Chairman.*—I mean the insurance, not only on the vessel, but on the cargo carried; but I am just conjecturing that. You are right in assuming that the stiffening alterations will cost a good deal of money, and I quite understand that before anything of the sort is started we should be quite definite and certain as to what the result will be in regard to the insurance of the vessel and her cargo. I do not think that the question of insurance of the hull and cargo has been raised with the Minister. When this contract was arranged it was distinctly specified that the vessel should be completed with Lloyd's highest certificate. I think that with the work we propose the *Bracside* will be able to obtain that certificate. Proposals were drawn up in conjunction with Lloyd's head surveyor, and we have consulted Lloyd's as far as possible. Speaking from memory, the estimated cost of the alterations for the first ship was £15,000; but I am getting a price for this work from the General Manager at Cockatoo,

and I hope to have it shortly. It would, perhaps, be better to wait until we have an actual estimate; but what I have stated is my present rough estimate for a first ship. That is for the cost of the extra stiffening to correct the hogging. I do not anticipate that the same work will be required with the other ship. We believe that the *Braeside* was strained in launching; further, she is known to have been aground since she was launched. The berth she was lying in was apparently mud; but on taking soundings it was found that there was a hard bottom under the mud, with a perceptible rise that came under the middle of the length of the keel. The variation in the tide was putting a weight on the ship every time; the rise and fall is only slight in Sydney Harbor; but there it is. That would have the effect of hogging—it would have that tendency. That, we think, is the principal cause; but there are other minor causes which may have contributed to it.

10. *To Senator Plain.*—In the case of steel vessels, under similar circumstances, there would probably be caused a dent in the bottom—she would not spring from end to end.

11. *To Mr. Mathews.*—The rise and fall of the tide, of course, is not very much, so there was not an extreme tendency to break the *Braeside's* back.

12. *To Senator Plain.*—If the tide had gone much lower I would not like to say what would have happened.

13. *To the Chairman.*—The responsibility of the contractor does not end when he launches the vessel, but continues until he hands it over completed; my reading of the contract is that the responsibility rests entirely with the contractors.

14. *To Senator Plain.*—It is the contractor's business to see that the vessel is properly berthed, and that the waterway is clear at the launching place.

15. *To the Chairman.* — It is certainly not the responsibility of the Commonwealth; the builder launches the boat in his own waters, and in his own way.

16. *To Mr. Mackay.*—It was the contractor's business to select the site, which I think the contractors leased; the Government had nothing to do with that.

17. *To Mr. Bamford.*—I do not know whether any survey was made of the bottom of the ship before launching.

18. *To Senator Plain.*—The contractors put their yard where the vessel was launched.

19. *To the Chairman.* — When the contract was arranged a great deal of power was given to the officer called the Chief Executive Officer, who is myself at the present time. No drastic alterations were made in the specifications after the work was started. We made a number of alterations in approving of the plans and specifications. The contractor prepared plans and specifications, which they submitted for our approval, and we naturally made alterations, but after these plans and specifications were approved, no alterations were made which might affect the stability of the vessels. There were no drastic alterations made. There may have been minor things arranged from time to time, and the contractors put in a number of modifications to simplify their work. So far as I know, there have not been any alterations made or insisted on by us to which the contractors took exception on account of their affecting the strength of the ships. I know of no alteration which could have so affected the vessel as to have caused the hogging.

20. *To Mr. Mathews.*—No alteration submitted by the Department would have caused the hogging.

21. *To the Chairman.*—I do not think the hogging could be caused by the use of unsound timber; I do not think the seasoning of the timber would affect the thing. I think it is doubtful whether the timber used had sufficient time to season properly; but I do not think that would affect the hogging. I have had no experience at all in the building of wooden ships; I am a marine engineer by profession. As to expert advice in regard to the alterations to give extra strength to the vessel, those alterations were done almost always after discussion with Lloyd's surveyor, who has had a great deal to do with the inspecting of wooden ships which come into Sydney Harbor. From that point of view I think he is pretty well informed as to all their weaknesses. There had been no vessels of this size built in this country before, and, therefore, expert advice was not available.

22. *To Mr. Mathews.* — Our shipwright inspector, Mr. Brown, who has been watching this work, is an experienced wooden-ship builder—a practical man, though he may not have much theoretical knowledge.

23. *To the Chairman.*—I think that this is a case where theoretical knowledge was absolutely essential, combined with practical knowledge.

24. *To Mr. Mathews.* — I think that Mr. Pickering has some experience of composite shipbuilding—steel-framed work with a wooden skin.

25. *To the Chairman.* — The chief draftsman, Mr. Hewison, is a steel shipbuilder, and has no special knowledge of wooden shipbuilding.

26. *To Senator Newland.* — I have heard of one case, that of the *Levi Ostrander*, which is about the same size as the *Braeside*, and was said to have a hog of about 20 inches. We got that information through Kidman and Mayoh. I think that the vessel had a first-class Lloyd's certificate; but there, again, that is information from the contractor. I have every reason to believe that the information is correct. I could not say whether the certificate of the *Levi Ostrander* was granted before she became hogged in that way, or was hogged when it was granted. It is not unusual for wooden ships to hog in that way, especially when empty. If the *Braeside* were filled with cargo that would tend to straighten the hog out. I can only say that the tendency would be that way; it would probably have the effect to a certain extent of straightening the ship out; indeed, it is almost certain it would have. There is a tendency for the stem and stern to drop on account of the heavier weight on each end of the ship. For instance, the deck houses at the stern and the heavier portions at the bow tend to put both ends down; but if the vessel were loaded with cargo it would tend to straighten her out. I have no particulars of hogging ever happening to a vessel at sea. I take it that you mean the working of the vessel up and down every time she loaded or discharged. The very fact that the vessel was once hogged and straightened out makes it likely that she will hog again. She would have to be considerably stiffened to prevent the hogging happening again. There would always be that tendency when she was a light ship. The big empty part of the ship is amidships, and that means the water pressing up, with the ends tending to drop. If you fill her with cargo, her ends go up. A vessel should not be allowed to work to an unlimited extent each way; she has to be held in one position or the other; there is bound to be a certain amount of strain on her. My experience of the *Braeside* has shown me that this is more so in the case of a wooden ship than of a steel ship. If a wooden ship were constantly straining and working in the way suggested, she would leak; she might loosen her fastenings and go to pieces. My personal opinion is that it would be better to strengthen the vessel with the hog in. I want to discuss this matter with Lloyd's surveyor before I do anything; but that is my present feeling. I have said that there are many ships that have not Lloyd's certificate. That, however, is just what I have heard. I believe it to be correct, but I do not know whether they are British or American ships—probably American. There are a great number of American ships without Lloyd's certificate. That is what I am given to understand, and I think it is correct. That does not apply to steel ships,

for which it is usual to get Lloyd's certificate, or the certificate of one of the registration societies of similar status to Lloyd's, such as the British Corporation. Lloyd's registration is the better for ships all over the world.

27. *To Mr. Parker Moloney.*—I think the contractors wish to be relieved of the second vessel, because they are getting short of money. There is no doubt that the second vessel will tend to hog slightly when she is launched; but if she is properly launched, and properly berthed after launching, I do not think there is much to fear. I think that the faulty launching was a contributory cause to the hogging in the case of the *Braeside*. The second vessel is of practically similar construction; but being the second ship her workmanship is the better. There is no doubt that wooden ships do tend to hog, and in the case of the *Braeside* it was extreme, through adverse circumstances. I think that the workmanship in the first vessel was rougher than that of the second; but I do not think that should worry people, being only what we might naturally expect. I think there is danger of a slight hog developing in the second vessel; but I do not know whether it will be a danger or detrimental to the vessel. It is possible that the contractors want to be relieved of the second vessel in anticipation of it developing a hog; but I think there are other reasons, too. By that I mean financial reasons; they have spent too much on the ships.

28. *To Senator Plain.* — It is partly the fact that the material has cost too much, and that they have spent more than they anticipated. They may have doubts about the other vessel as well—I mean as to its strength.

29. *To Mr. Parker Moloney.*—The vessels were originally designed for semi-Diesel engines, and the omission of these would reduce the price of the vessels by an amount estimated at £13,700 per ship. The whole ship is bent with this hog, and she will have to be docked, and a lot of work done to her in dock. When the work is done she will be simply floated out of the dock. As I have said before, I would prefer to stiffen her with the hog in, for then I think she would be stronger. The object should be to hold her in her position, and not let her move again; she has had a certain amount of movement already, and I would not care to attempt to hold her straight. The best course, in my opinion, would be to stiffen her with the hog in; fill up the heel, and make it level. The way to get rid of the hog is to put her in dock, and let her come down on the blocks, and then put the stiffening in. But I think that if you did that and refloated her, her tendency to fall back would be too much for the stiffening. The best thing is to put her in dock, pack her up with the greater portion of the hog left in, and put in the same stiffening as we might in the other case. My estimate for this work is about £15,000.

30. *To the Chairman.* — The first contract was for six vessels, but four were excised. I think the Government wished to cancel these four contracts. I heard a good deal about the matter. These wooden ships were put in hand as a war measure, and the Government cancelled all the contracts with the exception of that for those two vessels. The contractors were allowed £52,000 compensation; but I do not know on what basis that was arrived at. I do not think we shall ever get the ships unless we relieve the contractors of their contract; at least, we will get them sooner if we take the job on. I would recommend that the Commonwealth relieve the contractors of their contract, from the point of view of getting an early delivery of the ships. I say that apart from consideration of the terms for relief.

31. *To Mr. Parker Moloney.* — The contractors did make some proposals to that end, but I forgot the details; the proposals, however, were not acceptable.

32. *To the Chairman.*—The period has long lapsed for the completion of the ships. Clause 18 of the contract gives the Commonwealth power to take possession of the vessels and complete them at the risk of the contractors, and there is also clause 17. The contractors have not abandoned their contract, and that is the trouble. We have warned the contractors that in view of the late delivery of the ships, clause 18 is in operation, and there are heavy penalties that can be enforced by the Commonwealth unless good reasons are shown. There is a penalty of £500 for each calendar month for each vessel. There was some discussion as to the conditions under which the contractors would be prepared to come to terms, but we could not accept the terms offered. I do not think there is any record of those terms; but they were hopelessly impracticable.

33. *To Mr. Parker Moloney.*—The late Chief Executive Officer put some terms before the contractors; but the latter would not accept them. Briefly, the terms offered by the Commonwealth were that we should take possession of the yards and finish the ships, and that the contractors should be financially responsible at the finish, under the contract. The contractors do not like us spending their money; that, I think was the objection.

34. *To Mr. Mackay.*—One of the ships is launched, and the other is still on the stocks. As to the significance of Lloyd's certificate, a vessel is built in the first place according to their rules and requirements, and under their supervision. The certificate is granted on receipt of a satisfactory report from Lloyd's surveyor. It is taken for granted that every ship built under Lloyd's classification and survey shall have a Lloyd's certificate. Whether in the absence of such a certificate a vessel would be considered as unseaworthy, depends on the reasons for the refusal of the certificate. In the case of the *Braeside* there was the defect that developed during construction. It might lead to some difficulties if the Commonwealth-owned ships could not get Lloyd's certificate. Under the contract the price of the vessels is put down at £26 per ton. We consider that the £15,000 for stiffening the *Braeside* is the contractors' responsibility. They have to put the ship right to enable them to get Lloyd's certificate.

35. *To Senator Plain.* — The engines have been omitted from the ships, and their removal would affect the hogging favorably. I have had no experience in sailing, and loading, and unloading, such vessels. I should imagine it is necessary to take more precautions in loading such vessels than ordinary steam vessels; but I do not really know. I know about the Government considering the advisability of advancing £2,000 to the contractors to carry on the work in the meantime. The matter had already been referred to this Committee before that was asked for, and it is rather a difficult position. In the ordinary course, if the contractors had not the money, and had to stop the work, they would have abandoned the contract, and, under such conditions, I suppose we could take possession and finish the ships.

36. *To Mr. Mathews.*—That, I presume, would be at the risk of the contractors; but I am not quite sure.

37. *To Senator Plain.*—The fact that the Government are finding this money enables the contractors to continue the contract, and makes it more difficult for the Government to acquire the vessels under the terms of the contract. But from that point of view the matter has already been referred to this Committee.

38. *To Senator Foll.*—I do not know whether the contractors were going to abandon the contract if the matter had not been referred to this Committee.

39. *To Mr. Bamford.* — My duty as Chief Executive Officer is to supervise the construction of ships for the Commonwealth Government. The omission of the engines had been decided upon while I was still engineer. I have said that I have had no experience in

the building of wooden ships. As to whether it was peculiar that I, an engineer, should be retained as a supervisor of the construction of wooden ships, I may point out that the wooden ships were only two of about seventeen other vessels under construction. As a result of the hogging the bilges of the ships have come up to approximately the same extent as the keel; it is pretty much a uniform deflection throughout the ship. The *Braeside* lying on a hard bank was a contributory cause of the hogging. I do not think the same will occur in the case of the *Burnside*, although she is still on the stocks. That would imply that it was a warping of the timber that caused the hogging rather than the position of the vessel or some structural weakness in her. I am afraid I cannot say how many pieces there are in the keel. Lloyd's have degrees of classification for wooden ships, as well as for other ships. I do not know the exact classification of the certificate. If the keel is filled I think the caulking and other work will tend to keep the ship tight.

40. *To Mr. Atkinson.*—The removal of the engines would take away the weight of approximately 100 tons, and would, I should say, affect the contractors favorably. I have not heard anything directly from the contractors as to a first-class certificate being impossible, and their consequent inability to comply with the contract. I do not know whether it came from the contractors or not, but I saw a statement in the press the other day on the point. I have seen a letter from the contractors to that effect. I see no reason why the Commonwealth should not get a first-class certificate on making the alterations proposed. I do not see why the contractors should not get one. The contractors, practically speaking, cannot go on with the contract, and will not submit counter proposals that are acceptable to us. They have stated that our proposals are unacceptable to them, and we have requested counter proposals, but can get nothing out of them. I have suggested that the contractors should stiffen the ships, but they say that our proposals are not acceptable to them. They do not give any further reasons, and although we have asked them, we have received no satisfactory counter proposals from the contractors —there is a deadlock. I had an estimate made some time ago of the cost to complete these vessels if the Commonwealth took them over, and in that estimate I covered the contingency of having to stiffen both vessels in the same manner; but I doubt whether that will be necessary in the case of the second ship. There is an estimate of £15,000 for the first ship. There is very little work to do on her. The estimate was, I think, about £30,000 for the second ship, including the stiffening. That was what you might call an outside estimate. It was on the assumption that the contractors had bought all the necessary material up to date, and paid for it, apart from such material as might be required for the stiffening. My estimate practically covers the labour and material for stiffening both vessels; but I should like to refresh my memory as to the figures. I have never talked the matter over with the contractors as to what amount they should receive for abandoning the contract; I have never discussed with the contractors the cancellation of the contract, as regards the settlement of terms or matters of that sort. If the Commonwealth is not to lose money under the contract the question of payment should be rather that of payment to the Commonwealth than to the contractors. I do not quite follow your question as to an estimate of the amount that should go to the contractors. It is difficult for me to express an opinion. I have made no estimate.

41. *To Senator Foll.*—I have expressed the opinion that after certain work has been done the Commonwealth Government will be able to secure a first-class certificate from Lloyd's for the *Braeside*. We have nothing in writing, or verbally from Lloyd's, in the way of an assurance that a certificate will be granted. The original proposals were made in July of this year by Mr. Curchin, after discussion with Lloyd's chief surveyor. These proposals were with a view to enabling the contractors to obtain the certificate. I have no reason to doubt that Lloyd's will give a certificate. No alteration has been made in the plans and specifications during Mr. Curchin's time, or my time, that are likely to cause the contractors to desire to cancel the contract. Material alterations have been suggested by the Chief Executive Officer, and the principal ones are those now in dispute. I do not think that any alterations made by the Chief Executive Officers have hampered the contractors in their work; I do not know of any. I do not know of all the instructions issued by the Chief Executive Officer to the contractors since the work was started; but I could get that information. Some alterations might be verbally arranged on the spot. But the Chief Executive Officer has not to any serious or considerable extent hampered the contractors by giving instructions for alterations. There have been alterations for which the contractors asked a price that we considered too high. These are the matters now in dispute. The contractors have not been hampered in such a way as to delay the completion of the contract. I have said that I think it probable that the second vessel when launched will also hog to a certain extent. If I were building a ship I would take some precautions to prevent that hogging before it was taken off the slips. I would put in stiffening that would not involve large expense. There are certain things in regard to which, before putting them in hand, I would like to settle matters with Lloyd's. In some ways there have been deviations from the specifications and plans; but these deviations are not to a great extent responsible for the hogging, though they might have a slight tendency that way. Lloyd's surveyor is aware of these deviations, which are a slight contributory cause of the hogging. Certain edge fastenings in the inner ceiling of the ship have been omitted; the contractors found it impossible to fit them on account of the general method of construction adopted by them, which they considered necessary. The deviations are partly responsible, as a slight contributory cause of the hogging in the vessel. So far as I know, our inspectors were aware of the deviations made with the approval of the Chief Executive Officer. The inner ceiling of the ship is of thick planking, and, according to the plan, it had to be edged fastened right through. When the contractors came to the upper planks immediately under the deck, the clamps above these had already been put in position, and it was impossible to drive the vertical fastenings in place. I do not know whether Lloyd's surveyor was aware of that at the time; but he knows now. It is generally considered that when a vessel gets a first-class certificate from Lloyd's it is a first-class ship. The certificate is a certificate of character. If a vessel is unable to obtain such a certificate the general opinion among shipping men is that it is not as seaworthy as one that has a certificate. You are assuming that it is a fact that these vessels cannot obtain a first-class certificate; but it is a fact that without such a certificate a vessel is not considered to be a first-class one. If these vessels are not able to get the certificate it would certainly be detrimental. I do not know whether that would make any difference in the matter of insurance, but it would have that tendency. It is possible that there might be trouble about crews; I should think that would be probable. My view is that we should do everything to get the certificate. The hogging of the vessel would not affect the putting of the engines in if that course were found more convenient. According to the contract, if it be abandoned the Commonwealth can take it up and complete the work at the contractors' risk. I understand that the contractors have no money to pay their men. If the Government had not advanced £2,000 the contractors would have had to pay off their men, and that I take it, would be

the same thing as abandoning the contract. I suppose that this advance of £2,000 has the effect of enabling the contractors not to abandon their contract. If they paid off their men I should say that the contract had been abandoned. I understand that they would have to pay off their men this week if this £2,000 had not been advanced, and that would have meant abandoning the contract. The advance of £2,000 is practically saving the contractors from abandoning their contract pending the inquiry by this Committee. Under the circumstances the Department cannot step in now; but the matter had been referred to this Committee before there was any question of an advance being made. It is one way of looking at the matter to say that this advance of £2,000 has prevented the Department from stepping in and taking the ships. I do not look at it in that light, however, but rather regard it as enabling the contractors to carry on in the meantime. If the Commonwealth have to step in we want to take over a going concern, and not a yard that has been idle for a week or a fortnight with the men all dispersed. I suppose that the advance of this money has had the effect in the meantime of preventing our stepping in, irrespective of any reference to this Committee. I presume, however, that the Government could withdraw the advance at any time.

42. *To Mr. Mathews.* — I think that the uneven bottom and the launching are the principal causes of the hogging. There is no question but that the vessel was strained in launching. There was nothing in the alterations made that could affect the hogging one way or the other. The same applies, so far as I am aware, to any alterations made by Burns, Philp and Company. The decks went up and everything with them. The thing came to notice when we had to assess the light weight of the vessel after launching. We received certain measurements from the contractors which we could not reconcile. We got our inspectors to take sights along the ship. At the end of May we got the report from our inspectors showing that as a result of taking the sights there had been found a deflection of 17 inches then. When we got the report the Chief Executive Officer drew the attention of the contractors to it, and suggested docking to verify what deflection there was. We did not get the vessel docked until well into July, and then the actual deflection was measured. Apparently the deflection was not noticeable to the eye without measurements. A matter of 17 inches in the length of the ship would not be very noticeable. If you look at the vessel now she looks a little bit straight, even with the 23 inches of hog. The filling in of the keel would not affect the speed of the vessel. The hogging would have the effect of increasing the dead-weight capacity, and that would be taken into account in payments under the contract. I have never known steel ships to hog even in the launching. I know the *Indarra*, by name and reputation, but I have not heard of any structural defect in her. I have never heard of a case, as I say, of hogging in a steel ship, but I have heard of steam-ships having to be stiffened up owing to the excessive vibration of the machinery, and so forth. Various proposals were made in connexion with the surrender of the contract, but they never came to anything. There was a definite proposal made by Mr. Curchin to finish the contract at the contractors' risk, and the contractors suggested arbitration to settle the matter. We pointed out that an arbitrator was incompetent to assess the cause of the hogging. The ribs of the ship are a number of planks bolted together. I would not like to say that that contributed to the hogging. It is a novel form of construction to me, but I believe it has been employed elsewhere.

43. *To Mr. Bamford.* — I had a consultation with Lloyd's surveyor in connexion with the strengthening of the *Braeside*. No fees were paid to Lloyd's surveyor in connexion with that consultation; Lloyd's have a scale of fees for supervising the construction of a ship, and for those fees they have to give such advice as is necessary. My opinion is that it would be better to make the alterations to the *Burnside* now when she is on the stocks, in order to minimize any hogging that might occur later on; but I would not put in anything like the same amount of stiffening as is proposed for the *Braeside*. I would put in a little simply as a precautionary measure. I would not like to say whether that is necessary or not.

44. *To Mr. Mackay.*—I have heard some talk to the effect that the contractors might abandon the contract under terms to be determined by this Committee. The question of making a payment to the contractors to enable them to carry on arose after the matter had been referred to this Committee.

45. *To the Chairman.*—We could put in operation clause 17 of the contract; but the contractors have not abandoned their contract up till now. There has been very little work done on the *Braeside* for some time; but work has been going on slowly but steadily on the *Burnside*. Unfortunately, the contract is for two ships to be delivered at different periods, and the penalty clauses can only be used on the completion of the contract. We have notified the contractors that the penalty clause is in operation. I would not be justified in saying that the contract has been abandoned, because work is proceeding on the second ship.

The witness withdrew.

Herbert Charles Brown, Chief Clerk and Accountant, Prime Minister's Department, recalled and further examined.

46. *To the Chairman.* — I produce the following letter written by the contractors to the Department, under date 13th October, 1920:—

[Exhibit 7.]

Kidman and Mayoh.

25 O'Connell-street,
Sydney, 13th October, 1920.

The Secretary,
Prime Minister's Department,
Melbourne.

WOODEN VESSELS.

DEAR SIR,

With reference to our contract with the Government for the building of wooden sailing vessels, as you are aware, a number of difficulties have arisen during the past few months which have placed us in a very difficult position.

Without wishing to take up too much of your time, or going into too much detail, we think it advisable that we should outline the matter from its inception.

At the time the contract was entered into, vessels of any description were absolutely necessary, and as a war measure the Commonwealth Government enterd into contracts for building steel steamers and wooden sailing vessels in Australia. Four contracts were entered into for the building of wooden vessels, three of which were cancelled in the early stages, leaving only our contract in force.

We have made a very genuine and whole-hearted effort to complete the work intrusted to us; but, unfortunately, we have met with unforeseen difficulties, which have resulted in delays and large increased costs. From the beginning, considerable difficulty was experienced in obtaining the large timbers requisite for the building of these vessels. The forests throughout New South Wales were scoured, and even then sufficient could not be obtained to meet requirements. In addition to this, wages in all trades connected with the building of ships have advanced, and also the prices of all material required for ships have similarly increased.

The result of this is that, up to the present, we have expended more on the vessels under construction than we estimated they should have cost when completed, and they will require a considerable sum of money to be expended on them before they can be completed ready for sea.

In anticipation of the completion of the vessels, the Commonwealth Government some time ago decided to sell them to Messrs. Burns, Philp and Company. This rather complicated matters, in view of the fact that Burns, Philp and Company required certain alterations and additional work carried out

on the vessels to suit their requirements, and the Chief Executive Officer, Commonwealth Ship Construction Branch, authorized us to carry out this extra work on behalf of Burns, Philp and Company, which amounted to £13,339.

In addition to the foregoing, the Commonwealth Government decided, before selling the vessels to Burns, Philp, and Company to dispense with the Diesel engines which were originally specified to be provided in the vessels. This resulted in further complications, as no settlement could be arrived at between the Government and ourselves as to the amount which should be deducted from the contract price on account of the omission of these engines.

Another difficulty which has arisen is that, since the launching of the first vessel, a hog has developed, which in all probability, would prevent us from obtaining Lloyd's certificate, and we, therefore, are forced into the position that we cannot comply with the requirements of the contract with the Government.

We had no previous experience in building or designing ships, but the best available assistance was engaged, and plans were prepared by us and approved by Lloyd's, London, and your Mr. Curchin, and to these plans we have built vessels. Lloyd's committee of experts, and your own expert, having passed the plans, we always thought the vessels would be suitable for a Lloyd's certificate of registration.

We have made a list from Lloyd's Registry of Shipping and we find that there are not 10 per cent. of sailing vessels which have Lloyd's certificate, and the 90 per cent. are carrying cargoes safely to-day, and are insured in companies other than Lloyd's.

When Lloyd's approved of the plans, they wrote, and said they would give a registration if we built the ships to the plans submitted.

In view of all the circumstances, it is desired that the Government would consider some means of relieving us of our contract, and considering the question of allowing us some compensation for the work and time which has been expended in a genuine and conscientious effort to meet the country's needs in a time of great distress.

If the Commonwealth Government took over the work, it might reasonably be assumed that they could complete the vessels to their own satisfaction, and obviate the necessity for protracted delays which must occur to secure a settlement of the many points at present in dispute. Some of these would mean submission to arbitration, and possibly litigation.

Further than this, the fact of the Government having sold the vessels to Burns, Philp and Company has brought about a complication for which we are in no way responsible; but are, as a result, greatly inconvenienced and put to a heavy expense.

Finally, it is suggested for consideration that if the Government can see its way clear to relieve us of our contract, we would urge that the matter be referred to the Parliamentary Public Works Committee, with a view to their making a report on the whole position, and considering the question of the amount of compensation which might be allowed us.

If the Government can see its way clear to meet our request, we hereby undertake to abide by the decision of the Public Works Committee, whatever it may be.

Yours faithfully,

(Sgd.) KIDMAN & MAYOH.

(Taken at Sydney.)

MONDAY, 8TH NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mackay,
Mr. Atkinson,	Mr. Mathews.

(Mr. H. C. Brown, representing the Prime Minister's Department; Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh.)

Herbert Charles Brown, Chief Clerk and Accountant, Prime Minister's Department, recalled and further examined.

47. *To the Chairman.*—I was Accountant in the Prime Minister's Department throughout the whole of the negotiations in connexion with this contract. Paragraph 4 of the original contract provided that at any time after approval has been given to any plans and specifications, the Commonwealth may alter, modify, or revise them, and that the contractors shall construct the vessels in accordance with the plans and specifications so altered, modified, or revised. Under paragraph 1 of the contract, the contractors take all responsibility for the stability of the vessel. I am unable to say whether the contractors offered any objection to the alterations demanded by the Chief Executive Officer. I am not aware of any correspondence containing a complaint regarding these alterations, but a considerable amount of the correspondence went direct to the Chief Executive Officer, and did not pass through my Department. I think that the Chief Executive Officer probably consulted Lloyd's in regard to the alterations that were made. The original contract of the 6th July, 1918, was amended by the agreement of 4th August, 1919, by which the number of vessels to be constructed was reduced from six to two. Under the terms of the original agreement, the first vessel should have been handed over to the Commonwealth within a month of the signing of the second agreement; but I think it was generally understood that an extension of time was necessary in view of the alterations. Without looking through the correspondence I cannot say definitely whether the contractors made a written request for an extension of time; but I do know that they made a verbal request. Certain penalties were prescribed in clause 18 of the contract, and on the 7th October, 1919, the Chief Executive Officer, Mr. Curchin, wrote as follows to the contractors:—

"Under the terms of your contract one of the vessels you have under construction should have been delivered on the 6th instant. I beg to give you notice that I propose to put in operation the provisions of clause 18 of the contract as from that date."—[*Exhibit* 8.]

On the 13th January, 1920, Mr. Curchin wrote again to Kidman and Mayoh—

With reference to the question of a penalty for late delivery of the vessels you are constructing for this Department, I understand that you make claim for an extension of time in view of the delay in delivery of material, &c., over which you have no control. In order to arrive at what may be considered a reasonable extension, I shall be pleased to have the particulars on which you base your claim.—[*Exhibit* 9.]

I think Mr. Watson will probably produce the letter containing the details of that claim. In February of this year an arrangement was made to sell the two vessels to Burns, Philp and Company. The negotiations were opened verbally, but I cannot say by whom they were initiated. The sale to Burns, Philp and Company was approved by Cabinet on the 13th January, 1920, on condition that the transaction did not involve a loss to the Commonwealth of more than £5 per ton. The minimum price stipulated by Cabinet was £40,000 per vessel, but the later negotiations resulted in a sale at £45,000 each. The offer was accepted by Burns, Philp and Company in their letter to the Prime Minister's Department, dated 22nd January, 1920.—[*Exhibit No.* 1.] Burns, Philp and Company when negotiating informed the departmental officers verbally that they would require some variations in the rig of the vessel, and some minor structural modifications. I am not aware of any written advice to the contractors that the ships were being bought by Burns, Philp and Company, who would have the right to make any alteration; but I know that the contractors were advised verbally. The Secretary to the Prime Minister wrote to the Chief Executive Officer that if Burns, Philp and Company desired any alterations to be made to the ships that would be done provided that the alterations involved no extra expense to the Commonwealth, and did not interfere with getting Lloyd's certificate. So far as I know there was only a verbal agreement that the contractors should recognise Burns, Philp and Company as the prospective owners. I do not recollect any letter from our Department on the subject, except the one

to the Chief Executive Officer, but on the 24th February Mr. Curchin wrote as follows to Messrs. Kidman and Mayoh:—

[Exhibit 10.]

24th February, 1920.

Messrs. Kidman & Mayoh,
25 O'Connell-street, Sydney.

DEAR SIRS,

For your confidential information the two vessels you have under construction have been disposed of to private owners, and they consider that, in view of the decision to dispense with the propelling machinery, the said area be increased by lengthening the galls and by altering the rig from schooner to barquentine.

To improve the sailing qualities of the vessel an increased depth of keel by adding 6 inches of hardwood between the present keel and the turpentine shoe is also considered desirable.

It is suggested that the donkey boiler be stowed on deck instead of in the 'tween decks. In view of your contention that this would result in a substantial saving in cost, I shall be pleased to know that this can be set off against the cost of fitting the extra thickness of keel and altering the rig.

I shall be pleased to have your views at the earliest possible moment.

Yours faithfully,
(Sgd.) H. W. CURCHIN.

On 25th February Messrs. Kidman and Mayoh replied to Mr. Curchin—

[Exhibit 11.]

Kidman & Mayoh, Shipbuilders,
25 O'Connell-street, Sydney.
25th February, 1920.

H. W. Curchin, Esq.,
Commonwealth Ship Construction, Melbourne.

DEAR SIR,

We are in receipt of your letter of 24th inst. advising us confidentially that the two vessels are disposed of to private owners.

With regard to your suggestion that we should make an estimate for alterations required by the new owners, this we cannot do at the present time. There is considerable difficulty in arriving at what the cost to us would be, and we would prefer that no alterations be made.

The sails for one ship and all the gaffs and ironwork for the masts are completed, and to prepare an estimate for carrying out the alterations is a very big and long undertaking, especially as we do not know what they will require. It would be necessary for somebody to supply us with the information we should require before an estimate could be prepared. We could give an estimate for the cost of putting a 6-in. piece of hardwood between the present keel and the turpentine shoe, and we will go into this as soon as possible.

With reference to the donkey boiler, if the owners wish this fixed on the main deck as provided in the specification instead of on the 'tween deck, no saving will be entailed. Had you or the new owners insisted on putting the donkey boiler on the 'tween deck then the extra cost would have been up against the Government. If this is not carried out no saving will accrue to us, as in this case no deviation will be made from the specification.

Yours faithfully,
(Sgd.) KIDMAN & MAYOH.

I think the contractors were informed verbally of the conditions of the sale including the condition that the Commonwealth undertook to supervise the construction, and to see that the ships were delivered strictly in conformity with the plans and specifications, and the variations approved by the Chief Executive Officer and Lloyd's. I do not know that the contractors were advised in writing to that effect. The Department never considered that the contract had been abandoned by Messrs. Kidman and Mayoh in the terms of paragraph 17 of the original agreement which gives the Government power to take over the vessels in the event of abandonment. I will not say that there have been any undue delays on the part of the contractors in constructing the vessels. I am not competent to say whether any delay was caused by the demands of the Department. In a letter dated the 13th October—[*Exhibit* 7]—Messrs. Kidman and Mayoh asked to be relieved of the contract, and at their request the Government referred the whole matter to this Committee.

48. *To Mr. Mackay.*—I appeared before the Public Accounts Committee, and gave evidence in regard to shipbuilding generally. This contract was mentioned as part of my general evidence. I refer the Committee to this letter from the contractors dated the 25th of August, 1920—

[Exhibit 12.]

Kidman & Mayoh, Shipbuilders,
25 O'Connell-street, Sydney,
25th August, 1920.

The Secretary,
Prime Minister's Department, Melbourne.

DEAR SIR,

Ref. 20/1507. *Matters in Dispute.*

In reply to your favour of the 31st ult. we attach to this letter a list of all the matters in dispute which we consider should be submitted to arbitration for decision. We agree with you that the matters should be pushed forward as quickly as possible, and we will thank you to give prompt attention to same.

Yours faithfully,
(Sgd.) KIDMAN & MAYOH.

[Enclosure.]

Questions to be submitted to Arbitration.

1. To decide the amount of deduction from contract on account of machinery being eliminated from two ships.
2. To determine the cause of the hogging of *Bracside*. To decide what is to be done to remedy it. To decide, under all the circumstances, who is to pay for the work necessary to remedy it in regard to both ships.
3. To decide the amount to be paid by the Government in regard to Kidman & Mayoh's claim for galvanizing bolts for two ships.
4. To decide the amount to be paid by the Commonwealth Government to Kidman & Mayoh in respect of special blocks ordered by their expert at a cost greater than those specified.
5. To decide the deadweight capacity of each vessel, as per clause 12 of the agreement.
6. To decide whether the Government or the shipbuilders shall pay for new anchors and additional lengths of cables required by Lloyd's rules, consequent upon the ships being altered from auxiliary schooners to sailing vessels.
7. To decide the amount to be paid by the Government in regard to Kidman & Mayoh's claim for interest on moneys held back during the currency of the contract.
8. To decide what extension of time (if any) shall be allowed the contractors for completion of the ships.

(Sgd.) KIDMAN & MAYOH.

We are not yet in a position to say how much the two vessels will cost the Commonwealth. The original contract price was £135,200. When it was decided to cut out the auxiliary power the Department claimed a reduction of £27,400, whilst the contractors said that a fair reduction would be £19,000. The amount of that deduction is still in dispute. Up to date the Commonwealth has paid the contractors £104,193 on account of work done in accordance with the contract, plus an amount of £8,127 under clause 25. The Government agreed to sell the two vessels to Burns, Philp and Company for £90,000. I am not aware whether the negotiations with Burns, Philip and Company have terminated; but I believe that the Prime Minister stated in Parliament that he had given the firm twenty-four hours in which to decide whether or not they would complete the purchase, and as they had not replied the sale was off. So far as I know, the Department has no claim against Burns, Philp and Company, nor has that firm any against the Government.

49. *To Mr. Bamford.*—So far as I am aware no conditions were laid down by the Department in regard to the alterations that were made for Burns, Philp and Company, but the letter of the Chief Executive Officer to the contractors indicates that he was dealing with the matter.

50. *To Mr. Atkinson.*—The following letter from Messrs. Kidman and Mayoh, dated 1st September, 1920, sets out the firm's claim against the Department:—

[Exhibit 13.]

Messrs. Kidman & Mayoh, Shipbuilders,
25 O'Connell-street, Sydney,
1st September, 1920.

The Secretary,
Prime Minister's Department, Melbourne.

DEAR SIR,

Wooden Vessels.

We hereby apply for a payment on account of work done to the second ship, in accordance with terms of the contract.

Payments have been stopped by you on account of a report you received from Mr. Curchin that the first ship was not acceptable owing to the existence of a hog in same, said by him to be possibly caused through damage during launching, or the ship having been aground whilst lying at our berth.

The reasons given should not affect the second ship, as she has not yet been launched. Consequently, the statement made by Mr. Curchin that the first ship would have been all right and acceptable had nothing occurred, would not apply to the second ship, and, therefore, on his showing, no constructional alteration need be made in the second ship to prevent hogging.

The statement put forward that we had been almost paid up is not correct, as surely you will acknowledge that we are entitled to make our main item on a tonnage basis.

Mr. Curchin bases his statement on the following figures, and shows that we have been paid up—

	£	£
Two ships, each 2,600 tons—5,200 tons, at £26 ...		135,200
Deduct for machinery and engines ...	£27,400	
Deduct for sheathing	1,000	
		28,400
		106,800
Paid cash on account		104,200
Balance to complete		2,600

Our figures are as follows:—

Two ships, each 3,100 tons—6,200 tons, at £26 ...		161,200
Cost of galvanizing bolts for two ships, say ...		3,000
		164,200
Deductions.		
Cash paid on account	£104,200	
Retention	5,000	
Machinery not installed	19,050	
Sheathing not installed	1,000	
		129,250
Balance to complete		34,950

As security for satisfactory completion of the contract you have the abovementioned retention and the Government bonds deposited with you, making £10,000 in all. In addition, you have the good name of the firm.

As you are aware, the ships have been built to plans approved by Lloyd's, and your Mr. Curchin, and we attach no serious importance to the fact that the first ship is hogged about 20 inches.

We had an interview with you last week, and left with you photographs of a schooner called the *Levi W. Ostrander*, which was built in 1917 by the Seaborn Shipyards Company, of Tacoma, Wash. She is a vessel 6 feet shorter than ours, and 4½ inches less in beam. She has a tonnage of 1639, whereas ours is 1,720. To all intents and purposes she is a sister ship to ours.

This ship hogged immediately after launching, exactly as ours did, and her hog is 20 inches, which is the same as ours.

The *Ostrander* is built with a heavy centre girder attached to the keel, and is continued from one end to the other. She has very heavy timbers in her construction, and it goes to prove that there is no method of overcoming the great strains due to centre buoyancy at the middle of the ship, and very little buoyancy at each end.

This ship was, on completion, classed A1 at Lloyd's for twenty years, under special survey. She is loading coal at Newcastle, and will leave that port in about ten days. Under the circumstances, we fail to see why the *Braeside* is not acceptable to the Government and Lloyd's, and we cannot understand why ships built in Australia should be put on different terms to ships built on the Pacific Coast of America.

We have consulted Capt. Ambrose Steeves, who was employed by the American Emergency Fleet Construction as supervisor during the building of a number of wooden ships, and he states all wooden ships hog more or less. Both he and the captain of the *Levi W. Ostrander* will testify that their ships developed a hog immediately after launching, and that they did not attempt to take the hog out, as it was inadvisable to do so.

Under all the circumstances, and which are known to Lloyd's agent, we cannot see why a certificate should be denied us.

We are asking Mr. Heron to cable Lloyd's, London, for instructions, and will advise you result in due course.

Meanwhile, we hereby make formal application to you to pay us a further sum on account of the contract, which was for two ships at £26 per ton, whatever may be their dead weight.

Your kind attention will oblige,

Yours faithfully,

(Sgd.) KIDMAN & MAYOH.

On the 13th September the Secretary to the Prime Minister's Department replied as follows:—

[Exhibit 14.]

Prime Minister,
Melbourne, 13th September, 1920.

20/1685/4.

DEAR SIRS,

With reference to your letters of the 1st and 3rd September asking that a further progress payment be made in connexion with your contract for the construction of wooden vessels, I desire to inform you that the Acting Chief Executive Officer reports that the balance available for payment to complete the vessels under contract is only £3,007, and in view of this he is not prepared to recommend that any further progress payment be made until such time as the vessels are completed in accordance with the contract agreement.

It is noted from figures furnished in your letter of the 1st September that you quote two ships each of 3,100 tons dead weight capacity, and are claiming on that basis. In this connexion, your attention is invited to the contract, which provides for vessels of 2,600 tons dead weight capacity, with the proviso that payment will be made for tonnage in excess of that stipulated on completion.

The Chief Executive Officer points out that the actual dead weight capacity of the vessels can only be ascertained accurately on completion, and until the actual figure is ascertained the contract figure of 2,600 tons per vessel must be accepted.

When you were last in Melbourne this matter was fully discussed with you, and you were definitely advised of the position, and it was then clearly understood that no further progress payments were to be made, and you agreed to this arrangement.

There does not appear to be any reason for now departing from the course then agreed upon.

Yours faithfully,

(Sgd.) M. L. SHEPHERD,
Secretary.

Messrs. Kidman & Mayoh,
25 O'Connell-street, Sydney, N.S.W.

I should like to make an explanation in regard to the £2,000 advanced to the contractors. Some members of the Committee appear to be of the opinion that if the Department had not made that payment the contractors would have abandoned the contract, and then the Department could have stepped in and taken over the vessels under paragraph 17 of the original agreement. I do not think the Committee should have any delusions on that score. It would be difficult to prove that the contractors had abandoned the contract, even if they kept only three or four men employed. Our reason for making the advance to them was merely to insure that the staff of men would be kept on the job, so that no delay would take place in completing the vessels either by the contractors or by the Department. The payment was in no sense a progress payment, but was merely an advance to enable contractors to keep the workmen employed pending the result of inquiry by the Public Works Committee. The contractors could disburse that money only upon a certificate of two Government officers.

51. *To Mr. Mackay.*—I am unable to say that the Department would not have paid the £2,000 to the contractors if this matter had not been referred to the Committee for decision; it is hard to say what would have happened in other circumstances.

52. *To Mr. Atkinson.*—The Government could not have taken over the vessels on the ground of abandonment so long as the contractors retained some men on the job. Clause 17 of the contract would be very difficult to interpret. The contractors had asked to be relieved of the contract, and the matter was referred to this Committee. We could not assume that the contractors wanted this advance of £2,000 for any other purpose than to pay wages while the investigation by the Committee was in progress. Because we wanted to avoid delay in re-assembling the staff we made the advance, but we told the contractors we could not make any further payment.

53. *To Senator Foll.*—My own opinion is that the contractors thought that, once this question had been

referred to the Committee, the future was so uncertain that they did not want to spend any further moneys of their own; they did not know what the Committee's recommendation would be or whether they would be able to recover any money they expended while the investigation was in progress. Whilst I express the view that the contractors could still keep two or three men on the job for years without being held to have abandoned the contract under clause 17 of the original agreement, I admit that in that way they might lose more money in penalties for delay than by actual abandonment. I did not regard their statement that they would pay off all the men as an intimation that they intended to abandon the contract. If the Committee recommended that the contractors be not relieved of the contract, they would be at just as great a disadvantage in re-assembling the dispersed staff as the Department would be if the Committee recommended that the Department complete the job. The contractors had not done any work on the four cancelled vessels in respect of which they were paid £52,000 as compensation; but I believe they had purchased a lot of material for them. Whether or not that material was utilized on the other two vessels or was left useless in the hands of the contractors, I cannot say. I have already submitted to the Committee a letter from the Chief Executive Officer notifying the contractors that the vessels had been sold to Burns, Philp and Company, but that did not relieve the contractors of their obligation to the Commonwealth Government to complete the ships. So far as I know, Burns, Philp and Company were to pay the extra cost entailed by alterations made to their order. But the letter in which the Government accepted the firm's offer to purchase contained a proviso that no extra expense should be borne by the Commonwealth. I am not aware of anything done by the Department, or the Chief Executive Officer, that would account for delay in the completion of the contract.

54. *To Mr. Mathews.*—On the 15th February, 1918, Kay, Macnicol, and Company, consulting engineers of Sydney, advised the Prime Minister's Department by letter that they had prepared plans for a 2,500-ton dead-weight schooner to be built of Australian hardwoods. I think that letter was forwarded to the Ship Construction Branch, but I do not know of any Cabinet decision in regard to it. I remind the Committee that the building of wooden ships was solely a war measure. Owing to the German submarine campaign it was recognised to be a national necessity that everybody who could build ships should do so. I believe that the Imperial Government asked the Commonwealth Government if they could assist in that way. The need for shipping was emphasized in the press, and although I have no documentary evidence on the point, I believe that certain people approached the Government with offers to undertake this class of work. Following the letter from Kay, Macnicol, and Company, I believe that Kidman and Mayoh approached the Government with an offer to build vessels according to those plans and specifications submitted. Prior to his departure from Australia in August, Mr. Curchin had called attention to the hogging of the *Braeside*, and the files contain the following correspondence:—

[Exhibit 15.]

21st July, 1920.

Memorandum to the Secretary,
Prime Minister's Department, Melbourne.

I visited Sydney in order to inspect the *Braeside* in dry dock on 15th inst.

I had ascertained that she had about 23 inches of hog in the keel, and after consultation with Lloyd's surveyor, Kidman & Mayoh, and the representative of Burns, Philp, Ltd., it was decided to dock the vessel with a hog of 3 inches less than the actual. This was done.

Inspection when dry in dock indicated that the vessel had been severely strained. In my opinion, the statical strain this vessel has been subject to since launching would not account for this change in form. As the result of close inquiries, I gathered that the launching was not altogether satisfactory, but this did not, in my opinion, account for all the damage. I therefore arranged for a diver (and Mr. Greenlees, my inspector at Sydney, who volunteered to also investigate the matter) to go down, and the result of their examination clearly indicates that at certain stages of the tide the vessel has been aground only partially supported over the length.

As the vessel is at present she is not acceptable either to Lloyd's or myself, and Messrs. Kidman & Mayoh have been so informed. Steps are being taken to remedy the trouble as far as possible. For your information I enclose copy of letter I have this day addressed to Messrs. Kidman & Mayoh.

(Sgd.) H. W. CURCHIN.

[Exhibit 16.]

21st July, 1920.

Messrs. Kidman & Mayoh,
25 O'Connell-street, Sydney.

DEAR SIRS,

Braeside.

An inspection of the *Braeside* in dock indicates that this vessel has been severely strained. I understand that some straining was possibly caused at the time of launching, and an investigation of the berth where she has been lying since the launching date indicates that at certain stages of the tide she has been aground only partially supported over the length of the vessel.

Lloyd's inspector informs me that in her present condition the vessel is not acceptable to the society, and consequently is not acceptable to myself.

I shall be pleased to know what steps you propose to take in order to make the vessel eligible for the stipulated class at Lloyd's.

Yours faithfully,

(Sgd.) H. W. CURCHIN.

[Exhibit 17.]

Kidman & Mayoh, Shipbuilders,
25 O'Connell-street, Sydney,
23rd July, 1920.

H. W. Curchin, Esq.,
Commonwealth Ship Construction, Melbourne.

DEAR SIR,

Braeside.

Referring to your letter of 21st inst.—

From the launching diagrams, observations, and photographs taken at the time of launching, we do not agree that the ship was strained during launching. We ourselves have not been able to see any indication of the vessel having been severely strained.

With reference to your suggestion that the vessel has been aground at certain stages of the tide: We are investigating this, and if it turns out that the ship has been somewhat aground we do not think this is a serious matter.

We think the hogging is due to the flexibility in the entire ship, and the vessel requires to be stiffened in some way.

Since you left Sydney, and acting upon your advice, we floated the vessel in the dry dock, and afterwards took out the packings and allowed her to come down on a level keel. We fixed on either side of the ship pillars between the bilge and the underside of the 'tween deck beams. We put a pillar under every other beam, and when this operation was completed the ship was taken out of the dock, and the result has been that the hog is now about 15 inches, thus showing that it is necessary to make some structural alterations in the ship, and if you could suggest any method of overcoming the difficulty we shall be glad to give it serious consideration.

You are aware that we have built this vessel according to plans and specifications approved by Lloyd's and yourself, and neither you, Mr. Heron, nor ourselves expected so much hog as has been found in the ship.

You know more about these matters than we do, and we shall esteem it a favour if you will advise us what you think would overcome the difficulty.

We may say the ship is now lying alongside the titan crane at Cockatoo Dock, and she is perfectly dry, thus showing that no straining has taken place, although the ship has been put down on an even keel.

Yours faithfully,

(Sgd.) KIDMAN & MAYOH.

The file does not contain any letter from Lloyd's representative on the subject of the hogging; but I think his views were stated to Mr. Curchin personally. In

reply to the letter from Kidman and Mayoh of the 23rd July, Mr. Curchin wrote—

[Exhibit 18.]

30th July, 1920.

Messrs. Kidman & Mayoh,
25 O'Connell-street, Sydney.

DEAR SIRS,

Braeside.

I am in receipt of your favour of 23rd July, contents of which are duly noted.

I note that you do not consider that the vessel was strained during launching, and neither do you seem to attach very much importance to the fact that the vessel has been aground.

I take exception to your statement that you were acting upon my advice when you let the vessel down to an even keel on the blocks in dry dock. I beg to remind you I gave you the benefit of my opinion, but it was impressed upon you it was not in the form of advice.

You will realize that owing to the straining that this vessel has undoubtedly been subject to, due, in my opinion, to grounding, and probably launching, it will be necessary to fit additional longitudinal material in order to counteract the effect of the severe hogging.

I have discussed this matter with Mr. Heron, and I wish to place the following suggestions before you without prejudice and purely for your guidance and consideration.

As you are no doubt aware, it is practically impossible to definitely state to what extent material should be added in order to achieve the object aimed at. The following may help you somewhat:—

The vessel to go back on to straight blocks.
All fastenings overhauled, examined, refastened, and additional fastenings introduced wherever considered necessary.
Where the bilges are deformed, to be opened out for examination and made good.
The caulking throughout to be overhauled and hardened up where necessary.
Plate girder under upper deck, all fore and aft, alongside the hatchways, consisting of a vertical plate 30 inches deep and a horizontal plate 24 inches, with angles 4 x 4 x ½ inches, and bracket plates spaced about 4 feet apart. All to be efficiently fastened to deck beams and pillars.
Additional quarter pillars in a line with this girder as may be required.
The beam knees that have shown signs of leaving the frames or beams to be packed, fastenings hardened up, and extra fastenings where necessary.
The ceiling on the sole beams to be efficiently fastened.
Additional keelsons to be fitted and efficiently fastened, one at each side of the sister keelson, and one at the inside of the side keelsons.
Additional bilge keelsons at each side.
Tie rods at second deck spaced similarly to those on the upper deck.

With regard to the last paragraph of your letter, it must be obvious to you that if a vessel has changed form to the extent of 22 inches, some strain must have taken place.

As before stated, these proposals are submitted to you for your guidance and consideration; but if you have any alternative suggestions to make I shall be pleased to give same due consideration if you will kindly forward sketch.

Yours faithfully,

(Sgd.) H. W. CURCHIN.

The suggestions contained in Mr. Curchin's letter were not followed by the contractors, and I am not aware of anything having been done on the *Burnside* to strengthen it in accordance with Mr. Curchin's suggestions.

55. *To Senator Newland.*—I have not seen any correspondence in which the contractors objected to structural alterations in the ships demanded by Mr. Curchin. Any correspondence of that character would probably be in the office of the Ship Construction Branch. The due date of delivery for the first vessel was the 6th September, 1919. Burns, Philp and Company arranged to buy in February, 1920. There is no record of any certificate of seaworthiness having been asked for by Burns, Philp and Company at the time of the purchase. But the offer of the company was to take over the ships subject to their having a first-class certificate. The original contract provided that the first ship should be delivered not later than twelve months from the date of signing the plans and specifications, which should not be more than two months from the date of the agreement, namely, 6th July, 1918. There was a proviso that the contractors should not be liable to the Commonwealth for any delay or interruption of the contract through causes over which the contractors had no control. No deposit was paid by Burns, Philp and Company on account of the purchase. So far as I know, Kidman and Mayoh were not consulted in regard to the sale to Burns, Philp and Company. Of course, it did not matter to the contractors as to who got the ship; they still had to complete according to the contract. I regard the letter of Burns, Philp and Company to the Department as constituting a contract which would be binding upon them in any Court. All the evidence tends to show that the *Braeside* was in a satisfactory condition on the date when Burns, Philp and Company agreed to purchase.

56. *To Mr. Mackay.*—The alterations asked for by Burns, Philp and Company involved considerable expense, and were made by the contractors. I understand that Burns, Philp and Company are responsible to the contractors for the cost of all such alterations.

57. *To Mr. Boyd (through the Chairman).*—I am not aware of any arrangement for an extension of the time of the contract to correspond to the delay which occurred in the acceptance of the plans and specifications by the Chief Executive Officer.

58. *To the Chairman.*—There is only one contract in existence; the second agreement of the 4th August, 1919, is merely an addendum to that of the 6th July, 1918, and clause 6 of it reads, "Save as provided by this agreement, the principal agreement shall continue in full force and effect, and be binding on both parties thereto."

59. *To Mr. Boyd (through the Chairman).*—Under the agreement the Chief Executive Officer would have power to fix the date of its commencement which, according to my reading, must be not more than two months from the signing of the contract.

60. *To Mr. Mathews.*—I think the reference to an interval of two months between the signing of the agreement and the commencement of the contract had regard to the engines more than anything else. There is a clause in the agreement providing that any unforeseen delay shall not be counted against the contractors. The Government are quite prepared to admit that there have been considerable delays which were quite unavoidable on the part of the contractor, and they are ready to make reasonable allowance for such delay. That allowance would be more than two months.

61. *To Senator Newland.*—No amount has been withheld from the payments due to the contractors on account of penalties.

Kenneth Watson, Acting Chief Executive Officer Commonwealth Ship Construction Branch, recalled and further examined.

62. *To the Chairman.*—I submit a copy of the plans prepared by Kay, Macnicol and Company, upon which the original offer of Kidman and Mayoh was based. [*Exhibit No.* 19.]—I shall produce later the original plans and specifications which formed the basis of the agreement ultimately entered into. The final plans and specifications represented a number of alterations upon those submitted by Kay, Macnicol and Company but after Lloyd's approval of the plans and specifications prepared by the Ship Construction Branch, no structural alterations of importance were made. The plans and specifications were submitted to Lloyd's, and approved after the contract to Kidman and Mayoh was let. I am not aware of any structural alterations that would account for the hogging. I know of no alterations demanded by the Department which would cause delay in construction. The Department suggested certain modifications to stiffen the *Braeside*, but nothing of that kind has been done since July. I think we have gone a long way to meet the contractors, particularly in the matter of equipment.

Prior to Mr. Curchin's departure, I was not consulted in regard to the construction of the hull, although I was directly in charge of the arrangements for the installation of auxiliary power. After the contract had been entered into, I received instructions that the Bolinder engines should be omitted; I cannot say why. I am not aware of any lesson taught by experience of auxiliary power vessels which would suggest the omission of the engines. The wisdom of installing auxiliary power depends entirely on the trade for which the vessel is intended. I understand these two vessels are to be utilized for the copra trade, and which will involve long voyages. For this reason, in my own opinion, engines would not be necessary. But for a trade involving short runs it would be better to have engines mainly as a convenience in getting in and out of port. Prior to the launching of the *Braeside*, no suggestions were made for strengthening the hull. Our officers had been continually on the job and submitting reports. Mr. Curchin and one of the inspectors were present at the launching. No reports were submitted at the time in regard to any defect in the launching; but on the 19th July, Mr. Greenlees submitted the following report to Mr. Curchin:—

[Exhibit 20.]

19th July, 1920.

H. W. Curchin, Esq.,
Chief Executive Officer,
Commonwealth Ship Construction,
31 King-street, Melbourne.

DEAR SIR,

Braeside.

On Friday, 16th instant, accompanied by Diver Cook, of Cockatoo, who is considered by the management to be an experienced diver, I went down in a diver's outfit and examined the bed of the river in way of the berth the *Braeside* occupied during the greater portion of the period after the vessel was launched. Before going down I had a line (of about 240 feet in length, with knots at intervals of about 40 feet, with a grappling iron attached to one end and a weight to the other) dropped in the river in a position representing the centre line of the vessel as she lay at the berth, with the grappling placed at a point corresponding to the forward perpendicular, the position of which was verified by Mr. Barber and Mr. Barr, of Kidman and Mayoh, and Mr. Brown, the Department's inspector. When the diver and myself went down we picked up the position of the grappling iron and travelled along the line, and at each knot probed the bed of the river with a long iron-spike boat hook. In the vicinity of the first knot (40 feet aft of the forward perpendicular), the bed of the river is a mixture of shells and gravel, with a thin layer of mud on top, and to sink to about 3 feet required our united efforts by jumping the boat hook, showing the bed to be sufficiently solid to support the weight of the fore end of the vessel with very little sinkage. As we travelled along the line the bed appeared to rise, which was borne out by the sounding, reaching the highest point about the next knot (80 feet aft of Ford P.P.), and here we found a slight impression of the keel; but, owing to the hardness of the ground, could only obtain a depth of about 2 feet by jumping the boat hook, and in the vicinity of this point the ground appeared to be gravel under a thick layer of mud. Continuing along the line the ground suddenly dipped, and we walked into very soft mud; and at the third knot (120 feet aft of Ford P.P.)—about midships—there was a decided impression of the keel about 15 inches on the inside and about 6 inches on the outside, with the mud rising towards the wharf so quickly that while standing in the groove made by the keel I could touch the mud when bending slightly. At this point we probed the ground in the groove, using our united efforts jumping the boat hook, but could only reach a depth of about 6 to 9 inches. We proceeded along the line, walking in the groove made by the keel, to the next point (160 feet aft of the Ford P.P), the groove becoming less distinct and the mud thicker, reaching a depth of from 2 to 3 feet probing with the boat hook. At the fifth knot (200 feet aft of Ford P.P.) the mark of the keel had disappeared altogether, and a depth of about 5 feet of mud was easily obtained, and at the end of the line (about 240 feet aft of Ford P.P) the mud was so soft and deep that we could not reach hard ground.

When we had reached the end of the line I was so impressed with the idea that the vessel had been resting heavily about amidships that to make quite sure we returned to the central knot and again probed the bed, but with the same result.

I am of the opinion that during the greater portion of the period the vessel was lying at the berth, and for some time during each tide, the keel has been resting on the ground at the fore end and about 80 feet aft of the Ford P.P. and about midships, but more heavily at midships, and that the after end has always been afloat. And further, I feel convinced that the hogging, to a great extent, is due to the vessel having rested on the bed of the river during the rise and fall of tide.

Yours faithfully,

(Sgd.) A. M. GREENLEES.
(Sgd.) JAS. COOK (Diver).

In my opinion, the real cause of the hogging was the trouble in the launching; the subsequent grounding of the vessel was a contributory cause. Our inspectors pointed out to Kidman and Mayoh that the ship was aground at her moorings, but as the bottom was apparently soft, not much notice was taken of the circumstance. The hogging was first noticed in June, when measurements were taken with a view to ascertaining the light draught of the ship. On the 29th May, Mr. Greenlees wrote to Mr. Curchin—

[Exhibit 21.]

29th May, 1920.

H. W. Curchin, Esq.,
Chief Executive Officer,
Commonwealth Ship Construction,
31 King-street, Melbourne.

DEAR SIR,

Braeside.

At the request of Mr. Barber I have verified the following measurements taken from the vessel, but as to the accuracy of the results from these figures I disclaim every responsibility:—

	ft.	in.
Draft (forward)	11	4
Draft (aft)	13	7
Depth of water from soundings (shore side), starboard side, amidships	11	6
Ditto, port side, amidships	14	2
Depth, top of keelson to top of deck beam ...	22	4½
Underside of covering board to centre of disc, starboard side	4	7
Centre of disc to water, starboard side	12	1
Underside of covering board to water, starboard side	16	8
Underside of covering board to water, port side	16	4

Keel sights—

No. 1, 2 ft. 6 in. forward of foremast, 5 ft. 9¼ in. to top of keelson.

No. 2, fore end No. 2 hatch 4 ft. 3 11-16 in. to top of keelson.

No. 3, aft end No. 3 hatch 4 ft. 6 in. to top of keelson.

No. 4, 2 ft. 3 in. aft of spanker mast 4 ft. 3 in. to top of rider.

Water in hold, 2 ft. 8 in. (under No. 4 hatch).

Yours faithfully,

(Sgd.) A. M. GREENLEES.

That report shows a discrepancy of 18 inches. When the vessel was first launched she was lighter, so that she was not necessarily aground immediately after the launching. Subsequently weight was being continually added to her, and in order that the additional work might be done, she was moored further up the river. It was there that she grounded and these measurements were taken. In a letter to Mr. Mayoh, on the 2nd June, Mr. Curchin said—

[Exhibit 22.]

2nd June, 1920.

DEAR MR. MAYOH,

Mr. Hewison has discussed the question of deadweight of the vessels building by you with your Mr. Barber, but, in view of the unsatisfactory nature of the information, it is absolutely impossible to arrive at any decision satisfactory to myself.

In the first place, Messrs. Heron, Barr, and Barber each have different versions as to how the draught marks were put on the *Braeside*.

Mr. Barber states that the vessel now hogs to the extent of 1 ft. 5 in. It is somewhat difficult to realize that this is correct, but if so, I would suggest to you that such a position is a very serious one, and calls for very careful consideration, as it must be obvious that such a vessel cannot be considered satisfactory or acceptable.

Personally I cannot imagine that this vessel has changed form to the extent of 2 ft. 2 in., which would be the case assuming Mr. Barber's statement is correct, that originally she had 9 inches sag and has now 1 ft. 5 in. hog. It would appear impossible to arrive at any definite conclusion regarding this matter until you dry-dock the vessel, and even then, so far as I can see, it will be necessary to arrive at the deadweight as the result of actual measurements during loading.

Mr. Barber further states that the depth of the vessel has been increased by 2½ to 3 inches in excess of the specification and approved plans without any reference to or permission being obtained from this Department.

Under the circumstances, it is obvious that any additional deadweight due to this increased depth cannot be recognised for payment on the basis of price per deadweight ton.

Yours faithfully,

(Sgd.) H. W. CURCHIN.

J. Mayoh, Esq.,
Messrs. Kidman & Mayoh,
25 O'Connell-street, Sydney.

I do not think anybody in the Department will suggest that the hogging was due to inferior workmanship or scamping. On the 12th March, Mr. Curchin wrote advising Kidman & Mayoh to deal directly with Burns, Philp and Company with regard to any alterations that were required. It was open to Burns, Philp and Company to have any alterations made that they required without consulting Mr. Curchin, provided such alterations did not affect the structural strength. I understand that Burns, Philp and Company were to arrange to pay Kidman and Mayoh for the alterations. I do not recollect having seen the letter from Burns, Philp and Company to the Prime Minister's Department, dated 27th July, regarding the hogging of the *Braeside*, or Kidman and Mayoh's letter of the 8th October, in which they refer to Burns, Philp and Company having charged them with fraudulent practices in regard to the building of the ship. I do know, however, that Burns, Philp and Company made some charges against Kidman and Mayoh regarding the fastenings in the *Braeside*.

63. *To Mr. Bamford.*—The Diesel internal combustion engines were to have been situated aft, with a bulkhead between the engine-room and the holds. I did not anticipate that any danger would arise from the firing of the engines.

64. *To Mr. Atkinson.*—The claim for a deduction of £27,400, on account of the omission of the engines, was based on estimates prepared by me, details of which I can supply to the Committee. My deduction from statements made by other people is that the hogging was due to the defective launching and to the subsequent grounding of the *Braeside*. I am inclined to think also that the vessel would be the better for a little more longitudinal strength along the decks. It is possible to launch a vessel like the *Braeside* without causing any undue strain. I cannot say what extent of hogging might be expected in a vessel of that size properly launched, or whether it may be expected more in a vessel built of heavy Australian hardwood than in ships constructed of the usual soft timber. I have been on board wooden ships which had additional longitudinal members along the deck, running practically from one end of the ship to the other. The plans and specifications to which the vessels have been built were regarded by Lloyd's as satisfactory. I think the contractors have taken all reasonable precautions in the construction of the ships; they have worked to Lloyd's requirements. If the *Braeside* were so strengthened that no further hogging would take place, the vessel would be quite seaworthy. I have already given an estimate of the cost of strengthening the vessel, which I desire to amend later in accordance with further information that has been obtained.

65. *To Senator Foll.*—I am unable to explain why no report was submitted at the time by departmental officers in regard to the faulty launching. If I had been present, and a hitch in the progress of the launching had been obvious, I would have reported it. But the hitch that occurred may not have been obvious. From the reports I have heard, I should say that the launching was one of the principal causes of the hogging. The fact of the *Braeside* having been built with a 9-inch sag in the keel, similar to that which the Committee saw on the *Burnside*, indicates that some deflection was anticipated when the vessel was floated. But one would anticipate only a minor deflection, perhaps only sufficient to put the keel straight. I do not think that the contractors' work has been questioned during construction by the Department or Lloyd's surveyor, except to demand the rectification of minor defects. In my opinion, the contractors have made a very fair job of the vessel.

66. *To Mr. Mathews.*—Prior to Mr. Curchin's departure I, in my position as marine engineer, had nothing to do with the contract except in regard to machinery. I am not a shipbuilder, and I have not had previous experience of building wooden ships or of installing engines in wooden ships. If Lloyd's representative noticed any weakness in the vessel during construction he would order it to be rectified at once, probably without bothering to advise the Department. In shipbuilding contracts Lloyd's really act on behalf of the owners. Originally, Lloyd's was a committee of owners formed to look after their own interests. Gradually they formulated rules for the safe construction of ships, and carried out the supervision of construction in order to get the insurance of the cargoes and the vessels. An owner places an order for a ship to be built under Lloyd's survey, and Lloyd's really look after the interests of the owner during construction. But they accept no responsibility for any weakness discovered after launching. They give their final certificate on the satisfactory completion of the job.

67. *To Senator Foll.*—I cannot say whether if the Department had been constructing it would have built in accordance with the same plans and specifications as were used by the contractors. In the first place the contractors undertook to get Lloyd's certificate for vessels constructed on the plans they submitted. I am not prepared to say whether the Commonwealth would have started out on the same lines. The departmental experts were satisfied with the plans, provided they obtained Lloyd's approval. The whole responsibility for getting that approval rested on the contractors. They undertook to get Lloyd's certificate for ships constructed on these plans and specifications, and if they succeeded the ships would be all right for the Commonwealth. The construction was carried out under Commonwealth supervision, and the plans were approved by Lloyd's. Some alterations suggested by the Chief Executive Officer were agreed to, and others were not. The Department asked for a little additional strength in some places, and alterations were made accordingly. It was anticipated that the hull might deflect from a 9-in. sag to an even keel. The Chief Executive Officer watched the construction closely from start to finish. Although Mr. Curchin had no experience as a builder of wooden ships, he had had wide experience as a builder of steel ships, and thus had an extensive knowledge of the stresses and strains to which vessels are subject. For that reason he was competent to give advice to the contractors in regard to the construction of these vessels.

68. *To Senator Newland.*—I believe it to be a practice to lay down wooden ships with a sag so as to allow for straightening out when they are launched. The *Braeside*, like the *Burnside*, was built with a 9-in. sag in the keel, which was in the nature of an allowance for deflection when the vessel was afloat. The seriousness of a hog depends upon the extent of it. If the hog measures only a few inches it is not of much account.

69. *To Mr. Mackay.*—While Mr. Curchin was Chief Executive Officer I was Chief Marine Engineer; but when he resigned I offered myself for this position, and was appointed in an acting capacity. I do not

think the alterations made at the instance of Burns, Philp and Company affect the usefulness of the vessels. The additional sail area will give more speed. The number of winches has been reduced from six to three. These and other alterations were in no way responsible for Lloyd's refusal to grant a first-class certificate. I have not at any time heard a suggestion that the contractors were likely to abandon their contract. On the 17th August, a suggestion was made that the Commonwealth should take over the contract upon terms; but no satisfactory arrangement could be arrived at. There was no suggestion to abandon the contract.

70. *To Mr. Bamford.*—To-day there is a deflection in the keel of the *Burnside* in a direction opposite to that in the keel in the *Braeside*.

TUESDAY, 9TH NOVEMBER, 1920.

(Taken at Sydney.)

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Mackay,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney
Mr. Bamford,	

(Mr. H. C. Brown, representing the Prime Minister's Department; Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh.)

Kenneth Watson, Acting Chief Executive Officer, Commonwealth Ship Construction Branch, further examined.

71. *To the Chairman.*—A question was asked yesterday as to whether any alterations ordered by the Chief Executive Officer had been protested against by the contractors. I recollect that there was one instance of the kind. An additional hatchway aft was ordered by the Chief Executive Officer, and the contractors protested on the ground, I believe, that it would reduce the strength of the vessel. However, the hatchway was fitted and structural compensation was made which was approved by Lloyd's. That was subsequent to the decision to omit the machinery. I think the additional hatchway was provided in order to give better access to what is now hold space, and was then machinery space. The contractors' protest was contained in a letter to the Chief Executive Officer, dated 22nd December, 1919. Mr. Hewison will deal with this matter further.

72. *To Mr. Boyd (through the Chairman).*—I understand that the specifications submitted by the contractors and upon which they tendered were substantially the same so far as structural features were concerned as those approved of by the Department under their specification, and which were submitted in October, 1918. However, I have not examined the two sets of plans. I cannot say whether the specification drawn up by Mr. Curchin and ultimately adopted by the contractors, increased the sizes of timbers, &c., by, approximately, 30 per cent. I know that some increases were made, and they were agreed to by the contractors. You ask me, "If £26 per ton was a fair price at which to construct the ship on the original specification, what would be a fair price on the altered specification?" I cannot say. I know that various modifications of the original specification were made. Some were consented to by the contractors without extra payment being made in regard to others they are claiming extra payment as set out in the list of items referred to arbitration. I do not know whether the size of the timbers, &c., were increased by 30 per cent., and as I do not know the details I am not prepared to say whether the increases were a reasonable alteration under clause 10 of the contract. That question should be referred to Mr. Hewison. If the detailed drawings were marked with the approval of the Department, they were approved, but in some cases comments were attached to the approval. It was the usual practice of the Department to indicate in red ink any alterations on the plans. When the plans were corrected in red ink, the cost of construction might or might not have been increased. The contract price would not necessarily be increased. In certain cases there may have been increases; in others there may not have been. As to whether allowances should have been made for alterations required by the Department, and entailing extra expense, under the contract there would be no necessity for the Commonwealth to make any allowance in such cases.

73. *To the Chairman.*—In respect to some of the larger modifications the Government have agreed to alter the contract price. But the contractors' views as to what the amount for the modification should be differ from ours.

74. *To Mr. Boyd (through the Chairman).*—The practice to be followed when alterations are demanded after a tender has been accepted, depends on the nature of the alterations. If a plan already approved by the Department is added to or reduced in accordance with definite instructions, the contractors are entitled to some modification in the price. If during the progress of a machinery contract alterations have been made to machinery, it has been my experience that the engine-builders claimed extra money if they thought they were entitled to it, but they have not always received what they claimed. The manufacturer of the machinery would make the claim in the first instance and then negotiations as to the amount might take place. As to what would happen in the event of the contractors not being able to agree regarding the amount to be allowed, that would depend upon the terms of the contract. Under the contract now under consideration, the contractors would have to do as they were told. The original brake horse power of the engines specified for these vessels was 240. Mr. Curchin did not alter the b.h.p. to 320, but engines rated on the makers' list at 320 b.h.p. were bought instead of those rated at 240 b.h.p. Those engines were purchased through the Department on behalf of the contractors. The reason for the alteration was that a 240 b.h.p. engine, developing its full normal power, would have to run too many revolutions to suit the ships. We limited the number of revolutions, and that involved the installation of larger engines. We wanted an engine to develop 240 b.h.p. without exceeding 240 revolutions per minute. The specifications for the main machinery provided "Two sets of approved design of reversible crude oil engines to develop 240 b.h.p. each when running at not more than 240 revolutions per minute." Because of that limitation of the revolutions, we needed a larger engine. The machinery specifications were prepared by the Department failing the supply of any from the contractors.

75. *To the Chairman.*—A copy of the machinery specification was supplied to the contractors.

76. *To Mr. Mathews.*—The contractors drew up no specifications for the engines. The Department drew them up and the contractors accepted them and worked to them.

77. *To the Chairman.*—The contractors have never signed the machinery specifications.

78. *To Mr. Boyd (through the Chairman).*—That specification was forwarded to the contractors on the 11th November, 1919, and it provided for a 240 b.h.p. engine running at 200 revolutions to the minute. Paragraph 7 of Mr. Curchin's original specification specified 240 revolutions per minute. That specification was signed, and it would over-ride the one that was not signed. An engine rated 320 b.h.p. would certainly

cost more than an engine rated 240 b.h.p. The Government ordered for the contractors twelve engines—two for each of the six vessels. Of these only two were delivered, and they were re-sold after the Department decided to dispense with auxiliary power. As the plans were approved by the Chief Executive Officer and Lloyd's, one would expect that the vessels constructed from them would be all right. The matter of structural strength is, of course, governed by Lloyd's rules. The principal structural plans were indorsed by Lloyd's, but not the specifications. I cannot say straight out whether if the Government had been building the vessels for themselves they would have built to the specifications upon which the contractors worked. The original design was submitted by the contractors, and upon it they offered to build the vessels, and obtain Lloyd's certificate. Whether the Government would have started out with the same design, I cannot say. Every naval architect has his own opinion, and the Government might have started out with a different design. The plans were not prepared by Mr. Curchin; they were initiated by the contractors or their consulting architects. During the construction of the *Braeside* a representative of the Government was on the ship in order to see that the workmanship was satisfactory, and that everything was done in a workmanlike manner. Our representative had not access to all the plans because sufficient copies were not supplied to the Department. The contractors supplied the bulk of the plans, but not all that were necessary for the inspectors. As to whether they supplied the plans they were required to provide under the contract, Mr. Hewison will be able to answer. The Department had not the staff with which to make extra drawings of the plans, but I am informed that extra copies of plans were requested from the contractors. The contractors made no essential alterations to the ship of which the Department were not aware. I cannot give a list of the minor defects in the vessels, to which I referred yesterday, but the departmental inspectors when examined will be able to mention examples, if not to give a complete list. I cannot say whether the Department has any record of these defects; some of them may have been mentioned in the inspectors' reports. I cannot say whether any of these defects were allowed to pass while our inspectors were present. The supervision by our officers was satisfactory to the Department. Lloyd's representative has not to my knowledge raised any serious objection to any features of the construction. I cannot say whether any complaints have been made in writing to the contractors calling upon them to alter defects. The Chief Executive Officer agreed with the contractors and Burns, Philp, and Company that they might arrange between themselves as to any alterations which Burns, Philp and Company, as purchasers, might require. Mr. Curchin's letter of 12th March, to that effect, is already before the Committee.—[*Exhibit* "6."]—After that date the Department continued the supervision of the construction; no alteration was made in the departmental control over the construction, and the contractors were then in the position of carrying on the job under the instructions of two authorities, Burns, Philp, and Company and the Commonwealth. I do not know whether the instructions of the two authorities conflicted. I understand that Burns, Philp, and Company contracted with Messrs. Kidman and Mayoh to alter the rig of the vessels, but I have no idea of the cost of those alterations. The Department had nothing to do with arranging for the carrying out of the alterations required by Burns, Philp, and Company. That was done in accordance with arrangements referred to in Mr. Curchin's letter of 12th March. The understanding was that any financial adjustment that was necessary would be made between Messrs. Burns, Philp, and Company and the contractors. I am aware that extra work was done to the keel by fixing an extra 6-in. piece of timber for the full length of the keel. I cannot say whether the covering of the keel with Muntz metal was an extra. I do not know whether Mr. Curchin and Lloyd's surveyor approved of the addition to the keel; but I am not aware that they raised any objection. I realize that the addition to the keel was an important alteration, and I think it hardly likely that the contractors would carry out the instruction of Burns, Philp, and Company to make such an important modification without the consent of both the Commonwealth authorities and Lloyd's surveyor. I am not aware of any plan showing these proposed alterations having been sent to the Department for approval. I was present at a number of interviews between Mr. Mayoh, Mr. Curchin, and Mr. Heron at the office of the last-named gentleman, and I remember Mr. Mayoh submitting to Mr. Curchin drawings of various types of boilers. We finally decided to instal a boiler of the Cochran or marine type. I believe Mr. Mayoh told us that it would be difficult to get a Cochran boiler manufactured, and that he had an offer from Great Britain for the manufacture of marine boilers suitable for this work. The specifications provided that the boiler should have 400 square feet of heating surface. Clause 86 of the November specifications mentioned nothing about a heating surface of 400 square feet, but provided that drawings and specifications should be submitted to the Department for approval. The Department preferred a boiler of the multi-tubular type, which is a type of boiler ordinarily used on board ship. Clause 86 is merely a portion of the hull specifications. I am of opinion that the provision that the drawings and specifications should be submitted for our approval entitled us to demand a multi-tubular boiler if we wanted it. On an ordinary American sailing ship the boiler is usually one with vertical tubes, and I am prepared to admit that other boilers with ordinary horizontal tubes are to be found on sailing ships. Clause 67 of Kay, Macnicol and Company's specifications, on which this contract was originally prepared, provided for three steam winches on each vessel. On page 28 of the amended specifications, four winches are provided for. The additional winch was considered desirable by the Chief Executive Officer. I think that the diameter of the winch cylinders was increased from 6 inches to 7 inches, because that was considered by the Chief Executive Officer to be a more suitable size. The stroke of the winches was increased from 10 inches to 12 inches in order to suit a standard pattern of winches in Australia. I think the alteration was probably made by the Department. For a boiler of 100 pounds pressure, working a steam winch 6 inches by 10 inches, I would provide a heating surface of 80 to 90 square feet. I think that a heating surface of 400 square feet is a proper allowance for a boiler to drive four winches working at 100 pounds pressure. Probably if the contractors had supplied a boiler of less capacity there would not have been sufficient steam to drive the four winches. The Department ordered two additional steam winches to be fitted on each ship, making a total of six per vessel. I was providing heating surface enough to supply power for the working of the four winches simultaneously. The additional winches were afterwards cancelled at the request of Burns, Philp, and Company. I cannot say why two of the winches were cancelled. It would have been necessary to amend the specification for the size of the donkey boiler if six winches instead of four had to be driven at the same time. The additional winches were asked for by the Commonwealth Shipping Line more with a view to additional facilities for getting out cargo from the different holds than for the purpose of working the four winches simultaneously. Therefore the size of the donkey boiler was not increased. If it had been intended to work the six winches simultaneously, an increase in the size of the boiler would have been

necessary; otherwise it would have been possible to work simultaneously only four of the six winches. The extra two winches involved the provision of extra derricks and ironwork, gear, falls, etc. I cannot say who authorized their cancellation. Six winches were bought, three for each ship. Two for each ship were returned to the Department, and one for each ship must be still in the contractors' yard. The four returned to the Department were sent to the dockyard at Williamstown, and were paid for by the Government. It is intended to use them on a new ship at Williamstown. I have never heard that Burns, Philp, and Company ordered one of the four remaining winches to be taken out, and only three fixed, and the extra one to be sent to their yard to be fitted to one of their ships. The specified height of the Cochran donkey boiler to be supplied was about 13 feet. If that boiler had been installed under the forecastle head, as provided in clause 86 of the specification, the covering would have stood approximately 10 feet above the top-gallant forecastle deck. I have never seen on any ship a structure of this kind projecting from the deck to such a height. To obviate this projection above the top-gallant forecastle deck, a suggestion was made to cut a hole in the main deck and instal the boiler in an insulated watertight room, the base of which would have been on the 'tween deck. This would have involved cutting several beams of the ship, and any weakening that resulted therefrom would have required to be compensated. I cannot say whether or not donkey boilers on ordinary ships are always installed in deck houses on the main deck in the centre of the ship. The contractors objected to interfering with the structure of the ship in order to house this boiler. I have no positive knowledge that when the vessels were sold to Burns, Philp, and Company, that firm ordered the contractors not to proceed with the erection of the boilers in that place, as shown on drawing 873. Burns, Philp, and Company never consulted the Department in regard to fixing the Cochran boilers. I know that Burns, Philp, and Company arranged with the contractors that boilers of a smaller size should be installed. I have had experience in installing internal combustion engines in lighters for the Admiralty. Mr. Ellery was lent from Cockatoo Island to the contractors to advise in regard to the launching, but I do not know how the arrangement was made. I do not know that he had any definite duties. I understand that he was simply to give advice, and would assume no responsibility. Some particulars in regard to the launching of the *Braeside* were submitted to the Department, and Mr. Hewison will give the evidence in regard to them. My judgment that the faulty launching was partly responsible for the hogging is based upon verbal reports from our inspectors. There are no written reports. Mr. Greenlees can give evidence regarding those reports from the evidence he collected. Mr. Ellery was present at the launching. Mr. Greenlees' report regarding the grounding of the *Braeside* showed that the forward end of the ship was on deep, soft mud, while the midships was supported by a harder substance. A rough sketch of the bed of the river is attached to the report. I discussed the question of hogging of wooden vessels with various people, particularly Mr. Heron, Lloyd's surveyor. I cannot say that I have discussed the matter with others who are authorities on the subject. I should say that Mr. Heron is competent to express an opinion on this question. I am not prepared to say that with perfect launching and no grounding, the *Burnside,* now on the stocks, will not hog. I have already suggested that I consider it desirable to strengthen the vessel prior to launching, as a precautionary measure. Such a precaution is advisable, in the light of recent investigations. No matter what stiffening were added to the vessel, it would be impossible to guarantee that no hogging would take place. As to whether the *Burnside* should be finished in accordance with the specifications without making any further alterations, that is a matter that should be discussed with Lloyd's to start with. Of course, the responsibility is on the contractors to produce a satisfactory ship ultimately.

79. *To Mr. Brown (through the Chairman).*—The *Braeside* came out of dock on the 21st July, and it is not desirable that such a vessel should lie in the harbor for a longer period than three months without taking precautions to prevent worms or other submarine pests from getting into the woods. I have taken this matter up with the contractors at various times, and up till now have been unable to come to any arrangement by which they will undertake to dock the vessel. I am afraid that unless she is put in dock soon she may be found to be full of worms. There is a grave risk of that nature. I first raised the question on the 17th August. To that and subsequent notes I received no reply until comparatively recently, and even now we have reached no finality. I shall be very much relieved if the contractors will undertake to put the ship in dock at once. I understand that both teredo and the wire worm are troublesome in Sydney waters. The contractors confirmed the arrangements made by the Department in their behalf for ordering six Bolinder engines. In proof of that I submit the following letter:—

[Exhibit 23.]

KIDMAN AND MAYOH.

25 O'Connell-street,
Sydney, 28th February, 1919.

H. W. Curchin, Esq.,
Chief Executive Officer,
Commonwealth Ship Construction,
Melbourne.

Bolinder Engines.

Dear Sir,

We are obliged for your telegram of 27th inst., advising us that unless we confirm arrangement for purchase of engines by the 3rd March you would advise the Minister to cancel the contract for the engines.

Since receipt of your letter of 12th inst., we have been abnormally busy, and the matter has been left over for other important subjects. However, we now beg to confirm arrangement whereby the High Commissioner was requested to purchase on our behalf six (6) right-hand and six (6) left-hand Bolinder engines, each to give 240 horse-power at 225 revolutions, without water drip.

The cylinders are to be 16½-in. diameter by 19-in. stroke. The price of each engine to be £3,850, delivered f.o.r., Lincoln.

It is also understood that if the Commonwealth Government become liable for any payment judicially awarded in connexion with patent rights, the extra charges are to be on the same basis as the Admiralty for this make of engine. We agree that any charges under this heading shall be on our account.

The price quoted to include tools and spares. Delivery of first engine to be made in four months, then one fortnightly.

Yours faithfully,

(Sgd.) KIDMAN & MAYOH.

There was a difficulty in obtaining engines in Australia or elsewhere, and I think that the contractors verbally requested the Department to cable to London in their behalf to make inquiries through the High Commissioner.

80. *To the Chairman.*—The Bolinder engines were ordered at the solicitation of the contractors. The Government had opportunities of getting machinery at that time which were not open to private firms. This arrangement was initiated by the contractors.

81. *To Mr. Mathews.*—We specified an engine to develop 240 b.h.p. when running at not more than 240 revolutions per minute. The engine of 240 b.h.p. as per maker's list, had to run at 275 revolutions per minute in order to develop that power. That was why we ordered the engine rated at 320 b.h.p.

82. *To Mr. Brown (through the Chairman).*—The contractors were unable to obtain the engine required for these vessels unless the Commonwealth came to their assistance. A conference was held in Melbourne, at which various engine-builders were present, but none would undertake the work. We received a report from London that we could get engines that were building for the Admiralty, and naturally the Commonwealth Government would have a better chance of negotiating the purchase through Australia House than would a private contractor. Negotiations for these engines were proceeding from September to December, 1918. Confirmation of our arrangements was only received from the contractors on the 28th February, 1919.

Joseph Mayoh, Civil Engineer, and partner in the firm of Messrs. Kidman and Mayoh, Sydney, sworn and examined.

83. *To the Chairman.*—The firm of Kidman and Mayoh comprises Sidney Kidman, Arthur Mayoh, and Joseph Mayoh. The firm contracted with the Commonwealth Government for the erection of six wooden sailing vessels equipped with auxiliary power.

To enable you to understand how the contract arose, I might explain that about the month of April, 1918, when it was apparent, on account of the sinkings of British and Allied ships by submarines, that there was a serious world's shortage of tonnage, when the Commonwealth Government found it necessary to provide ships for the carriage to the seat of war of various Australian products, and particularly wool and wheat, for the use of the Empire's troops. The Government, for this reason, placed orders with the Government dockyard at Cockatoo, and at Williamstown, and also at Walsh Island, Newcastle, and with Messrs. Poole and Steel at Adelaide, and Messrs. Walkers Limited at Maryborough, for the construction of steel cargo vessels. In addition to this, contracts were placed with the Wallace Power Boat Company for six wooden vessels, and with Messrs. Hughes, Martin, and Washington for a similar number. On 6th July, 1918, the contract with my firm was executed, providing for the construction of six wooden vessels. The original agreement has been already submitted in evidence. On the Armistice with Germany being signed, it was considered by the Government that there was no further need to complete all the wooden vessels contracted for, and arrangements were made to cancel all they possibly could. The vessels ordered from the other firms mentioned, and those ordered from the Western Australian and Tasmanian Governments, were cancelled *in toto;* but in regard to our contract, as two of the ships were then well advanced, it was only possible to cancel in regard to the remaining four. An agreement, dated 4th August, 1919, was thereupon entered into between the Government and ourselves. This also is in evidence. I am not aware on what basis the other firms mentioned were compensated, but I suggest that it might be some guide for the Committee to call for particulars in regard to them. It will be noticed that our cancellation agreement provided for payment at the rate of £5 per ton, which we duly received, and for a further payment to be made to us at the rate of £5 per ton in the event of the dead-weight of the two completed ships exceeding 2,600 tons. I submit there can be no doubt whatever that the approximate dead-weight of each of these ships is in excess of 2,600 tons, and we would, therefore, be entitled to a further substantial payment in respect of this. From the commencement, the construction of the ships was carried out under the periodical supervision of the officers of the Government and of Lloyd's surveyor, who regularly saw the work in progress, and whose requests in regard to alterations, &c., were always complied with. Furthermore, the Government periodically made progress payments each month until May last, which, I contend, shows that, up till that time at all events, no fault was found with either material or workmanship; in fact, it was not until July last that anything of the kind occurred. The *Braeside* was launched on 23rd April last, in the presence of Lloyd's surveyor and the representatives of the Government, and under the supervision of Mr. Ellery, of Cockatoo Dock, whose services were lent for the occasion. The vessel was launched at 12 o'clock, and before 2 o'clock we were advised by our own representatives that she had developed a hog. This was before she had an opportunity of settling in the mud, as alleged by the departmental officers. She was launched at high tide, and moored alongside our wharf. Some hours elapsed before low water occurred, consequently there was no time for the ship to settle down before the hog was discovered. Men had been put on board for the express purpose of taking observations, sights, and measurements for this hog, which we confidently expected would occur. It was discovered that the vessel had about 16 inches of hog immediately after launching, and she was then removed to the berth where she was to be fitted out and completed. Although the hog in the ship was known to Lloyd's surveyor and the Government, no complaint was made by either until Mr. Barber visited Melbourne to go into figures relating to dead-weight with Mr. Hewison (one of Mr. Curchin's assistants) at the beginning of June. In doing this, the question of the hog was discussed, as was necessary, and Mr. Curchin was called in. He then professed to be surprised, and said he would have to write us about the hog, which he did. A great amount of correspondence followed, and this will be put before the Committee. In this correspondence Mr. Curchin expressed the opinion that the *Braeside* had been injured either in the launching or while she lay at her berth during fitting out. We are of the opinion that neither of these suggestions has the slightest foundation in fact. About the beginning of July we docked the ship at Cockatoo Dock, and, in accordance with Mr. Curchin's instructions, packings representing the hog were placed under the keel to prevent her from straightening out on an even keel—she was there inspected by Mr. Curchin, Mr. Heron (Lloyd's surveyor), and others. The ship was then re-floated in the same dock, and the packings were taken out, and the water was pumped out of the dock, and the ship was allowed to settle down on an even, or straight, keel. The ship's bottom was cleaned and painted, and certain timbers were put in the ship, with a view to seeing if the hog could be prevented from again presenting itself. The ship was then floated out of the dock, and the rigging and other small works were completed. On the advice of Mr. Curchin, the ship was allowed to straighten, and it was found that, notwithstanding this operation, the ship was perfectly dry. Since then the rigging has been completed, and the ship now requires very little done to fit her for sea. The other ship is ready for caulking, and the final touches on the forecastle and poop are being completed. Since the tender was prepared the increase in wages and all material has been considerable, and numerous difficulties have arisen in obtaining materials and skilled labour, due to strikes, droughts, floods, &c. These have brought about unforeseen delays, which I will explain in detail. I will be prepared to show that the general cost of the ships was largely increased by Mr. Curchin's insistence upon the work being carried out in a manner that would be more suitable for a vessel of the *Lusitania* class than a sailing vessel of this class. An inspection of the *Braeside* will fully demonstrate this to the Committee. I will also be prepared to satisfy you that the hog in the *Braeside* is only what was expected, is usual in this class of wooden ship, is no detriment whatever to her seaworthiness or carrying capacity, and is much the same as is to be seen in practically all the wooden ships of her class and size trading to Australian ports. As I have previously pointed out, this ship was launched under the supervision of Mr. Ellery, an expert employed at Cockatoo Dock. To safeguard our interests in the matter, a policy of insurance for £47,250 against all risks during launching was taken out with the Royal Insurance Company, and, if necessary, the Underwriters are prepared to prove that no injury was done to the ship during launching. Therefore, we have not received any money under this policy. I believe Captain Cuthbert, who represents the Underwriters, was present at the launching, and he could be called to give his opinion, if necessary. With regard to the assertion made by Mr. Curchin, that the vessel possibly injured herself while she lay at our berth, we had a special survey made of the site, and observations made of the tides, and plans prepared showing the position of the ship on the worst, or lowest, tides. The report and plans were made by Messrs. Scott and Scott, licensed surveyors, 64 Pitt-street, Sydney. We put in a copy of their report, dated 7th October, 1920. I think that this is all that need be said regarding the alleged defects in launching and berthing. The donkey boiler question has been a very big one to us, and considerable correspondence and discussion has taken place between ourselves and Mr. Curchin regarding it. We always considered that the donkey boilers that he required us to supply, and which were specially imported from England, were far too big, and quite unsuitable for sailing ships. We are backed up in this opinion, not only by master mariners, but by representatives of Burns, Philp and Company, who stated that they were unsuitable; as a matter of fact, we arranged with Burns, Philp and Company to supply two very much smaller boilers, which we have endeavoured to get manufactured in Melbourne, we undertaking, at the same time, to sell the big boilers, if possible. Had the boilers been fixed as intended by Mr. Curchin, I say, without hesitation, that in the first heavy gale the vessels encountered the boilers would be likely to go overboard. The donkey boiler house necessary to cover these boilers would have been so high that it would have obstructed the view, and the steering of the ship would have been interfered with. One of these boilers has recently been sold to the Manly Gas Company. The donkey boilers imported from England cost about £975 each, whereas the two boilers we are now purchasing

from Melbourne are costing several hundred pounds less. This is the kind of thing we have had to put up with. Although we did not provide for the wheel house on our original plans, Mr. Curchin insisted upon one being in the *Braeside*, and he included it in his amended specification. We are informed by most master mariners that this wheel house will have to be removed, as it will be impossible to steer the ship from inside the wheel house. We are supported in this contention by the fact that Messrs. Burns, Philp and Company arranged with us that the wheel house should not be put on the *Burnside*. Examination of this wheel house by the Committee will show in a practical manner that the ship cannot be steered from it.

Mr. Curchin involved us in additional expense by altering the plans to provide four hatchways instead of three, as approved by Lloyd's. We think that this might have something to do with causing the ship to hog, as the deck is further cut up, and somewhat weakened. Notwithstanding that Lloyd's only called for one through bolt in the 8-in. planking on the sides of the ship, Mr. Curchin insisted upon our putting in an extra dump to each plank at each frame. This also increased the cost of the ships, and if Lloyd's knew their business this money has been wasted. Mr. Curchin inserted in his new specificaton an item calling upon us to supply an electric lighting system, which was not included in our original estimate. This electric lighting system was afterwards cancelled, and Mr. Curchin has deducted £1,000 from each ship on that account.

When we submitted our tender we anticipated that the rigging blocks would be the standard blocks supplied by the leading hardware merchants of Sydney or Melbourne. We understand that ships which have been visiting Australian ports during the last fifty years have been in the habit of getting their supplies of blocks from the various merchants. These blocks are commonplace items, and, from inquiries made from seafaring men, only blocks of standard type would be accepted. The reason for this is obvious. If a sailing vessel meets with bad weather and loses tackle or sails, or breaks pulleys and blocks or hooks, or is dismasted, she can borrow blocks from a passing ship; then they can be replaced in any port, as the standard blocks are made with parts interchangeable. Mr. Curchin, however, was not satisfied with our supplying blocks of this nature, which we considered were the proper thing, but caused us to prepare drawings of special blocks to meet with his requirements. These had to be specially made, and the cost to us was increased very largely. All master mariners who have seen the blocks say they are absurd. When the representatives of Messrs. Burns, Philp and Company first saw these blocks they stated that they would not have them on the ship, and asked us to stop making them, as they could only accept the standard blocks, thus showing that Mr. Curchin was asking for something unreasonable and unprocurable. The disadvantage in Mr. Curchin's blocks is that the pulleys and pins cannot be replaced in foreign ports, and, in addition, they are excessively heavy and cumbersome. As the contractors are going out of business, they will not be able to supply replacements, and when the blocks get broken or damaged standard blocks will have to replace them.

Clause 13 of the general agreement provides that monthly estimates shall be made of work done, which shall include the value of materials and cost of labour, and also cost of materials in the shipyards of the contractors up to the date of the estimate. When this contract was made the clauses were based on terms suggested by the Prime Minister, and the clauses, when drafted, were expected to represent the wishes of the contracting parties. Notwithstanding the plain language used in this clause, Mr. Curchin never made payments in accordance with it. On the contrary, he had a system of his own, which was not applicable for a work of this nature; moreover, the terms would be altogether too onerous if payments were to be made in accordance with his suggestion. To emphasize my point, I may explain that the Prime Minister's Department instructed Mr. Walter, the Sydney Accountant for the Works and Railways Branch of the Commonwealth Government, to make monthly estimates in accordance with clause 13, thus showing that it was always the intention of the Prime Minister's Department to read this clause in accordance with our views. If necessary, I think the Prime Minister would be prepared to support me in my contention regarding his intentions when he agreed to this method of payment. On 13th and 19th November, 1918, there were two letters from Mr. Curchin, asking us to approve of a proposed basis for progress payments, which were contrary to the agreement. We also received a letter from Mr. Curchin on 21st December, with regard to his system of making payments, and we replied, on 31st December, regretting that we could not approve of the system of making payments on percentages, and that we much preferred the system provided for by clauses 13 and 14 of the contract. Two other firms were building ships in Sydney, and I know one firm received payments every fourteen days in order to assist them to finance the undertaking. This contract being a war measure, we had to order as much timber as we could get, and have it stored in our yard, to be available when required. In this way a big expenditure was piled up in a very short time. All through the contract Mr. Curchin has kept us short of money, and as a result we have had to supply a very large amount of money that would not have been necessary had he made us fair payments in accordance with the contract. Clause 11 of the agreement says the contract price for each of the said vessels shall be £26 per ton dead-weight capacity. Mr. Curchin has always been aware that there would be any excess dead weight, and in making payments he has completely ignored this fact. He has framed his statements to show that we have been practically paid up. I shall put in a statement showing how his figures and ours differ. I am submitting a copy of a letter addressed to the Secretary, Prime Minister's Department, on the 1st September, and the reply from Mr. Shepherd. This correspondence will give you an idea of the differences between us.

In regard to the Bolinder engines, I do not appear to have any information as to who initiated the negotiations for the purchase. Probably there was a verbal arrangement between Mr. Curchin and myself. The original contract provided for two internal combustion engines for each ship, developing 240 b.h.p., and not exceeding 240 revolutions per minute. As the obtaining of the engines was very urgent, I despatched an engineer to America to visit all the large works making engines of this type. He was unable to get any offers, and I cabled an instruction to discontinue his inquiries. I think that subsequently I must have had a conversation with Mr. Curchin, as the result of which it was agreed that some inquiry should be made from Bruce and Company, engineers, of London, a firm known to Mr. Curchin. That firm communicated with the Admiralty or with Messrs. Ruston and Hornsby Limited. After negotiations, it was decided that they could supply us with the necessary engines for the six ships. Some correspondence took place regarding the size and the revolutions, and eventually it was decided by Mr. Curchin, with our approval, that engines of 320 b.h.p. should be supplied. We were informed that Messrs. Ruston and Hornsby Limited had a licence to manufacture Bolinder marine engines of the usual pattern. They were known as "M" type, and were manufactured in the following sizes:—120 b.h.p., 160 b.h.p., 240 b.h.p., 320 b.h.p., and 500 b.h.p. This firm made a specialty of marine engines, and had fixed them in a large number of ships similar to those we were building. The catalogue shows that the 240 b.h.p. engine would run 275 revolutions per minute, and the 320 b.h.p. 225 revolutions. Mr. Curchin and I always considered that the fewer the number of revolutions, the better it would be for the ship. At the time we were discussing the engines serious faults had developed in other wooden ships that had been fitted with engines, due, no doubt, to the excessive speed at which they were required to run. This was the chief reason why Mr. Curchin and I always endeavoured to get an engine running at as slow a speed as was possible. If the 240 b.h.p. engine had been installed, there is no doubt that it would have had a bad effect upon the ship. In addition to this fault, these engines were supposed not to use a large quantity of water, and it was contended by the manufacturers that if we would accept the engine of 320 b.h.p. the water drip could be dispensed with. That was another inducement to Mr. Curchin to order the larger engine. Of course I agreed with him that that was the correct policy. It turned out, however, that when these engines were manufactured in large quantities for the British Admiralty, tests by the authorities disclosed that they still required a large quantity of water, so that there was no advantage in the bigger engine except the reduced number of revolutions. This was one ground on which the Commonwealth Government was able to get out of the contract for the twelve engines—namely, that the makers had not produced the engine they had contracted to make. The Committee must understand that these engines were not made specifically for these ships. They were standard engines made largely for

Admiralty purposes during the war. The Commonwealth ordered two engines for each boat, but I think they sent only two complete engines to us. I have an original invoice from Ruston and Hornsby Limited, showing that a 320 b.h.p. four-cylinder Bolinder engine, right hand, was sent out to us at a price of £3,938. While the *Braeside* was being completed, articles appeared in the technical papers in America to the effect that these engines were not satisfactory. I thought it my duty to write to Mr. Curchin, pointing out that fact. A number of ships were entering Mort's Dock, Sydney, at that time, and we learned that, as a rule, the engines were being removed. I therefore suggested to Mr. Curchin that the engines should be omitted from the two Commonwealth ships. Negotiations were then entered into with the manufacturers in London with a view to cancellation of the order. In the end, terms of cancellation were arranged. About that time, Burns, Philp, and Company were consulted —that was some time before they agreed to purchase— and they advised us that if the ships belonged to them, they would not have the engines in them. That was, no doubt, one reason why the Prime Minister's Department decided that the order for the engines should be cancelled if possible. Two engines were delivered to our shipyard, and eventually they were sold to the Anglo-Persian Oil Company, and sent to the Orient. As the Government had bought these engines for us, it was arranged that the price they had paid should be debited against us as cash paid. We are not asking the Committee to consider what amount should be deducted from the contract price owing to the omission of the engines, because that claim has been waived.

(*Taken at Sydney.*)

WEDNESDAY, 10TH NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Mackay.
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

(Mr. H. C. Brown, representing the Prime Minister's Department; Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh.)

Joseph Mayoh, Civil Engineer, and partner in the firm of Messrs. Kidman and Mayoh, recalled and further examined.

84. *To the Chairman.*—We did not offer any objection to clause 5 of the contract in regard to its effect if we were not able to get Lloyd's certificate for the vessels. We did not know that any hog would occur; indeed, we thought the contract would be a walk-over for us. We thought that if we built to the approval of Lloyd's and Mr. Curchin they would be the guardian angels. Now we find that on account of a hog having developed in the *Braeside,* we cannot get Lloyd's certificate. Lloyd's have not directly refused us a certificate, but we have information from the Chief Executive Officer that as Mr. Heron will not grant a certificate, he too refuses to accept the vessels. Clause 1 of the contract provides that the contractors shall take all responsibility for the stability of the vessels. Stability as employed there is a shipping term referring to the capacity of a ship to stand up right and take her cargo without capsizing. It does not refer to strength of construction. My firm has had no previous experience in the building of wooden ships, but I personally have carried out much more difficult work. If the plans were right and the ship is stable and sufficiently strong to resist a hog, we have done our work efficiently. We have put in every strength of timber required, and bolts wherever they were necessary, and we instructed the workmen that nothing should be scamped, no matter what the cost. I am sure that the workmanship in the vessels is all right. We employed to assist us a very good man, in the person of Mr. Barr, who has had considerable experience in building ships, but not wooden ships. The plans were prepared by Kay, Macnicol and Company, of Bridge-street, Sydney, in whose employ is Mr. A. C. Barber. I believe him to be thoroughly experienced. I placed his plans on the table yesterday—[*Exhibit* 19]. They had been already submitted to the Government before we tendered; three or four firms tendered on the same plans. The contract provided that the Government might make any alterations in the plans, and they were, in fact, substantially altered by the Department. They were sent to Lloyd's in London for approval, and were returned with certain alterations—mainly in regard to the scantlings. Any trouble that has occurred with the ship is probably due to the fact of Lloyd's people not being acquainted with Australian timbers. I do not remember how the plans came into our possession after they were returned from London—whether they were sent direct to Mr. Curchin or to Mr. Heron. However, we received them, and they are stamped with Lloyd's approval. I submit copies of correspondence from Lloyd's showing that if we built the ships to the specified size and design, they would be eligible for certicates—

[Exhibit 24.]

(*Six Enclosures.*)

Lloyd's Register of Shipping,
71 Fenchurch-street, E.C.,
22nd July, 1918.

DEAR SIRS,

I duly received Mr. Heron's letter of the 14th May last, enclosing one from Messrs. Kay, Macnicol, & Co., together with plans of the wood auxiliary twin-screw barquentines proposed to be built by that firm for the Commonwealth Government, and I may say that the case has been carefully looked into.

A long cablegram regarding the scantlings has been received from Mr. Curchin, the shipbuilding representative of the Commonwealth Government, and in the circumstances I have written to the Official Secretary to the High Commissioner in London, setting forth the text of a long cablegram which it is suggested should be sent to Mr. Curchin.

A copy of my letter to the High Commissioner is enclosed for your information, and I have also cabled to you to-day as follows, namely:—

"Kay Macnicol vessels, cabling Curchin fully through High Commissioner regarding scantlings."

The plans forwarded with Mr. Heron's letter are returned herewith, and I am directed to state that provided the scantlings and arrangements as shown and amended on the plans be adhered to, the rules in all other respects be complied with, the timber be well squared and free from sap, shakes, and all other objectionable defects, the workmanship and fastenings be to the society's satisfaction, the vessels will be eligible to be classed A1 for a period of twelve years, with a suitable notation in the register book, and subject to special surveys at periods of four and eight years from the date of completion, the requirements for each of these surveys being the same as for the ordinary half-time survey.

I am, dear sirs,
Yours faithfully,
(Sgd.) G. REDMAN,
Assist. to the Secretary.

The Surveyors, Sydney, N.S.W.

[I certify that this is a correct copy of letter handed to me by Mr. Heron.—A. C. BARBER.]

(Enclosure.)

CABLEGRAM TO COMMITTEE, LONDON. 26/6/1918.

Auxiliary barquentines, 244 feet B.P. by 44 feet moulded beam by 24 feet moulded depth Australian hardwoods submitted by Kay Macnicol, Sydney. Rise of floor 21 inches, radius of bilge 4 feet to moulded edge. No tumble home. Crop 11 inches, keel 16¾ inches by 16¾ inches, false keel 16¾ inches by 6 inches. Laminated frames, single, 10 inches by 10½ inches, formed of 7 layers each 1½ inches thick spaced

30 inches centres. Anchor stock at each laminated frame across centre line 18 inches by 10 inches to scarph laminated frame 11 feet each side. Three members of frame run to side of keel, remainder checked back about 2 ft. 7 in. each. Intermediate half floors 16 inches by 12 inches at centre to 12 inches by 12 inches at ends to lower turn of bilge. Inner bottom 3 ft. 6 in. deep at centre line with ceiling beams 9 inches by 7 inches spaced 30 inches apart, centre keelson 16 inches by 16 inches, sister keelsons 12 inches by 5 inches, side keelsons 12 inches by 12 inches, 7 feet out from centre, bilge keelson, two at 12 inches by 10 inches and one forming margin of double bottom 14 inches by 8 inches about 16 feet out from centre. Keelsons form bearers from ceiling beams. Double bottom ceiling 12 inches by 3 inches, bilge ceiling 12 inches by 4 inches, garboard 12 inches by 5 inches, planking 4 inches thick, wales 6 feet by 6 inches.

Upper deck waterways 15 inches by 6 inches, inner two at 12 inches by 6 inches, sheathing 1 inch turpentine to load water line, deck 6 inches by 4 inches, clamps four at 12 inches by 8 inches, beams 14 inches by 10 inches to 10 inches by 10 inches spaced 37 inches, lower deck waterway 10 inches by 8 inches, inner 12 inches by 6 inches, deck 6 inches by 3 inches, clamps three at 12 inches by 6 inches, beams 9 inches by 12 inches spaced 37 inches no crop. Diagonal ceiling continuous from bilge to gunwale double 12 inches by 2 inches with one thick strake 12 inches by 6 inches at lower edge of same near upper turn of bilge. Spars oregon length from heel to cap, fore mast 105 feet 29 inches diameter at partners, main mizzen jigger 105 feet by 27 inches diameter, bowsprit length including housing 70 feet by 29 inches diameter. Topmasts 60 feet by 20 inches, foreyard 78 feet by 20 inches, royal yard 40 feet by 11 inches. If hardwood spars propose 10 per cent. reduction in diameters. Plans of this proposal forwarded through local surveyors May 15th. Kindly cable approval as early as possible.

[This is a correct copy of cablegram despatched to High Commissioner, London. Copy of same handed to me by Mr. Curchin.—A. C. BARBER.]

[Exhibit 25.]

DECODE OF CABLEGRAM RECEIVED FROM HIGH COMMISSIONER'S OFFICE, DATED 25TH JULY, 1918.

Shipbuilding.—Your telegram 9th July following from Lloyd's begins—Kay Macnicol plan approved, provided double bottom not used for water. Laminated frames should be 13½ inches moulded by twelve sides. Long and short arm floors scarphed at butts. Wales 8 feet by 6 inches, side planking 5¼ inches. Bottom planking 5 inches in the way of double floors. Ceiling of 'tween decks 3½ below lower deck 4½ at bilge 5½ inches. Three lower deck clamps 12 by 8. Lower deck beams 10 inches sided, lower deck hanging knees at every beam 36 by 48. Beam knees increased in depth across throat diagonal iron plate 6 by ⅞, fitted outside frames or ceiling edge bolted from lower turn of bilge to gunwale. Upper deck waterway outside strake 15 inches by 8½ inches. Pillars at lower deck 11 by 11 alternate beams. Runner fitted semidactyl pillars. Upper deck hatch coamings carried through one space each end. Upper deck pillars at the middle of No. 2 and No. 3 hatch side coamings 11 inch square at centre line 9 inches square. Length of lower deck hatchway same as upper deck No. 2 and No. 3 hatchway, corner pillars dispensed with, pillars fitted at centre line and middle of lower deck side coaming 11 inches square. 1¼ inch fastenings in keel, keelsons, beam knees, clamps, and breasthooks dumps ⅞ inch by 11 inch long in (wales?) 10 inches in outside planking and bilge ceiling 9 inches in ordinary ceiling. Hatch end beams at upper deck 14 inches square. Curchin's alternative proposal same as above except wales should be 8 feet by 6 inches side and bottom planking 5 inches. Diagonal ceiling proposed compensate diagonal plates and ordinary ceiling. Method proposed of fastening and protecting respective layers of the laminated frames must be submitted. Advise Sydney surveyors.

[I certify that this is a correct copy of cablegram received and handed to me by Mr. Curchin.—A. C. BARBER.]

New plans were made in accordance with those instructions, and were approved by Mr. Curchin and Mr. Heron, and we contend, in view of the vessels having been constructed on plans approved by Lloyd's and the Department, responsibility for the vessels rests upon the Department and Lloyd's, subject, of course, to efficient work being done by us. I submit the following copy of a letter from Lloyd's to the Official Secretary to the High Commissioner:—

[Exhibit 26.]

Lloyd's Register of Shipping,
71 Fenchurch-street, E.C., 3,
21st August, 1918.

Indent No. 7 S.C.S.

SIR,

With reference to previous correspondence respecting the wood auxiliary barquentines proposed to be built by Messrs. Kay, Macnicol & Co., Sydney, for the Commonwealth Government, I beg to acquaint you that a further cablegram has now been received direct from Mr. Curchin, the shipbuilding representative to the Commonwealth Government, at Melbourne, which, being decoded, reads as follows:—

> Kay Macnicol barquentine, please cable if any alteration in scantlings, if length increased 6 feet, also state equipment, letter, and approximate freeboard both dimensions (S). Early attention will be esteemed.

In reply thereto I am directed to state that as the proposed increase in the length of the vessel does not change the tonnage for the scantlings grade, the scantlings approved for the original proposal would also be approved for the increased length.

As regards the equipment, I have to state that provided the vessels be fitted with auxiliary engines having sufficient power to be capable of driving them at a fair speed, the anchors and chain cables, &c., may be as prescribed by table 31 of the society's rules relating to steam vessels. For the vessels as proposed originally, viz., 244 feet in length, the letter for equipment could be "r," and for the 250 length the letter could be "s," table 31 in each case.

With regard to Mr. Curchin's inquiry as to the freeboard that could be assigned, I have to state that the approximate freeboard, assuming normal sheer and beam camber would be 5 ft. 3 in. from statutory deck line 4 inches above the intersection of the wood deck at side, and if length were increased 6 feet the freeboard would be about 1 inch more.

The usual particulars for provisional freeboard assignment should be forwarded, and it may be stated that the length for freeboard computation and length of forecastle are required to be taken from the fore side of stem at the load line.

I may add that the position of the statutory deck line has been computed with the breadth from inner edge of inner waterway as 4 ft. 6 in. from the outside planking, and would be modified if the round of beam and breadth to inner waterway differ from that assumed.

In the circumstances I beg to suggest that a cablegram might be despatched to Mr. Curchin as follows, viz:—

> Approximate freeboard assuming normal sheer and beam camber five feet three inches from statutory deck line four inches above intersection wood deck at side. If length increased six feet freeboard about one inch more scantlings not altered. Equipment according table 31 provided engines sufficiently powerful drive fair speed equipment letter original length "r" increased length "s."

I shall be glad to hear that you will arrange for such a cablegram to be despatched, as you have so kindly done before.

I am, Sir,

Your obedient servant,

(Sgd.) G. REDMAN,
Asst. to the Secretary.

The Official Secretary,
Commonwealth of Australia,
High Commissioner's Office,
Australia House, Strand, London, W.C., 2.

[This is a correct copy of letter received by Mr. Curchin, copy of which was handed to me.—A. C. BARBER.]

I am certain that every alteration asked for by Lloyd's in London has been carried out. These cabled instructions were received before the contract was signed, but they applied to our contract as well as to others. I submit certified copies of further correspondence with Lloyd's:—

[Exhibit 27.]

Lloyd's Register of Shipping,
71 Fenchurch-street, London, E.C., 3.
22nd August, 1918.

DEAR SIR,

I have to acknowledge receipt of your cablegram of 8th inst., which, being decoded, reads as follows:—

> Kay Macnicol barquentine please cable if any alteration in scantlings if length increased six feet also state equipment letter and approximate freeboard both dimensions. Early attention will be esteemed. Curchin.

In the circumstances, a reply has been sent as before through the Commonwealth Government Offices in London,

and for your information I have pleasure in enclosing a copy of my letter to the official secretary.

Trusting that the cablegram which he has been asked to be so good as to communicate to you has reached you safely,

I am, dear Sirs,

Yours faithfully,

(Sgd.) G. REDMAN,
Asst. to the Secretary.

H. W. Curchin, Esq.,
Commonwealth of Australia, Melbourne.

[This is a copy of cablegram despatched to the High Commissioner by Mr. Curchin, copy of which was handed to me.—A. C. BARBER.]

(Enclosure.)

Following from Lloyd's: Freeboard assuming normal sheer and beam camber 5 ft. 3 in. from statutory deck line 4 feet above intersection wood decks at side. If length increased 6 feet freeboard about 1 inch more. Scantlings not altered. Equipment according table 31 provided engine sufficiently powerful drive fair speed. Equipment letter original length R, increased length S.

[This is a copy of cablegram received by Mr Curchin, copy of which was handed to me.—A. C. BARBER.]

[Exhibit 28.]

24th September, 1918.

Shipbuilding.—Following for Lloyd's: Your cable July 25th Kay Macnicol's plans. Proposed method of fastening and protecting layers laminated frames as follows:—Surfaces to be be covered with Stockholm tar. Fastenings 1½ inch hardwood treenails one row middle of frame spaced four feet on flat of floor and side two feet at bilge. View difficulty obtain members laminated timbers over 35 feet builders suggest butting four outside sections. Cable if you approve.

CURCHIN.

[This is a correct copy of cablegram handed to me by Mr. Curchin.—A. C. BARBER.]

[Exhibit 29.]

DECODE OF CABLEGRAM RECEIVED FROM THE HIGH COMMISSIONER'S OFFICE.

Dated 19th October, 1918.

Shipbuilding.—Referring to your telegram 26th September Lloyd's advises begins—"Kay Macnicol barquentines proposed method of fastening protecting framing approved. No exception taken to butting four outside layers provided shift of butts satisfactory."

The Chief Executive Officer,
Commonwealth Ship Construction.

Referred for information.

(Sgd.) M. L. SHEPHERD,
Secretary, Prime Minister's Department. 21/10/18.

[This is a correct copy of cablegram received by Mr. Curchin, copy of which was handed to me.—A. C. BARBER.]

[Exhibit 30.]

Lloyd's Register of Shipping,
71 Fenchurch-street, London, E.C.,
26th November, 1919.

DEAR SIRS,

With reference to your freeboard report, No. 6319, on Messrs. Kidman & Mayoh's wood schooner No. 1, I am directed to acquaint you that, provided the vessel be built in accordance with the approved plans, and the particulars and dimensions now supplied be verified on the completion of the vessel, the freeboards set forth below could be recommended for the approval of the Committee.

I have to request that you will inform the builders accordingly. When the vessel is built and the necessary particulars of tonnage and registered dimensions are obtained, you should forward your report of survey, together with a formal request form, No. 9 or 10, as early as possible, in order that freeboards may be assigned by the Committee in sufficient time for the same to be marked and the certificate issued before the vessel leaves your port.

I am, dear Sirs,

Yours faithfully,

(Sgd.) J. F. HILL, *pro* Secretary.

The Surveyors,
Sydney, N.S.W.

[This is a correct copy of letter handed to me by Mr. Heron, Lloyd's commissioner.—A. C. BARBER.]

Every alteration which Lloyd's suggested as desirable we have made. The work of construction started under the supervision of Mr. Brown, an experienced shipwright, representing Mr. Curchin, and a Mr. Dobney, an expert in timbers. After about twelve months, the services of the latter were dispensed with, as the Department was satisfied that everything was proceeding satisfactorily, and no complaints were ever made by the Government supervisors. Eighteen months were occupied in preparing the plans, and we were continually altering them to meet the demands of the Department. Originally the contract was for schooners fitted with Diesel crude oil engines. Later, it was decided to omit the engines; and I thought this would improve the vessels, because I do not regard wooden vessels as suitable for carrying engines aft. There has been no suggestion that the omission of the auxiliary power would necessitate any alteration in construction; the vessels were designed originally to have the auxiliary power. Although alterations in construction were required by the Department, I do not think they affected the stability of the vessels. I do not think that we declined to carry out any alteration that was requested. When the amending contract of the 4th August, 1919, was signed, we omitted to ask for any extension of time for the completion of the two vessels. At that time we had done a certain amount of work in connexion with the third, fourth, fifth, and sixth ships, the keels of which were actually fixed. Those keels were taken down, and the completion of the other two ships was not interfered with. We omitted to ask for an extension of time. Mr. Hughes wanted the ships constructed quickly, and he said he would offer a bonus of £2,000 for every month that the ships were completed ahead of contract time. It has been held in law over and over again that there cannot be a penalty clause for delay unless there is also a bonus for earlier completion of the contract, and *vice versâ*. That is the reason why the clause providing for a penalty of £500 per month was inserted. The contract also provided, however, that if the completion of the contract was delayed through causes not under our control, the time was necessarily extended. We might have asked for an extension of time when signing the amending contract, but we overlooked the matter. We have had a notification from the Department that the penalty clause would be operated against us. The moment the contract was signed, we obtained a site for building, and proceeded to place contracts for the supply of materials. We bound the contracting timber merchants to give quick delivery. Some firms did better than others, but none of them kept their promises by many months. They all had excuses: They could not get enough men in the country to cut the timber; and if they did get the timber cut, they could not get it shipped because of the shortage of tonnage. At other times, there was drought for many months, necessitating the removal of bullocks from those areas, and there were no animals left to drag the timber into the sawmills. Then when the drought broke, there were floods which drowned the cattle. In addition, there was a marine strike for five months, during which it was impossible to get any timber from the north coast or the south coast. We engaged men to endeavour to get timber, and made every effort to keep the yards supplied with material. We experienced great difficulty in getting qualified labour for working the timber. At one time we had only six shipwrights at work, because we could not get more, and we had to dilute their labour with men from the bush. The spars had to be imported from America, and they were ordered many months before shipping was available for their transport. In order to assist us, Mr. Curchin altered the rig of the vessels. Originally we were to have built a bald-headed schooner, the masts of which would have been 130 feet. That was altered to a top-sail schooner, with masts of 112 feet. All these things made for delay. All the detailed designs, apart from the general design originally prepared, had to be prepared and submitted to Mr. Curchin. Invariably, a long time was occupied in getting the plans prepared and

approved. I will submit to the Committee a detailed statement of the causes of delay. We proceeded with the construction, however; and, on 24th February, 1920, the Chief Executive Officer wrote and said the two vessels we had under construction had been disposed of to private owners. I afterwards learned that the private owners were Messrs. Burns, Philp and Company. On 18th March, 1920, Burns, Philp and Company gave us a written order to make alterations to the keel, at a cost of £300 per ship. On 1st April, 1920, they arranged for us to fix Muntz metal sheathing on the keels, at a cost of £369 per ship. We have received from Burns, Philp and Company the sum of £669 for the work done on one ship. On 10th March, we wrote to Burns, Philp and Company with reference to their proposals for altering the rig of the ship. We objected to doing the work, for several reasons, the main one being that the completion of the vessels would be delayed, and prevent me from leaving Australia on the date I have fixed. On 11th March, Burns, Philp and Company wrote to us, and pointed out that it was essential that the rig of the ships be altered as desired by them; and on 30th April, we submitted an estimate for carrying out the work for a lump sum of £6,400 for each ship. This amount was subject to a deduction for work not to be carried out. On 1st June we wrote a letter to Burns, Philp and Company stating that the deductions is to be allowed were £477 from each ship, thus reducing the net amount of the contract to £5,923 per ship, or a total for both ships of £11,846. A detailed estimate of the cost of this work was submitted to Burns, Philp and Company, through their superintending engineer, Mr. Snellgrove, and the work was put in hand at once. The first ship, the *Braeside,* was duly launched; and at a later date my firm was informed that the ship was not to the satisfaction of Lloyd's surveyor, nor to the executive officer. This information was given to Messrs. Burns, Philp and Company, and since then they have refused to pay for work done on these ships. During the construction of the ships, we were advised that Burns, Philp and Company were the purchasers, and we allowed the servants of Burns, Philp and Company to inspect the ships and to make daily visits to the works. We had no contract with Burns, Philp and Company entitling them to have their inspector in our works; but we allowed them to attend as an act of courtesy. Latterly, however, it was noticed that Burns, Philp and Company's servants were working against our interests; and on 10th July, a letter was written to Burns, Philp and Company asking them to withdraw their representatives from our works. Shortly after that, matters seemed a little more satisfactory, and their representatives were again allowed to visit the ships and the works. Owing to Burns, Philp and Company refusing to pay for materials supplied and work done, it was decided, on 9th September, to again instruct them to withdraw their representatives from the works and the ships. They refused to pay any further sums on account of work done, and a legal action was pending for the recovery of moneys expended on their behalf. Pleas have been filed; but, at the request of Mr. Shepherd, we have not entered the case for hearing. An additional keel was added to the ships at the request of Burns, Philp and Company. Their representatives visited the shipyards with Mr. Curchin and Mr. Heron, and it was arranged that an extra 6 inches of keel should be added for the full length of the keel. It was thought that this alteration would assist in the steering and sailing of the ship, and it was passed by Mr. Heron. Mr. Curchin was not greatly interested. Up to the time the *Braeside* was launched, no objections to the workmanship was raised, either verbally or otherwise. No fear was expressed that the vessel would hog, and no suggestions were made for giving additional strength to the hull before launching. The launching itself was left to us; but Mr. Shepherd, during a conversation in Melbourne, suggested to me that, as the Government had a large financial interest in the ship, we should accept the services of some officer from Cockatoo Island. Accordingly, Mr. Clarke, the General Manager at Cockatoo, visited our shipyard, and later delegated Mr. Ellery to advise and assist us. We accepted his advice, and wrote the Department a letter of thanks. He took general control of the launching; everybody in the firm's employ was placed at his disposal, and he told us what to do, and when to do it. However, I do not hold him responsible for the launching. Both Mr. Curchin and Mr. Brown, one of the departmental inspectors, were present. Immediately following the launching, Mr. Curchin said that the forefoot of the vessel appeared to drop, and I remarked that I did not think any injury had been done. We employed a diver from the Harbor Trust to examine thoroughly the hull; and he said that there was nothing wrong with it, except that a splinter of 18 inches had been knocked off the keel. He said he could put that right without the vessel being placed in dock. When the vessel was launched, we placed on board a foreman and two draughtsmen, and these men erected sights on the deck with a view to taking immediate observations and measurements. It was then, while she was being towed to the berth, and before there was any chance of the tide falling, that the hog was first discovered. The captain of the ferry-boat *Bronzewing,* who passed the *Braeside* on the evening of the launching, will testify that the vessel was hogged at that time. The hogging was first discovered at between 12 and 1 o'clock; but no report was made to the Department on the matter. The launching was followed by a luncheon, and the hogging was not discussed. According to the investigations of our surveyors, the extent of the hog was about 16 inches. About an hour after the launching, the vessel was moved to the moorings, where she is supposed to have grounded, and where a survey of the river bed was made. At that place there are various depths of water. A survey made in our behalf by Scott and Scott, licensed surveyors, of Pitt-street, contradicts the report made by Mr. Greenlees regarding the grounding. We saw Mr. Greenlees make his survey; but we received no copy of his report, and were never officially advised of the result. We know now that Mr. Greenlees' report was to the effect that portion of the length of the vessel was in soft mud, and the other portion rested upon hard ground. If the bottom were as bad as the report indicated, the grounding of the vessel might have contributed to the hogging; but I am not quite sure. Mr. Greenlees said that the stern and midships were on hard ground, and the after part was in soft mud. If that is so, the grounding would not make any difference, because there was never a list in this ship. The report prepared by Scott and Scott, and the accompanying plans, show the worst that could possibly have happened to the *Braeside*.. The keel would settle in soft mud, but at no time would any portion of the hull rest upon hard ground. A moored vessel is always sagging from side to side, and in this case the keel would make a little lake in the mud in which it was resting, and therefore an impression of the keel in the river bed could not have been found. The mud is very soft, and there is no hard rock or shale, such as Mr. Greenlees mentioned. A 26-ft. rod of iron will sink out of sight almost of its own weight. As the vessel was moored, there was more water at the stern than at the bow. While the ship was lying there, the diver from the Harbour Trust went all along the keel at

low water, and he reported that he could not find anything wrong. When Scott and Scott made their survey, the boat was fully loaded with gear; so that she was practically on the same summer draught as she was when the Committee saw her to-day. Practically 26 tons of cargo was required to sink her 1 inch. I submit the following report by Scott and Scott:—

[Exhibit 31.]

Dixon Buildings,
64 Pitt-street, Sydney,
7th October, 1920.

Messrs. Kidman & Mayoh,
O'Connell-street, Sydney.

DEAR SIRS,

In accordance with your instructions I have made a survey of the site at your shipbuilding yards on the Parramatta River where the *Braeside* was fitted up after launching.

I understand that she was launched on the 23rd of April last and remained on the berth until the 13th July, when she was moved to Cockatoo Dock at 1 p.m.

I have made a very exhaustive survey of the position in which the ship was lying with regard to the land, and also have taken considerable soundings of the water and also the depth of the mud thereunder, all of which are shown on the plan marked "A" already handed to you and deducted from the low-water mark on the 17th July, which was the lowest tide since April.

The position of the points at which I took my soundings were located by means of cross bearings taken from known stations on the shore.

To obtain this depth of the mud I used a ¾-in. diameter bar, 26 feet long, the weight of which was about 26 pounds. I found that there appeared to be a thin crust on the top of the land, no doubt owing to the site not having been disturbed for many years, but, with a little pressure, the bar would pierce this crust, and the mud underneath was so soft that the bar would rush through the man's hands.

I found the depth of this mud was very evenly graded, and that the depth of the mud in no place was less than about 7 feet, and increased to a depth of about 9 feet.

The above-mentioned plan, marked "A," shows the position of the ship as she was lying alongside the wharf, also a longitudinal section showing displacement of mud at low water on 17th July.

The plan marked "B" is a cross section of the ship, and shows the position with regard to the mud, also at low water on 17th July.

Yours faithfully,
(Sgd.) H. NEWTON SCOTT.

That is accompanied by longitudinal and cross-section plans of the ship as she rested in the water. After the vessel had been lying at her moorings for some time, she was docked, and she then showed no sign of any injury from either launching or grounding. The keel was without a flaw. There were barnacles to a thickness of about 4 inches from one end to the other, which was proof that she had never been in the mud. In docking her, the vessel was let down on an even keel. While in dock efforts were made by us to strengthen the vessel, but in this regard we were left to our own resources. Mr. Curchin practically said that the ship was no good, and she was ours to do what we liked with. Mr. Curchin advised me to put her on an even keel and put further stiffening in. We tried to strengthen her by putting in extra timbers. This Government expert, who was supposed to know what to do, left us floundering; but before he went away he made a recommendation, accompanied by detailed plans, as to what, in his opinion, should be done to hold the hog. No suggestion of bad workmanship in construction was made until a later date. When it was apparent that Burns, Philp and Company did not intend to proceed with the purchase, a statement was made that the fastenings in the *Braeside* were not right, and that the bolts, which should pass right through the ship's side, were only dummies. We denied these allegations. We have been informed by the men themselves that Mr. Snellgrove and Captain Maxwell, representing Burns, Philp and Company, approached some of our workmen on a Saturday afternoon, and endeavoured to influence them by promises of good employment. The foreman rigger received a telegram to call at Burns, Philp's office on the Monday morning. The men ignored the company's inducements, and made statements which I submit to the Committee. No complaint, except in regard to the fastenings of the ship, has ever been made by the Department. On one occasion Mr. Watson paid us a surprise visit. He visited the *Braeside*, and told us he had been informed that there had been bad workmanship in connexion with the fastenings, and had come to investigate them. Examinations of the fastenings have been made by Mr. Greenlees and Mr. Brown, the departmental inspectors. Mr. Miller, of Melbourne, and Mr. Patience tested the fastenings electrically, and I have a letter from the Secretary to the Prime Minister's Department to the effect that the result of the investigations was satisfactory. On the 20th October I wrote as follows to the Secretary of the Prime Minister's Department:—

[Exhibit 32.]

20th October, 1920.

The Secretary,
Prime Minister's Department, Melbourne.

DEAR SIR,

We wired you to-day advising that the testing of the fastenings on the *Braeside* is getting talked about all over Sydney, and we were informed that there will probably be some difficulty in obtaining crews for the ship.

The dispute and state of the ship is becoming known to seamen, and we suggest that by proceeding as you are doing you are damaging your own interests as well as ours.

We think if you will ask for a report from your own officers and Lloyd's agent, they will advise you that they are perfectly satisfied with the fastenings

In the planking on the side of the ship we have over 100 per cent. in excess of what is required by Lloyd's rules.

It appears that this investigation is being made at the instance of Messrs. Burns, Philp & Co., who seem to be aware of everything that is going on. Somebody unknown to us is letting them know everything, and we strongly advise that you instruct your people to make no report regarding these ships which can be called for by the other side.

Outside the Government nobody has anything to do with the construction of these ships, and we thought it our duty to remind you of the danger of the present proceedings.

Your faithfully,
KIDMAN & MAYOH.

To this the Department replied as follows:—

[Exhibit 33.]

Melbourne, 25th October, 1920.

DEAR SIRS,

With reference to your letter of the 20th October, and previous correspondence, respecting the tests being carried out in regard to the fastenings on the *Braeside*, I desire to thank you for the information contained in your letter, which has been duly noted.

At the same time, however, it is considered that in view of all the circumstances surrounding the matter, it is desirable in the interests of all concerned that the tests which have been started should be completed. In this connexion I am pleased to inform you that the tests so far carried out are quite satisfactory, and it is considered that no good purpose would be served by discontinuing the tests at the present juncture.

The Department is well aware of the rumours in circulation respecting the *Braeside*, and it is considered that the only satisfactory method of removing any doubt which may exist is to complete the tests and make a definite statement as to the result.

With regard to your statement respecting Messrs. Snellgrove and Maxwell watching the *Braeside*, it is not quite clear that this Department has any power to prevent these gentlemen watching the vessel in question if they so desire. A letter has, however, been addressed to Messrs. Burns, Philp & Co.'s representative pointing out the objection to adversely criticising the structure of these vessels at the present juncture.

In the event of the legal action which is pending between yourself and Messrs. Burns, Philp & Co. resulting in reference being made to the alleged defective fastenings, it is all the more essential that the Department should be in a position to definitely deny any such allegation.

Yours faithfully,
(Sgd.) M. L. SHEPHERD.

I have received no further report from the Department. We asked for a copy of the report referred to in the above correspondence, but Mr. Watson refused to supply it. After the vessel came out of dock, she

was taken alongside the Titan crane at Cockatoo Island, and later removed to her present position alongside Glebe Island Wharf. She has been there for about two months. I suppose the *Burnside* could be completely caulked and ready for launching about the 16th December or the 27th December. Sufficiently high water will be available at about either of those dates. By that time the bulk of the wood work will be ready for the erection of the masts. The *Braeside,* when she was launched, was not as far advanced as the *Burnside* will be when ready for launching. In my opinion, the *Burnside* should be strengthened structurally before launching, otherwise hogging will occur. It is more expensive to do the strengthening after launching than when the vessel is on the stocks. I am sure there is no expert in Australia in the building of wooden ships of that size, and I favour an application to Lloyd's, in London. Mr. Curchin is in England now, and he might be asked to explain to Lloyd's what is required. I have informed Lloyd's by cable exactly what has happened to the ship, and have been informed that until they get a favorable report from their representative they cannot issue a certificate. In regard to our request that the Government should take over the contract and carry it to completion, our first difficulty has been in regard to payments. We cannot get any money out of the Government, and we are at the present time about £60,000 to the bad. I asked the Government to agree to arbitration proceedings. They asked me to suggest an arbitrator, and I mentioned Mr. David Fell, accountant, of Sydney. A draft agreement as to the points to be referred to the arbitrator was made by our solicitors, and submitted to Mr. Shepherd. Correspondence followed, and some months elapsed without anything being done. In the meantime, we were getting no payments from the Government. When Mr. Hughes was in Sydney, he inspected the ships at my request. He asked me if they were seaworthy, and would carry wheat and wool, and I replied that they would carry anything. He asked me if I would be afraid to send the ships to sea if they were my own. I replied, "Certainly not." Mr. Shepherd informed him that the ships had been sold to Burns, Philp and Company, but they would not accept them. Mr. Hughes remarked that the ships were like a case of apples, slightly damaged; and then he suggested that I had better go to Melbourne and make him a sporting offer to hand the ships over to the Commonwealth. I accordingly went to Melbourne, but could make no arrangements with Mr. Shepherd. Then I decided to proceed with the arbitration. The departmental officers must have had some objection to arbitration, because they were continually fencing, and would not agree that the time was ripe for such proceedings. Nothing was done until one day, when I was at Parliament House, Mr. Shepherd, after seeing the Prime Minister, asked me if I would agree to the matter being referrred to the Public Works Committee for investigation and advice, in order to save the cost of arbitration proceedings. I said I did not care who made the inquiry, and I would agree to his suggestion. At his request I went back to Mr. Brown's office, and wrote him the letter dated 13th October, which is before the Committee. Subsequently Parliament approved of the reference, and this investigation is the result. Our proposal is that the Government should take over the ships and the liabilities attaching to them, and stand in our shoes as from the commencement of the contract, just as if it had been a Government undertaking. We are asking, also, that compensation be allowed us for what we have done in endeavouring from the start to carry out the contact to the best of our ability. The money already paid to us, and that due under the agreement of the 4th August, can be thrown into the pool, and the Committee can recommend an adjustment. The Government may take over the control absolutely, or may arrange for us to finish the job on a salary. If the Government so desire, we are perfectly prepared to retire altogether, and to leave the completion of the works entirely in the hands of the Department; but, in view of the fact that the works are so far advanced, and we are so well acquainted with all the details, it would be difficult for the Department to take over the job and leave us out entirely. Mr. Kidman is a pastoralist, and I am a railway contractor, and we took on this job during the stress of war. We knew nothing about the building of wooden ships; but everybody was trying to do something to assist the country. We have done our best, but we have been up against trouble from the start. We are up against it still. We cannot get a certificate for the ships. The Government may be able to get a certificate, for I see no reason why they should not, when other ships as badly hogged have certificates. In order to meet the Department's requirements, we should have to make considerable additions to the ships in the endeavour to qualify for the certificate. The Department now shuffles out of the responsibility by offering to give us the benefit of its advice, but without undertaking that when the work is done the hog will be corrected. Throughout the construction the Department has approved of everything we did. Anything the Government officers asked for has been done. Now, when we are in trouble, the departmental officers offer us the benefit of their experience, but will take no responsibility. Hitherto they have taken every responsibility. We had to build the ships to plans approved by them. We say, therefore, that they have been responsible all along. They would not allow us to do anything off our own bat. They knew everything, and we knew nothing; now, when the ship has hogged, they know nothing about the matter. They want us to correct the defect, and they tell us that unless we do so we cannot tender the ship.

85. *To Senator Foll.*—The contractors are responsible for getting a certificate, but we are unable to do so because of the hog, which is due to the plans on which the ship has been built. There is no doubt that there must be some means of designing a wooden ship, so that it would not hog—even if it is necessary to insert steel girders from one end of the vessel to the other.

86. *To Mr. Atkinson.*—Since we have been building these ships, we have made a good many inquiries from master mariners who have been visiting this port as captains of large sailing vessels, and we find that nearly all the ships had a hog, generally measuring from 6 inches to 24 inches, although in some ships as much as 36 inches. A very fine example of an American wooden ship was recently docked at Mort's Dock for painting and cleaning. This vessel, which was called the *Levi W. Ostrander,* had a hog of 20 inches, which is practically the same as that in the *Braeside.* The *Levi W. Ostrander* is 244 feet long, 44 ft. 1½ in. beam, with a depth of 22 feet. She was built in America in 1917, and although she had a 20-inch hog in her, Lloyd's agents in Vancouver, and in other places where she has been docked, have granted her a certificate to Lloyd's highest class. Mr. Heron Lloyd's surveyor in Sydney, inspected this vessel in Mort's Dock, and issued a continuation of Lloyd's certificate. The *Levi W. Ostrander* recently left Newcastle with a cargo of coal. During her stay in Sydney we took the opportunity of asking Captain Seel, who was in command, to make a statement regarding this ship. The declaration he made I shall read. I also tender protographs and plans of the vessel. I should like to remind the Committee that the building of wooden ships in Great Britain has been practically discontinued for many years, but on the American coast the building of smaller wooden vessels has been in progress for many years. The vessels so built always have

a hog in them. During the war, the American Government undertook, at the request of the British Government, to build vessels of every kind, including a great number of large-sized sailing vessels. The general design of these vessels was put under the control of a body of experts, who were known as the Shipping Emergency Board. Having a knowledge that large wooden vessels were liable to hog, they made many experiments for the purpose of eliminating the hog. Various methods were suggested, one in particular being a system of building a centre girder from one end of the ship to the other, in some cases reaching from the keel to the upper deck, and in other cases reaching from the keel to the 'tween deck. Notwithstanding these alterations, hogging in vessels still continued, as is evidenced by the *Levi W. Ostrander*, which was built with a centre girder about 9 feet deep. Various naval architects have evolved different schemes to combat the hog, but none of them has been successful. Sir Robert Steppings, late surveyor to the Navy, who had the designing of several of His Majesty's wooden ships, tried all kinds of schemes to prevent the keels of ships assuming a curved form, which is technically termed hogging, and in several cases he filled in the space between the frames with bricks and motar, and in other cases with concerete. He points out in his book that it is practically impossible to make large wooden ships without a hog. From *Lloyd's Register of Wooden Sailing and Auxiliary Vessels*, we find that out of a total of 4,168 wooden ships built, only 3 per cent. have Lloyd's certificate. With regard to the hog in this ship, we were advised before the keel was laid that considerable hog would be found after the ship was completed, and, to obviate this, we built with a camber of 9 inches, so that, when she was launched, the hog that was expected would be reduced. Mr. Curchin and Mr. Heron approved of our building the ship with a sag of 9 inches in the keel. After the launching of the *Levi W. Ostrander*, nothing whatever was done to overcome the hog in her. I submit the following statutory declaration by Captain Ernest Seel, the commander of that ship:—

[Exhibit 34.]

STATUTORY DECLARATION BY CAPT. ERNEST SEEL.

I, Ernest Seel, of Seattle, Washington, United States of America, do hereby solemnly and sincerely declare—

1. I am a master mariner, and have had 45 years' experience at sea. I have had a sail licence 25 years and steam licence 20 years in December next.

2. I have been both master and owner of wooden ships of the type of the ship I now command, the *Levi W. Ostrander*, and I have had experience in superintending the construction of several wooden ships on behalf of the owners. In 1918 I was employed by the United States Government Shipping Board to superintend the finishing off of the wooden steamer *Mosquito*, 3,500 tons, and in June, 1919, for the E. K. Wood Lumber Co., I superintended the reconstruction of the schooner *Fearless* in J. A. Moore's shipyard in San Francisco, the largest shipyard in California.

3. Twelve years ago, at Mort's Dock, Sydney, I undertook the repairing of the wooden ship *David Evans*, 748 tons, and this work necessitated the refastening of the ship in vital places, and general overhaul to put her in a seaworthy condition.

4. During the course of my experience as above, I have seen a large number of wooden ships on the ways in course of erection, in course of repair, and actually under commission, and I have inspected many other wooden ships in dock and afloat of the size of the *Braeside* and *Burnside*, both of which I have also inspected.

5. In my experience as above, I say that about 75 per cent. of the wooden ships of about the tonnage of the *Braeside* and *Burnside* have been hogged from nothing up to 30 inches, and that hogging has not necessarily been due to defective workmanship or material, but has, in my opinion, happened no matter how carefully or faithfully this class of ship has been constructed.

6. The ship I command at present, the *Levi W. Ostrander*, is a five-masted schooner of 1,502 tons register, built of oregon pine, in the year 1917, and annexed hereto and marked "A" is a longitudinal section of that ship showing her dimensions, all of which are correct. Annexed hereto also, marked "B" is a cross section of the ship showing the length and other measurements, all of which are correct. Her length is 244 feet, beam 44 ft. 1½ in., and depth 22 feet.

7. With reference to the plan annexure "A," the whole of the centre keelsons, including two top lengths, which are full depth of the middle and taper at the ends, were built in the ship before she was launched, and were not added afterwards. The sister keelsons, of which there are two on either side at the lower height and one at either side above same, as shown in annexure "B," were all built in before the ship was launched.

Since the ship has developed a hog I have recommended to my owners that additional sister keelsons be placed on the side of the present sister keelsons to stiffen the keelson, and act as ballast. Although this has not yet been carried out, I know it is the intention of the owners to do this work on my return to Seattle.

8. After the *Ostrander* was launched, signs were perceptible on the general lines that some hog had taken place, and in consequence a diver made the necessary investigations. At that time a docking plan was prepared by the docking company (The Winslow Dry Dock Co.), and the amount of the hog in the keel is shown on annexure "A."

9. I have personally supervised the docking of the *Ostrander* on two occasions, and can certify that the amount of the hog in her is 20 inches. Owing to the hog being in the vessel considerable distortion has taken place in her bilges.

10. I have looked at the five photographs marked annexures C, D, E, F, and G, and I say they are correct reproductions of the hog and general appearance of the *Ostrander* as she lay in Morts' Dock on the 25th August, 1920.

11. From information given to me by the owners and builders from time to time, during the time I have been master of this ship she has been hogged since immediately after launching, and I have always received instructions in consultation with owners and builders that it is impossible to take out the hog in the ship. It is my opinion and the builders' opinion that the hog should be retained, and for this purpose additional sister keelsons will be placed in her on her next visit to Seattle.

12. The *Levi W. Ostrander* was loaded and sailed from Puget Sound on the 27th December, 1917, and since then she has been in high latitudes, where we get the worst kind of weather, and she carried all kinds of cargo. Her second cargo was a cargo of wool from Durban to Boston. The third was a cargo of coal from Norfolk to Para, in South America. The fourth was case oil from New York to Shanghai; and the fifth lumber from Puget Sound to Durban. And all these cargoes were delivered A1, which means that no claims against the ship were made for damage to cargo.

In all these cases the vessel has been loaded to her fullest capacity, and in some instances she has been very heavily loaded, so that she would be drawing, when loaded with coal, 21 ft. 6 in., and with lumber 22 ft. 3 in.

13. During all the voyages I have mentioned the ship has proved herself to be an able and seaworthy vessel in every respect, and her sailing qualities have not been affected in any degree by the hogging.

14. Every time the vessel has been loaded she has been inspected in every port by Lloyd's agents, both when she was empty, during the process of loading, and after loading, and in every case I have received a clean certificate from Lloyd's, which shows that she is acceptable to Lloyd's Association.

15. When the *Levi W. Ostrander* was launched she was given a certificate—Star A1 at Lloyd's—for twelve years from that date, and she still carries that certificate.

16. I have inspected the *Braeside* on one occasion, at Glebe Island, on the 6th inst., and I went thoroughly over the vessel, and from my examination of her I say that she is well built in every respect, and in my opinion she is thoroughly seaworthy. If I were at liberty and looking for a ship, I should be glad to command her.

17. I am informed that the *Braeside* has about 20 inches of hog, and taking into consideration the size, dimensions, and tonnage of the ship, I do not think that hog is in any way detrimental to her value or seaworthiness.

18. I have seen a large number of wooden vessels of about the size of the *Braeside* launched during my experience, and I say it is usual in the large majority of cases for these vessels to develop a hog after launching. In fact, I can say that about nine out of every ten vessels of this size built on the Pacific Coast are more or less hogged, and I know from my own knowledge of a large number of such vessels, including the following:—*H. K. Hall, Geo. Billings, Rosamund, Inca,* which are hogged to a very considerable extent.

19. In my opinion, if a ship like the *Braeside* had a straight keel, and when loaded it was found to have sagged, the butts of the planking would tend to open up, so that it would be better not to take any steps to interfere with the hog or to take it out in any way; but I would prefer to strengthen her in the hog that she has got, and keep her there.

20. In my opinion, all ships of this kind should be flexible, as otherwise, in heavy weather, the strain would be too great.

21. I have inspected the hardwood of which the *Braeside* is constructed, and I can see no reason why it should not be

as good or even better than oregon pine; and in one case I know of an English brig constructed of English oak which has been carrying cargo for 112 years.

22. I consider the *Braeside* is a very strongly constructed ship, and barring accidents, of course, she should have a life, in my opinion, of about 40 years.

23. I carefully inspected the fastenings of the *Braeside*, and, in my opinion, they are all that could be desired, and are sufficient in every respect for the work they have to do. In fact, the ship is generously fastened. The lodging and hanging knees and fastenings in these are, if anything, more than sufficient, as the strength to be derived from these bolts is much greater than would be expected from the knee itself. It would be a disadvantage to put any more bolts in the knees as it would lessen the strength of the knees. All the fastenings compare most favorably with all other wooden ships I have seen of this class.

24. I have examined the knees in the *Braeside* and notice that a few of them are not hard against the clamps and beams, and I attribute this to the fact that the timber has warped, and, further, a little alteration must necessarily take place in same, owing to the hog having developed.

25. I fail to understand the reason why a classification is refused the *Braeside*, because I consider the hog she has is of no detriment to her.

26. I have examined the blocks that are being manufactured for this ship, and I consider that they are outrageously heavy and out of proportion, and not anywhere near a standard block.

The difficulty with this class of block would be that the sheaves cannot be replaced outside of Sydney, and if you wanted to replace any of these blocks in a foreign port you would be unable to do so.

A further detriment to these blocks is their excessive weight, which adds unnecessary weight aloft.

27. With regard to fresh water tanks, in my opinion the provision for one gallon per man per day is amply sufficient for a ship like the *Braeside*.

And I make this solemn declaration conscientiously believing the same to be true by virtue of the provisions of the *Oaths Act* 1900.

ERNEST SEEL.

Subscribed and declared, at Sydney, this sixth day of September, One thousand nine hundred and twenty, before me—

I tender also two photographs of the *Braeside*, one taken prior to the launching, and one taken half-an-hour afterwards, which shows the hog on the waterline. The photos were taken before the vessel was moored at the place where she was supposed to have grounded. The hog is already clearly indicated. It was calculated that the hog had increased by a few inches between the time she was taken to her mooring and her removal to Mort's Dock. While she was in the water we could only take approximate measurements. I do not think that the hogging was in any way due to grounding at the mooring. I do not know of any alteration having taken place in the hog during the last two or three months. By inserting pillars from the bottom of the hold in order to distribute the strain to the 'tween and upper decks we have reduced the hog 4 or 5 inches. Measurements to determine the exact extent of the hog to-day could be made in the course of a day. We contend that owing to unforeseen difficulties experienced in building these ships, the Commonwealth should take them over as from the commencement of the contract, together with any liabilities attaching to them, complete the ship, and compensate us for our labour. There are no special financial liabilities and no troubles with the bank, but money is owing to us by the Department. Up to last Friday all debts owed by Kidman and Mayoh were paid except two or three big accounts. They include the contract of £2,000 for the manufacture of the sails, in connexion with which £500 has been paid on account. The original contract was for £1,000, but it has been largely increased on account of the requirements of Burns, Philp and Company, who, however, have refused to pay us. For the same firm we have to pay an amount of £500 for steel for the *Burnside*. Altogether about £4,000 worth of materials will be required to finish the ship.

(*Taken at Sydney.*)

THURSDAY, 11TH NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Mackay,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.
Mr. Bamford,	

(Mr. H. C. Brown representing the Prime Minister's Department; Mr. J. A. Boyd representing Messrs. Kidman and Mayoh).

Henry Newton Scott, licensed surveyor, of Scott and Scott, sworn and examined.

87. *To the Chairman.*—The site at which the *Braeside* was moored was indicated to me by Mr. Mayoh, and in accordance with his instructions I made an exhaustive survey, which was completed on the 2nd September, 1920. So far as I am aware, no representative of the Government was present. I located the spot on the plan by the Sydney Harbor Trust survey marks on the foreshores. Roughly, it is a line bearing 150 degrees 31 minutes. I found, also, the marks made by the Sydney Harbor Trust for the slips. I located the position of the wharf and the bollards against which the ship had been moored. I made an investigation from the shore by soundings with a chain and dumpy level. I took notice of the low-water mark, and compared it with the Sydney Harbor Trust low-water mark for Fort Denison. The actual position of the soundings was located by two theodolites, the bearings of which intersected each other. At the same time I had a dumpy level with which I set a mark on the tape, and the distance down to the bottom of the mud was read off. It was then necessary for me to ascertain the depth of the mud, which I tested with a 26-ft. iron bar, going through the same procedure as I did when making the soundings. The plan dated 13th September, which is already in evidence, represents a complete survey of that area, and I certify that the soundings shown thereon are correct. I submitted a report to Messrs. Kidman and Mayoh on the 7th October—[*Exhibit* 31]. I took the data for the 17th July because that was the lowest tide between the months of April and July. I found that the depth to the hard ground was in shallowest water near the wharf, and that the depth to the hard ground became deeper further out. The shallowest depth of the hard ground was 14 ft. 4 in. The *Braeside* at that time would be drawing about 7 feet or 8 feet. My plan shows that at about the foremast there were depths of water varying from 9 ft. 5 in. to 9 ft. 11 in., increasing to a depth of about 18ft. 9 in. at the after part of the ship. The soundings were approximately 10 feet apart.

88. *To Mr. Bamford.*—The vessel was not at the moorings when the soundings were taken.

89. *To Senator Foll.*—According to my soundings, the vessel could not possibly have touched hard bottom. The mud is very soft, and would require a tremendous weight to displace it entirely in order to let the ship down on to the hard bottom. If the depth of the mud was only a foot or so, the ship might have displaced it and touched the hard bottom, but as the depth of mud was about 7 feet, I do not think that could have happened. After the iron bar with which the bottom was tested broke through the crust of the mud, it practically slipped through the man's hands. It was impossible to take the soundings at absolutely regular intervals on account of the tide, but I am satisfied that there is no big patch of rock anywhere about the area I tested. In my opinion, there was nothing at the moorings to cause the hogging.

90. *To Mr. Mathews.*—Mud is of much stronger consistency than water, and has a tremendous lot of

suction. The soundings showed that there was more mud amidships than at the bow of the vessel. The mud would yield to a certain extent to allow the hull to fit in. I do not think that the mud would be firm enough to hold a big, flat surface like the bottom of a ship. If there were enough stiffness in the crust to hold the vessel, it would take a tremendous lot of weight to break it with a flat-bottomed bar. My only experience of shipping has been in connexion with yachts. I do not think it would be possible for the bottom to hold up the vessel amidships whilst leaving it afloat at the bow and stern.

91. *To Senator Newland.*—The mud does not appear to be shifted much by the motion of the tide; it appears to be the accumulation of years. The period for which the impression of the ship could be traced in the bottom would depend upon the tides. It might be traceable for a fortnight or a month.

92. *To Mr. Mackay.*—I located the actual position where I took the soundings, but a diver down below might not be able to do that. To fix positions accurately it is necessary to use instruments. A diver would be able to state the appearance of the bottom, but without instruments he could not tell the grade of it.

93. *To Mr. Parker Moloney.*—Water would not offer nearly the same resistance as mud does. A vessel which was drawing 6 feet in water would not draw 6 feet in mud. If there was a greater resistance amidships that might have a tendency to hog the vessel if she were resting on a sort of saddle, with the bow and stern hanging over each side, but not otherwise. But the grade of the bottom from stem to stern at this spot seems to be very even. I do not think it possible for a hard ridge to exist in between the soundings. They were not always taken in the same line; owing to the movement of the tide some of them would be taken on a curve. Unless it were a pinnacle, it would not be possible for a ridge to occur between the soundings. If a pinnacle did exist it might cause damage to the hull, but such damage would be noticeable when the vessel was docked.

94. *To Senator Foll.*—According to the information as to the draught of the vessel when lying at the moorings, I should say that the keel penetrated into the mud, as shown in the cross-section, but that the actual bottom of the boat did not touch the mud at all. The mud was not taking the weight of the ship; practically all the weight was borne by the water above the mud.

95. *To Mr. Mathews.*—If the vessel was hogged before she was taken to this berth she might touch the mud astern, but not amidships. If she was hogged 31 inches amidships she would not touch the mud at any time.

96. *To Mr. Brown (through the Chairman).*—The iron rod with which the bottom was tested went 5 feet or 6 feet into the mud without any pressure, but the depth of mud below the crust varied a great deal. The shallowest depth of mud that the rod went through without pressure was about 6 feet. The rod was of $\frac{5}{8}$ inch in diameter, and blunt at the end. A diver would not sink into that mud because he would be supported by the top crust. But a man's weight was practically enough to press the rod through the crust, and then it went down of its own weight. I think my field work in connexion with these tests extended a little over three days. I did not employ a diver. My investigations covered the whole length that the ship would occupy at her moorings. I took soundings in front of the position of the bow for about 6 feet, but aft they ceased about 14 feet short of the length of the vessel. If the ship were moored more than 6 feet from the position I surveyed, my investigations would not cover the area she occupied. My plan shows the position in which the vessel was moored as explained to me. I should think that a 17-in. keel would penetrate the crust of the soft mud. The time for which the impression would remain could be discovered only by investigation, which would require to be taken over every square inch of the length of the keel. A line heavily loaded at both ends, stretched closely along the bottom, and knotted at intervals, would enable the diver to locate his position approximately. My observations were taken throughout the day when the tide was rising and falling. I set a staff against the pile of the wharf, and watched it two days, in order to get the lowest water mark. Then the Sydney Harbor Trust gave me data as to the difference in the tides on every day during the period of my survey, and I had only to apply that to my own observations in order to ascertain the lowest depth of water.

97. *To Mr. Boyd (through the Chairman).*—My calculation would not be affected by the height of the water when I took the observations. I made a scientific investigation on the basis of the lowest tide between the date when the vessel was moored there and the date of my survey. If the tide had been higher, the plan would not have shown the keel resting in the mud. A hog of 19 inches would have lifted the keel out of the mud. I cannot say exactly how thick the hard crust is, but only the weight of a man was required to push the rod through it. If the keel had rested in the hard crust, the yawing of the ship would have broken it up. The crust was not sufficiently thick to hold up the ship. If a pinnacle of rock did exist between the soundings, I do not think it would have penetrated the hull, because the depth of water would have been sufficient to support her weight, unless she was heavily loaded. The depth from the surface of the water to the top of the mud would vary from about 7 ft. 7 in. at the bow to 10 ft. 5 in. aft; amidships it would be about 9 ft. 4 in. If the layer of hard substance had been strong enough to support the bow, I do not think the ship could possibly have hogged forward; the grade of the mud was practically even all through. Observation by a diver is not a scientific way of taking soundings. The only way to accurately determine a position is to use the instruments I did, and also a bar.

98. *To Mr. Mackay.*—I cannot say offhand how many pounds to the square inch the weight of a man applied to a $\frac{5}{8}$-inch rod would represent, but it would mean a considerable pressure.

99. *To Mr. Mathews.*—It is my opinion that if there was a hog in the boat the centre never rested on the mud.

The witness withdrew.

Joseph Mayoh, further examined.

100. *To Mr. Atkinson.*—The second agreement of the 4th August, 1919, was negotiated with the officers of the Prime Minister's Department. Mr. Curchin was not present. The first boat was due to be delivered under the original agreement not later than the 7th November, 1919, but that condition was not taken into consideration when the second agreement was made. Everybody knew that we had been delayed a great deal in the construction. We did not ask for any extension of time, because it would be difficult to say what extension we would be entitled to. We might have made such a claim if we had been sharp enough, but we missed it simply through inadvertence. No thought was given to the time when the first boat would be completed, although we did not think that the completion would take as long as it did. The delay was caused through many unforeseen circumstances. It is true that, on the 7th October, 1919, Mr. Curchin wrote to inform us that the penalty clause would be enforced. But that was a necessary step for him to take; otherwise he would have no legal standing. This vessel is constructed of heavy timbers which were difficult to obtain. Some pieces were 30 feet and 35 feet long, and in order that they should have a natural curve, they had to be cut from trees which had naturally grown

to that curve. They were difficult and costly to get. Unfortunately, also, we were the last ship-builders in the field. The other two firms which had been given contracts were in the field six months before us, and had the first opportunity of arranging for supplies. The keel and keelsons of the ship had to be of iron-bark, in lengths of 70 feet, perfectly straight and sound. There was great difficulty in getting this timber, and we were not able to lay the keel of the first ship until January, 1919. The *Braeside* was actually built in less than the contract time. All the timbers used were naturally shaped, and there was delay in procuring special deadwood and stem knees, natural floors, anchor stocks, and hanging and lodging knees. As we could not obtain the timber to form the bilge we had to adopt a system of steaming boards 12 inches x 1½ inches in order to bend them to the shape of the ship. These had to be of spotted gum, which could only be obtained from the South Coast, from where there is very little trade. Only one man was handling this timber. The delays in obtaining supplies have continued from the inception of the contract. A dearth of timber cutters accounted for further delay in delivery. There was also a shortage of shipping and a maritime strike, which extended over fifteen weeks, and held up the work for about five months. At one time three of our foremen were absent through influenza. There were also droughts and floods in the timber districts. We warned Mr. Curchin about these delays, and he said that he was sorry, but hoped we would be able to get the timber. I submit for the information of the Committee a number of letters from timber merchants apologizing for and explaining delays in forwarding supplies. We were not delayed in respect of the delivery of other materials, because our difficulties in connexion with timber had kept our construction backward. Delay was caused during the progress of negotiations for the cancellation of four ships, by wet weather, the works being held up for practically three weeks at a stretch and by Mr. Curchin insisting upon our putting a donkey boiler in the 'tween decks. We argued this question out for many months, and finally Burns, Philp, and Company decided that the boilers should not be fixed as Mr. Curchin wanted them. Delay was caused by reason of the plans of the fastenings not being decided upon promptly. Several plans were prepared and altered by Mr. Curchin, and delay was caused by having to get Mr. Heron to approve of them. We could never satisfy him. There was further delay through no decision being arrived at for the cancellation of the engines and time was expended in making up the spaces that were to be occupied by the engines. Mr. Curchin delayed in finally agreeing upon the longitudinal sections. Two complete plans were made before we could satisfy him. We had no trouble with the workmen. Our relations with them were harmonious all through. They have worked as well as any workmen in any part of the globe, and we have no complaint to make of them. Our only trouble was that even when we had supplies of timber we were always short of shipwrights. We did bring a large number of adzemen from the bush, and they ultimately learned to do boring also. All the material required to complete the vessels is in sight. It was only a fortnight ago that we received the planking for one side of the *Burnside*. If the Commonwealth takes over the contract and undertakes to build the vessels all the materials will be available except two boilers, which are being manufactured in Melbourne. In that regard we have had the usual trouble in satisfying Mr. Heron. Burns, Philp, & Company required two additional small boilers, and the makers in Melbourne have made one which they say is perfectly satisfactory. If we were not bound by Lloyds, that boiler would be as good as is made in any part of the world; it will stand all the requisite tests. If the Government will accept those boilers they can be put on board the ships. The sails for both vessels are made, and can be delivered at any moment. They are insured against damage by rats. Everything else is on the ship, or on the job, and is paid for. When Burns, Philp and Company undertook to purchase the vessels, we arranged with Mr. Curchin that any alterations required by the purchasers which cost nothing would be done by us free of charge, but any additional cost entailed would have to be arranged with Burns, Philp, and Company. Certain work was done for that firm, but now they do not want to pay us. We have an action against them pending in the Courts, but we have not asked for it to be set down for hearing pending the decision of this Committee. Prior to the sale to Burns, Philp and Company, Mr. Curchin had notified us that he intended to enforce the penalty clause for delay in completing the ships. I do not think that the sale of the vessels influenced the Commonwealth to drop that claim. We did not attach any importance to the penalty clause, for whilst it says that we shall deliver by a certain date, another clause gives us relief if in certain circumstances we are not able to comply with the time conditions. In a letter to us on the 31st May, 1919, Mr. Curchin wrote—

> I have to acknowledge receipt of your two letters of the 29th inst., having reference to delay in construction and the shipping strike. Contents are noted, and while they will be given consideration, should any question arise in connexion with the delay in completion, I am not prepared to admit that the reasons given are sufficient grounds to warrant extension of the time.

On 7th October, 1919, he wrote again—

> Under the terms of your contract, one of the vessels you have under construction should have been delivered on the 6th inst. I beg to give you notice that I propose to put into operation the provisions of clause 18 of the contract as from that date.

We received a letter from Mr. Watson after he took charge, reminding us that the penalty clause was still in operation. Of course we knew that, but my own opinion is that the Department did not attach much importance to the clause, because it was known that we had experienced delays through causes beyond our control. After the original plans were approved, one big hatch and a small machinery hatch were added to the ships. There is no doubt that either timber or iron is weakened by the cutting of additional holes, but this additional large hatch is supposed to have been compensated structurally. I am positive that the additional hatch did weaken the ship, because a number of beams had to be cut. Common sense suggests that this would weaken the ship to a considerable extent, but how much is difficult to calculate. Mr. Watson has asked us to put the *Braeside* in dock. If the vessel were our property we would dock her during the next few weeks, and if the Government take her over I would advise them to do the same. When she is docked an examination of the hull for marine pests will be made, but the main purpose of the docking will be to clean the bottom and repaint. The vessel was last docked after she had been lying at our berth from 23rd April to the 13th July. She was then found to have barnacles clinging from the full length of the keel and bottom. They were about 3 inches in length and ¾-inch thick. I regard them as evidence that the vessel had not been in the mud at the moorings.

101. *To Senator Foll.*—I would not care to say that the Chief Executive Officer kept us short of money with a view to hampering us in any way. The contract provided for a certain method of payment, but he had a system of his own, different from that provided for in the contract. Because of his system we were kept short of money. It did not hamper the progress of the work, but we had to find the money which the Government

should have paid to us. We are asking the Government to step into our shoes and take all the liabilities in connexion with the ships, and compensate us for the time and experience we have given to the job. But if it is decided that the contractors must complete the contract, we shall be obliged to do so under the terms of the agreement. I several times notified the Chief Executive Officer that we wanted to pay off our men. We have a right to do that. At the time when Mr. Shepherd suggested that the matters in dispute should be referred to this Committee, I had gone to Melbourne with a view to applying to the High Court for the appointment of an Arbitrator. Had an Arbitrator been appointed, I should have been obliged to hold up the works pending his decision, because we declined to continue spending our own money. The paying off of all the men would not have amounted to an abandonment of our contract. We were supplying goods which the Government were purchasing. By not paying for the goods they committed a breach of an important condition of the contract, and we had a right to discontinue the operations pending the decision of an Arbitrator on that breach. The paying off of all the men would have meant a great loss to both sides, no matter who was successful in the law suit. We have invested a sum of £55,000 in addition to the amount which the Government owe us. If we had been a small firm we would have had to abandon the contract long ago. We shall not complete the contract unless the Government make further payments; we will not provide any more of our own money. We are prepared to abide by the recommendation of this Committee; but if we are compelled to go on with the contract we will ask for further progress payments from the Commonwealth. If we do not get that money, we shall have to assert our legal rights. We have no intention of abandoning the contract. We would never put ourselves in that position. In our letter of the 13th October to the Secretary of the Prime Minister's Department, we placed ourselves entirely in the hands of this Committee, which we think is capable of doing justice in this matter. I am prepared to say definitely that some of Mr. Curchin's instructions have delayed us in our work. Altogether we are fourteen months behind in the building of these ships, and it would be difficult to say how much of the delay in the aggregate was due to him. But even if we had been allowed to proceed without interruption by the Department, we could not have completed the vessels within the contract time, because there were other delays. I suppose the delay in passing the plans would not aggregate more than two months. I do not think it possible to make any alteration to the *Braeside* that would enable us to get a first-class certificate from Lloyd's. If we do all that is required to satisfy Mr. Curchin, the vessel will be worth no more than scrap iron. Mr. Heron has worked in unison with the Department in Melbourne in the production of a plan which has been put before us, and he made out a report in conjunction with Mr. Curchin regarding the alterations he required. Mr. Curchin used to ask Mr. Heron what he thought was required, and Mr. Heron used to reciprocate by asking Mr. Curchin what he thought; nobody knew anything about the job. I do not think it possible to do anything that will enable us to get a first-class certificate for the *Burnside,* although some stiffening should be added before the vessel is launched.

102. *To Mr. Mathews.*—In the negotiations with the Government, Mr. Kidman was never present, nor was he consulted regarding the reference to this Committee. He will attend the Committee to-morrow. I have full power to settle everything and do everything. I have had the management of this business since the commencement. I am aware that in entering into this agreement with the Commonwealth we were dependent entirely upon the good graces of the officials; but all contracts are like that. I have never been a party to a contract which did not contain the same sort of clauses; but the contractor has to rely upon getting a square deal. I have had other Government contracts; in fact, I was sent to Australia to carry out £10,000,000 worth of work for Norton Griffiths. Some contracts are even more definite than this one. The contractor has to place himself entirely in the hands of the engigineer, and he can hang you if he likes. Under this agreement the Chief Executive Officer had absolute control, and he could make the contract easy or hard for us. The provision in the agreement that the contractor should take all responsibility for the stability of the vessel does not bear the ordinary dictionary meaning. The word " stability " refers to the sailing of the boat and its security against capsizing. It does not refer to the strength of timbers or liability to hogging. The contract provides that the Commonwealth might alter or revise specifications, and that the contractor shall construct in accordance with the plans so revised, and if, in the opinion of the Chief Executive Officer, such revision or alteration increases or decreases the cost of the contract an allowance should be made accordingly. We handed ourselves over to the mercy of the Chief Executive Officer, as we were bound to do. He was rather reluctant to give orders for the payment of extras. He was never quite sure whether we were entitled to any extra payment on account of alterations, but we had to go on with the contract whether we liked it or not, with the idea of making an adjustment at its completion. Of course, we always had the right to arbitration in respect of any matter in dispute. I am of opinion that the excessive weight and large sizes of the Australian hardwood used in the vessel have contributed to the hog. I think probably Mr. Barber and Mr. Hewison will support that view. American oak is a hardwood, but ships are not built of that timber nowadays. Some ships built of English oak have been on the water for over 100 years. I can produce authority to show that other hardwood ships have hogged. I should say that ships of this size constructed of hardwood are more liable to hog than are vessels built of softwoods. With the latter we would not have the excessive weights at either end of the ship that we get with hardwoods. Every bit of timber put into these ships is very substantial, although possibly owing to the fact of the timber being hardwood, the size might safely have been smaller. Lloyd's, however, stipulated certain sizes, regardless of the kind of timber employed. They class Australian blackbutt and other timbers as equivalent to the Burmah timbers, such as green heart, and they specify the exact size of timber to be used in every part of the ship. In the original plans Mr. Barber, having regard to the strength of Australian hardwoods, specified lighter timbers, but Lloyd's insisted on him adhering to their list. He had provided 4-in. planking on the side of the ship, and Lloyd's increased it to 5 inches. We thought that an injustice, but the contract provided that we should build to Lloyd's approval. We claim that we are entitled to consideration under clause 9, which provides that in the event of any interruption or delay through causes over which the parties have no control, the contractors shall not be liable for any loss or damages, and that the time for completing the contract may be correspondingly extended. The Government have not attempted to penalize us in any way on account of delays. If the question arises, the Arbitrator will decide whether the Government are entitled to claim the penalty or whether we are entitled to an extension of time. I do not think that Mr. Curchin was ever serious about the penalty clause, because he knew the difficulties we had experienced in obtaining materials. We, on the other hand, knew that we could always combat any claim for penalties, and we did not worry about it. In May last the Government refused to make any further progress payments. That was after the discovery of the hog in the *Braeside*. They may have paid £1,000 since, but

not more. All through, our complaint has been that the Government did not pay us enough as the work proceeded. The Government officials assessed the value of the work, and the contract provided that the work done should be estimated and paid for monthly. We had as much right to a fair deal in that regard as the Chief Executive Officer had to see that the ship was built to the plans. But in regard to the payments, I consider that he ignored the agreement. After the *Braeside* was discovered to be hogged, payments were discontinued altogether. That has been one of my grievances, and I pointed out in a letter to the Ship Construction Branch that, although one ship was hogged, there was no proof that the other ship would hog. Since we notified the Government we would not continue operations until a further payment was made, they have made arrangements to pay us £2,000, to be expended only in wages. Work is proceeding accordingly. The stoppage of operations was not due in any way to financial difficulties. I am told that Mr. Kidman alone is worth £5,000,000. At any rate, the combination of Mr. Kidman and the Mayohs is prepared to finish the ships. We were advised that we had a right to cease work pending the decision of an Arbitrator upon our claim that the Government had committed a distinct breach of the contract by not paying us. We asked for an Arbitrator to be appointed, and the Government agreed. A reference agreement was prepared and sent to them. We had to make claims, but the Department "fenced," and said that there was no dispute to submit to Arbitration, so we had to make a dispute. We said that the Government were not paying us according to the terms of the agreement, and that if they did not pay up we would be compelled to ease down, and unless they paid something on account we would cease operations whatever the consequences. We can find any amount of money; in fact, Mr. Kidman objected to my action; but I told him that he must leave the matter in my hands or do the job himself. He decided to leave it entirely to me. We were not prepared to keep paying money out. We are, of course, paying our accounts. I paid out £1,500 on the last Friday of the month regardless of whether or not the Government would pay us. We cannot say to a man who has supplied us with material that, because Burns, Philp and Company will not pay us, we will not pay him. These obligations will be honoured even if they involve paying out our last penny. But to the Government we say that the contract has been broken from the start, and that unless they pay us we will deliberately stop work; not entirely, for some men will still be kept on. We will not allow it to be said that we abandoned the contract. Even if we did abandon it, it would have to be completed and accounts made up as between the Government and ourselves. We would never allow that to happen. I do not think that what we have done has the appearance of an abandonment of the contract. If a small firm had been treated in this fashion, it would have gone bankrupt long ago, because everybody would have been claiming money for work done, or material supplied, and it would not have received payment from the Government with which to meet its obligations. It is only because of the means we have at our disposal that we have been able to keep going. We have brought matters to a stage when the question must be settled as to whether the Government owe us money, and whether or not these ships are worth anything to them. The Government take the stand that, having made progress payments up to a certain date, the ships are their material. Under the terms of the contract, when once they pay on material delivered at the yard and on work done, that work and material becomes their property. If they have paid us to the extent of 90 per cent. of the value of such work and material, they own that proportion. The departmental officers did not assist us, but I do not think they wilfully retarded our operations. I think that all along they have treated us very hardly. The contract provides for fair and reasonable treatment, but the treatment we received was unreasonable, and I objected to it. It is not the first time I have had hard deals. It is well known that a civil engineer or an architect can either make or break a contractor. The Department and Lloyd's were satisfied with the structural compensation made for the additional hatchway. As to whether that compensation was sufficient, Mr. Barber will be able to say. I left the decision in regard to this additional hatchway to Mr. Barber, and Mr. Curchin and his assistants, and when the Department passed the plans my responsibility ceased. From my own personal experience of big structures, I should say that the ship would be weaker with four hatchways than with three. If we made one hatchway 50 feet long, Lloyds would require heavy structural compensation, and the naval architects would provide for that. The specifications provided that the fastenings shall be to the approval of Lloyd's surveyor. When Lloyd's passed the plan first produced by Mr. Barber, they said that the fastenings must be approved by the local surveyor. We prepared plans, and Mr. Curchin amended them by providing for additional bolts. I discovered from Mr. Heron, only a few weeks ago, that we had put more bolts in the side of the ship than were required by Lloyd's. Mr. Curchin had insisted on these bolts being put in. The boring of a number of holes in a piece of timber would weaken rather than strengthen it. The extra bolts would increase the strength of the ship, but I do not think that so many bolts were necessary to secure the planking of the sides of the ship. There is no doubt that the extra bolts increase the strength of the ship, because there is plenty of room for two bolts in a plank 8 inches wide. If the Government decide to take over and complete the ships, the litigation between my firm and Burns, Philp and Company will cease. The onus of obtaining payment from Burns, Philp and Company will be thrown upon the Government. There is no suggestion that the work done for Burns, Philp and Company weakened the boat and contributed to the hogging. When the amending agreement was drawn up on the 4th August, 1919, we made no endeavour to have the price of £26 per ton increased. The new agreement did not make a bit of difference to the cost of construction. The amendment of the specifications, however, increased the cost of the ships by 33 per cent., but we got no allowance on that score. Timbers of increased size had to be put in the vessel in accordance with Lloyd's requirements, because that was one of the terms of the contract. Mr. Ellery, of Cockatoo Island, had absolute charge of the launching. He was sent there to advise and assist us in the launching. We thought there would be more security for the firm if we had him there to assist us. We did everything he suggested, although we were not bound to do it. I do not think that the dropping of the forefoot at the time of launching had anything to do with the hogging. If it had any effect at all, it would be to cause a sag rather than a hog. The cinematograph picture of the launching shows that the vessel never got away from the cradle. It shows that the fat was taken away from the last 20 or 30 feet of the ways, proving that there was greater weight at the forepart of the ship, and that the tendency would be to cause a sag rather than a hog. Shipwrights say that the timber to be used on a boat should not be too well seasoned, because when it is put in the water it swells, and the sides of the ships bulge. That effect can be seen in the American wooden ships built for the Commonwealth. The timber used in the *Braeside* and *Burnside* was fairly seasoned, because, owing to the delay in shipping and transport, there was opportunity for the weather to dry the wood. There was no sap in it. All the timber was examined by officers of the Forestry Department at a price of 3d. per 100 feet. Our specification for the provision of the timber was more severe than that of

Mr. Curchin. I do not think that wire worms will be found in the timber of the *Braeside*. She was given seven coats of anti-fouling paint, but she should be re-docked for washing and further painting before being sent to sea. In the light of what has taken place, I think I could do something to stiffen the *Burnside* if it belonged to me. Had Lloyd's or the Government officials suggested to us any means of strengthening the vessel before the launching, we would have been bound under the contract to do it. They would have said that unless we did as they required they would not accept the vessel. We never heard any suggestion from Lloyd's regarding the possibility of the ship hogging, but Captain Stirling, who has commanded many wooden vessels, told me, when looking over the plans of the ship, that she would have a hog of about 3 feet. He visited the ship many times while it was being built. Because of what he said we decided to build the keel with a 9-inch camber, just as when building a girder bridge the engineer gives it a camber in the middle so that it will straighten when the load goes on. Mr. Curchin knew about the camber we were putting in and approved of it. There was no suggestion that it should be increased. Everybody thought that was a fair provision to make. I want the Committee to understand that the hog includes the 9-inch of camber. That is to say, if the ship was built with a sag of 9 inches, and then hogged 20 inches, it only means that she is 11 inches up from the even keel.

103. *To Mr. Bamford.*—We claim that the measurements will disclose that the vessels have a dead weight of 3,100 tons, instead of 2,600 tons, and we are entitled to £5 per ton for the additional tonnage. That applies also to the four cancelled boats. We were paid compensation for them at the rate of £5 per ton on a dead weight of 2,600 tons. If the measurements prove these vessels to be 3,100 tons, we shall be entitled to an additional payment in respect of the four cancelled vessels of £10,000. We have not made any claim on that score yet, except that we have asked for payment on account, but nothing has been decided. In regard to alterations in the specifications made by Mr. Curchin, it was left to him to give us an order for additional payment, but he always said that those alterations were included in the contract. We had our own schedule of estimates, but we received none from the Government. It was impossible to obtain seasoned timber. A tremendous amount of building was in progress, and it was most difficult to get timber anywhere in Australia. We had no chance of getting properly seasoned timber, but we did the best we could. Burns, Philp and Company considered that the 6-in. turpentine additional keel would improve the sailing qualities of the vessel, in the same way as does a centreboard in a yacht. They paid us £300 for the extra keel and £369 for Muntz metal sheathing. Mr. Curchin gave us no official order for extra payment for the galvanizing of the bolts, but he several times wrote to us that we would have to be paid for galvanizing bolts other than those specified. Nobody engaged in the supervision of the construction had any previous experience in the building of wooden ships. Even our own manager had not had anything to do with wooden ships, and Mr. Curchin told me that he knew nothing about them. The keel was made of lengths of timber from 55 feet to 74 feet. I do not think that these keels, spliced as they were, would have a tendency to make the vessel hog. The best brains were brought to bear in designing the splices. I admit that it would be a good idea to have the keel made in two thicknesses, so as to break the joints, but Lloyd's lay down definite rules for splicing keels.

104. *To Senator Foll.*—I do not think that in any circumstances a first class certificate can be obtained for these two boats. It is quite possible that the extra hatchway increased the liability to hog, but the design should have compensated for any weakening in the deck. The greater the number of holes put in the deck, the less its strength. The original specifications provided for about 44 tons of bolts, and about 60 tons more have been put in. I think the vessel is over-bolted, but probably 44 tons would not have been enough. The over-bolting would tend to weaken the vessel, which is now riddled with bolts; but what has been done is in accordance with plans received from Mr. Curchin and approved by Mr. Heron. We were bound to follow those plans. As an engineer, I say there are too many bolts, especially in the knees. In the event of strain, the timber would tear away and the bolts would remain. The over-bolting did not contribute in any way to the hogging. Burns, Philp and Company should pay for the work which we did for them. They have already paid £669 for the false keel and Muntz metal sheathing. We are out of pocket now on their account, including the payments made last month, to the amount of about £11,000. Under the terms of the contract, the responsibility for this expenditure is entirely with Burns, Philp and Company. The Government do not enter into that at all. I objected to doing some of the things that we were asked to do by Burns, Philp and Company, but, in response to a special request from one of the directors, Mr. McMasters, I eventually agreed to carry out the work for them. The statement that the *Braeside* grounded at its moorings represented only the opinion of the inspectors on the ship. I stated that only about .3 per cent. of wooden vessels have Lloyd's certificates. The reason is that the owners do not trouble to get the vessels classed. A first class certificate is a sort of hall-mark, but I do not think it affects the insurance rates. In a sale, a steamer without a Lloyd's certificate would be at a disadvantage, but that does not apply to the same extent to a wooden ship. A certificate from the British Corporation is just as good as one from Lloyd's. There is also a French Lloyd's. Certificates of the other classifying organizations give the same hall-mark as does Lloyds, and plenty of vessels on their registers are in Australia. I do not know whether persons connected with the British Corporation or other organizations of the kind have inspected the boats. There are a number of marine engineers in Sydney who value cargo and who have been on the *Braeside,* but what companies they represent I do not know. America has just cast off from Lloyd's, and is establishing its own organization, in order to avoid sending all the registration-fees to England. The *Braeside* has been standing for a long time exposed to the weather, and before being sent to sea the caulking should be hardened a little. None of the caulking is coming out. It was all done under the supervision of Government officials. If the vessel had been strained to any serious extent, that fact would be revealed by the caulking being squeezed out in parts. There is no sign of that. Of course, the hogging compresses the joints and tends to close up the seams. It is a great advantage to have a hog in a wooden ship, because it tightens up the timber everywhere, particularly in the lower parts, where water-tightness is so necessary. With a certain amount of extra stiffening the *Braeside* would be quite seaworthy; in fact, she is seaworthy now. I base that opinion on the statement of Captain Seel and others. There is nothing wrong with the ship. She is quite fit to go to sea. The fact of the vessel having been refused a first class certificate is not likely to cause any difficulty in obtaining crews. If this ship were owned by a private person, and she were to be loaded with a cargo of coal for Honolulu,

the guarantee to the shipper without a Lloyd's certificate would not be as good as with a Lloyd's certificate; but, as the Government carry their own insurance, they need not bother about a certificate. I do not know why disparaging statements concerning the vessel have been made, but possibly Burns, Philp and Company thought they could run the price of the vessels down from £45,000 to £35,000. One of our foremen reported to me that Burns Philp, and Company had offered to build him a house if he would tell lies about the vessel, but he declined, and replied that all the work done on the ship was good. He is a leading member of the Shipwrights Union, and the union delegate in our yard. They wanted him to leave our service and go to them. I have another signed statement from a man named Cook. I have not the slightest hesitation in saying that there has been a deliberate campaign waged against these vessels, and everybody connected with the works will say the same. The whole thing has been disgraceful.

105. *To Senator Newland.*—All the plans were made by Mr. Barber, who is a partner in a firm of naval architects in Sydney. He has acted for us. To the extent that he is responsible for the plans, we have to share his responsibility. When we submitted our complete plans, Mr. Curchin had the option of altering them, and 95 per cent. of the drawings sent to Melbourne, numbering nearly 500, were returned marked in red ink. We made all the alterations suggested, because we had no alternative. The original plans were so altered that they were no longer our design. No objection was raised by the inspector or Lloyds' surveyor regarding the quality of work put into the ships during construction. There was no complaint, either verbally or in writing, as to the workmanship or quality of material. The alterations suggested by Burns, Philp and Company were planned by Mr. Barber. The plans were passed by Mr. Snellgrove, representing Burns, Philp and Company, and counterpassed by Mr. Heron. Burns, Philp and Company altered the arrangement of the accommodation for the crews, and instructed us not to build a wheelhouse on the second ship. Their alterations were put before Mr. Curchin for approval. The additional false keel was put on as a result of conversation between Mr. Curchin and Mr. Heron in Sydney. Both Mr. Curchin and Mr. Heron approved of the method of putting the keel on, and the number of bolts to be used. The wooden ship *Ellen B. Stirling*, formerly the *Tacoma,* built in America for the Commonwealth Government, and now engaged continuously in the Newcastle coal trade, has had her engines taken out, and has a 14-in. hog. We wrote and cabled to Lloyd's, London, pointing out that the *Levi. W. Ostrander* was certificated, notwithstanding her hog, but we received a reply that they could not issue a certificate until they received a more favorable report from Mr. Heron. We have been definitely refused a first class certificate. The beam knees in the *Burnside* have as many as eleven bolts in them. There were not so many until lately, when Mr. Heron became scared and made us put more in. Any architect or engineer will agree that that must have the effect of weakening the knees. The excessive number of bolts is more likely to do harm than good.

106. *To Mr. Mackay.*—We only ask the Committee to decide the question of relieving us of our contract. If the Government decide to take over the contract, and desire my advice regarding the completion of the boats, I shall be glad to give it to them free of charge. Other Australian shipbuilders have received compensation, and the American Government has given compensation to shipbuilders for work done. We have been working for two and a half years, and for that are entitled to something. We made an effort in war time to do what we could. If the Committee decide not to relieve us of our responsibility matters will be in *statu quo.* The liabilities which the Government would have to take over are infinitesimal, but we ask to be repaid all we have expended on the ships. The £52,000 we received as compensation in connexion with the cancellation of the order for four ships will be handed back, and we shall make no further claim on the extra £10,000, representing £5 per ton on the estimated dead weight in excess of the contract weight of 2,600 tons. The Government would be expected to take over the shipyard and the plant, and reimburse the whole of the expenditure we incurred from the commencement of the contract. They could appoint their own officers to complete the work, and between now and the middle of January I should be only too pleased to give them every possible help. Our shipyard manager is competent to finish the ships. A valuation of the plant may be obtained from our books. There will be no material on hand when the ships are finished, except a couple of winches and some chains. I shall prepare a full statement of the cost of the ships and the present financial position between ourselves and the Government. I expect that the *Burnside* will hog when she is launched; the plans in my opinion are defective. For that I hold Mr. Curchin and Lloyd's surveyor responsible. Our agreement was to construct the ships according to plans approved by Mr. Curchin and Lloyd's. We as builders were only the labourers who made the ships. The other parties had to approve of the design. According to a statement made by Captain Seel the hogging will not affect the speed of the ship. I would not recommend that an effort should be made to take the hog out of the *Braeside,* but I would approve of filling in the hog with a straight piece of timber, so that when the vessel is docked it will not be necessary to put additional timbers under that portion of the boat. The advance of £2,000 we received from the Government for the payment of wages while this inquiry is in progress is the result of considerable correspondence with the Prime Minister's Department. I discontinued dealing with the Ship Construction Branch because we could not get satisfaction. The Government agreed to let us have £2,000 as a payment on account. But when they forwarded the money they attached a condition that we must use it only for paying wages. However, that is better than nothing, for it saves us the interest on our own money. I do not regard that advance as relieving us of any responsibility. They had previously paid us £104,000, and they can sue us for £106,000 as easily as for £104,000. If the Committee recommend that the ships shall be taken over by the Commonwealth I do not ask that they should inquire as to whether or not we have put in £3,000 worth of extra bolts, or whether the Government are entitled to deduct any money, because all these details are irrelevant. We ask the Government to take over the works from their commencement, and to stand in our shoes. We have endeavoured to do our best, and I reckon that the building of these two vessels in the time we have occupied was a monumental work, having regard to the difficulties in obtaining supplies. If the Committee recommends that the Government should not take over the contract and complete the ships, we must complete them under the terms of our contract. We are prepared to accept the decision of the Committee.

107. *To Mr. Parker Moloney.*—The conditions upon which we think we should be relieved of our contract were stated in our letter to the Prime Minister's Department on the 13th October last. No other conditions were laid down by the Government or ourselves. We have no definite statement from Lloyd's that they refused a certificate to the *Braeside,* nor have they given any explanation of their attitude. They say

that it is not within their province to give an explanation. We wrote asking for their reasons for refusing to grant certificates, and we received only offensive replies. On 19th June we wrote to Mr. Heron as follows:—

[Exhibit 35.]

19th June, 1920.

A. C. Heron, Esq., Lloyd's Surveyor,
George-street, Sydney.

Dear Sir,

No. 1, Five-masted Barquentine.

With reference to the suggested hog in the ship. As Mr. Curchin has written us pointing out that this is a serious matter, and requires consideration, we shall be glad if you will advise us, as Lloyd's Surveyor, if it is an unusual case to have any hog in a ship of this construction.

We are informed that a hog is to be expected, and you will no doubt have records of similar cases.

As you are aware, the ship has been constructed to plans and scantlings approved by Lloyd's in London, and we presume that they have had similar ships previously constructed, and know what is required and acceptable to them.

We shall be glad to hear if the ship is acceptable to Lloyd's for insurance, so that we may know just where we are. And oblige,

Yours faithfully,

Kidman & Mayoh.

To that we received the following reply:—

[Exhibit 36.]

Lloyd's Register of Shipping,
Sydney, 21st June, 1920.

Messrs. Kidman & Mayoh, Shipbuilders,
Sydney.

Gentlemen,

I beg to acknowledge the receipt of your letter of the 19th inst. *re* suggested hog in your No. 1 barquentine, building for the Commonwealth Government Line.

Within the last seven-eight years I have examined a number of vessels of about similar dimensions to yours—*Wergeland, Korsnaes, Carmen, and Forest Friend*—soft-wood vessels built with Lloyd's Class, and did not observe any appreciable hog; all these vessels had been to sea with full cargoes. I think it would be the proper thing for you to arrange that Mr. Curchin should visit the vessel at an early date; most likely he would like to see the vessel in dry dock in order to get accurate measurements, and the matter fully discussed.

Two-inch hog can easily be seen by the eye to one accustomed to sighting vessels in dry dock.

Yours very truly,

(Sgd.) A. C. Heron.

There is no doubt that the refusal to grant a certificate is due to the hogging. Lloyd's have not pointed out any other defects in the vessel. It is most difficult to get any information from Lloyd's surveyor. On the 9th August we wrote to Mr. Heron—

[Exhibit 37.]

9th August, 1920.

A. C. Heron, Esq., Lloyd's Surveyor,
George-street, Sydney.

Dear Sir,

Five-masted Barquentines.

In view of the hogging which has developed in the *Braeside*, we shall be glad to know if Lloyd's Committee will make any recommendation as to what should be done to prevent the same thing from happening in the case of the *Burnside* before she is launched.

We suggest that a cable be sent to London, at our expense, for instructions on the subject, and we think the cable should explain the whole circumstances connected with the hog, which is no doubt due to the design of the ship.

We shall be glad to hear from you, and oblige,

Yours faithfully,

Kidman & Mayoh.

No reply was received to that, and on the 20th September we wrote again:—

[Exhibit 38.]

20th September, 1920.

Mr. A. C. Heron, Lloyd's Surveyor,
Sydney.

Dear Sir,

"Braeside."

We propose to send a cablegram to Lloyd's Society, London, with reference to the hog in the *Braeside*.

Before sending same we wish to consult with you, and we shall be glad if you will make an appointment to meet us, either at this office or at yours, so that we can arrange the text. And oblige,

Yours faithfully,

Kidman & Mayoh.

After consultation we sent this cablegram to Lloyd's, London, on the 20th September—

[Exhibit 39.]

Cable to Lloyd's, London.

Committee, London.

Bentleys. Barquentines Commonwealth Government.

We have to report that first vessel immediately after launching developed a hog of about 18 inches in keel amidship to nothing at ends and during fitting up the hog increased to about 19 inches in keel due in our opinion to increased weights aft and forward and no load in middle to counteract buoyancy.

As you are aware nearly all wooden ships of large dimensions are hogged and it is the opinion of masters of these vessels who have visited the vessel in question that it is no detriment as the ship when loaded causes the bottom to be in compression and thus ensures watertight ship whereas if the ship sagged the ship would leak.

The vessels have been built to plans approved by you and under special survey.

The schooner *Levi Ostrander* which is similar ship to ours has just been docked in Sydney and she carries 20 inches hog in keel which the master states was developed immediately after launching at Tacoma and this ship carries Lloyd's certificate and classification. We therefore respectfully ask that your surveyor be instructed to issue certificate and classification.

On the 24th September we received this reply—

Barquentine *Braeside*. Committee regret they are unable to deal with the classification of the vessel or issue certificates until favorable report received from Surveyor.

108. *To Senator Foll.*—A first-class certificate was issued to the *Levi W. Ostrander* by Lloyd's agents at Vancouver. She developed a hog immediately after launching. The certificate has always been renewed, on one occasion by Mr. Heron in Sydney. I cannot explain the reason why Lloyd's refused to give a certificate to one hogged vessel and granted it to another. There is no suggestion that there is anything wrong with the ship other than the hog. It is simply that Mr. Heron thinks the hog is too great, and he will not recommend the issue of a certificate. Yet the hog in the *Levi W. Ostrander* was 20 inches from the start, and the percentage in that case is greater because the vessel is 6 feet shorter than the *Braeside*. I do not think it possible that something occurred during construction to cause the hog. The timbers, when examined, looked to be just as sound as on the day when they were put in. There is no alteration in the joints, no tearing away of the bolts, and no sign of strain in any way. When the vessel was in dry dock the bilges appeared to be a little distorted, but they were bound to show sympathy with the hog. While the *Braeside* was lying alongside the wharf, Mr. Heron caused us to knock out a number of the bolts and wooden treenails in order to see if any of them were bent or broken. They were all perfect. The members of the Committee saw the bolts and treenails when they visited the shipyard on Saturday afternoon. Captain Stirling, as a result of his practical experience, was able to express the opinion when looking at the plans that the vessel would develop a hog. He commands the biggest steel sailing ship trading to this port, and earlier he had command of wooden ships for many years. His opinion was not based on any examination of the ship itself, but upon an examination of the drawings in the earlier stages of construction. The *Braeside* and *Burnside* are the only ships built of heavy Australian hardwoods during the last 40 years. No objection was raised to the use of those timbers. In fact, the Americans are importing Australian ironbark for the keels and keelsons of their heavy ships. After our conversation with Captain Stirling, we anticipated some hog in the *Braeside*, and so built the vessel with a camber of

9 inches. Although we thought the vessel might hog a little, we did not worry about it. I am prepared to make suggestions to protect the second ship to some extent from hogging, but I would not like to guarantee that it will have no hog. I would put more stiffening timbers in the centre portion of the ship, and also a few iron ties. I think that if more stiffening had been given to the *Braeside* we would have had a better result. I think I could make the second ship better than the one that has been launched, but one cannot tell absolutely what will happen. I have not said that the first boat suffered on account of our lack of previous experience in the building of wooden ships. But as a civil engineer I could insert timbers in the second ship that would improve it. There is no difficulty about building a ship. A man might construct a big building, although he could not design it. Although I had never previously built a ship, I am quite competent to do a little job like this; it is nothing in comparison with the big works I have carried out. But the experience I gained in building the first would help me in building the second. I will not guarantee the efficiency of any suggestion I make for strengthening the second ship, nor will Mr. Watson guarantee his proposals. The fact is that nobody in Australia knows anything about the building of wooden ships of this kind. I believe that if I had to build another ship from the very commencement, I could minimize the hog, but I would not guarantee that. We did not know for certain that the *Braeside* would hog; in any case, that possibility had nothing to do with us. We were working to approved plans, and any alterations made had to be with the concurrence of both Mr. Curchin and Mr. Heron. If we had made any alterations without their authority we would have given them sufficient grounds for refusing to pass the ship. It was not our business to make any alterations or suggestions in regard to design. Had somebody told us that the ship was sure to hog, we might have made suggestions to the Chief Executive Officer, and he would probably have pooh-poohed the idea, and told us to get the vessel launched, and then see whether it was hogged. That was his way of doing things. On the other hand, he might possibly have accepted our suggestion for stiffening the vessel. I do not think we could make any alteration to the vessel which would enable us to get a certificate for it. If the Commonwealth Government will not take over the ships, and they are thrown on our hands, we shall have to charter them ourselves. It will be useless to try to get a certificate. Lloyds have made no suggestions that we might carry out in order to get a certificate. Mr. Watson has submitted to us a plan which he says is for our guidance, but in regard to which he will take no responsibility. That is one of our complaints. In the past they took all responsibility, but now they tell us we may, if we choose, do what they suggest, but they will accept no responsibility. I have no faith in the proposals put forward by the Government for rectifying the *Braeside*. If the work suggested were carried out, it would depreciate the ship 100 per cent., and reduce it to the price of scrap iron. The additional hatchway which was insisted upon by the Government in my opinion contributed to the hogging of the *Braeside*. We could not substantiate any objection to that alteration. We were bound to build the ships in accordance with Mr. Curchin's views. The fourth hatchway was not in the original plan. He had power to modify the original plan, and we had no power to resist modifications even if we thought they would be injurious to the ship. Of course, we could have done the work under protest. The alterations to the two ships at the instance of Burns, Philp and Company represent a cost of over £13,000. That is the amount the firm will have to pay when the ships are completed, if we succeed in our claim. The Government have paid us on account £104,000, plus the recent £2,000 for wages. The estimated price of the completed vessel on a dead weight of 2,600 tons was £135,200. The two ships have been sold to Burns, Philp and Company for £45,000 each. The Committee may be able to ascertain from the Secretary to the Prime Minister's Department, Mr. Shepherd, how the sale price was arrived at. We made no alterations of which the Commonwealth did not approve. We were too well watched for that. When we signed the contract we knew that the Government would be within their rights in compelling us to complete it. The Government might take advantage of that by twisting the contract a good deal, but we are asking the Committee to give us a fair deal.

(*Taken at Sydney.*)

FRIDAY, 12th NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman.

Senator Foll,	Mr. Mackay,
Senator Newland,	Mr. Mathews.
Mr. Atkinson,	

(H. C. Brown, representing the Prime Minister's Department; Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh.)

Andrew Crawford Heron, Ship and Engineer Surveyor to Lloyd's Register, sworn and examined.

109. *To the Chairman.*—The construction of hardwood ships of the size of those ordered by the Commonwealth Government is an innovation in Australia. Not many ships of that size have been constructed of hardwood during the last thirty or forty years. When the Government decided upon the construction of these vessels plans were prepared by the builders, six in number, and submitted to us, and were passed on to London for final approval. The London authorities made certain additions and alterations which have been embodied in the ships, and further slight alterations have been made locally with the concurrence of the builders, the Commonwealth Government officials, and myself. I am conversant with the terms of the contract entered into between the Commonwealth Government and the builders. The agreement gave to the Chief Executive Officer power to alter, modify, and revise the plans at any time during the progress of construction; that is often done in shipbuilding. The contractors were obliged to comply with any demands made by Lloyd's or the Chief Executive Officer, and to meet the requirements of the Navigation Act. Lloyds do not accept any responsibility for any alteration of the plans during construction. Lloyd's make any alterations in the plans which their experience suggests as necessary for the betterment of the vessel. But for those alterations they accept no responsibility. Lloyd's are simply a society for the classification of shipping for the benefit of owners, underwriters, and merchants, in order to give them a true and faithful classification, and to supply the parties interested with a certificate that everything is in order. It is stated distinctly in black and white that Lloyd's accept no responsibility The organization exists merely for the protection of the owner, the merchant, and the underwriter. The contract in this case contained the provision "The contractors take all responsibility for the stability of the vessel." The interpretation of that condition is that under working conditions the vessel, when properly stevedored, shall be stable and seaworthy. So far as my knowledge goes the fastenings put into these vessels

are not more than are required by Lloyd's rules and regulations. I think the fastenings are in accordance with the submitted plans. Our rules provide that two-thirds of the fastenings shall be through fastenings. Short bolts or dumps may be used, or the whole ship may be fastened with treenails, but two-thirds of the fastenings must be through. After the construction had been started the alterations that were made were not sufficient to affect the strength of the vessel in any way. I recollect that the original plans provided for three hatches and a booby hatch for the engines. The plan was altered to provide for four smaller hatches. But I found that that alteration involved the cutting of a half beam less than did the original plan. The alteration was in favour of the vessel as constructed. The total area taken out for hatches by the amended plan was less than was proposed in the original plan. The vessel's length was increased by 6 feet, the masts were re-dispositioned, and the hatchways made more favorable to the working of the ship. The overall length of the hatches is less, and half a beam less has been cut out than if the ship had been built with the three bigger hatches originally designed. It was suggested that the after hatchway should be larger than it is, and that would have weakened the ship, but I did not approve of that. The decision to omit auxiliary power meant that that portion of the after end of the ship which would have been open for a space in order to admit the engines, was filled in with beams, with the result that it is stronger than if the engine had been put in. There was considerable correspondence about the proposal to instal a Cochran boiler. I approved of placing the boiler on the upper deck, but as it was tall and might have been in the way, a proposal was made to place it on the lower deck. For that purpose one beam or two would have had to be cut, but any loss of strength could have been compensated for. A donkey boiler is only about 7 feet in diameter. The addition of an extra false keel to the ship would have no effect on its strength. It was added for the purpose of preventing the ship going to leeward, and to serve the same purpose as a centre-board in a small vessel. There was the further consideration that if the vessel went ashore the false keel might be ripped off, but no damage would be done to the principal keel. The additional keel would have no influence towards the hogging of the vessel. During construction I visited the job once every ten days or fortnight. My organization was not otherwise represented. For all practical purposes I was overseeing the work of construction throughout. Government supervisors whom I regarded as satisfactory were in daily attendance. In my opinion there was no danger of scamping occurring. The contractors made a faithful effort to carry out the work in accordance with the plans. I was present at the launching of the *Braeside*, but that is a matter which we leave entirely to the builder and his naval architect and staff. The launching is a precarious time in the history of a new vessel, and we do not interfere or make any suggestions. On the day preceding the launching there was a very low tide, and on the day of the launching a still lower tide. Whether or not the tide had anything to do with the hogging I cannot say, but the fact remains that the vessel is hogged. I did not hear of the hogging until there had been some correspondence between Kidman and Mayoh and the Commonwealth authorities in Melbourne. From the date of launching six weeks or two months must have elapsed before I heard of a hog having developed in the *Braeside*.. No special report on the matter was made. Later the *Braeside* was docked. The vessel had been built with a camber of 9 inches. When the vessel was in dock, the hog was discovered by sighting the keelsons inside the ship. In docking the weight of the vessel was taken at both ends, and that let down the centre of the vessel, so that the hog was reduced to about 18⅞ inches, but I think the maximum hog was about 22 inches, plus the 9 inches of camber, making a total movement of 31 inches. In the docking, after the hog had come down about 3 inches, the centre of the keel was packed in order to prevent any further drop. A spasmodic effort to correct the hog was made, but the time during the vessel's stay in dock was very limited. A number of vertical quarter-pillars were placed in the ship. I discussed with Mr. Curchin the possibility of strengthening the ship, but I made no definite proposal of any kind. It is not customary to allow a vessel which has hogged to settle on an even keel, and it is possible that through doing this the centre-line fastenings of the *Braeside* have been slackened. They must go through a slight curvature, and that must have a tendency to weaken them. There would be a possibility of leakage occurring through the straining. I have seen the vessel frequently since she was docked, but have seen no evidence of serious leakage. The pump has been in operation occasionally, but as the vessel is in light draught now we do not expect her to leak much. So far as leakage is concerned, she is under the best conditions at present. The matter of inserting strengthening material in the *Burnside* before launching, in order to prevent or minimize the possibility of a hog is for the builder to consider. Lloyd's specify minimum scantlings, but that does not prevent the builder or the owner from adding extra strength in order to make a first class job. Of course, it is possible to add strength in the wrong place, but, unless the additional timber is inserted injudiciously, Lloyd's do not interfere. It is very difficult to find in Australia experts in the building of hardwood ships. There are big difficulties in the way of a contractor, especially one who admits that he has never built a wooden ship before, and who has to rely entirely upon plans and specifications submitted to him. It is usual for a contractor to get his expert advice before he starts, and to take care that he has qualified men in charge. I have worked in shipyards in various parts of Great Britain, and the men in charge there did not require any assistance from Lloyd's. In America the building of ships of oregon has been a continuous industry for many years, but even there the builders have experienced trouble. The *Levi W. Ostrander*, built of American softwoods, was recently in Sydney Harbor, and had an extensive hog, quite 20 inches I should say. The ship was solid with keelsons up to the lower deck beams, but whether they were put in subsequent to the launching or previously I cannot say. That construction is not usual with American ships, although some of them carry the keelsons up considerably. Whether or not the extra keelsons have been put in in order to strengthen her after the hogging, I do not know. and the captain of the ship did not know. He was not the original master, but he told me that he understood that the ship had been injured in launching. In building ships of oregon there is more opportunity of getting longer and better timbers, and there is more room for the fastenings. Amongst other wooden ships I have examined recently were the *Forest Pride*, a softwood five-masted barquentine of about the same dimensions as the *Braeside*, the *Forest Dream*, a sister ship, and the *Wergeland* and *Korsnaes*. I do not care to express an opinion as to whether a slight hog in the *Braeside* would make it dangerous. That decision must be left to my principals in London. I would be very pleased to consult with the Commonwealth Government's experts, if so requested, with a view to strengthening the *Burnside* in order to reduce the possibility of hogging. I know of nobody in Australia who has had experience in the building of wooden ships. No doubt both the *Braeside* and the *Burnside*, particularly the latter, can be made all right, but in the case of the *Braeside* the alterations will take a lot of time and money in order to make the vessel comply with our requirements.

110. *To Senator Foll.*—The alterations made by Lloyds, London, in regard to fastenings and size of timbers, were not very radical. The contractors have not done everything which we desire. They have not inserted the required number of fastenings in the beam knees of the *Braeside*. I refer to the hanging knees connecting the beams with the sides of the vessel. However, Mr. Mayoh has arranged to put in these fastenings. Nothing I have asked them to do has been refused. The boat will be strengthened very little by these fastenings, but they are necessary in order to comply with Lloyd's rules. They cannot now have any effect on the hog, nor do I think they would have had if they had been put in before the vessel was launched. The *Braeside* is not seaworthy at present. The stability of the vessel was approved by our London experts when they passed the plans. Seaworthiness relates to the condition of the vessel when built. She is not satisfactory in her present condition, but she can be made seaworthy at the cost of much money and time. Lloyds require that two-thirds of the fastenings must be through. That requirement has been met in the case of the *Braeside*. I do not consider that the alteration of the hatches, and the making of four instead of three, as provided for in the original plans, has weakened the vessel. I watched closely the progress of construction. Even if the ship were built to our specifications throughout, if she is not to the satisfaction of Lloyd's surveyor after launching, she cannot get a certificate until she is made so. My reason for refusing to report in favour of the vessel being classed was the hog and the omission of some of the fastenings from the beam knees. The hog in this case is excessive, but I am not in a position to say whether or not it will make the ship unseaworthy. My refusal will continue until such time as the ship is made good and I can report favorably to London. The *Braeside* may be made, even at this stage, eligible for a first class certificate, but I repeat only at great expense of money and time. Whether she will actually get a certificate I am not prepared to say. She might or might not be made satisfactory to us. The hog alone would not necessarily be sufficient reason for not reporting in favour of the vessel getting a certificate. There is nothing wrong with the material or the workmanship, except in regard to the beam knees. The *Levi W. Ostrander* has a first class certificate from Lloyd's, but whether it was granted before or after the hog developed I cannot say. It is possible for a representative of Lloyd's in one place to recommend a certificate being refused on certain grounds and for a representative in another place to recommend it to be granted even though the same grounds exist. But that is not probable. We do not know the facts concerning the hog in the *Levi W. Ostrander*. The hog may have developed gradually. The vessel has been to sea with cargo and has proved herself good. A classed vessel is inspected at every dry docking by a Lloyd's surveyor, and a report is forwarded to London. Whether the certificate was granted before or after the hogging can be ascertaind by an inquiry from the London office of Lloyd's. The *Forest Pride* and the *Forest Dream* are of a design entirely different from that of the *Braeside* and *Burnside*. The plans of the latter two were submitted to London and approved before the construction was commenced. I do not anticipate having to refuse a certificate for the *Burnside*; what will happen I cannot say. I cannot recommend that the *Braeside* be classed in her present condition.

111. *To Mr. Mathews.*—The building of hardwood ships is an art that belonged to a past generation, but on the east coast of America hardwood ships of about the same size as the *Braeside* are being constructed. The wooden ships built twenty and thirty years ago were as large as those being built by Messrs. Kidman and Mayoh. The design of the *Braeside* is not a common one, but Lloyds accept all designs. This particular design was probably adopted for the purpose of facilitating construction, and not for the purpose of getting increased cargo capacity. Books have been published in America recently dealing with the construction of hardwood ships. Differences between two ships built to the same design, by the same builders, and of the same material, would be only in small degree. I do not think that a hog would develop in one ship, and that half-a-dozen others built under the same conditions by the same people would be without that defect; there must be a definite cause. Whether the hogging of the *Braeside* was caused by faulty plans and specifications I cannot say. The timber used was as good as could be obtained, and was examined and passed by the Government experts. That is the only precaution that was necessary. The construction and workmanship were to the best of my knowledge fairly and honestly carried out. The alteration of the original plans was not responsible for the trouble. Whether the dropping of the forefoot of the vessel as she left the launching ways was accountable for the hog I cannot say, but ships have actually broken their backs in that way. I cannot say whether the *Braeside* was launched on an even keel. When a vessel commences to move, she is bearing uniformly over the whole surface of the ways. The critical moment is when the centre of gravity reaches amidships; if the buoyancy of the water at the stern is not sufficient to keep the ship flat on the ways during the rest of her progress she strains herself or breaks her back. I have seen thousands of ships launched. The *Braeside* seemed to slip off the launching ways very nicely. Lloyd's require that an 8-in. plank shall be held by one bolt, a 11-in. plank by single and double bolts alternately, and planks over 11 in. by double fastenings throughout. The fastenings are not all through; there is one through and a dump alongside. The dump is a good fastening. The plan sent to London showed one through fastening. Lloyd's specified by red ink markings on the plans that dumps also should be put in alongside. The number of fastenings at present in the ship is in accordance with Lloyd's plans. An ordinary ship is built with two frames, but the *Braeside* is of a special type, having widely spaced frames. I did not take sufficient interest in the launching to be able to express an opinion about it. Lloyd's deal only with the finished article, and I left the launching entirely to the builders. It is better that they should make all the calculations that are required in connexion with a launching. Ships have been strengthened from time to time at the suggestion of Lloyd's. I cannot say what caused the hogging of the *Braeside*.

112. *To Senator Newland.*—The number of fastenings required in the planking is shown by a table in Lloyd's book. The insertion of a larger number of bolts than was specified strengthens the ship in a measure, unless the fastenings are put in the wrong place, in which case they would tend to weaken the ship. If successfully launched, and no accident such as grounding happened, a properly constructed ship should not hog within an hour of being placed in the water. Hogging is usually due to the cargo, and frequently develops gradually over a period of years, until it reaches its maximum, and then it stops. The *Korsnaes* and the *Wergeland* are of the same proportions as those of the *Braeside*, and the timbers are larger in every instance. But there is not the same weight in it. The *Braeside* and *Burnside* are flatter in the bottom than is customary. Owing to the extra buoyancy at the centre of the ship and the comparatively little buoyancy fore and aft, the tendency is for the ends to drop. Including the original sag of 9 inches with which the *Braeside* was built, the actual hog is now 31 inches. After the hog was first discovred we had some of the fastenings removed, but we failed to discover any flaw

in them. They were, however, taken fairly near to the neutral axis, where the strain is least. Wooden treenails also were withdrawn and found to be very good. None of the fastenings along the centre line was withdrawn. There are in harbor now some American ships built to the order of the Commonwealth Government. There is no hog in them. Those ships are packed between the floors with small filling pieces; I think the packing was done with a view to counteracting any tendency to hog. Those vessels are all steamers. The oil motor engines are aft, but the steam engines and boilers are in the middle. The disposition of the engines and boilers does not affect the ship so much as does the distribution of the cargo. A ship should be built rigid enough to withstand the strain of the engine. If auxiliary engines were placed aft, they would have a tendency to hog the ship. Lloyd's can withdraw the certificate of the *Levi W. Ostrander* at any time if she does not comply with the rules. All wooden vessels on the register are periodically surveyed and their fastenings are examined. We do not expect a serious hog in a ship that is absolutely new. If a vessel made a voyage with heavy cargo and came back with a hog of 6 inches nothing would be thought of it, although I would report the fact to London. After the *Braeside* was discovered to be hogged she was let down in dock. Now the hog is up again; the vessel has been doubly stretched. That is one reason why I would not like to put my name to a favorable report until the fastenings, the beam knees, and other things have been attended to. We always pack a hog when a vessel is docked. I cannot express an opinion as to the effect of a hog on the seaworthiness of a vessel. One effect of the hog in the *Braeside* will be to keep all the bilge water at each end of the ship, because it will not be able to run over the rise in the centre. Some of the beam knees have sprung away from the beams and clamps, but whether that is due to strain or shrinkage I cannot say. The beam knees might be packed. The requisite number of bolts have not been placed in the beam knees in the *Braeside*, although they are in the *Burnside*. Lloyd's specified four fastenings above and four below in the beam knees in upper deck, and that number was not inserted in the *Braeside*. We will not have anything but through fastenings in the beam knees. Before the *Braeside* can be put right the false keels must be taken off in order to test the centre line fastenings and insert others if necessary, and the vessel will require to be caulked throughout because she has been strained. Sometimes when a ship returns to port after straining in heavy weather the caulking hangs out in festoons. There are slight indications that the caulking in the *Braeside* has been squeezed out, but as the ship has never been to sea we do not expect much to be wrong with the caulking. This ship has always been in still water, but there is some appearance of the caulking coming out. It would be necessary to put strengthening inside the boat as well as on the keel. There is also a slight deformation in the bilge. If the *Braeside* were strengthened there would be no guarantee that Lloyd's would issue a certificate, but we would try to meet the owners as far as possible. I think 90 per cent. of the vessels sailing in and out of this port are on Lloyd's register. Lloyd's is the parent society, but there are other organizations of the kind, including the American Bureau of Shipping, the Norwegian Lloyd's, and the Italian Lloyd's. They, however, all take their information, more or less, from the British society. It is not necessary that a ship shall be classed at Lloyd's. Many ships are not classified at all. There is no great disadvantage in not having a certificate. An unclassed ship will get practically the same insurance rate, but the certificate is a guarantee to the underwriters. There should not be any difficulty in getting crews for the *Braeside* if she were properly repaired.

113. *To Mr. Mackay.*—It is the usual practice to refer plans to Lloyd's, or some other association of the kind. I cannot say that the hogging of the *Braeside* proves that the plans were defective. The trouble is not necessarily due to the plans; other things might have been contributory. There are other organizations similar to Lloyd's who issue certificates in various parts of the world, but they are not so complete as is Lloyd's, and they are easier to negotiate. Another British association is the British Corporation, a Glasgow classification society represented by surveyors in Sydney and Melbourne. I have seen the pulley blocks intended for the *Braeside*, but they are a matter to be settled between the owners and the builders of the ship. They are good enough for our requirements. They may be the better for having a little more weight than the standard blocks. Bolts were extracted from the sides of the *Braeside* at my suggestion. Mr. Brown and I found them in order, but they were not taken out at the maximum point of deflection. Bolts could be extracted from the seat of the trouble only by taking off the false keels in dry dock, an expensive and tedious operation. We asked for 6 and 4 bolts in the lower hanging knees, and 4 and 4 in the upper hanging knees. That is not too many if the bolts are properly disposed. Sometimes in boring the auger strikes another fastening, but with a little care that can easily be avoided. The spaces between some of the knees and the planking must be packed. I am not in a position to favorably recommend the ship to Lloyd's as she is at present. Many schooners of this kind are not classed in Lloyd's, and a great number of sailing ships are not classed at all. The underwriters may be a little more favorable to Lloyd's classification than to that of other societies.

114. *To Mr. Atkinson.*—The average seaman does not worry much as to how a ship is classed. With a good skipper and good food he will go anywhere. I cannot say whether hardwood ships are more liable to hog than are softwood ships. Some of the old oak ships hogged. I will not say whether the class of timber used in the construction of the *Braeside* has had anything to do with the extensive hogging. The bolts and treenails which were extracted proved that the holes were quite round, that the fastenings fitted tightly, and that no water could pass through them. At the points at which these fastenings were removed, no movement of the planking and framing was apparent. The maximum strain and deflection take place at the bottom of the vessel and on the top girder. But there was no time to take the other fastenings out. I will not say that the bolts and treenails which were extracted were any guide to the general condition of the fastenings. But if they had been found to be twisted and broken, that would have been evidence of the vessel having been strained. I can give no idea of the cost of the alterations necessary to qualify the ship for a first class certificate. I do not think £20,000 would be sufficient. The caulking as well as the alterations would have to be done in dock, and there would be a difficulty in getting the use of a dock for the requisite period.

115. *To Mr. Boyd (through the Chairman).*—If the *Braeside* went to sea with a heavy cargo and returned in a satisfactory condition without having developed any more hog, I would not recommend her for a certificate without some alterations being made. On such a voyage the vessel might experience fine weather all the time. Even if she went around the Horn with a heavy cargo and returned in the same condition as she is in to-day, I would not recommend the granting of a certificate. I question whether it would be wise to reduce the hog any more except by filling in. I think it would be better to fill in the hog with a false keel in order to make the keel level, while retaining the hog. I am not able to say whether the keelsons on the *Levi W. Ostrander* were put in the ship when she was being built or afterwards. I noticed that the

extra timbers almost met the 'tween deck beams, but the master could not tell me whether they had been put in before or after the launching. All he told me was that the vessel had been injured at the launching. The fact that the masts are stepped in the centre of the keelsons does not prove anything, because it would have been quite easy to lop off the bottom of the masts and stove them up. If at the launching there was sufficient buoyancy in the water at the stern as the vessel went off the ways, and there was a continuous pressure on the cradle poppets forward, I think that would be a perfect launching. If that can be shown to have been the case it will dispose of the contention that damage was done to the vessel at the launching. The photograph submitted to me shows a chain supporting the cradle under the bow. If the forefoot of the vessel had dipped, the chain would have slackened off, but when the ship got her buoyancy again within a period of a couple of seconds, the chain would tighten again. The trouble in launching occurs when the centre of gravity passes the end of the ways. The tendency would be for the bow of the vessel to lift up after passing the end of the ways. The ships I saw in dock with perfectly straight keels were comparatively new, and the keels had not moved from the normal line. Within certain limits my superiors would allow me to take responsibility in advising as to the alteration of the ships. I have been with Lloyd's for twenty-six years, and I frequently make alterations in vessels. But I think it better to refer a big job to London, where there is more experience, and a record of all failures. If I wished to suggest big alterations, a cablegram embodying them could be sent to London. The captain of the *Levi W. Ostrander* told me that the vessel was damaged in launching, so far as he knew. I cannot account for the fact that Lloyd's issued a certificate in those circumstances. The *Levi W. Ostrander* had a better form of bottom than has the *Braeside*. She has more rise of floor, and that means greater strength. I have not classified in the highest class many ships with hogged bottoms. The ships which come to this port were not built in Australia, but all ships on the register are annually examined in order to see if they are in general conformity, and we then report whether or not the vessel is eligible to remain as classed. I am a full member of the Institute of Naval Architects, London, and have served Lloyd's in different parts of the world. I have not had any actual experience of the building of wooden ships of the size of the *Braeside*, but I have repaired many at Sydney and elsewhere. The plans prepared by Mr. Barber were sent by me to London to be inspected and approved by Lloyd's Committee. I gave no special advice or instructions when forwarding the plans. The plans came into my office on the same afternoon as the mail for England left, and I forwarded them at once. I do not think Mr. Curchin saw them. The fact is that this was a war-time measure, and in a big hurry. I did not deal with the specifications; they are a matter for the owner and builder to decide. Lloyd's rules are their specifications. The London office returned the plans to me with their alterations. I sent them on to Mr. Barber, and he had them for four or five weeks. I approved of the alterations made in the London office. They coincided with Lloyd's printed rules with regard to the building of wooden and composite ships, except in regard to the fastenings. In building, a few edge fastenings have been omitted, but have been compensated for, in a manner. They could have been put in had the shipwright put on the planks in the proper sequence. I think he made a mistake. We specified edge fastenings from the gunwale to the lower turn of the bilge. When the clamps immediately below the hanging knees are put in there is no room to drive the edge fastenings into the planks underneath. Those edge fastenings were provided for in the drawings. The part from which the edge fastenings were omitted was nearer the neutral axis than the upper and lower parts of the girder. There is not so much strain there, but Lloyd's asked definitely that they should be put in. We had to compensate with dowels for the omission of edge fastenings on the upper part of the side ceilings below the clamps and in the hold ceiling also. In my judgment, the dowelling at that point is compensation for the absence of edge fastenings. Lloyd's specified that two fastenings should be put in each frame in an 8-in. plank. That is not the orthodox rule, but it is not incorrect. The plans show one through bolt in each plank at each frame, and also a dump. I took it that that was necessary on account of the wide frame, and I acted on that. The original planking was 12-in., and is now only 8-in., but the double bolting is a compensation for the wider frame. I think it better to have a through bolt and a dump in each plank on account of the wide spacing of the frames. This ship has a single frame instead of the ordinary double frame. The number of fastenings was to be arranged to the approval of myself and Mr. Brown, the Government inspector. I do not remember whether Mr. Curchin also had to approve of the number of fastenings. I frequently went to the ship with him, and probably we told him that we intended to have the fastenings according to rule, and he agreed to it. It is usual to use a large number of wooden treenails in wooden ships, particularly those made of softwoods. In these ships steel galvanized bolts have been used instead of treenails. I think the metal fastening is superior to the wooden one. Under the contract the contractors could have used wooden treenails instead of steel fastenings, but they admitted in their plans that they intended to put in metal fastenings and they must keep to the submitted plans. I know that Mr. Curchin sent a cablegram to Lloyd's, London, submitting all the measurements of the ships to be built by the Wallace Power Boat Company. In reply to a letter I sent on the 14th May to Lloyd's, London, I received a letter from Lloyd's dated 22nd July, 1918, which is already in evidence. [*Exhibit* 24]—

I received also a copy *Exhibit* 40—

[Exhibit 40.]

Lloyd's Register of Shipping,
71 Fenchurch-street, London, E.C. 3,
22nd July, 1918.

(Enclosure.)

DEAR SIR,

With reference to the six or more Australian hardwood barquentines proposed to be built by Messrs. Kay, Macnicol, & Co., plans of which have been received from the society's surveyors at Sydney, I have to acknowledge the receipt of your cablegram of the 28th ultimo regarding the scantlings of these vessels, and your further cablegram of the 18th instant requesting cable approval of the scantlings.

In reply thereto I have pleasure in stating that in the circumstances I have forwarded to the official secretary at the High Commissioner's Offices, in London, the text of a long cablegram which I have asked him to be so good as to kindly have cabled to you, and I trust that this will reach you shortly.

For your information I enclose a copy of my letter to the High Commissioner, setting forth in detail the cablegram which has been suggested should be sent you.

The plans forwarded by the society's surveyors at Sydney are being returned to them direct, and I have informed them by cablegram that I have cabled you fully through the Commonwealth Government as to the scantlings required.

I am, dear sir,
Yours faithfully,
, Secretary.

H. W. Curchin, Esq.,
Commonwealth of Australia,
Ship Construction Branch,
31 King-street, Melbourne.

If all those specifications were complied with and my instructions carried out, I was practically authorized to issue a certificate, if the ship was to my satisfaction. I gave a copy of that letter to Mr. Barber. In the main, except for small details the ships have been built to the arrangements and scantlings suggested by Lloyd's. The timber was fairly good. There are two or three places where the work does not look pretty, but in the

main the wood was well squared and free from sap. The workmanship and fastenings were to my satisfaction. The vessels are not eligible to be classed because of the hogging. I saw the *Braeside* launched and was at Kissing Point on the previous night. I cannot say whether or not the launching was successful. I was standing on the launching platform, at the wrong place to be able to judge of the success of the launch. I did not hear of any complaints at that time. I cannot say how long afterwards it was that I first heard of a complaint regarding the launching. I cannot say whether defective launching was urged as an explanation of the hog. I did not see any damage done to the vessel during the launching. When the vessel left the fore end of the ways, she dipped her fore foot and that gave her a nasty jar. As she came off she hit and stopped; one could not help seeing that. As she fell off the ways she stopped suddenly. Only a slight chafing of the timber occurred as seen in dry dock. That hit might have jarred the caulking, but it did no damage worth speaking of. It was in no way responsible for the hogging. I saw the vessel float to the opposite shore after the launching, and she was on the ground for a short time. The vessel was not hogged when she was on the stocks. I cannot say whether the paint line was practically level while the vessel was on the stocks, and the photographs submitted—one taken prior to the launching and showing the paint line straight, and the other immediately after the launching showing a deflection of the paint line—would not be evidence of hogging, because the paint line is near the neutral axis of the vessel. Hogging affects only the bottom part of the vessel, and the upper deck, but not the middle of the ship. The alteration in the paint line shown by the photographs might be an optical illusion. These photographs were taken at different angles and do not afford a good comparison. I noticed that when the ship finally left the ways it appeared to drop a little; all ships do that. I do not think one would want to take steps to prevent that; it is not necessary to do so, because it is part of the launching. When the vessel drops she has no artificial support; she is all water borne. I saw the *Braeside* in Cockatoo Dock, and made an examination of the keel, rudder, stern and stem. I saw the small chip that had been broken off the bottom of the forefoot. The damage that it represented was very slight, but the jar which caused it might have started some of the caulking forward. I did not notice any alteration in the caulking when I examined the vessel in dry dock, but previous to that I saw the chunam of the caulking protruding in places. A new wooden ship is caulked every five years, and the caulking is usually hardened up after the first voyage. I have not surveyed any wooden vessels while building. I have made a special survey of the ships built by Kidman and Mayoh, and on every visit I examined the workmanship and the material. I saw some of the holes drilled and the fastenings inserted. I think the decision to lay the keel with a sag of 9 inches was made by the builders, but I knew of their intention. The holes in the ship were drilled with augers of less diameter than the bolts, and the fastenings were driven in by air and hand. The bolts had to be forced into the holes. To the best of my knowledge they were all inserted in a satisfactory manner. I consider that the timber employed was good and suitable for shipbuilding. I am not quite sure whether the timber was seasoned sufficiently, but the building of the ship has taken so long that the timber ought to have seasoned during that time. If the space between the planking and the beam knees is attributable to shrinkage, I do not know why they should have shrunk so much. The question is whether the movement is due to stress or shrinkage, or a combination of both. I cannot say whether it would have been possible to get better timbers for the purpose. When the contract was let there was no timber in stock; the contractors had to wait for it. I have never complained that the timber was not suitable or sufficiently seasoned. It is advisable for the planking to be thoroughly seasoned so that there will be less chance of twisting, shrinkage, and other movement. I do not think that the caulking would be interfered with if dry timber were used which swelled in the water, because the last thread is always sunk below the flush. The principal strain is in the upper part of the girder, and the lower part of the ship, diminishing at the neutral axis near the centre. The strains are greatest at the furthest distance from the neutral axis, which is approximately a little more than half way down; it can be determined only by calculation. The material in the locality of the neutral axis is subject to a certain amount of stress. According to authorities the timber employed in the construction of these vessels is a little stronger than Douglas fir. The latter might be about 13,500 lbs. to the square inch in tension, and hardwood might give 16,500 lbs. to the square inch. I have made hogging and sagging calculations, but not on wooden vessels. Stability in a vessel is dealt with by our London office when plans are submitted to them, and any necessary corrections in dimensions are made. By stability is meant a vessel's power to recover herself after she has been inclined off her original floating level. I have seen all the spars of the *Braeside* loaded on one side of the vessel. As she is a beamy craft that weight on one side would tilt her probably not more than from one degree to one degree and a half. Properly stevedored the *Braeside* has the necessary stability. The six inches of false keel that has been added to the ship will improve its sailing qualities; at any rate it will do no harm. The ship would not sail any worse if the hog were filled in by a straightening of the keel. It would help to keep the vessel from going to leeward, and in docking it would not be necessary to pack under the hog, which is a tedious and expensive operation. I think the false turpentine keel was suggested by the prospective buyer, Burns, Philp and Co. I was told about it and saw no objection to it. We do not interfere in shipbuilding so long as our plans are complied with. We rather like to encourage the industry of shipbuilding, and as naval architects and advisers we help to a degree. Lloyd's were satisfied that if the ship were built faithfully, and on the lines they had laid down, she would be stable and worthy of a certificate. Every item of the plans was examined. I cannot say whether Mr. Curchin or I first passed the plans. I sent them to London, and when they were returned to me they were passed on to Mr. Barber who, with Mr. Curchin, prepared a set of detailed plans from them. A hog might occur in a vessel without any accidents happening. The *Braeside* might have been aground after the launching or she might have hogged without grounding. But hogging usually occurs after vessels have been at sea with heavy cargoes. Mr. Campbell Holmes' book on ship construction is a standard work. He is one of Lloyd's senior surveyors; I used to work with him, and I wrote the steel testing portion of his book. In article 45 he says—

> In wood ships longitudinal strength is difficult to secure, for as they are composed of numerous planks, only united as a continuous surface through the indirect medium of ill-jointed timber frames, longitudinal bending stresses are at once accompanied by marked fore-and-aft straining tendencies in the different planks, each one sliding endwise on its neighbour. Just as a beam composed of detached horizontal layers is deficient both in strength and rigidity, so in a wood ship is the comparative freedom of the different parts to slide or strain upon each other incompatible with these qualities. With such pronounced straining of the various parts, the deformation soon becomes permanent; the hull gradually departs from the straight; so that it is not uncommon in old ships to find the original keel line hollowed up amidships by a couple of feet, the sheer line of the deck having become round in place of hollow. If the tendency to such sliding movement of the planks were prevented, the strength and rigidity of the hull

would at once be greatly increased; it is checked to a great extent by the frictional resistance of the caulking, the perfection of which, in wood ships, is almost as necessary for the rigidity of the hull as it is for watertightness.

I agree with that paragraph. In paragraph 1 of the book, he wrote in regard to hogging—

Until about 1840 practically all vessels were of wood. By that time great perfection had been attained in the use of this material, but its possibilities in the matter of size were limited, for, although in some exceptional cases a length of 300 feet was attained, few wood ships exceeded 200 feet. Even when of this moderate size, to make wood sea-going ships quite strong enough is impracticable, for, as the numerous short pieces of which they are composed can be but imperfectly connected, the inevitable slipping or straining movement of each one upon its neighbour results in time in a large and permanent deformation of the hull, so much so that in old vessels the keel line often departs some feet from the straight, bending upwards in the middle, or "hogging," as it is termed. Although many of those accustomed to wood scouted the idea of iron sea-going vessels, they had soon to admit their superiority.

I cannot say that that passage would apply to the *Braeside*. Mr. Holmes expresses the opinion that it is impossible to build a ship over a certain length that will not hog, but the Americans are doing it all the time. After having a conversation with Mr. Curchin I decided to refuse to recommend a certificate for the *Braeside* until she had been materially strengthened and recaulked. The only way in which to examine the centre line fastenings is to dry-dock the ship and strip off the Muntz metal from the keel. The false keel also would have to be taken off. Possibly it would be necessary to introduce extra bolts. If I were the owner of the *Braeside* I would not take the risk of sending her to sea. I have two brothers who are ship-owners and I know their feelings in a matter of this kind. It would be necessary to take out only a few of the fastenings in order to see whether or not they were bent or strained, but that would necessitate a great deal of work. I do not know that it would be necessary to remove the ceiling in order to expose every bolt in the bottom of the ship. The ceiling should have been spiked before launching, but that has not been done yet. I do not think it would be necessary to take out the garboard strake. I fail to see that it would be necessary to take out a good deal of the bottom of the ship in order to examine the bolts amidships in the sister keelsons. The number of extra fastenings to be put in would depend on what the examination of the bottom of the ship disclosed. After the vessel has been strained, as she has been, it is impossible for her to be perfect. I am only suggesting extra fastenings in the sister keelsons because of the hog. I do not say that the hog proves that the boltings and fastenings were not strong enough. When the *Braeside* was docked I saw a man scraping a little marine growth off the keel. I cannot say how long it would take for that growth to occur; that would depend on how and where the ship was moored. There was not much growth either forward or aft. Just forward of amidships I saw a length of about 10 feet with not a barnacle on it. There was evidence of a slight rubbing; the wood was abraded. Generally, the boat was fairly clean. I asked Mr. Mayoh to remove the copper sheathing in order to examine the scarphs of the keel, but he had not time to expose them. He attempted to do so, but I became tired of waiting. He took off a great many pieces of copper, but not sufficient to expose the scarphs. I noticed a slight deformation in the hull and especially in the bilge due to the hogging. I saw a vessel called the *Admiral D. Mayo* in Morts' Dock, but I do not remember how much she was hogged. I believe it had been decided to take the engines out of her; she is not a classed vessel. American people think that engines are suitable for large wooden ships, but opinion on the subject is divided. With auxiliary power you can calculate on always doing 5 or 6 knots an hour and you save a good deal of time in getting in and out of port. I cannot say whether the *Levi W. Ostrander* was granted a certificate, although she had a 20-inch hog in her. I simply examined the vessel here. She did not get a renewal of her certificate from me, as that was not necessary. Any ship that is classed is examined whenever she is in dry dock; that is a condition of Lloyd's class. If she is all right we report to London for the benefit of the underwriters that she has been seen in good order and that the amount of hog has been duly noted. Shipbuilders need not necessarily have a lot of experience in shipbuilding in order to build faithfully to Lloyd's plans, if they are aided by experienced men who have done similar work before. Of course the principal work is the designing, but in building it is necessary to have a good foreman shipwright. So far as I remember, the hog had lifted the bottom of the keel amidships about 18¾ inches above the level of the blocks on which the keel was resting in dock, but that was after the ship had been let down about 3 inches. The then remaining hog of 18¾ inches was in addition to the camber of 9 inches with which the vessel was originally built. The hog is approximately 19 inches, but the actual movement of the vessel's keel has been about 31 inches. I cannot state the exact date on which I asked the contractors to put additional bolts in the beam knees on the *Braeside*, but it was subsequent to the discovery of the hog. I think I earlier called attention, on more than one occasion, to the necessity for the extra bolts. The 7th October may have been the most recent occasion. The contractors said they would put in the extra bolts, but the work had ben delayed. It is incorrect to say that I did not give instructions before the 7th October. Usually my instructions are given verbally, but if the matter is of great importance, I send the instructions by letter. A certificate is not issued until my instruction are carried out. I asked for one or two other bolts to be put in, which I do not think are yet in place.

116. *To Mr. Brown* (*through the Chairman*).—Donkey boilers were ordered by the contractors from manufacturers in Melbourne, and I wrote to our local surveyor asking him to attend to them. He found that the makers had punched holes instead of drilling them, which is not allowed by Lloyd's according to the most recent instructions. I have not seen a boiler built in that way within the last thirty years. There was no marine growth of any magnitude on the keel when the *Braeside* was docked. Portion of the keel forward of amidships was free of any growth. A little growth was found at both ends of the keel, but there was only plain mud on the stern posts and portion of the rudder. My society has not yet finally assigned the freeboard of the *Braeside*. It is not possible to accurately determine the dead-weight tonnage of the vessel until the freeboard has been determined, because the dimensions of the vessel are altered by the deformation. The altering of the sheer-line has a big bearing on the freeboard. The dimensions originally submitted, and upon which the provisional freeboard was calculated, are changed; consequently it will be necessary for fresh measurements to be taken before the final freeboard can be ascertained. I cannot say definitely whether or not the *Braeside* was aground at the contractor's wharf at Kissing Point, but I did see an abrasion of the keel just forward of amidships. I think I pointed it out to Mr. Mayoh. It would be possible for the abrasion to be caused by the keel rubbing on some hard substance after the launching, but I canot say definitely

117. *To Senator Foll.*—If the vessel went aground that might have accelerated the hogging.

118. *To Mr. Boyd* (*through the Chairman*).—In order to hog through grounding the vessel would have required to be resting amidships on a sort of saddle.

119. *To Mr. Mathews.*—I am not certain whether the hogging would increase the freeboard measurement, thus increasing dead-weight tonnage. The deck is not altered as much as is the bottom. The freeboard has

to be arrived at by calculation. The hogging forces the upper deck up but the deformation of the deck takes place more in the centre of the vessel than on the side, for it is the bottom of the vessel only that is pressed up.

120. *To Mr. Boyd (through the Chairman).*—The alteration to the freeboard caused by the hog is a matter for London to decide; it may be 3 inches. The freeboard will depend upon the result of the measurement; at the most the difference will be only a few inches.

121. *To the Chairman.*—I cannot say definitely from my observations if the *Braeside* has been aground, but if she has been aground about amidships, that would tend to aggravate the hog, because she would be touching so frequently and unsupported fore and aft.

(Taken at Sydney.)

SATURDAY, 13TH NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman.

Senator Foll,	Mr. Atkinson,
Senator Newland,	Mr. Mathews.

(Mr. H. C. Brown, representing the Prime Minister's Department; Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh.)

Joseph Mayoh, further examined.

122. *To Mr. Brown (through the Chairman).*—I submitted to the Committee a sworn declaration by Captain Seel, of the *Levi. W. Ostrander*, and I abide by the statements it contained. If Mr. Heron states that Captain Seel was not the original master of the ship, I do not accept that statement. Mr. Heron once told me that he had had a conversation with Captain Seel, who had said that the timbers forming the centre girders were not in the ship before she was launched. I mentioned that conversation to Captain Seel, and he said it was rubbish, that he had never told Mr. Heron anything of the sort, and that he would write out a statement for me. That was done, and the statement was duly attested. Whatever it contained I believe to be true. In undertaking the contract for the building of these vessels we were advised professionally by Messrs. Kay, Macnicol, and Company, consulting engineers and naval architects. I am aware that the first offer to build was sent by our naval architect to the Government. I was told by Mr. Macnicol that on 15th February, 1918, he had written to the Commonwealth Government stating that his firm had an offer from two Sydney companies to build wooden ships. My offer was not included, because I was not connected with the negotiations at that time. That offer to build ships was based upon the original designs and specifications of Kay, Macnicol, and Company, which have been handed into the Committee by Mr. Watson. Those designs do not embody the principal structural features covered by the latest plans and specifications submitted by us when the contract was signed. The original plans and specifications have been altered tremendously by both Lloyd's and Mr. Curchin. The timber sizes have been increased by at least 30 per cent. Mr. Heron and Mr. Curchin always worked together. The contract was signed on the 6th July, but the plans were not returned to us until about the 22nd August. It is not a fact that the contract agreement was signed before the plans and specifications were approved. The original plans and specifications were sent by Kay, Macnicol, and Company to the Commonwealth Government, and negotiations were opened by them. They told the Government that they knew of a firm who were willing to build these ships to their plans. I think they had in mind the Wallace Power Boat Company and others. I dropped out of the negotiations altogether. An offer was then made by the Wallace Power Boat Company on the plans originally submitted. They may have been sent in in April, 1918. I agreed to those plans before the contract, which the Government let to us, was signed. I went to Melbourne, and the Secretary of the Prime Minister's Department informed me that the Government were prepared to give my firm a contract similar to that made with the Wallace Power Boat Company. I approved of the plans which had already been put before the Government on behalf of that company. Our contract provided that the plans and specifications had to be prepared by the contractors and submitted for the approval of the chief executive officer and Lloyd's. Before that contract was signed the plans previously submitted by the Wallace Power Boat Company were on their way to England to get the approval of Lloyd's, and when they were returned they were applicable to our contract as well as to the contract let to the Wallace Power Boat Company. Mr. Heron gave a copy of the plans as altered by Lloyd's to Mr. Barber, who proceeded to make the necessary detailed drawings, which he subsequently submitted to Mr. Curchin. The making of detailed drawings proceeded for the next eighteen months. No specifications were supplied by us beyond the original specification submitted with Kay, Macnicol, and Company's plans. The specification signed by us on the 29th November was prepared and submitted by Mr. Curchin. We could not agree to terms, but Mr. Curchin sent an intimation in writing that if we did not sign the specifications he submitted he would not allow us to proceed. For a month I refused to sign, and the other companies that had accepted contracts for the building of wooden ships wanted us to combine with them in endeavouring to force Mr. Curchin to agree to the original specifications. I refused, telling them to fight their own battles and we would fight ours. Eventually, however, there was nothing for it but to sign the specifications, as we had contracted to do in the agreement, and, accordingly, we signed on 29th November. If I could have got out of the contract I would have done so, but, in the meantime, I had taken a lease of the land at Kissing Point and had made preparations for the commencement of the work. The specification is marked as approved by us on 29th November. On the 11th September, 1918, Mr. Curchin wrote to us as follows:—

[Exhibit 41.]

Commonwealth Ship Construction,
Melbourne, 11th September, 1918.

Messrs. Kidman & Mayoh, Sydney.

DEAR SIRS,

With reference to the hull specification forwarded to you some time ago, and which was discussed between us, I shall be pleased if you will have the specification signed as early as possible.

In this connexion I would draw your attention to the terms of the contract, where it states that the plans and specifications must be approved by myself before the work is commenced, and I shall be pleased if you will give this matter your earliest attention.

Yours faithfully,

H. W. CURCHIN.

Again, on 3rd October, he wrote to us:—

[Exhibit 42.]

Commonwealth Ship Construction,
Melbourne, 3rd October, 1918.

Messrs. Kidman & Co., Sydney.

DEAR SIRS,

Adverting to my letter of the 11th ult. respecting the hull specifications forwarded to you some time ago for signature

and drawing attention to the terms of the contract, which stipulate that the plans and specifications must be approved by me before the work is commenced, I beg to again bring to your notice that the signed specifications have not yet been received by me, and to ask you if you will be good enough to advise me as to the position of the matter, and to expedite their submission.

Yours faithfully,

H. W. CURCHIN.

The specifications to which he refers included a number of alterations to which I would not agree. For instance, I objected to the installation of an electric lighting plant. I complained that that was not in the original specification, but as I had contracted to do everything which Mr. Curchin required, I had to agree to the specifications, knowing that I could go to arbitration in the last resort. Accordingly, I signed on the 29th November, and on 3rd December Mr. Curchin wrote to us: "I have to acknowledge receipt of yours of the 29th ultimo, with specifications, for which I thank you." I do not remember whether or not our naval architect forwarded on our behalf specifications to Mr. Curchin on the 23rd July. Mr. Curchin had considerable correspondence with Kay, Macnicol, and Company in regard to plans, and that correspondence did not come under my notice. In the earlier days of the contract Kay, Macnicol, and Company prepared all the plans at their own offices. Later, for greater convenience, Mr. Barber and his staff were removed to our yard. I have never seen any correspondence that passed between Mr. Curchin and Mr. Barber. I do not know whether or not our consulting naval architects submitted the principal structural plans to Lloyds in London through Lloyd's local surveyor on the 15th May, 1918, and not through the Chief Executive Officer. Mr. Heron stated yesterday that he received the plans back from London and handed them over to Mr. Barber, who kept them for several weeks while he made copies. Mr. Barber was not allowed to communicate direct with Lloyd's. On the 2nd July, 1918, Lloyd's of London wrote that they had received Mr. Heron's letter forwarding Kay, Macnicol, and Company's plans. We accept all responsibility for the actions of our naval architect. You ask me if I will accept the evidence contained in the following letter, sent by Mr. Barber to Mr. Curchin:—

[Exhibit 43.]

Messrs. Kay, Macnicol, & Co.,
No. 4 Bridge-street, Sydney,
3rd October, 1918.

H. W. Curchin, Esq,
Chief Executive Officer,
Commonwealth Ship Construction,
31 King-street, Melbourne, V.

DEAR SIR,

Under separate cover we are forwarding you the following blue prints:—

193/S Midship section.
194/S Longitudinal section and deck plans.
195/S Longitudinal section and poop forecastle decks.
197/S Scheme of fastenings.
198/S Sketch of inner bottom.

These have been printed from the drawings sent to us by Lloyd's, London, and returned to Lloyd's surveyor, Sydney, with amendments and alterations thereon.

You will note that we have gone over the print of Lloyd's markings in red.

Yours faithfully,

(Sgd.) A. C. BARBER.

I certainly accept that letter, but I fancy the plans referred to there as having been received from Lloyd's are the identical drawings handed by Mr. Heron to Mr. Barber so that he could detail them as Mr. Curchin required. In order to pin Mr. Curchin down to something definite we made him sign every plan we possessed. I am sure that Mr. Barber's letter refers to portion of the plans we received through Mr. Heron for enlargement, because Mr. Heron stated definitely yesterday that Lloyd's Committee in London returned the plans to him. The files contain probably 100 letters like that of the 3rd October, each one forwarding plans to Mr. Curchin. You ask me to name any modifications requested by the Chief Executive Officer which reduced the strength of the vessel. I have already expressed my opinion that by increasing the number of openings in the deck of the ship the strength of the vessel might have been reduced. That was the only modification which, in my opinion, might have weakened the ship. I do not agree with Mr. Heron's statement that that modification would make no difference to the longitudinal strength. He stated that the actual area of the four hatches finally adopted was less than the total area of the three hatches originally specified, but you must have regard not to the area of opening but to the disposition of the hatches and how and where beams are cut. In between the hatches are beams which tie the ship together. If you increase the number of hatches from three to four, though the aggregate area of opening may be less, yet more beams are cut. Mr. Heron is not correct in his statement that the increase of the hatches from three to four meant the cutting of one beam less. I admit that we undertook to build the ships to the satisfaction of Lloyd's and to get their certificate. I repeat my statement that up to the time when the hog was discovered in the *Braeside* the Department took full responsibility for the ship, but afterwards we were left to our own resources. We were not allowed to deviate in any way from the plans approved by Lloyd's and Mr. Curchin. The contract was definite upon that point. When the hog was discovered I asked Mr. Curchin what we were to do. From that on he ceased to be our adviser and to take any responsibility. Afterwards, at a meeting in Melbourne, he told me that we would have to do something to radically alter the ship. I asked him what he could suggest. Later we had a meeting at Mr. Heron's office and discussed the matter. As a result, Mr. Hewison prepared a plan suggesting alterations that could be made. I cannot produce any letter in which the Department ever acknowledged responsibility, but up till the time when the *Braeside* was docked Mr. Curchin was the king-pin. Under the terms of the contract whatever he asked for he got. When the hog developed we did not know what to do, and we applied to Mr. Curchin and Mr. Heron as experts. Mr. Heron said that it was not his business to tell us what to do, and he did not suggest anything. I then asked Mr. Curchin what we should do, and he replied: "If I were you, I would let the ship down on an even keel and try to stiffen her." At a later meeting he left us to our own resources, but later sent us a plan, with a covering letter, in which he said that the plan was only for our guidance and he took no responsibility. We could carry out the alterations suggested if we pleased, but he would not accept the ships until we got a certificate. I admit that the responsibility of finishing the ships and getting Lloyd's certificate rested with us and I do not wish to depart from any portion of that deed. But the Department approved of the plans on which the ship was built. Up till the time that the trouble occurred they sent us instructions in regard to every alteration they required; when the hog was discovered the Department sent us no instructions, but suggestions, for which the officers took no responsibility. We had a look at the departmental suggestions, and came to the conclusion that they would make a mess of

the ship. I draw attention to the following letter from Mr. Watson, acting chief executive officer:—

[Exhibit 44.]

Prime Minister's Department,
Ship Construction Branch,
31 King-street, Melbourne,
13th September, 1920.

Messrs. Kidman & Mayoh,
25 O'Connell-street, Sydney.

DEAR SIRS,

Braeside.

As arranged during the recent discussion at Lloyd's office, Sydney, I enclose herewith plan showing stiffening which it is suggested should be fitted in the above vessel.

You will understand that these suggestions are made without prejudice, and simply for your guidance and consideration. You will note that the general principle is similar to that put forward by the late Chief Executive Officer in his letter to you of 30th July last. The principal difference between the present suggestions and his suggestions have been made to meet certain objections raised by yourselves as to the position of the upper girder. I consider this alteration will also simplify the work. You will also notice that some additional ties and struts have been embodied in the suggestions, these being considered desirable after further inspection of the vessel.

I would also impress upon you that the suggestions are put forward in the absence of acceptable counter proposals from yourselves.

With regard to the *Burnside*, I have to request that you will supply full and accurate particulars of the proposed launching arrangements.

Yours faithfully,
(Sgd.) K. WATSON,
Acting Chief Executive Officer,
Commonwealth, Ship Construction.

I also submit the following earlier correspondence:—

[Exhibit 45.]

Commonwealth Ship Construction,
Melbourne, 21st July, 1920.

Messrs. Kidman & Mayoh, Sydney.

DEAR SIRS,

Braeside.

An inspection of the *Braeside* in dock indicates that this vessel has been severely strained. I understand that some straining was possibly caused at the time of launching, and an investigation of the berth where she has been lying since the launching date, indicates that at certain stages of the tide she has been aground only partially supported over the length of the vessel.

Lloyd's inspector informs me that in her present condition the vessel is not acceptable to the Society, and consequently is not acceptable to myself.

I shall be pleased to know what steps you propose to take in order to make the vessel eligible for the stipulated class at Lloyd's.

Yours faithfully,
H. W. CURCHIN.

[Exhibit 46.]

23rd July, 1920.

To H. W. Curchin, Esq.,
Commonwealth Ship Construction, Melbourne.

DEAR SIR,

Braeside.

Referring to your letter of 21st inst.

From the launching diagrams, observations, and photographs taken at the time of launching, we do not agree that the ship was strained during launching.

We ourselves have not been able to see any indication of the vessel having been severely strained.

With reference to your suggestion that the vessel has been aground at certain stages of the tide. We are investigating this, and if it turns out that the ship has been somewhat aground we do not think this is a serious matter.

We think the hogging is due to the flexibility in the entire ship, and the vessel requires to be stiffened in some way.

Since you left Sydney, and acting upon your advice, we floated the vessel in the dry dock, and afterwards took out the packings and allowed her to come down on a level keel. We fixed on either side of the ship pillars between the bilge and the underside of the 'tween deck beams. We put a pillar under every other beam, and when this operation was completed the ship was taken out of the dock, and the result has been that the hog is now about 15 inches, thus showing that it is necessary to make some structural alterations in the ship; and if you could suggest any method of overcoming the difficulty, we shall be glad to give it serious consideration.

You are aware that we have built this vessel according to plans and specifications approved by Lloyd's and yourself, and neither you, Mr. Heron, nor ourselves expected so much hog as has been found in the ship.

You know more about these matters than we do, and we shall esteem it a favour if you will advise us what you think would overcome the difficulty.

We may say that the ship is now lying alongside the Titan crane at Cockatoo Dock, and she is perfectly dry, thus showing that no straining has taken place, although the ship has been put down on an even keel.

Yours faithfully,
KIDMAN & MAYOH.

That was followed by another letter from Mr. Curchin dated 30th July—[*Exhibit* 18.] We did not forward to the Department any plan of suggested alterations, because we did not think that we were competent to do it. We were competent to build vessels according to plans submitted, and we have completed one vessel already. We are not competent to take the hog out of the vessel, and it is not our business to do it. We built the ship to Lloyd's plans, and there our responsibility ceases. I do not agree that the responsibility for the strength of the vessel rests entirely between ourselves and our naval architect, because all responsibility for the design was taken from our naval architect when his designs were altered. The Department has all along contended that the responsibility for building the vessel rests upon the contractors under clause 5 of the agreement. The work done by us for Burns, Philp, and Company represents an amount of £11,000, and we are suing them for £8,000 on account. When the whole of the work ordered by Burns, Philp, and Company is completed, the total expenditure will be £13,250. The alteration to the rig of the vessel represents £5,923 for each ship. I admit having asked the Department to refer to arbitration, along with other matters, the matter of our failure to complete the ships within the contract time. When I stated in evidence that I did not regard the penalty clause as anything to worry about I meant that Mr. Curchin and the Government inspectors knew that we had been delayed through difficulties in getting material and labour, and we knew that on that account the Government had no claim against us for penalties. Therefore, I regarded the penalty clause as not serious. I still take that view, notwithstanding that the Department advised us that the penalty clause would be in operation from a certain date, and that that intimation has never been varied. In my opinion, the *Braeside* is longitudinally weak. But I said that she was fit to go to sea, because I was advised by Captain Seel and other master mariners that the ship was perfectly safe and hundreds of other sailing ships have the same defect. However, I think my opinion is as good as theirs, because if the vessel had been designed strong enough the hogging would not have happened. That, however, does not prove that she is not fit to go to sea, because master mariners say that she is seaworthy and that thousands of boats like her are at sea. Any ship that bends in an undue manner may be considered weak. I am aware that a Committee of departmental officers, including Mr. Curchin, was appointed by the Government to consider the variation of the original contract. That Committee was appointed because the Government had not confidence in Mr. Curchin. All the arrangements in regard to the cancellation of four of the ships were made between Mr. Brown and Mr. Shepherd, of the Prime Minister's Department, and myself. Mr. Curchin had nothing to do with me in connexion with that matter. I was not aware that

Messrs. Shepherd and Brown were advised by any Committee. The only Committee of which I heard was one appointed to report to the Government regarding the amount to be deducted from the contract for the omission of engines. I do not think I advised the Department in writing that Captain Stirling had informed me, prior to the launching of the *Braeside*, that she would probably hog to the extent of 3 feet, but I talked about the matter openly. Captain Stirling's statement was made before the keel was laid. However, nobody seemed to raise any objection to a hog in a vessel. If he had suggested that the vessel would hog 6 feet I would have taken notice of it. From what I have read and heard, a hog of 30 inches is getting beyond a reasonable limit. The *Braeside* ought to be docked soon. Although she was moored at our wharf for three months prior to docking there was no dirt on her except the barnacles hanging from the keel. If the Committee decides that the ship belongs to us we will dock it; if, on the other hand, it belongs to the Government they must dock it. At present the Government have practically thrown the ship on our hands, and we will not dock it yet awhile. As builders we are still responsible for her condition. We are quite aware of the risk we are running in deferring docking. I have previously stated that the dead-weight tonnage of the *Braeside* and the *Burnside* is about 3,100 tons. Mr. Barber will inform the Committee how the tonnage is arrived at. He has furnished us with documentary evidence as to how he arrived at the tonnage, and I can produce it, but I shall not do so until the Government produce their calculations. The *Braeside* and the *Burnside* are a little wider and deeper than the measurements which the plans provided for, but the difference is less than an inch each way. The plans which we submitted to Lloyd's provided for a length of 244 feet, which was increased at our request to 250 feet. Mr. Barber will explain the reason for the extension. A cablegram was sent to Lloyd's Committee asking for their approval of the extension, and inquiring whether it would necessitate any alteration in the size of the timbers. To that inquiry they answered "No." I do not agree with Mr. Heron's statement that as Lloyds have not yet definitely defined the freeboard of the *Braeside* the dead-weight carrying capacity cannot be determined. I am advised by our naval architect that it can be done. I have the provisional freeboard stated in writing by Lloyd's, and new measurements are not likely to alter this by more than an inch. The Department informed us that the test which had been made of the fastenings had been satisfactory. I do not know whether or not the tests are completed. Early in 1920 disputes between ourselves and the Department commenced, and reference was made to arbitration. On the 10th June we submitted the name of an arbitrator, and a draft of the points to be referred to him. Up to the time of the commencement of this inquiry we could get no finality from the Department in regard to arbitration. On the 11th June we sent the following letter to the Prime Minister's Department:—

[Exhibit 47.]

11th June, 1920.

The Secretary, Prime Minister's Department,
Commonwealth of Australia, Melbourne.

DEAR SIR,

With reference to the correspondence which has taken place between this firm and the Ship Building Department as to the amount of deductions to be made from the contract price for building ships for the Commonwealth Government, it is clear, we think, that the best course to adopt is to make use of the arbitration clause in the contract. This, it seems to us, is the most satisfactory solution of the difficulty, and will be preferable to any other mode of settling it.

We therefore have asked our solicitors to prepare a draft form of reference to arbitration, which we enclose for your perusal and consideration.

In regard to the appointment of an arbitrator, we think a sole arbitrator would be preferable in this case, as our experience of arbitration leads us to believe that where you have an umpire and two arbitrators, as you are entitled to have under the Act, proceedings are likely to be more protracted and cumbersome. We would, therefore, suggest the name of Mr. David Fell, a well-known public accountant of Sydney and Melbourne, and with some years of London experience recently. Mr. Fell is suggested not only for his knowledge and experience as an arbitrator, but because of his having been for many years chairman of directors of The Illawarra Steam-ship Co. and director of another steam-ship company in Australia, and being well up in shipping matters generally.

Yours faithfully,

KIDMAN & MAYOH.

On 4th October, the Secretary to the Prime Minister's Department wrote to us—

[Exhibit 48.]

Melbourne, 4th October, 1920.

DEAR SIRS,

With reference to your letter of 16th September regarding the matters which it is desired should be submitted to arbitration, I desire to inform you that your letter was referred to the Acting Chief Executive Officer, who desires more detailed information on several of the matters referred to therein.

I am enclosing herewith copy of the Acting Chief Executive Officer's reply, and have to ask if you will kindly furnish definite information on the various points raised by him.

Yours faithfully,

M. L. SHEPHERD, Secretary.

Messrs. Kidman & Mayoh,
25 O'Connell-street, Sydney.

[Enclosure.]

28th September, 1920.

Memorandum to the Secretary,
Prime Minister's Department, Melbourne.

I duly received your memo. of 20th September (20/1507/43) enclosing copy of letter from Messrs. Kidman & Mayoh, dated 16th September, regarding arbitration, but I cannot see that this letter from the contractors makes the position much clearer.

Clause (c).—The only possible dispute that can be settled by an arbitrator under this clause would appear to be the question as to who is to pay for any alterations that may be decided upon in connexion with these vessels. In putting this forward I do not admit the Commonwealth's liability in this respect. The question as to the cause of the hogging and what is to be done in the two vessels respectively must rest ultimately with Lloyd's head office. I understand the contractors have already cabled London regarding this.

Clause (e).—The contractors' views are noted. I consider, however, that they should submit a specific claim in connexion with the supply of these blocks.

Clause (f).—The dead-weights capacity of the vessels cannot be ascertained now, for the simple reason that the first vessel has not yet been completed, and owing to the contractors' non-acceptance of our suggestions for completing her, it is impossible to state yet what weights are to go on.

Clause (d).—I note the dispute regarding cables is withdrawn, and note that the contractors request official instructions to put this work in hand. I understood that this matter was already being dealt with by them, but in order to avoid misunderstanding I am writing them regarding this.

Clause (h).—Regarding alleged delayed payments. The contractors' so-called explanations do not carry this matter any further. They should submit detailed particulars as to what payments have been held back, the date on which they were held back, and the length of delay occasioned in dealing with such payment.

Until I receive such particulars, it is impossible to admit any dispute in this matter.

Clause (i).—Extension of time. Here again the contractors should submit a specific claim. It is quite possible they may have perfectly legitimate grounds for claiming an extension, but until I have a statement from them giving the amount of time claimed and the reasons, I cannot admit of a dispute in this matter.

In the meantime, the contractors' contentions do not carry this matter any further, and I consider they should be requested to state clearly and concisely their specific claims, and not simply reply with expressions of opinion.

(Sgd.) K. WATSON.

We answered that by a letter in which we made specific claims. I adhere to my previous statement that we have not asked to be relieved of our contract on financial grounds. Immediately after the launching the *Braeside* was berthed a little forward of the pier head. I should say that the bow of the vessel was 5 or 6 feet forward of the pier head. Between the launching and the docking the vessel was frequently moved backwards and forwards. She may have been moved 5 or 6 feet forward of the position I have described, but she was moved further aft; I cannot say to what extent, but it would be nothing like half a length. The vessel was moved up stream for the purpose of putting the machinery aboard, not for the purpose of stepping the mast, for which a special floating crane was used. The vessel was moved forward of the wharf two or three times a week, whenever we wanted to put material on board with the steam crane. I cannot say how far she would have been moved backwards and forwards at any time. She was moved to Cockatoo Dock on the 13th July, and Mr. Scott made his survey of the berth at Kissing Point on the 2nd September. We also employed a diver to examine that spot; we have no written reports from him, but we have subpœnaed him to give evidence before this Committee. I do not think the departmental inspector at any time called attention to the fact that the *Braeside* was aground. We have had conversations with various persons, but no one said that she was aground. We do not admit that she was actually aground. Upon that point there is a difference of opinion. Mr. Curchin wrote suggesting that the hogging was partly attributable to grounding. I informed the departmental officers that the bottom of the river where the vessel had been berthed was all very soft mud. I admit that the Department carried on extensive correspondence by cable with the High Commissioner's office in order to arrange for the supply of engines, and to obtain other information which would be of assistance to us in carrying out the contract. Clause 26 of the agreement provides that the Government shall give us all assistance of that kind. The Government did assist us a good deal in accordance with the wish of the British Admiralty. I do not think the Department assisted us in any other respect. The Department sent us prints of standard machinery parts which the Government were putting into their steel ships, and of bollards and other ironwork. As far as I remember those were the only drawings with which the Department supplied us. Our naval architect did not prepare any drawings or specifications of the machinery to be placed in the vessels; complete prints were sent by the manufacturers. Mr. Watson sent us a little drawing of a propeller shaft which the Department had made previously. It was not necessary to do that because we were capable of doing it ourselves. We submitted a plan of the propeller, and that was altered by Mr. Watson. The assistance that the departmental officers gave us was of no value whatever. I think I could have obtained the engines without the assistance of the Government. My nephew was in London at the time; he is an engineer, and he could have made the arrangements for us, but the Department objected to his going to the manufacturers' works in regard to the engines. There was no need for us to prepare machinery specifications, because the machinery was bought from standard designs. The specifications provided that the ships should be fitted with two sets of engines of semi-Diesel pattern, and we could only adopt some manufacturer's pattern.

(Taken at Sydney.)

MONDAY, 15TH NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Mathews,
Senator Newland,	Mr. Parker Moloney.
Mr. Atkinson,	

(Mr. H. C. Brown, representing the Prime Minister's Department; Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh.)

Joseph Mayoh, further examined.

123. *To Mr. Brown (through the Chairman).*—It was not competent for us to make any specifications for the machinery, which was to be of a special nature. Nothing could be done in regard to the propelling shafting until the engines had been decided upon. I admit that the Department sent us a specification, but we did not need it. It was detrimental to our interests, because it enumerated a lot of material, including spares, which we never intended to supply. The specification was made as elaborate and as expensive as possible. The electric lighting plant was not included in the original specification, but we were compelled to supply it. We were also called upon to supply spare gear for the main engines and outfit overhauling gear, portion of spanners, oil tanks, and engineering tools. Those things we considered the owners should supply. Then the specifications provided that the main and auxiliary engines and pumps should be tested as required in the shop. No provision for such a test was included in our original estimate, nor is it customary with machinery of this nature. It is not necessary to have a shop test of the pumps. We had to buy from the makers standard engines, and there was no necessity to prepare plans showing the size of the crank-shaft or other proportions. We did not object to the provision for a mooring trial and a sea trial of the engines and pumps. Those were reasonable requirements. Clause 9 of the specifications provided that the main engines should consist of two sets of approved design of reversible crude oil engines, to develop 240 b.h.p. each, running at 240 revolutions, "or as may be approved." That meant that the Chief Executive Officer could order anything he liked. If he had chosen to demand an engine running at only a hundred revolutions we would have had to supply it. That was an enlargement of the original specification. It may be true that all the pumps for the Commonwealth ships are being tested, but that is only because the Department wants to make work. The specifications of 29th November, 1918, provided for an engine developing 240 b.h.p. at 240 revolutions per minute, but on the 17th December the number of revolutions was reduced to 200, and that necessitated the adoption of an engine of larger b.h.p. I do not recollect the Department cabling to London in our behalf in regard to chain cables. My nephew in London made those purchases for us, and my file shows that we cabled him on the subject on 28th April and 5th May, 1918. My only record of the date when the plans were forwarded to Lloyd's for approval is a letter from Lloyd's enclosing a letter to Kay, Macnicol, and Company on the 4th May, 1918. I admit that it was our responsibility to get Lloyd's approval to the plan; but other people were doing that for us. Mr. Curchin did offer, on the 17th June, 1918, to draft cables to Lloyd's embodying the principal scantlings; that was part of his duty. I think his cable of the 27th June was sent after consultation with our naval architect before we signed the contract. The cable was sent in order to assist us and avoid delay. I admit that the plans did not come from Lloyd's to Mr. Barber through the Government. Mr. Barber's letter to Mr. Curchin, dated 3rd October, and referring to plans returned to him from Lloyd's is not

technically correct, because Lloyd's did not send the plans to him. They were sent from Lloyd's, London, to their Sydney agent, and by him were sent to Mr. Barber. I shall write out a statement of delays caused in construction by departmental tardiness in handling the plans. I am not prepared at this stage to mention any definite instance of delay. I remember sending the following letter to Mr. Curchin in regard to delay in the preparation and submission of plans:—

[Exhibit 49.]

Kidman & Mayoh, Shipbuilders,
Sydney, 13th February, 1919.

H. W. Curchin, Esq.,
Chief Executive Officer,
Commonwealth Ship Construction, Melbourne.

DEAR SIR,

As the detailed drawings for the schooners are not being prepared with the expedition we expected, we have arranged with Messrs. Kay, Macnicol, & Co. that Mr. Barber and his assistants shall be transferred to the shipyard to work under our supervision.

Clause 3 of the agreement provides that the contractors shall submit for approval all necessary plans and specifications, and we have, therefore, instructed Messrs. Kay, Macnicol, & Co. to allow us to submit all drawings and other particulars to you for your approval.

We consider that the plans are in a very backward state, and we thought by this new arrangement we should be able to expedite matters.

Any information you wish to transmit with reference to the designs of the schooners we shall be glad if you will please address to us, and same shall receive our careful attention.

And oblige,
Yours faithfully,
(Sgd.) KIDMAN & MAYOH.

Under the original contract we agreed to rig the vessels as barquentines. Subsequently at our request the rig was altered to bald-headed schooners. Again, a further alteration was made at our request to top-sail schooner rig. I do not think those alterations delayed the preparation of plans. When signing the contract on the 6th July, 1918, I did not foresee the great difficulties we subsequently experienced in obtaining the principal timbers and the necessary labour. If I had I would not have entered into the contract upon any conditions. By August, 1919, when we agreed to the modification of the contract, and undertook to complete two vessels, those difficulties had been impressed upon us very much, and I admit that it is strange that we did not again ask for an extension of time. But I was never afraid of being penalized for being behind on the contract, because I knew I could always prove to the engineers or arbitrator that we had experienced delays which were beyond our control. I was absolutely positive that Mr. Curchin always intended to inflict penalties if he could, but I was not afraid of being unable to give reasons for an extension of time. If I could prove cause, he was bound to give me an extension; his authority in that respect was not final, because the agreement gave him instructions as to what he should do as the intermediary between us and the Government. I do not think that we are denied arbitration in respect of the time clause, because clause 9 assures us of relief if we can show good cause for the delay. The backwardness of the plans referred to in my letter to Mr. Curchin on the 13th February was unavoidable, because we could not get a sufficient number of hands to make the drawings which Mr. Curchin wanted. Because he was in Melbourne and we were in Sydney, we had to submit detailed drawings of everything he required done. That letter of the 13th February was the outcome of the many alterations in the rig made to meet the circumstances. A great many plans had to be prepared, and Mr. Barber was very much behind with his work, but that was unavoidable, because he could not get skilled help. We saw Mr. Greenlees taking soundings of the berth where the *Braeside* had been moored after launching, but we did not receive from the Department a copy of his report. I think that investigations of that kind should be made in conjunction with ourselves, because upon this point the evidence is likely to be conflicting. I have only hearsay knowledge that the contracts made with Hughes, Martin, and Washington, the Wallace Power Boat Company, and the Western Australian Government were cancelled. I did not wish the Committee to infer that the Government cancelled them, but it is immaterial how the contracts were cancelled. The fact that a hog had developed in the *Braeside* was not reported to the ship-construction authorities until the 2nd June, when Mr. Barber was in Melbourne, but every man in the yards knew of the hog, and it was openly discussed. The first record on the file of the hog is a letter from Mr. Curchin dated 2nd June, regarding a statement made by Mr. Barber. Mr. Barber had gone to Melbourne to discuss the dead-weight tonnage with Mr. Curchin, and the hogging of the ship was incidentally mentioned. I made the arrangements to borrow the services of Mr. Ellery, of Cockatoo Island, to supervise the launching. He was representing the Commonwealth in a way, but I did not hold him responsible. In my earlier evidence, I said that we could launch the *Burnside* on or about the 15th December, or the 28th December, when we had a 5 ft. 3 in. tide. That tide is necessary for the launching of the *Burnside*, because she is in a position different from that where the *Braeside* was launched. I think the tide was only 3 ft. 6 in. when the *Braeside* was launched, but that did not matter, because we used a different launching way. The guiding factor is the depth of water under the ways. We signed the agreement to build these vessels before the plans and specifications had been approved. That was an unreasonable course, but these ships were a war-time measure, and we took a little risk. The Government inserted in the agreement a clause which protected them, and their officers have used it very badly. I do not agree that it was possible that, if progress payments had been continued on the value of the work done and the material supplied, the amount to which the contractors would be entitled under the agreement might be exceeded. If the Government had paid us another £40,000 or £50,000, we should not have complained, but they stopped their progress payments too early. Under the agreement, the two ships, assuming them to be of 2,600 tons dead weight, should cost £135,200, to which must be added the cost of galvanizing the bolts. The Department estimates for that item £1,400, making the total cost of the ships £136,600. From that, deductions of £27,400 for machinery, and £1,000 for sheathing, are claimed, thus reducing the cost to £106,800. The Department has paid us to date £104,192, and claims that only £3,007 is due for the completion of the ships. We complain that the £27,400 which the Department deducted for the omission of the machinery and engines was excessive. The Department might as well have deducted £37,000, and then calculated that they had overpaid us three months earlier. I have always claimed that the amount to be deducted should be £19,050. I arranged to be paid £500 per ship for the sheathing. The galvanizing of the bolts cost us £3,000. Apart from these adjustments, I claimed that under the contract we are building these ships at £26 per ton. I admit that the Government are not actually bound to pay us for the tonnage in excess of 2,600 tons until we have completed the ships; but if the Government had been reasonable, they would have paid us something more on account of the extra dead weight, because the engineers can arrive at approximately what the dead weight will be, notwithstanding that the provisional freeboard may be altered to the extent of an inch. Deductions and extras are usually arranged on the completion of a contract, but in this case it is not reasonable to allow the claim for

extras to stand over. We should not be expected to stand out of the money expended on galvanizing the bolts until the contract is completed. The Government could pay us 50 per cent. of that amount on account. Under the original contract, the Government were entitled to hold £10,000 as retention money, but are retaining only £5,000. The £10,000, however, related to six ships; £5,000 is quite sufficient to retain for only two ships. The Prime Minister's Department has acted very decently towards us, but the Ship Construction Branch has not. We are nearly £60,000 out of pocket, and, in addition, the Government hold our security deposit. We have never made any claim for payment for extra winches. We think we should be entitled to make a claim when we finish the job; but if this Committee decides otherwise, there will be no necessity for a claim. A clause in the agreement provides that the Commonweatlh shall re-imburse us for any increase in wages after the commencement of the contract. We have been paid £8,000 on that account, but the Government still owes us £2,000. In regard to the payment for extra dead weight under paragraph (*b*) of clause 3, if the naval architects agree that the actual dead weight of the vessel when completed is 3,100 tons, there will be an excess of 500 tons per ship. On account of the four ships that were cancelled, we were paid £52,000 as compensation, on the basis of £5 per ton for an estimated dead weight of 2,600 tons per ship. If the actual dead weight should be found to be 3,100 tons, there will be due on account of the four ships a further payment of £10,000, representing £5 per ton for 2,000 tons. There will be due also on the *Braeside* and the *Burnside* an extra payment of £26,000, making the total payment on account of excess dead weight £36,000. The dead-weight carrying capacity can be ascertained within 50 tons before the vessels are completed and ready for sea; allowance will have to be made for putting the sails on. Any extra stiffening put into the vessels will reduce the dead-weight carrying capacity. Anything that is put inside the *Braeside* will sink her lower, and thus reduce the dead weight. The only equipment not yet on board is the sails and the donkey boiler. In our estimate of the dead-weight capacity, we do not allow any deduction for the omission of the machinery. If the Government chose to take the engines out of these vessels, we sell them as they are, in accordance with the new arrangements, at the price of £26 per ton. We did not undertake to put in or take out anything. Under the original scheme for installing auxiliary power, everything in the engine-house would have weighed 74 tons. The effect of omissions upon the dead-weight carrying capacity is a technical question, upon which evidence can be given by Mr. Barber and Mr. Hewison. I have not gone into the calculation of the probable weight of the extra stiffening suggested by the Acting Chief Executive Officer. The specification includes provision for a wheel-house. I did not offer any objection to it in writing, but it cost money which we did not estimate when we signed the original agreement. The protection of the man at the wheel against weather conditions is not my concern. No doubt, it would be very nice to have the man at the wheel comfortably housed; but, from a practical point of view, the wheel-house is absurd. No man can steer a ship from that house. My lay opinion is that the wheel-house is unsafe. I have never seen a sailing vessel with a wheel-house. We have not yet made a request for extra payment on account of the increase of the hatches from three to four. That is one of our extras. The custom is to make out a bill for extras at the completion of the contract. Also, the Government have said that we must stand out of all excess expenditure until then. If I had made a request for payment, it would not have been granted. We would have been satisfied if the Government had made a payment on account of the extra dead weight and the galvanizing of the bolts, and we could have dealt with the smaller extras at the conclusion of the job. Although the specification includes a provision that payment shall be made for such extras as may be agreed upon by written agreement between the owners' representative and the builders, Mr. Curchin would not even give us a written order for extra payment on account of the galvanizing of the fastenings. He was very unreasonable. We could do nothing with him. On the 10th December, 1919, Mr. Curchin wrote to us—

[Exhibit 50.]

Commonwealth of Australia,
Prime Minister's Department,
Melbourne, 10th December, 1919.

Messrs. Kidman & Mayoh,
25 O'Connell-street, Sydney.

DEAR SIRS,

I have to acknowledge receipt of your favour of the 8th inst., giving particulars of the amount provided in your estimates for engines and machinery, &c.

My letter of to-day's date deals with this matter and also confirms our conversation of yesterday morning.

It is not intended to pay any extras in connexion with the alterations that will be necessary in converting ships into sailing vessels.

I shall be pleased to have particulars of your claim for an extension of time for the completion of the vessels at your early convenience.

Yours faithfully,
H. W. CURCHIN.

In our letter of the 8th we had mentioned the amount of money we had estimated as a deduction on account of the omission of the engine, but it will be seen that Mr. Curchin informed us that "it is not intended to pay any extras in connexion with the alterations that would be necessary in converting ships into sailing vessels." That is the most astounding statement I ever read. No matter what we asked for, Mr. Curchin would never admit that there were any extras. The plans will show that Mr. Curchin required an extra dump to be put in each plank. We drew the plans, and Mr. Curchin altered them to meet his requirements. We have had long conversations with Mr. Curchin in regard to payments for the extra fastenings, but we have not written any protest against them, because we were bound to make everything to Mr. Curchin's approval, with the right to claim for them afterwards as extras. He could always refuse to pay us for extras, and if we were unable to arrive at an agreement we could take the matter to arbitration. I do not think we ever made a formal claim for the extra fastenings; our protests were made verbally by Mr. Barber and myself. Plan 672, which was afterwards replaced by plan 673, was a result of conversations and interviews with Mr. Curchin. It did not represent our first proposal; there were earlier plans. We protested a great deal, but not in writing. I admit that the signed specifications provide that no extra bill shall be made except for extras agreed upon by signed agreement between the owners and the builders. It is not a fact that the electric lighting system, as well as an electric sail-winch, were agreed upon between ourselves and the Chief Executive Officer in consequence of the substitution of schooner rig for barquentine rig at our request. I always protested against the installation of the electric lighting system. I do not think the alteration from barquentine to schooner rig was greatly to our advantage and considerably reduced the cost of the vessel. We put in another mast. We altered the *Braeside* from a barquentine to a five-masted schooner; then, when Burns, Philp, and Company required us to revert to the barquentine rig, we were involved in extra cost, because half the gear for the schooner rig had been made. The sails are now at Brett's workshop, and are insured against damage. They will be used. A great deal of the material we made for the

Government had to be scrapped, and many of the sails had to be altered. There was also a large quantity of extra wires. The installation of the electric lighting system was not substituted by the Chief Executive Officer as a counter-balance to the alteration in the rig of the vessel. I do not remember receiving a letter from Mr. Curchin stating that he would not be prepared to agree to an alteration in the rig of the vessel until we had accepted his specification, which included provision for electric lighting. You ask me if I have seen the following letter addressed to Mr. Barber:—

[Exhibit 51.]

3rd September, 1918.

Mr. A. C. Barber,
C/o Messrs. Kay, Macnicol, & Co.,
4 Bridge-street, Sydney.

DEAR SIR,

I have to acknowledge receipt of your favour of the 30th ultimo, with reference to the schooner rigged vessels. It should be understood that I am only agreeable to accept the schooner rig provided the present specification is agreed to.

I am awaiting further information in connexion with the American canvas, and I will communicate with you immediately I hear from the Government representative in America.

Yours faithfully,
H. W. CURCHIN.

That letter was not brought to me. The electric lighting system consisted of a separate explosive engine and dynamo. When the original plans were returned from London they showed that Lloyd's required the sizes of the timber, including the beams, to be increased by 30 per cent. right throughout the vessel. The cubic content of the timber in the ship when Mr. Barber made his original estimate was increased by 30 per cent. to meet Lloyd's requirements, and the wishes of Mr. Curchin. Mr. Barber submitted his estimate to us in the first instance, and we accepted it. They showed so many thousand cubic feet and lineal feet of timber. Those measurements had been exceeded throughout. Fastenings of all kinds had been increased by 150 per cent. When the *Braeside* was docked, certain timbers were put in the ship with a view to seeing if the hog could be straightened; we did that on our own responsibility.

124. *To Mr. Boyd (through the Chairman).*—I submit the following additional statement in regard to delays in obtaining supplies:—

[Exhibit 52.]

At the outset of this contract we were up against a very big task in securing the special or natural bent timbers and knees required for the ships. We immediately engaged men to proceed to the north and south coasts to find cutters to put at work to get these timbers. Our representatives, Messrs. Legge, Pashley, Davies, McNamara, and Woodward all set out for various districts, but without any tangible results. We did not, of course, expect such trouble would be met with as the capabilities of our forests had been so well spoken of, but being engaged on a very urgent national undertaking we were out to make a big effort to succeed.

Reports from these men and cutters were very discouraging, some extracts from which may be recited here—

For instance, B. G. Legge writes in a letter received by us on 13th September, 1918, from Port Stephens:—"There are seven men started cutting crooks in this district. They are all very disappointed with the high standard that has been fixed on floors, &c., and claim that it is almost impossible to find timber to work up to our specification."

Legge again writes on 28th September, from Port Stephens—"Smith Bros., of Bulahdelah, had *five floors* on wharf, *only one being up to specification.* They also had about 40 *knees* for inspection, of which I should say *six would be passable.* C. Findlay had six floors and one stem knee for inspection; only one floor was suitable for the purpose required."

Henry Bird, timber getter, wrote from Laurieton on 26th October, 1918—"I am writing to let you know that I have had no success at getting the crooks. I searched the country and thought to find them, but failed to get anything, and as I cannot afford to lose any more time I had to give it up."

Legge wrote from Casino on 29th October, 1918—"There are practically no axemen in this district, and therefore we would have to get them from other parts, which may be difficult."

J. G. Pashley wrote from Heron's Creek on 30th October, 1918—"Saw Ellis this morning. Ellis and myself went out in the bush having a look for some, but up to the time of writing did not find one."

J. W. Davies wrote from Forbes on 30th October, 1918—"I have had a good look round the timber and I do not think it will cut good."

J. McDermott, timber getter, of Huskisson, Jervis Bay, wrote on 1st November, 1918—"I have not had the luck to get even one piece. I have just got back after having a week's searching the bush, but have had no luck, so have to give it up."

J. G. Pashley writes from Camden Haven on 30th October, 1918—"I saw Haydon, of this place, and he told me that his price was 8s. per cubic foot all round."

Pashley again writes from Wauchope on 2nd November, 1918—"So far, from Taree to Telegraph Point, there is not one crook but Coopers. Coolon says he will try and find some also, but they all say that they tram for two or three days and do not find a tree that will cut anything, and then they go to the agents for an order for straight stuff, and our crooks can go hang. In Wauchope this afternoon there is a wood chop, and as far as I can see there must be fifty cutters, and I have tried all this afternoon to get some of them to take an order, but receive the same reply—take straight stuff only."

John Rolliston, cutter, of Telegraph Point, writes on 3rd November, 1918—"Those men who were going to get the crooks with me have not started. I spent a few days in the bush myself, but could not see any suitable timber. I do not think they are procurable."

Legge writes from Casino on 4th November, 1918—"I spent Saturday and Sunday looking at the timber out from Mummulgum, 21 miles from Casino, but I saw very few crooks."

W. Potts, cutter, of Kimbriki, wrote on 6th November, 1918—"I have been unable, so far, to get any men to cut crooks."

Legge wrote from Coraki on 7th November, 1918—"Since writing you before I have spent several days in the bush but saw very little timber suitable for crooks; and, as I have worked 35 miles south of Casino, I doubt finding anything worth bothering about north of Grafton.

J. G. Pashley wrote from Wauchope on 13th November, 1918. After giving details of what the various cutters had procured, he says—"This makes 8 crooks and some knees, which are very small. The cutters here find them hard to find. I do not know how McNamara is doing, but I do hope better than I am."

James Ritchie wrote from Dubbo on 2nd December, 1918—"After a good trial they say the timber is too pipey. There is sufficient timber in the trees for sleepers, but too hollow for ship's timbers."

Legge wrote from Taree on 5th December, 1918—"I quite realize the cost in wages and the small results for same. I have seen all the cutters north of Wingham, whose names were on the list that Pashley gave me, but found none of them cutting. The majority were under the impression that the smallest bend to be got was 1 ft. 9 in. I have been out with a number of men and have shown them the bends we require; but I can say for almost certain that none will start until after the next timber inspection, which will be somewhere about the middle of next week, as this will be the last pass before Christmas."

These extracts are but a few of the many we have from cutters, &c., going to show what great difficulty and delay occurred in the procuring of the special timbers required.

After four months of travelling north, south, and west, all of the men we sent out gave up the task as hopeless.

In December, 1918, we sent another representative (Captain Aarons) to Kempsey to remain on the spot so as to be able to effectively scour the country from Taree as far north as Woolgoolga. Better results, certainly, were attained, but the getting of the timbers continued very slowly and costly.

After the Armistice, representations were made to Mr. Curchin with a view to an alternate scheme to overcome the difficulty as regards natural crooks and knees, but without result. He stated that *further efforts* should be made to secure the natural crooks.

It will be seen that much time was lost in this connexion, but it is impossible to say what period should be allowed for extension of time in consequence. All we can claim is that great delays occurred over which we had no control.

Similar experiences were met with as regards the supply of sawn timbers. Especially was this the case with regard to the bending quality of spotted gum for laminated frames, 12 x 1½ inches, which could only be obtained from one supplier from the south coast. Logs to cut this size in required lengths were scarce, and we were simply carrying on in a hand to mouth fashion. Also the other large sections of sawn timber for planking, viz., 12 x 5, 9 x 5, 8 x 5, and 8 x 6 in. long lengths, which had to be free from heart and all other defects, were most difficult to procure, and great delays occurred in consequence.

Timber merchants who contracted with us for the supply of these timbers could be called to detail the great difficulties under which we and they were working.

Then, again, the shipping troubles had much to do with the delay in getting timber forward from the mills. At one time there was a shipping strike of some months' duration, during which we were very much delayed.

Grouping all these circumstances together, it will be seen that we were up against a tough proposition, and no time could reasonably be stated by which an extension of the time in the contract might be extended. Had the timber been procurable in quick time, and in sufficient quantities, and with necessary shipping facilities, we venture to say the contract time would not have been exceeded, and we put it to the members of the Committee to fairly judge what clemency should be shown the contractors under the clause of the agreement. Our contention is that the whole of the delay in completion of the ships has been beyond our control.

Apart from any delays caused by the necessary approval of plans and the difficulties of obtaining skilled labour at the shipyard, the reasons given herein, we think sufficient justification for the attitude we take on to the matter; but the fact that *we were obliged* to employ diluted labour to carry on the work of construction in the place of competent shipwrights—which were unobtainable—still further justifies our claim. Many men who were nothing more than adzemen were put on, and had to be shown as the work progressed.

At the time of the signing of the second agreement, it was quite apparent that the ships could not be finished in the specified time, but, for reasons already explained, no arrangements were made for any extension.

The alterations ordered to be carried out by Messrs. Burns, Philp, & Co. were also responsible for much delay, and this objection was pointed out to the Chief Executive Officer before the work was undertaken.

Since then delay has occurred through the failure of the Department to grant our request in the terms of our agreement for reference to arbitration, as owing to the serious differences existing between us we did not feel disposed to keep a large body of men engaged on the *Braeside*.

We think that this is all that need be said to substantiate our claim for remission by the Government of any claim whatsoever for penalty for late delivery.

J. MAYOH.

I can produce the originals of the letters referred to in that statement. I have previously said that Mr. Curchin could have made us do anything he wished under the terms of the contract; we knew that when we signed. An engineer appointed under a deed of this kind is like an architect; he is a go-between to see that the owner and the builder get fair play. He is not supposed to be biassed in any way. I relied upon him to see fair play between us and the Government. I did not regard him as merely a representative of the Government. When we applied to the Government to submit our claims to arbitration, I asked the Secretary to the Prime Minister's Department to obtain from Sir Robert Garran an interpretation of the clause referring to payments, because Sir Robert was present when the conditions of payment were agreed upon. I told Mr. Shepherd that I would abide by Sir Robert Garran's decision. The alteration of rig from bald-headed schooner to topsail schooner was due to the fact that the masts for bald-headed schooners would have to be 133 feet long. We ordered them from America, but could not get ships to carry them. We then fell back upon the topsail schooner rig, which enabled us to have the mast in two lengths, reducing the height to 112 feet. Mr. Curchin allowed us to do that.

125. *To Mr. Parker Moloney.*—The functions of a person occupying the position that Mr. Curchin occupied under our agreement with the Government are those of an umpire whose duty it is to interpret the deed honestly as between the parties. If we could show that he was biassed in any way, we could have the agreement upset. He occupied a position analogous to that of the engineer-in-chief in connexion with a railway contract. It is the usual custom for the engineer-in-chief to be made the arbitrator between Government and the contractor.

126. *To Senator Foll.*—Of course Mr. Curchin was a Government servant. If the Government had employed a firm of naval architects to design the vessels for them the analogy I have mentioned would be more correct, but Mr. Curchin was employed by the Government, and perhaps for that reason he thought he was more entitled to do what he did. I contend, however, that he did not act as he should have done under the agreement.

127. *To Mr. Mathews.*—The original specification was for a four-masted barquentine with auxiliary power. The ship was then altered to a five-masted schooner with auxiliary power. Both these rigs would include topsails. We consider that the rig for the four-masted barquentine cost about the same as the rig for the five-masted schooner. I do not know why we increased the masts from four to five. The next alteration of the rig was that to a bald-headed schooner which had no topsail, but the sail area and estimated cost would be about the same. Finally we reverted to the five-masted topsail schooner, because we could not ship from America masts 133 feet in length. The cost of the five-masted topsail schooner would be about the same as the cost of the bald-headed schooner. This is the first occasion I have heard of any suggestion that the alteration of the rig should be set off against the cost of the electric installation. I always told Mr. Curchin that I would claim extra for the electric lighting system. I accept responsibility for any letter Mr. Barber wrote in connexion with our contract. The contract distinctly provides that the ships shall be paid for at the rate of £26 per ton of dead weight when completed. If the Government choose to take out the machinery or anything else, thus increasing the carrying capacity of the ship, they cannot alter the agreement in so far as it fixes payment on the basis of £26 per ton. Whilst approximately 74 tons of machinery has been omitted, there is probably 100 tons of extra timber which would be a contra charge. For any net increase in dead weight resulting from these alterations we would expect to be paid at the rate of £26 per ton. If the Chief Executive Officer demanded the insertion of certain timbers which reduced the dead weight capacity of the ship, we would not expect to receive reduced payment accordingly. The plans of the ships have been approved by Lloyd's, but now that the *Braeside* is hogged, the Government give us for what it is worth a suggestion in regard to the insertion of additional timbers. It would not be fair that we should lose dead weight tonnage on that account. From any alteration in the ship that increases the dead weight tonnage we expect to benefit. But we do not expect to lose on account of any reduction in dead weight capacity. When the ship was launched she was as approved finally by Mr. Curchin and Lloyd's. If the Government desire any more timbers inserted in order to strengthen the ship, that must be their responsibility. We will not admit any claim by the Government on account of reduced dead weight capacity. If any alterations made in order to get Lloyd's certificate represents an error on the part of the Government to rectify their own error, we do not expect to lose by it. I blame Lloyd's and the Department for the defect in the *Braeside*. The ship is longitudinally weak, and the responsibility for that should not be thrown upon us. Our contract was to build the ships in accordance with the plans approved by the Government and by Lloyd's. We have done that. If anything is wrong, the responsibility must lie with the Government. You ask me whether if, during construction, the Government decided to omit all masts but one, thus increasing the dead weight capacity, we would expect to benefit. That is rather an extreme illustration. We are reasonable people.

We produced a finished ship in accordance with specifications. At this stage we cannot finish the *Braeside* and get Lloyd's certificate, and the responsibility for doing anything further to secure that certificate does not lie with us. If alterations are carried out by the Government we do not expect to suffer a reduction of payment on account of any resultant reduction in the dead weight capacity, because in that way we would lose money. We say that the extra weight put into the ship in order to strengthen her is due to the Government's fault, unless they can prove that the fault is ours. We have conformed to all demands made upon us under the contract, and it is not our fault that we cannot secure Lloyd's certificate. I cannot say whether Mr. Barber received the plans direct from Lloyd's or through Mr. Heron, but Mr. Heron said that he received the plans from Lloyd's, and handed them on to Mr. Barber, who kept them for several weeks. Any misapprehension on the question is due to carelessness of expression in Mr. Barber's letter. On the 14th May, 1918, Kay, Macnicol and Company sent their plans to Mr. Heron, who forwarded them to London. Lloyd's wrote to Mr. Heron, saying that they had returned the plans to him with alterations. Lloyd's were not dealing with us, although they should have been. We employ them and pay their fees, but in this case Mr. Heron seems to have had all his correspondence direct with Mr. Curchin. After Mr. Barber received the plans from Mr. Heron, following their return from London, he forwarded them to Mr. Curchin, accompanied by the letter which has been previously quoted. Mr. Curchin thereupon said, "Go ahead and make detailed drawings." I think that Lloyd's should have sent the plans to us as the builders, but we have been ignored in the matter. I was not competent to deal with the plans, and I would have simply handed them over to Mr. Barber. I will let the Committee know the approximate cost of material and extra parts in excess of what we think we ought to have supplied under the original specifications. The difference of opinion between us and the Government in regard to the allowance for the engine does not enter into this calculation. Both the Government and ourselves submitted an estimate of what should be deducted on account of the engines. At one stage we wrote to the Government, saying that if they were not satisfied with the allowance we were making we were not agreeable that they should omit the engines. Nevertheless they did omit them. I will let the Committee have the estimated cost of the Bolinder engines and auxiliary outfit.

The witness withdrew.

William Alexander Brown, shipwright, sworn and examined.

128. *To the Chairman.*—I have had 55 years' experience of shipbuilding, and I have been in the employ of the Government as inspector of ship construction for two years last August. I was appointed to supervise the whole of the eighteen wooden vessels originally arranged to be built in Australia for the Commonwealth. I have been almost continuously supervising the construction of the *Braeside* and the *Burnside*, and recently Mr. Greenless has been acting with me. He is employed at Cockatoo dock, and is at Kidman and Mayoh's yards when he has time to spare. He supervises the construction of the living accommodation. I received plans and specifications of the ships, and so far as I know was advised by the Department when alterations in them were made. I had to follow the specifications which were sent to me for my guidance, and if I noticed any departure which had not been approved I reported it. Nothing of importance in that way arose; the work was carried out in accordance with the plans and specifications, and to my satisfaction. Having regard to the fact that they have met with so much difficulty in regard to labour, I think the contractors have done a very good job. Occasionally I have had to call attention to minor defects, and they have always been put right. There was nothing wrong in the big things. I have seen nothing to lead me to believe that the contractors have been guilty of fraud in connexion with the construction. It was possibly in some places for dummy bolts to be used without my knowledge. On every ship some dumps must be used, and on these vessels which have laminated frames, and in which so many bolts have to be put together, it is impossible to get every bolt through. I think the builders have broken 120 augers through fouling bolts when boring. I have never seen any dummy bolts used. I noticed on two or three different occasions that the shipwrights bored five or six holes before they could get one through; the incomplete holes had to be plugged. Two men were employed the whole of one day in trying to get a defective bolt out, and make a decent job of the fastening. I believe that in every instance an effort was made to make the fastenings perfect. There was no other Government inspector permanently on the job. During the caulking of the vessels I wrote asking for assistance, and a man was sent to help me for six or seven weeks. I was present at the launching of the *Braeside*. I have not attended very many launchings. As the vessel left the ways I saw her drop heavily. I was standing forward of the ship. I saw her touch the ground on the opposite shore, but there was no mark about the vessel. When the vessel dropped she knocked a little piece of timber off the false keel. I cannot say whether there was sufficient water for the launching. The *Braeside* did not strike the opposite bank with much force; in any case it only struck the mud. Later the vessel was moored a few feet forward of the fore end of the jetty. The forefoot came to about the head of the jetty. When Mr. Greenlees went there to survey the bed of the river, where the *Braeside* had been moored, I helped him to locate the exact spot. The depths were taken by an officer from Cockatoo dock. We measured a space of about 40 feet from the end of the pier, Mr. Scott's plan showing where the *Braeside* lay appears to tally with that prepared by Mr. Greenlees.

129. *To Senator Newland.* — In many of the beam knees two or three holes were drilled before a bolt could be put through. The plugs can still be seen. That happened in many parts of the ship. It is not possible to avoid those false holes because of the number of bolts in the ship. I do not think there was any attempt on the part of the contractors to deceive me or to slum the work in regard to fastenings which were of vital importance. On one occasion I drew the attention of Mr. Heron to some bolts in the lodging knees of the *Burnside* that were not to my satisfaction; but Mr. Heron agreed that the defect was unavoidable. I do not think that the ship would be affected. There was a slight space between the knees and the walls. I examined them for Mr. Curchin, and found that in some cases the knees had sprung ¾ of an inch. Thinking that the trouble was due to strain, I had some of the bolts taken out. I came to the conclusion that the trouble was due partly to strain and partly to shrinkage. I cannot say what caused the strain. On the *Burnside* there has been very little shrinkage of the knees. Those knees had been seasoning in the yards for months, and they must produce a better job. I can vouch for the keel fastenings being straight and true, for I paid particular attention to them. If the false keels were taken off it would be found that nothing was wrong with the fastenings. Therefore, I think it would be a pity to remove the false keels. The bolts are all 15 inches and clinched, although clinching was not necessary. I believe those bolts are perfect. All my life I have worked on hogged vessels. On occasions we have had to take all the treenails out

of a vessel in order to rectify a hog. Those vessels benefited by that operation, but they were not so long as the *Braeside*. Prior to launching I thought that the *Braeside* might hog 9 or 10 inches, which would not have made much difference to the ship. I took out of the *Braeside* possibly half-a-dozen bolts and treenails, and they were quite straight, whilst the holes were clear and without any twist. I took them from the place where we thought the strain would be worse. I did not know that the *Braeside* was hogged until I received a letter from Mr. Curchin dated 2nd July; but eight days after the launching of the ship I had gone away on holidays for three weeks. It appears as if the ship hogged immediately she was put in the water, but whether or not the hog is due to defective launching I cannot say. The *Braeside* is of considerable length, and has great beam amidships, whilst being narrow at the bow and stern, and I think that a ship of that length and shape would be more prone to hog than would a vessel more squatly built. She is very heavy fore and aft, and has a long overhang, but she should not have hogged as much as she did. The workmanship was all right. Local shipbuilders have told me that the workmanship was good, and that many times they had seen worse in their own yards.

130. *To Senator Foll.*—During the progress of the work I sometimes gave advice to the contractors, but not much was needed. Any advice I gave was carried out. I merely gave them the benefit of my opinion. I should think that the *Braeside* is not seaworthy at present, because of the hog and the strain. She requires some strengthening. Having been strained the ship should be put right before being sent to sea, and I think she can be made seaworthy with some expense. I consider that there is sufficient bolting in the ship. More bolts have yet to be inserted; but, in my opinion, there are already too many along the topsides and sides. Excessive bolting may not make the vessel unseaworthy; but I do not think she is any better for it. If I were building a vessel for myself I would have only one bolt at each frame in an 8-in. plank. I was not responsible for the excessive bolting because I could order nothing; I could only make a request. In one instance, I made a request for treenails, and it was granted immediately. I was on board the *Braeside* with three surveyors when the fastenings were being tested. The caulking above the water line requires attention. The ship has been in the water since April, and no ship could stand the heat on the top side without the effect showing on the caulking. The caulking is good, and has held well. The ship does not make more than 1½ inches of water in 24 hours. Straining always has an effect on caulking, but in this instance a good job was done, the caulking being well set into the seams in order to allow for the swelling of the timber in water. The oakum was forced in possibly ¾ of an inch in order to allow for it coming back. Below the water the caulking is all right.

131. *To Mr. Parker Moloney.*—When I said that I had sometimes to call attention to slumming, I meant that the men were not fitting the ceiling planks right down. Any workmen will do that if they are not watched. But in every instance the defect was made right. Prior to the launching I considered that on account of her great length the ship would hog 10 or 12 inches. To counteract that tendency she was built with a 9-in. sag. The hog is now about 22 inches, so that the total movement of the keel has been about 31 inches. That is excessive for a new ship. The hogging is not altogether attributable to the length of the ship. The trouble may have been caused at the launching or afterwards. I do not know what caused the straining of the vessel; I cannot attribute it to anything. I do not think there was any great deviation from the original plans and specifications which would contribute in any way to the hogging. I do not think the extra hatch was responsible. I did not advise against the excessive bolting; that was not part of my duty. Acting under instructions from Mr. Watson, we examined the topside knees, with a view to seeing whether we could get more bolts into them, and we recommended that a few dumps should be inserted rather than through-bolts. When Mr. Heron came up he asked for a plan, and drew some of the bolts to have them examined. He found some of the bolts so close together outside that he advised that extra bolts should be put through from the inside, and that the holes should be plugged from outside. I think the bolting would have been better, as it was but what was done was according to Lloyd's conditions.

132. *To Mr. Atkinson.*—Some of the strengthening timbers recommended by the Department in order to remedy the defect caused by the hog is very necessary, including the extra keelsons. The departmental suggestion partly meets with my approval. I think that wood and wood together are better than an alliance of wood and iron, because the principal weight is on the boltheads. Therefore, I would rather have wooden girders than iron girders. I have no suggestions to make for strengthening the ship.

133. *To Mr. Mathews.*—Before coming to Australia I had a couple of ship-ways on the Tyne, and I was outdoor surveyor and contractor. None of the ships on which I worked was 200 feet in length. All of the ships were of hardwood and pitch pine. Where I served my apprenticeship, there was always a wooden ship on the stocks made of English oak frames, elm bottom, and pitch pine tops. The timbers used in England do not hog very much. One reason is that they are obtained in longer lengths than are the Australian timbers. I have seen vessels 250 feet long in Australia. Some of them were hogged, but possibly that occurred only after they had done a trip or two. One would not take much notice of a hog 12 or 13 inches. It is hard to get Australian timber suitable for vessels of the size of the *Braeside*. If the hog in the *Braeside* had been only half-a-dozen inches or so it would not have mattered much. As a shipwright, I would not care to take the responsibility of constructing wooden ships 250 feet long of Australian hardwood because of the difficulty of getting suitable timber. It is hard to get the timber cut in the first place, and even when it is obtained it is green, consequently there is difficulty in keeping it in position. You may make a very close tie-joint, but six months later it will be quite open. If when the fore foot dropped as the vessel left the launching way it had struck anything, that would have been likely to cause a sag rather than a hog. The effect of the dropping of the fore foot would depend upon the moment at which the vessel got her buoyancy at the after end. If the cradle kept to the launching ways the vessel would have gone out on a level keel and must have had buoyancy at the after end. The fact that the forefoot dropped as the vessel left the ways would not be evidence that she went out on an even keel. The two photographs produced, showing a straight paint line when the vessel was on the stocks, and a slightly defected paint line after the launching, indicates that the ship hogged at about the time of launching. The launching should not have caused the hog if there was sufficient depth of water, and the ways below water were strong enough. They were all right above water. The launching was prepared by five or six foreman, with the advice of Mr. Ellery from the Cockatoo Dock. Any extra weight added to the ship in the course of strengthening her must reduce her dead weight carrying capacity. When I was last in Melbourne, there was a vessel in Williamstown dock, which one of the surveyors told me had hogged in spite of having a riding keelson. The mast was lifted, and another riding keelson was put in. The strengthening of the *Burnside* in the manner in which the *Levi W. Ostrander* was strengthened would reduce her dead weight capacity. I would not like to

say how she could be strengthened. If I were to say that the *Burnside* should be strengthened before she is launched, that would be tantamount to saying that the vessel had not been designed with sufficient strength. I do not think the hatches affect in any way the strength of a ship. The *Braeside* is beamed much closer than any other vessel you may see, and the beams being closer, the knees also are closer. They are good naturally-grown knees. Any strengthening would have to be done longitudinally. The extra hatch put into the *Braeside* is not very large. Had the fourth hatch been large, it would have had some effect, but, as no more beams were taken out than under the plan for only three hatches, I do not think the strength of the ship has been affected. The building of ships of this length of Australian hardwood is a very experimental enterprise.

134. *To Mr. Boyd (through the Chairman).*—When I saw the *George Billings* a number of years ago she had not much hog, but I believe she has more now. The *Admiral D. Mayo* had a hog of about 11 inches. I anticipated a little hog in the *Braeside*, but not so much as has developed. I expect that the *Burnside* when launched will hog about 10 or 12 inches. Longitudinal strengthening beams alongside the combing of the hatches would be of great assistance to these vessels. When the timber is flexible it is only natural to look for a slight hog in wooden ships of the length of these. If during the launching the fore foot of the vessel struck something, the tendency would be to sag rather than to hog the ship. The fact of the fore foot going into the mud would not hog the ship; it would keep the end up. But if the vessel grounded amidships that would tend to cause a hog. If there had not been sufficient water at the launching, and the stern, not having the same buoyancy as amidships, had canted downwards, the bows would have lifted the cradle off the ways. If the photographs of the launching show that there was pressure on the ways until she took her buoyancy, that would show that there was sufficient buoyancy aft. If the fore foot had dropped, the chains underneath the bow would have fallen slack. One naturally expects any vessel leaving the ways to drop in the water a little. Not much of the caulking is bulging out. The men doing the caulking made such a good job of it that I gave them £1 out of my own pocket. I had told them to be very particular about the outside caulking. Any bulge in the caulking might have been due to shrinkage on the topside. It was not caused by the bump which the vessel received during the launching. The vessel is pretty tight to-day. I don't think any serious damage was done by the drop off the ways. Steel bolts are very much stronger than treenails, but the treenails in the first place were too light. I am satisfied that the bottom fastenings are all right. Lloyd's surveyor would have to be satisfied if he cut the keel at one particular place to examine the fastenings. I have heard Mr. Joseph Mayoh tell the workmen on many occasions that there was to be no slumming. I remember that on one occasion Mr. Mayoh and Mr. Curchin were together in a motor car, and Mr. Mayoh told me that if anything was wrong it was to be put right, because £100 was neither here nor there. I took that to mean that I would be held responsible for the workmanship; therefore, I got all I could.

135. *To Mr. Brown (through the Chairman).*—I was at the shipyard practically every day. I was there the day before the launching. The launching ways were not then complete, because Mr. Ellery and Mr. Barber concluded that there was not sufficient water at the end of the ways. I think they put out two extra lengths of ways representing a distance of about 60 feet. There was not much time before the launching in which to do that work. I scarcely think there was sufficient time to do the job efficiently. A diver should have been employed. I cannot say whether the ways collapsed during the launching. I noticed the fore end of the vessel rise as she went off the ways but all ships tip more or less. It should be possible to launch a vessel without a tip if there was a sufficient depth of water. The launching would not be satisfactory if the vessel tipped too much, but whether the tipping of the *Braeside* was excessive I cannot say. Certain bolts were drawn from the beam knees a little fore and aft of amidships. I do not believe that the bolts in the centre of the keel would be subjected by the hog to more strain than would the bolts elsewhere, because those in the centre of the keel are perpendicular. There does not seem to be any sign of deflection. A hog of 31 inches spread over a length of 250 feet would not show very much in the bolts. The beam knees from which the bolts were taken were in both the upper and 'tween decks about amidships.

The witness withdrew.

(Taken at Sydney.)

TUESDAY, 16TH NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Mathews,
Senator Newland,	Mr. Parker Moloney.
Mr. Atkinson,	

(Mr. H. C. Brown, representing the Prime Minister's Department; Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh.)

William Henry Harris, diver, in the employ of the Sydney Harbor Trust, sworn and examined.

136. *To the Chairman.*—I have been in the employ of the Sydney Harbor Trust for about twenty years. Our work is generally in depths of from 30 to 40 feet, and sometimes in greater depths.

137. *To Mr. Boyd (through the Chairman).*—Under instructions from the Sydney Harbor Trust I went to Kissing Point, on 29th June, to do whatever was required of me by Messrs. Kidman and Mayoh. I made an examination of the *Burnside* on the stocks. I made myself conversant with the stem and stern of the ship, including the rudder. I then proceeded to the *Braeside*, in the fitting-out berth. I examined the stern of the vessel, and reported that I could see no evidence of damage. I ran my hand right along the keel, and looked at the rudder and stern, and could discover no damage. The portion about the rudder I could see because the water was clear; but further forward where the water was muddy I examined the keel by feeling. I was able to go along the bottom of the ship from stem to stern; but I had to wait for the tide to rise a little. The copper on the stem was burred up and stripped for a length of about 18 inches. The keel was splintered slightly, and I brought to the surface a splinter about 18 inches long and 1 inch in diameter. I was able to pull it off with my fingers. I cannot say how the damage had been caused. I then continued to examine the keel from one end of the ship to the other, passing my hand along the whole length of the keel. I could see no damage done anywhere to the keel or bilge. I commenced my examination when the tide was rising by looking at the stem and stern; then I worked from the stern to amidships, and then from the stem to amidships. My pipe line was not long enough to permit me to go from end to end of the ship in one trip; but I estimated by the length of the line that I had covered the whole extent of the ship. When I first went down

at the rising tide the bilge was not sitting in the mud. High tide on that day would be about 7 p.m. or 8 p.m. I commenced my inspection about 2 p.m., and finished about 4 p.m.

138. *To Mr. Brown (through the Chairman).*—The bottom of the river consisted of fairly soft mud. I could feel no crust on it. I did not sink into the mud for any depth. By regulating the supply of air a diver can walk over very soft mud without sinking. When I ran my hand along the bottom of the keel I was kneeling. The vessel was not resting on the bottom. I did not feel any hard ground anywhere under the vessel. The copper on the keel was burred backwards in the direction of the stem. I did not notice any other marks on the bilge on either side of the keel. I worked along the outside of the ship. I did not examine the side alongside the pier, and, therefore, have no knowledge of the state of the river bed on that side. When I made my examination a small length of the wharf was showing forward of the stem; the position was approximately that shown on Mr. Scott's plan. So far as I was able to ascertain, no portion of the keel was resting on the bed of the river; but I cannot say whether or not it had been on the bottom. If the keel had been resting in the mud I could not have examined it. I did not go right under the ship; I do not think there was enough space underneath for that. The water was a little deeper aft than forward; the difference would be about 18 inches in a gradual slope from stem to stern. I had no means of ascertaining how far the soft mud extended. I did not discover any hard crust on the mud.

139. *To the Chairman.*—I did not sink into the mud more than ankle deep. By regulating the air so as to increase his buoyancy a diver can walk in very soft mud. The keel did not appear to have been lodging in the mud at low water, for it felt clean. Whether or not it had been actually on the bottom I cannot say. Between the bottom amidships and the mud there would be 18 inches of water.

140. *To Senator Foll.*—I am not able to express an opinion as to the accuracy or otherwise of the statement that there was a 10-in. crust on the top of the mud, and that a man's weight was required to push an iron bar through it. I had nothing with which to probe the mud; but I should think that very litle weight would be required to sink right through. I do not consider that there was any crust on the mud.

141. *To Mr. Parker Moloney.*—It must have been contact with something very firm that caused the splinter to be knocked off the keel. I am not able to say whether the chains which attached the cradle to the bow at the launching caused the damage, but I am certain that it must have been some very hard pressure or substance that stripped the copper and knocked an 18-inch splinter off the keel. I did not take any measurements of the distance from the bow to the damaged point, but I judge that it would be about 12 or 15 feet before I came to the damaged part of the copper. The stem was coppered for only a certain distance. The stripping commenced from the beginning of the copper and extended for a distance of 18 inches towards the stem, then the splintering followed where there was no copper. The total damaged length would be about 3 feet. I did not examine the river bed near the launching-way. Prior to my examination of the *Braeside,* Mr. Mayoh took me to the *Burnside* on the stocks, in order to give me an idea of what he wanted me to look for. He indicated the part of the *Braeside* I was to examine, and told me to go right along the keel. I did so, and I reported in the terms of my evidence to-day.

142. *To Mr. Atkinson.*—I did not notice any marine growth on the keel; the bottom of the ship seemed clean. The position of the *Braeside* in relation to the jetty was that shown in the photograph taken on 10th June. I had not seen Mr. Scott's plan before to-day.

143. *To Mr. Mathews.*—I cannot state the exact time of low tide on the day I made the examination, but data can be obtained from the Harbor Trust to show the exact hour of the turn of tide from low to high. The time between tides varies in places from 5 to 5½ hours. When I commenced my examination at 2 o'clock it was low water, and the tide was beginning to rise. I cannot say definitely that I could have run my hand along the keel at low tide. I think I waited for the tide to rise a little before crawling along the keel. I do not know what was the position of the vessel at low tide, but I have an idea that at some time during the day the keel touched the mud. I do not think there was an impression of the ship's bottom in the mud. I did not inspect the bed of the river forward of the bow, because I did not know that the ship had ever been forward of the position in which she was lying.

144. *To Senator Newland.*—My duties as a diver include the repairing of damage below the water-line. When making my inspection, I could not see the keel amidships, and I could not tell by feeling whether it was hogged. If the ship had not been there the water would have been clear enough. The keel extends about 18 inches below the bottom of the vessel, and as there was 18 inches of water below the keel, I had 3 feet of water in which to work. The stripping of the copper may have been caused by the keel striking something in the water. It may have dropped on the ways during launching, or may have encountered some obstruction. I reported to Mr. Mayoh that the damage done to the ship was not serious.

145. *To Mr. Mathews.*—A pinnacle of hard substance might have been in the river bed without my noticing it. I was sent there only to examine the ship, and I kept my mind on that job.

146. *To Mr. Boyd (through the Chairman).*—The damage done to the keel could be repaired in 2 or 3 hours; the time occupied would depend on whether the splintered part was to be levelled off or a new piece of timber put in. It would be necessary to tack on a new piece of copper, and that job would occupy from 1½ to 2 hours. Of the 2 hours I was in the water, half-an-hour was occupied in searching for the plate, so that my inspection was completed in about 1½ hours.

147. *To Mr. Parker Moloney.*—The depths of water under the keel varied, probably, from 15 inches to 18 inches. It was possible for the keel to have been in the mud at low tide.

The witness withdrew.

James Bruce Barr, shipwright, employed by Kidman and Mayoh, sworn and examined.

148. *To the Chairman.*—I have been in the employ of Messrs. Kidman and Mayoh since October, 1913. I have had about seventeen years of shipbuilding, having worked in a number of shipyards in the Old Country, although mostly on steel ships. I built some small composite tenders in Calcutta for the British India Company. They had a tonnage of from 75 to 120 tons. I have personally superintended the construction of the *Braeside* and the *Burnside,* and am conversant with everything that has taken place since the commencement of the work. The builders suffered a great deal of inconvenience through delays in the delivery of timber. I should think these delays kept back the work about six months. The laying of the keel of the *Braeside* was completed at about Christmas, 1918, and that of the *Burnside* about April, 1919.

We were able to get plenty of unskilled labour, but it was not suitable. We wanted shipwrights, but we could not get them, and we had to dilute such skilled labour as was available with bridge and bush carpenters, and axemen, obtained through the Bureau. Even now, skilled shipwrights are not obtainable. As far as I was able to do so, I inspected all the holes drilled for the fastenings. There were three shipwrights to every squad of men to inspect the holes as they were bored. Each shipwright was in charge of a measured section, and had a squad of men to bore the holes. I inspected the holes when they were finished. I saw the majority of the fastenings put in, and I am satisfied that those I did not see were as well done as the others. So far as my knowledge goes, none of the bolting was done in an unsatisfactory way. Nothing was scamped, or done in a slovenly manner; the work was done as well as it possibly could be under the circumstances, and was as good as any work of the kind done in other parts of the world and in other Sydney ship-yards. Not being able to get skilled labour such as shipwrights, we were involved in extra expense in getting men to make the templates, and see the timber cut to proper dimensions. We could not leave some of the unskilled men for ten minutes lest they should spoil the timber. Until we had taught the men how to bore the holes, we had a lot of difficulty; but after two or three months' experience, they were able to do the work as well as anybody else. I was instructed to work to the letter of the plans and specifications. I was never told at any time to try to save money for the contractors; it was not beneficial to me in any way to do so. None of the employees on the job had any interest in scamping the work, and, so far as I know, none of the work has been scamped. Before starting construction, we obtained a line plan, and worked to that in the moulding loft. The ships are 250 feet between perpendiculars, 44 feet beam, and 24 feet moulded depth. We built as accurately as was possible to the dimensions of the final plans. I personally set down in the moulding loft the lines to which the ships were to be built, and they were absolutely accurate. I gave to Mr. Greenlees particulars of the lines I had laid down, and he passed them. On a second occasion he came to the yards for particulars for Melbourne. The lines were also passed by Mr. Heron. The lines were submitted to Mr. Greenlees after the *Braeside* was built, because of a communication from Mr. Mayoh in regard to the dead weight. We made templates for every anchor stock, deck beam, and frame. The lines were inspected and approved by Mr. Curchin and Mr. Heron; it was later that I proceeded to make the templates. I believe that it was after the contract was signed that I showed the lines to Mr. Curchin and Mr. Heron. We employed two carpenters to do nothing but make the templates of timber. Having to work with diluted labour, we had to take great care that the templates were correct to scale and drawing. The ship was entirely built from templates, and for that reason the construction was likely to be more accurate. I really adopted the iron ship method of making templates for practically everything. I made templates for the beams and frames, and mid-sections of the frames at every 2 feet. In every detail the ships were built as closely as possible to the plan. I know that the dimensions of the ship are correct, because they were measured and proved when the vessel was launched. You cannot keep to within a sixteenth of an inch in building ships of this kind, but they can be built to the nearest inch. All the timbers were cut in templates before being taken to the ship for erection; even the floor beams were made to templates with the exact required length, and then put on the ship. The floor beams were not attached to the frames of the ship, but the anchor stocks were. The tie rods were not fixed across the beam of the ship for the purpose of pulling in the frames to the beams. The tie rods are strength members which are put in when everything else is fixed. They are bolts of 1½-inch diameter, and extend right through the planking. in the centre is a turnbuckle with which the rod is screwed tight. These rods are used more for the purpose of holding the frames in their proper place. The moulded depth of the ship as built is in accordance with the lines I laid out in the moulding loft. No complaint was ever made to me during the building that the ship was not being constructed to the lines laid down in the loft. I have had experience of the launching of steel ships, but not ships of the class of the *Braeside*. I superintended in every detail the erection of the standing and sliding ways for the *Braeside*. Mr. Ellery visited the yard, and suggested that the standing ways should be increased one length. They were, accordingly, extended 30 ft. 6 in. On 22nd April, the day before the launching, Mr. Mayoh discussed this work with me in the office at lunch time, and a commencement was made with it at 1 o'clock. The men knocked off work at 6.30 p.m., and I left the job about an hour later. I recommenced work at 2.30 a.m., and the men came in between 3 a.m. and 4 a.m. They worked waist deep in the water. The packing was completed, and the ways were greased down by 7 a.m. on the morning of launching. The ship was hardened up, and everything was ready for launching by 9 o'clock, and we were standing by for orders. It was launched at noon. The ways were properly packed, and quite strong enough for the launching of the ship by 9 a.m., and everything was in perfect order. It is entirely wrong to say the ways were not packed at all. For the last 6 feet from the end the ways were not packed because the water was too deep. In other words, 24 ft. 6 in. of the additional ways put down on Mr. Ellery's instructions were properly packed; the lack of packing in the last 6 feet did not matter. Mr. Ellery did not really tell us the exact length of the extra ways to be put down. but he said that about 20 feet would be helpful. We had one length of 30 ft. 6 in., and we used it. There was no need for the services of a diver to put the packing under the extended way. The water is shallow there, and shelves gradually. The water is deep at a distance of about 80 feet from the shore, where a ledge occurs in the bottom Everything connected with the launching ways was made fast and secure. There was no collapse of the ways when the ship was launched. As the ship left the ways. Mr. Ellery asked if they had broken; we examined them, and found nothing at all wrong; in fact, some lengths of the ways are in use now. They were fastened through the scarphs with 1½-inch bolts. When the bolts were removed, there was no evidence of damage in the holes. There was sufficient water over the way ends when the ship was launched; in fact, the launching was absolutely satisfactory. I have attended the launching of big steel ships on the Clyde, but I have never seen large wooden ships launched. From a practical point of view no damage was done to the ship when she dropped off the standing ways. The keel was not injured; the splinter that has been referred to was knocked off the false keel, which is really a chafing keel. It is tacked on to the main keel with 14-inch bolts, and if the ship should run aground or strike an obstacle, the shock is taken by the false keel. I do not think the *Braeside* touched ground when she dropped into the water off the standing ways. She was made up under the forward poppets with chains passing under the bow, and wedges were used to tighten them in order to put a heavy strain on the poppets. The wedges under the false keel would be a foot below the ship, and the chains were over them. Undoubtedly the ripping of the metal from the keel was caused by the chains supporting the poppets. Packing was put inside the chain in order to prevent any chafing of the

hull. When that came out the chain would tear the copper away. It was not possible for the damage to the keel to have been caused by the vessel hitting the bed of the river. The vessel did not tip at the launching. I was at the fore end of the ship with Mr. Ellery, and I watched very closely for any tipping, because the critical moment is when the ship leaves the end of the ways. There was no movement in her at all. When we examined the ways afterwards we found that all the grease had been taken off, proving that the pressure of the bow on the ways had been maintained, and there had been no tipping. That is definite evidence that there was pressure on the fore foot when the ship left the ways. If she had tipped, the fore foot would have left the cradle, and the poppets and the cradle would have been bound to fall away. There were only the chains holding the poppets to the ship. Had she tipped at all they would have dropped right out, and the ship would have fallen between the ways. But the chains did not become slack; they remained in position until they went out of sight in the water. I examined the ship when she was put in dry dock, and there was marine growth on the turpentine keel from end to end. In dock the ship was washed and painted. There was no evidence of damage to either the rudder, stern, or any portion of the keel except the small part forward that had been torn by the chain during the launching. While the ship was lying at the fitting-out berth she had always sufficient water under her to prevent damage being done. I had sights on the vessel all the time to check her movements as she was lying at the berth. If there is a movement of a fraction of an inch it may be detected by looking through the sights, but no movement of the kind was disclosed. No damage was done to the ship while lying at the fitting-out berth. At times the ship was moved right under the jetty. There was sufficient water for that at high tide, and we were not able to move her at any other time. She was only kept in that position sufficiently long for us to make a couple of hoists aboard, and then she was shifted back to her moorings. She was never shifted up to the jetty at low water; in fact, that could not be done. If she grounded at the fitting-out berth that would have no influence in causing a hog. Some alteration should be made in the *Burnside* before she is launched in order to minimize the risk of hogging. I am not able to express an opinion as to what that alteration should be. I expect that the *Burnside* will hog when she is launched.

149. *To Mr. Brown (through the Chairman).*—The *Braeside* was moved forward of the end of the wharf in order to hoist aboard the winches, the spars, and other heavy timbers. That may have happened 50 to 70 times. We have no record of the dates when the ship was moved forward of the end of the wharf. Of necessity, it was always at high tide, because the water was shallow. I think she could have been moved at half tide; I do not know whether that could have been done at quarter tide. At low tide, the depth of water is about 8 ft. 6 in. at 10 feet past the end of the wharf. Probably, about half-an-hour would be taken in putting the winches and other gear aboard while the ship was at the wharf. She was then immediately brought back and moored in her previous position. It was only about fifteen minutes after the launching that I examined the ways with Mr. Ellery. I have had considerable experience of the launching of vessels, and have prepared ways on previous occasions. On 21st April, all the ways were turned in and packed up. I did not consider them complete before Mr. Ellery visited the yard on 22nd April. I understood from Mr. Mayoh that he had asked the authorities at Cockatoo Dock to send an expert to Kissing Point to give advice regarding the launching. He called in Mr. Ellery for his advice, and acting upon it we put down an extra length of way. I will not say that up to that time the ways were complete, as far as I was concerned. The final decision would rest with our naval architect. If he had been prepared to launch without additional length of ways, it had nothing to do with me. It was generally understood that the launching ways were complete before the additional length was laid down. I regarded it as my duty to see that the ways were correct according to the drawings I received from the naval architect; I gave no consideration to the depth of water at the end of the ways. All I had to do was to put down the length and declivity of ways according to the architect's instructions. I am not prepared to say whether or not it would have been advisable to launch the ship without the extra 30 ft. 6 in. of way. The length of way requires a lot of working out, and I did not take the responsibility for that. I do not think that the architect would have given the dimensions of the ways without working them out, but the factor of safety is so great that the ways could be put down approximately until they were actually worked out. Up to the time Mr. Ellery came on the spot, I had laid down the ways according to the declivity and length supplied me by our naval architect. When launching a vessel of the size of the *Braeside,* you must know exactly what the depth of water will be. If the water was not likely to be sufficient, it would have been a simple matter for the architect to have delayed the launching; but if he took the responsibility of putting the ship in the water with the aid of an extra length of way, it was no business of mine. I do not know whether or not the naval architect declined to take the responsibility for the launching of the vessel on 22nd April. The 30 ft. 6 in. of extra way was supported by square hardwood blocks put in at intervals of not less than 6 inches. They varied in the size from 12 in. x 12 in. to 16 in. x 12 in. The ways were dogged down to the blocks and iron rails were laid down fore and aft inside and outside. They kept the blocks in position, and as the ways were dogged to the blocks they could not slip; in fact, the ship carried them out with her. Struts were put from the outside to prevent the ways from spreading; they were made of 9 in. x 7 in. hardwood. Little niches were cut in the ways for these struts to fit into, and the other ends were let into holes in the rock and wedged. At the end of the ways there would be a depth of about 22 feet of water at high tide. From about 6 feet from the end of the extra 30 ft. 6 in. of way, we made no attempt to make holes in the rock. At that point, the depth of water would be about 3 feet or 3 ft. 6 in. at low tide; just beyond that point there is a sharp declivity in the river bed. The struts were sunk far enough into the rock to get a good hold—probably 10 or 12 inches, which was quite sufficient; the rock there is soft. The ways did not spread; the launching was satisfactory in every respect. The vessel did not drop heavily on the fore foot as she went off the ways. I have seen a great number of launchings, and the ships have always dropped when they leave the way ends. As the *Braeside* came off the ways she received a glancing blow off the end of the rock; that was not on the forefoot, but on the packing tying the poppets together. Our men were working at low water for two tides in putting down the extra length of ways. I have already mentioned that we worked from 1 p.m. to 6.30 p.m. on 22nd April, and from 3 a.m. till 7 a.m. on morning of the launching. About 60 men were employed on this job; some of them were labourers, but there may have been 30 or 35 shipwrights who did anything and everything that was required, the labourers helping them as best they could.

The witness withdrew.

Captain John Pertz, master mariner, sworn and examined.

150. *To the Chairman.*—All my life I have been connected with wooden ships. I am at the present time master of the barquentine *Forest Pride*, now in Sydney Harbor. She is a wooden ship built of softwood, at Aberdeen, Washington, and is 260 feet long, 44 feet in beam, and 19 feet in moulded depth; her net tonnage is 1,424 tons. I have seen a good many wooden ships launched, and I have never known one that would not hog more or less.

151. *To Mr. Boyd (through the Chairman).*—I would not consider a ship unseaworthy because she had a hog. There is no danger to life in sailing in a hogged ship. I have sailed in vessels having a 2-ft. hog in the keel. The keel has been straightened by being filled in underneath. The filling in was not done because the hog did the ship any harm, but because if the vessel grounded, and the hog was not filled in, she would be supported at only the bow and the stern. It is hard to say whether a vessel is safer with a hog or with a sag. I do not think a hog interferes with the sailing qualities of a ship. Many wooden sailing vessels are not classed at Lloyd's, but most of the large vessels are on Lloyd's register. I have not seen the *Braeside*. I would leave the hog in the ship, and give her an even keel. I have seen ships with 2 feet of hog, and that did not affect their seaworthiness in any way. The *Dashing Wave* has a hog of, approximately, 5 feet; but she still carries first-class cargo to Alaska. She is so bent that it is necessary to have scuppers through the forward end and through the stern in order to let the water off her deck.

152. *To Mr. Brown (through the Chairman).*—I cannot express an opinion as to whether a vessel should hog to the extent of 2 feet immediately after launching. The hogging in the vessels I have mentioned might have taken place immediately after launching or might have developed gradually over a number of years. The *Dashing Wave* did not have a 5-ft. hog when I first saw her. I was never master of that ship; she is fairly old now. The vessel I sailed with a 2-ft. hog is still sailing to-day, and probably the hog is now 5 feet. I know that when she was launched she had at least 12 inches of hog. I cannot say that I have ever heard of a vessel that had more than 12 inches of hog within three hours of launching. A vessel that hogged to the extent of 2 feet immediately after being launched might still be good. I cannot say definitely whether the *Forest Pride* has a hog; but I think she has. The condition of her keel will be disclosed when she goes into dry dock shortly.

153. *To the Chairman.*—The straightening of a keel by filling in the hog would strengthen the ship to a small extent. I have had no experience of ships built of hardwood. I am not an expert in shipbuilding; but I was overseer during the construction of three four-masted schooners. Beams are usually cut to make room for the hatches; but ships now are being built with longitudinal beams alongside the coaming of the hatchways, and extending the full length of the ship. Those beams were not employed in the old days. The addition of longitudinal strength on the top deck would not give strength to the keel and prevent hogging.

154. *To Mr. Parker Moloney.*—I cannot say whether or not the *Dashing Wave* has Lloyd's certificate now; but years ago when she was younger she was classed at Lloyd's. A vessel cannot be claimed to be unseaworthy merely because of a 30-in. hog; as long as a vessel can carry cargo she is seaworthy. It is customary to get a certificate for a hogged ship. I am commanding a new ship, which, I think, has some hog, but she is seaworthy, and will get a certificate; if she had a 2-ft. hog she would get the certificate. A certificate should be obtainable for a ship built according to Lloyd's requirements. If the *Braeside* is built according to Lloyd's rules, I do not see how a certificate can be refused. I am unable to express an opinion as to what is the principal cause of hogging. I remember the launching of a boat, which, after leaving the ways, touched a gravel bottom. The moment she dropped off the stock the hog could be seen. When the bow goes into the water it must drop a little, and that makes the centre hog; therefore, hogging would not be evidence of faulty launching. In every launching there is a factor which contributes to hogging to some extent. I believe a steel ship would hog more or less at the launching; but whether or not the hog would remain I cannot say. I believe there are steel ships afloat to-day with a hog in the keel.

155. *To Mr. Mathews.*—The greatest length I have seen in a wooden ship of later years was 260 feet. Ships are being built on the east coast of America of oak, which is a hardwood. Most of the ships built on the east coast are of hardwood frames, with pitch-pine ceilings and plankings. The *Forest Pride* has a more tapering hull than has the *Braeside*. A flat-bottomed ship has a greater tendency to hog. Ships are built with wide, flat bottoms in order to carry big cargoes; the flatter the bottom, the greater the cargo that can be carried. A sharp, tapering ship will load down in the water faster than one with a wide, flat bottom. The *Forest Pride* has been launched for about eleven months. I am sure that most wooden ships hog more or less. Hogged ships do not pay higher insurance rates than do others; the insurance rates are determined by the age of the ship, and not by the hog.

156. *To Senator Newland.*—I would have no hesitation in going to sea in a ship with a hog, provided that she was otherwise to my satisfaction. Sailors do not care how much hog there is in a ship; the hog has nothing to do with the safety of the ship.

157. *To Senator Foll.*—I think that steps were taken to stiffen the *Dashing Wave*. I have never seen a ship with a 2-ft. hog immediately after launching, but as to whether a hog of that extent is excessive is a question I should not be asked. A ship might continue to hog, notwithstanding the filling in of the original deflection in the keel. Hogging may be caused by careless loading or unloading.

158. *To Mr. Boyd (through the Chairman).*—I do not think a hog in the keel would distort the bilge. I would not be alarmed if the bilge did alter slightly; the bilge is bound to alter to a certain extent.

The witness withdrew.

Captain William James Macleod, master mariner, sworn and examined.

159. *To the Chairman.*—I have been 27 years a master mariner, mostly in command of sailing vessels.

160. *To Mr. Boyd (through the Chairman).*—I have heard the evidence given by Captain Pertz, and I agree with him.

161. *To Mr. Brown (through the Chairman).*—I have had very little experience in the launching of vessels, but I have known ships to hog immediately after launching. I think that a hog of 12 inches within three hours of launching is excessive; a hog of 24 inches is very excessive.

162. *To Mr. Atkinson.*—I know that both hardwood and softwood ships hog. I saw an American oak ship,

the *James Nesmith,* which hogged the moment she dropped in the water, and has continued hogging. We had to have scuppers in the centre of the aft house, because the water would not run forward or aft. I agree with the previous witness that the flatter the ship is built the greater is the tendency to hog.

163. *To Mr. Mathews.*—The last wooden ship I commanded, five years ago, was hogged. I was master of one of the best American ships ever built, the *Henry T. Hyde,* and she dropped 4 inches in five years; she was not strengthened while I was in charge. Every wooden ship I have been on hogged more or less. When the *Henry T. Hyde* was launched she had that hog; then she settled on a straight keel, but when I last saw her she had again a 4-in. hog. I have never heard of a ship hogging 18 inches immediately she was launched. Even steel ships spring more or less, and the loading has to be done carefully, in order to avoid springing.

164. *To Senator Foll.*—I have known old ships to be strengthened. The *Dashing Wave* was stiffened; whether or not she hogged further I cannot say, but I know the stiffening strengthened her. A ship cannot be built so strong that it cannot be sprung.

165. *To Mr. Parker Moloney.*—A 12-in. hog within three hours after launching is the most of which I have ever heard. The hog in the *Braeside* might have been caused by the launching. For such an extensive hog to develop so soon after launching something unusual must have happened. The *James Nesmith* had a hog of 10 inches from the day she was launched, but it was never any detriment to her, except in appearance.

The witness withdrew.

Francis John Ellery, Assistant Shipyard Manager, Cockatoo Island, sworn and examined.

166. *To the Chairman.*—I have had life-long experience in dockyards, particularly in connexion with steel; I have had very little experience of wooden ships. I was formerly employed in Portsmouth Dockyard, and I have been at Cockatoo Island since March, 1915. Of launching I have had considerable experience in England, and in this country I have launched the *Brisbane*, the *Adelaide*, the *Biloela*, and various smaller vessels. I was instructed by Mr. Clark, general manager at Cockatoo Island, to go to Kissing Point to render Mr. Mayoh whatever advice I was able to give in regard to the launching of the *Braeside*, but to make it clear that I took no responsibility. I made it clear to Mr. Mayoh that I was there to give practical advice, but not to take any responsibility. I inspected the launching site on two occasions, the first time about a week before the launching, and the second time on the 22nd April. I proceeded to the site in company with Mr. Mayoh, and to him gave any advice I had to offer. So far as I could see, only some minor alterations were necessary in the arrangements that had been made for the launching, and those alterations were effected at my suggestion. On the occasion of my first visit I could see no fault in the preparations that were being made, but, at my second visit, on the day preceding the launching, I saw that there was not sufficient water over the end of the ways to permit of a safe launching. Immediately I arrived I called the attention of Mr. Mayoh to that fact. Invitations for the launching had been sent out, and we had to devise some means of getting over the difficulty that confronted us. An extension of the launching ways was suggested, and immediately carried out. Mr. Mayoh gave instructions to his foreman to do whatever I suggested. I inspected the ways prior to the launching. I could not see the end of them, but, on going to see the depth of the water, I could see that they had been put down as suggested. I was present at the launching, and consider that it was successful. I was standing under the launching patform, and had every opportunity to witness the operation fully.

167. *To Mr. Mathews.*—I noticed the vessel dip as she left the ways, but we were quite prepared for that. My impression was that she just touched the ground. I think it would be the chain under the poppets that actually struck. I do not think that if the bow had struck the ground that would have caused the hogging; the damage done would be so local that it would have practically no effect on the ship. I have known other ships to fall off the ways, but I have not known them to strike the ground because of insufficiency of water at the end of the ways. In the circumstances it would have been wise to have extended the ways another 6 feet, although possibly a little less would have been sufficient. I have seen some wooden ships in dock which were 250 feet long; many of them were hogged. It is usual to find more or less hogging in every wooden ship whether made of softwood or hardwood. I would be prepared for a hog of from 6 inches to 12 inches as a maximum at the launching. The hog is bound to increase with work. Strengthening of the ship may delay further hogging for a time, but the alternating stresses would gradually overcome any strengthening. I have seen ships considerably hogged; the old *Victory* had a hog of 3 ft. 6 in. Some provision is made in all wooden ships to prevent hogging, but, in spite of experience, they still hog. If ever we are putting a wooden ship in dock, and we did not know the condition of her keel, we send a diver down to examine it. I have never seen a hog filled in from the outside, although I have known it to be done, but I have seen ships strengthened internally. I have never heard of hogging affecting the insurance rate or causing men to refuse to go to sea in a ship. I am afraid that a ship with a hog of 20 inches would not get a first-class certificate unless something was done to prevent the hog going further. I have never worked in private shipyards, but at Cockatoo Island we built two ships to Lloyd's plans. If a vessel were built according to the requirements of Lloyd's I should think they would be primarily responsible for her condition when launched, provided that the workmanship was good. I have known of steel and iron ships to hog or sag; it depends on the shape of the vessel; the tendency to hog depends on the distribution of the weights. If a ship has sufficient support throughout her length she will not hog. I do not think the peculiar build of the *Braeside* has had anthing to do with the hogging. I did not have an opportunity of seeing that the extra length of ways was erected as securely as the main portion, because, when I arrived on the day of launching, the ends of the ways were covered with water. I am quite satisfied that the extra length was put down, but I cannot express an opinion in regard to the supports.

168. *To Senator Foll.*—In my opinion nothing occurred at the launching to cause the ship to hog. I think a hog of 2 feet is excessive. I would not say that a vessel was unseaworthy because she hogged from 18 to 24 inches immediately after launching. I am not in a position to say whether the *Braeside* is unseaworthy at present because I do not know the ship; but I think that steps should be taken to strengthen her in order to prevent the hog from developing further. I have had no experience in strengthening hogged ships. I last saw the *Braeside* about a month after the launching; at that time the caulking in the deck was not in bad condition; whilst that in the sides down to the water line appeared from a cursory examination to be all right. In many cases bad straining of the ship would

have an effect on the caulking; but I saw no such indications on the *Braeside*. Of course, I did not look for defects in the caulking.

169. *To Mr. Parker Moloney.*—I consider that the extension of the ways by 30 ft. 6 in. was sufficient. The work of putting in that extra length could have been done in nine hours, although I would prefer a longer time. It is possible that danger might arise through doing the work in a hurry; but I do not see why there should have been any element of danger in the job as it was carried out. A lot of work can be done in a short time if there is a sufficient number of hands to help; personally, I would have preferred longer time in which to carry out this extension.

170. *To Mr. Boyd (through the Chairman).*—Various means are adopted to prevent wooden vessels hogging; but the principal safeguard is in the design of the ship. A very strong keel is provided, and the upper portion of the girder is made very strong, also diagonal ties and double ceilings. The Admiralty used to put between the frames concrete and mortar, but they were used as ballast only. In a wooden war ship the centre of gravity is so high that it is necessary to ballast her in order to get a steady gun platform. A hogged keel should never be allowed to settle down. I should fill in the hog from below, in addition to internal strengthening. I think the *Braeside* is the first ship 250 long built of Australian hardwood, and there is no experience to guide us as to the tendency to hog. I asked Mr. Barber to prepare a fresh launching curve, and it showed a length of way that was sufficient. I had to accept his calculations as correct because I had not time to go into them.

171. *To Mr. Brown (through the Chairman).*—If I had been preparing the launching ways I think I should have employed divers. I should regard the letting down of the hog while in dock as serious. When a vessel hogs each fastening must take a certain amount of strain; when the hog is let down the stress is relieved, and the tendency after that relief is for the whole structure to fly back. The probability is that as soon as the ship is again floated she resumes her original hog, thus again straining the bolts. Continual stressing of the material will ultimately cause a strain, and when the ship is at sea it is undergoing alternating stresses. I do not know why the *Braeside* was let down on an even keel in dock; if she was let down, the straining I have referred to possibly took place. If I were responsible for the vessel, I should desire to examine the fastenings, and it would be preferable to draw some of them. They might be tested by sounding in order to find out if any were cracked; the test should be made in those places where the strain is greatest. If I had been responsible for the launching of the *Braeside* I would have required a depth of 8 ft. 4 in. at the end of the ways; so far as I can remember the depth at the launching was 6 ft. 6 in. I do not think that the shallowness of the water had a bad effect so long as the ship did not strike the ground sufficiently hard to do any damage to the stem. Insufficiency of water would increase the tendency of the ship to tip. Dipping, if it were not sufficient to strain the ship would not be evidence of an unsatisfactory launching. I suggested filling the forward tanks of the *Braeside* with water before launching in order to overcome the tipping moment that existed before the way was lengthened. I knew there was a tipping moment with only 6 ft. 6 in. of water over the ends of the ways. I was of opinion that there was not sufficient water at the end of the ways.

172. *To the Chairman.*—Steel ships and small wooden ships have been constructed at Cockatoo Island, and I consider that the staff there are competent to advise in regard to the alterations that are necessary in connexion with the *Braeside* and *Burnside*, and to carry them out.

(*Taken at Sydney.*)

WEDNESDAY, 17TH NOVEMBER.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Mathews,
Senator Newland,	Mr. Parker Moloney.
Mr. Atkinson,	

(Mr. H. C. Brown, representing the Prime Minister's Department; Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh.)

Frederick Wallin, Shipping Manager for Burns, Philp and Co., sworn and examined.

173. *To the Chairman.*—In addition to the letter which the Committee has received from the Prime Minister, enclosing a letter from us and copies of the pleas which our attorneys have filed in the action brought against us by Kidman and Mayoh, you will receive another letter from the Prime Minister, with which he will forward to you copies of statutory declarations and written statements made to us by different men who were employed by Kidman and Mayoh. As those statements may not be in the possession of the Committee at this moment, I propose to tender them. In the first place, I may explain that as you have decided that Burns, Philp and Co. can be represented only by a layman, and not by their legal adviser, my principals have determined not to be represented at all. I attend as a witness to furnish the Committee with evidence that is in our possession, but I am not attempting to state the case for my firm; that is a matter to be dealt with through the Court if the proceedings should go that far. In view of the serious hogging of the vessel, and in view, also, of the statements made by various men and now in our possession, we absolutely decline to take the vessels from the Government, or to pay Kidman and Mayoh for any work they have done at our request. I am not an expert in shipbuilding—I am only a layman—and I have brought with me Captain Grainger, the company's marine surveyor, who will be in a position to answer any questions of a technical nature that the Committee may care to ask. We absolutely deny that we have made any attempt to decry these vessels for the purpose of securing them at a cheaper price than we contracted to pay the Commonwealth Government. Mr. Mayoh was guilty of a falsehood in making a statement to that effect. It is also a falsehood to say that Burns, Philp and Co. attempted to bribe anybody in connexion with this or any other matter. I am not aware of the provisions of the contract entered into between the Commonwealth Government and Kidman and Mayoh. As prospective purchasers of the ships, we applied for a copy of the agreement, but were not furnished with it. We were supplied with copies of the plans and specifications for the six ships originally contracted for, but not with a copy of any amended plans; therefore, we are not in full possession of the details of the agreement under which Kidman and Mayoh were to build the ships. We have no knowledge, except from what we have read in the press, of the contract price or the special terms upon which the ships were to be constructed. As a result of negotiations, Burns, Philp and Co. arranged to purchase from the Commonwealth Government the *Braeside* and the *Burnside* for £45,000 each. The negotiations started some time in 1919, and we finally agreed to the Government's terms in a letter dated 22nd January last. The negotiations originated through a suggestion from the Secretary of the Prime Minister's Department to me or Mr. Lucas. In

October, 1919, Mr. Shepherd suggested that we might purchase the two vessels. We had been in the shipping and chartering business for a long time. We needed more vessels, and at that time we were chartering about 50 vessels per annum, of which 25 per cent. were being loaded in Australia, and the balance in the Pacific Islands. For vessels loading in Australia, permits had to be received from the Commonwealth Government under the War Precautions Act, or some other enactment, in regard to the export of copra. Those permits brought us in frequent contact with the Prime Minister's Department. As we needed shipping, and the *Braeside* and *Burnside* were supposed to be nearing completion, it was suggested that they would be of use to us. Negotiations followed, and we first made an offer of £40,000 per vessel, through Mr. Lucas, in October, 1919. We stipulated that the vessels should be completed in March and May of 1920 respectively. I have a copy of a telegram to Mr. Baker, our manager in Melbourne, asking him to tell Mr. Lucas to submit that offer to the Government. We offered a bonus of £500 for every month by which the period of construction was reduced. That was one of the conditions of the original negotiation. It was also arranged that the Commonwealth Government should undertake to faithfully supervise and expedite construction; no definite time for delivery was fixed. When we first made a definite offer, our marine superintending engineer, Mr. Snellgrove, submitted a report, dated 31st October, 1919, in regard to the vessels. To some degree, we made an expert examination of the vessels before offering to purchase, and we had a fair idea of what the tonnage of the vessel would be. I do not know how Kidman and Mayoh calculate their estimate of a dead weight capacity of 3,100 tons. The question of dead weight tonnage was not necessarily of great importance to the purchase. We already have five American schooners each of 600 tons dead weight capacity. Of course, the value of the ships would increase according to their tonnage. You tell me that the ships would cost the Government about £82,600 each on a dead weight of 3,100 tons, but I do not know how those figures are arrived at. We were prepared to pay an increased amount to the Government if the completion of the vessels was expedited. I will not say whether or not it would have been possible to purchase second-hand vessels at the price for which we were getting these two ships from the Government. Second-hand vessels vary; I could only comment on an article that was in front of me. At the time at which negotiations were commenced through Mr. Lucas, he was island inspector and plantation manager. He was in Melbourne, and that was why the original offer was made through him. He has since resigned from our service, and now occupies a position under the Commonwealth Government. The explanation of paragraph 3 of our letter of 22nd January, making it a condition of the purchase that the Government should, as far as possible, grant preference to those ships, is that at that time war conditions prevailed, and the Government considered that vessels on the British and Australian registers should have preference over foreign vessels. This preference was one of the inducements held out to us in connexion with the negotiations for purchase. I do not know why the Government did not call for tenders for the purchase of the ships, but my own view is that they thought they could get better terms from us than from anybody else. We undertook to take delivery of the two vessels as they were completed, furnished, and equipped, seaworthy, and fit in every respect to proceed overseas. We were given no direct authority in regard to the completion of the ships. Our agreement with the Government provided that they were to faithfully supervise and expedite the construction. We made no attempt to interfere with their authority or supervision. We were told that if any alterations were required by us that would not vitally affect the ship or for which the Government would not be called upon to pay extra, we could have them made by the builders. We suggested that an extra thickness of keel should be added, and asked for Muntz metal to be put on the garboard strake, and in that vicinity. We also considered that the vessel would be a better sailer for dispatch round the world should we decide to send her across the Pacific or the Atlantic, if she were rigged as a barquentine, for which she was originally designed. We further considered that the donkey boiler would be better placed on the deck than in the 'tween decks. We were asked if we wanted auxiliary power in the ships, and we said that we did not. I believe that the Government had decided to omit the auxiliary power apart entirely from our arrangement to purchase. No doubt we could have had auxiliary power if we had so desired, but we did not ask for it. I understand that, on 11th February, 1920, the Government advised the contractors that if we desired any alterations to the ships they could be carried out, provided they involved no extra expense to the Commonwealth. Mr. Curchin arranged that we could deal directly with the contractors in regard to any alterations that were not a departure from the general plans. Any suggested alteration was communicated to Mr. Curchin, and I understand that it was arranged between the Government and the contractors that, in order to save time, they could proceed with our alterations, pending the receipt of confirmation from Melbourne. Certain alterations were made at our request, and our marine superintending engineer, Mr. Snellgrove, attended frequently at the builders' yards. When we decided to have the vessels rigged as barquentines, we arranged, with the approval of Mr. Mayoh, that Captain Maxwell, who would command the *Braeside*, should attend as our representative while the boat was being rigged as a barquentine. In every instance, Mr. Mayoh was pleased to avail himself of the advice of Captain Maxwell in regard to technical matters connected with the rigging. Mr. Curchin's letter to Kidman and Mayoh, dated 24th February, was the outcome of suggestions made by us. We desired certain alterations in the ships on account of the reversion to barquentine rig. I have no knowledge of any complaint having been made by our firm prior to the launching in regard to structural defects in either plans or workmanship which would affect the seaworthiness of the *Braeside*. Mr. Snellgrove may or may not have made complaints, but none was reported to me. He suggested that the boiler would be better placed on deck than in the 'tween decks. I am not in a position to state his reasons for that suggestion. I was present at the launching of the *Braeside*, but I am not competent to express an expert opinion upon the operation. I know that when the vessel left the ways there seemed to be a jar, but whether that is usual or whether it was due to the state of the tide, or to any obstruction in the river bed, I am unable to say. We were represented at the docking of the *Braeside*. We agreed, after consultation with Mr. Curchin, that the hog should be let down 3 inches, and no more. Our fleet includes five American wooden schooners of 600 tons capacity and four schooners of smaller capacity, trading in the Islands. They are mostly built of soft wood, but one was constructed by Morrison and Sinclair of hard wood. None of these vessels has hogged; our longest vessel has a length of 180 feet. The vessels which come into Port Jackson are not, as a rule, hogged. The majority of them are in good order and condition, and have a straight keel. I do not regard myself as sufficiently expert to say that a vessel which has hogged is unseaworthy; but I know that there is a

distinct prejudice against a vessel that has a hog. Hogged vessels cannot be as good as those that are not hogged; and Burns, Philp and Co. would not knowingly buy or own a vessel that was hogged. I am not acquainted with the *Levi W. Ostrander;* but if she has a pronounced hog, and yet is classed A1 at Lloyd's, it would be interesting to know how and when she developed it. Our five American schooners, and also the smaller vessels which were built in United State of America, are registered with the American bureau. One of the ships built in Australia is on the Australian register. Our steamers are registered with Lloyd's. The five American schooners are in Lloyd's register, but they are not classed. On 9th November, we wrote to the Prime Minister's Department—

[Exhibit 53.]

Burns, Philp and Company Limited,
9 Bridge-street,
Sydney, 9th November, 1920.

To the Honorable the Prime Minister,
Melbourne.

Sir,—

Braeside and *Burnside.*

We beg to confirm our urgent telegram to you this morning, as follows:—

> Referring to Public Works Committee inquiry concerning *Braeside* and *Burnside,* we offer to Government for production to Committee all evidence in our possession indicating defective construction.

We sent you this message as we feel that it is for you, as Prime Minister, to decide the proper evidence to be placed before the Committee so as to prevent the Committee being misled, and that it is our duty to place at the disposal of the Government for production to the Committee all the evidence in our possession which indicated serious defects we have discovered to exist in the construction of these vessels.

We must again place on record that under no circumstances are we prepared to accept these vessels as being constructed either properly or in accordance with our contract. We have not asked to be relieved of any contract, we have merely absolutely declined to accept these vessels as a compliance with our contract.

We have now to officially inform you that Messrs. Kidman and Mayoh have issued a writ against us, claiming a considerable sum in connexion with alterations to these vessels. We are defending this action on the grounds set out in the pleas of which we inclose a copy. You will see that our defence to the action raises very serious questions, which in due course we are prepared to prove, but so far Kidman and Mayoh have not set the case down for trial, and it is this evidence which we have offered to the Government for their production to the Public Works Committee.

Yours faithfully,

BURNS, PHILP AND COMPANY LIMITED.
Per (Signed) F. Wallin.

[Enclosure.]

In the Supreme Court of New South Wales.
No. 2356 of 1920.

The day of October, in the year of our Lord One thousand nine hundred and twenty.

Burns, Philp and Company Limited *ats* Kidman and Anor.

1. The defendant company, by George James Sly, its attorney, says that it never was indebted as alleged.

2. And for a second plea the defendant says that the claim of the plaintiffs is for certain work alleged to have been done by the plaintiffs for the defendant to the ships *Braeside* and *Burnside,* then being built by the plaintiffs for the Commonwealth Government under the terms of a contract between the plaintiffs and the said Government, and the defendant had agreed with the Commonwealth Government that when the said ships should have been built and completed by the plaintiffs for the said Government in all respects in accordance with the conditions of the contract between the said Government and the plaintiffs (save in so far as the conditions of such contract might be varied by alterations and additions requested or ordered by the defendants from the plaintiffs) the defendants would purchase and take over the said ships from the said Government upon certain terms then agreed upon between the defendants and the said Government, of all of which matters the plaintiffs were at all times well aware, and thereupon and before the said ships had been built and completed by the plaintiffs for the said Government the defendants requested and ordered the plaintiffs to effect certain alterations and additions to the said ships, being matters not included in the conditions under which the said ships were to be built and completed by the plaintiffs for the said Government, but save for the said alterations and additions the plaintiffs remained bound to build and complete the said ships for the said Government in accordance with the conditions of the contract originally made between the Government and the plaintiffs, and it was agreed between the plaintiffs and the defendants that unless the said ships, save for such alterations and additions, were built and completed by the plaintiffs for the Government in accordance with the conditions of the contract between the plaintiffs and the said Government, then the defendants should not be bound to accept the said ships from the Government or pay the plaintiffs for the alterations or additions requested or ordered from the plaintiffs by the defendants and the defendants say that the said ships were not (save for such alterations and additions) built or completed by the plaintiffs for the said Government in accordance with the conditions of the contract between the plaintiffs and the Government, but were built and completed by the plaintiffs for the said Government otherwise than according to the conditions of such contract, and were unseaworthy and worthless, wherefore the defendants, as they lawfully could and might do, refused to pay the plaintiffs for the alterations and additions which had been requested and ordered by the defendants from the plaintiffs, which are the matters and causes of action herein sued for.

3. And for a third plea the defendants repeat the allegations in the second plea, down to and including the words "And it was agreed between the plaintiffs and the defendants" and say that it was a term of the agreement getween the plaintiffs and the defendants that if the plaintiffs should be guilty of any fraud or fraudulent practices in the building and completing of the said ships for the said Government, then the defendants should be entitled to object that the Government should not take over the said ships from the plaintiffs, and should be themselves entitled to refuse to take over the said ships from the Government or pay for the same, and should not be bound to pay the plaintiffs for any alterations or addition which they might have requested or ordered from the plaintiffs, and the defendants say that the plaintiffs were guilty of fraud and fraudulent practices in the building and completing of the said ships for the said Government by knowingly putting dummy fastenings in the said ships in place of real fastenings, as in and by the contract with the said Government they were bound to supply and fix, and the defendants, upon discovering such fraud, notified the said Government thereof, and objected to the Government taking over the said ships from the plaintiffs, and themselves objected to take over the said ships from the Government or pay for the same, and have thereupon refused to pay the plaintiffs for alterations and additions requested by the defendants from the plaintiffs, as they lawfully could and might do, which are the matters and causes of actions sued for.

4. And for a fourth plea the defendants, as to £2,161 12s. 8d., parcel of the plaintiffs' claim, say that before and at the commencement of this suit the plaintiffs were, and still are, indebted to the defendants in an amount equal to the plaintiffs' claim herein pleaded to for money payable by the plaintiffs to the defendants, for goods bargained and sold by the defendants to the plaintiffs and for goods sold and delivered by the defendants to the plaintiffs and for money received by the plaintiffs for the use of the defendants and for money paid by the defendants for the plaintiffs at their request and for money found to be due from the plaintiffs to the defendants upon accounts stated between them, which amount the defendants are willing to set off against the plaintiffs' claim herein pleaded to so far as it may be necessary to meet such claim.

And the defendants claim to recover the excess.

GEO. JAS. SLY,
Attorney for the Defendants.

[Enclosure.]

In the Supreme Court of New South Wales.
No. 2356 of 1920.

Between Sidney Kidman and Joseph Mayoh, trading under the style or firm name of Kidman and Mayoh (plaintiffs), and Burns, Philp and Company Limited (defendants).

The following are particulars under the defendants' fourth plea herein:—

1920.

March 31—To timber (spars and derricks) ...	£1,487	16	0
March 31—To wharfage dues on above	2	15	6
March 31—To insurance on above	2	1	3
May 4—To cheque on account supplying false keel and fixing sheathing ...	699	12	9
	£2,161	12	9

(Signed) GEORGE JAS. SLY,
Defendants' Attorney.

Enclosed with the letter were copies of our pleadings in the action being brought against us by Kidman and Mayoh. We decline to take delivery of the vessels from the Commonwealth, because they are not in accordance with the contract, and, I am informed by our experts, cannot be made so. We have no wish to press for the completion of that contract with the Government in the terms of our letter of 22nd January, nor do we desire to make any money out of the Government by claiming compensation for breach of contract. I now hand into the Committee copies of the following statutory declarations in our possession in regard to the fastenings in the *Braeside*:—

[Exhibit 54.]

Statutory Declaration.

I, William James Maxwell, of Sydney, in the State of New South Wales, master mariner, do solemnly and sincerely declare as follows:—

1. I am in the employ of Burns, Philp and Company Limited, Sydney, as a master mariner.

2. On the eighth day of September instant I was on board the *Braeside* at White Bay, in the harbor of Port Jackson, and I saw Captain Murchison on board the ship, and while I was talking to him Aleck McDougall, the foreman rigger in the employ of Kidman and Mayoh, and Cook, a shipwright in the employ of that firm, spoke to us, and during the conversation McDougall said, "Do you know that there are thousands of dummy fastenings in this ship?" I said, "No, I did not," and the foreman rigger said, "There are about 20 tons in the ship." I said I did not know. After talking to him for a little while, I said, "What are these dummy fastenings?" and he said, "They are just put in to represent a clinched up fastening." He then said they had two or there men for a couple of months up at the shipyard doing nothing else but manufacturing these dummy fastenings. As soon as he mentioned that fact, I remembered seeing these men making these fastenings, but not being a practical shipwright and not conversant with the schemes indulged in in wooden shipbuilding, I stood and looked at them making the dummy fastenings quite innocently, and did not know for what purpose they were intended. I mentioned the fact that I had seen them making these dummy fastenings, and that I remembered some were very short. McDougall said, "Yes, they were making them for the *Braeside*." He also said that during the construction of the keel, whenever they broke an auger they left the broken piece in, and put a dummy fastening down on top of it.

3. Captain Murchison and I went down into the hold of the *Braeside* to see if we could pick out any of these dummy fastenings, and we walked along the 'tween decks, and on the information that the rigger and the shipwright had given us, we picked out a good number of what we considered dummy fastenings, showing a very heavy clinch on the end of the bolt and no mark on the washer. We went along and found a fastening in the point of the hanging knee in the 'tween decks abreast of No. 1 hatch on the starboard side, and felt the washer, and found that we could spin it around with our fingers. If the bolt had been put in properly the washer could not have been moved. We had a look at it, and suggested that if we hit it with a heavy hammer we could see what would happen to it. We obtained a heavy hammer, and gave it two or three good hits, and the bolt went up into the beam and took the knee with it, and tightened the washer, and everything went back into its original position.

4. This test satisfied me that according to what we had been told by the rigger and the shipwright, that we had struck one of these dummy fastenings.

And I make this solemn declaration by virtue of the *Statutory Declaration Act* 1911, conscientiously believing the statements contained therein to be true in every particular.

(Signed) WILLIAM JAMES MAXWELL.

Declared at Sydney the sixteenth day of September, One thousand nine hundred and twenty, before me—

(Signed) G. J. SLY,
Notary Public,
Sydney.

[Exhibit 55.]

Statutory Declaration.

I, Findlay John Murchison, of Sydney, in the State of New South Wales, master mariner, do solemnly and sincerely declare as follows:—

1. On the thirty-first day of August last I entered the service of Messrs. Kidman and Mayoh, who were the contractors with the Federal Government for the construction of the *Braeside*.

2. While in the employ of the said Messrs. Kidman and Mayoh, on the eighth day of September instant, on board the *Braeside*, Aleck McDougall, the foreman rigger of Messrs. Kidman and Mayoh, and Cook, a shipwright in the employ of that firm, who were then working on the *Braeside*, spoke to me and Captain Maxwell, and McDougall asked me if I knew that there were thousands of dummy fastenings in the ship. I replied I did not, and I further stated if there was such a thing in the ship I would like to see it, and they told me that these dummy fastenings were easily picked out, as the washers did not show any signs of any marks of the hammer.

3. In company with Captain Maxwell I went down into the hold of the *Braeside*, and we commenced to look for these dummy fastenings. Captain Maxwell and I picked out a number of what we considered dummy fastenings, which was in accord with what the rigger and the shipwright had told us, and we decided that they were dummy fastenings. We noticed one knee three-quarters of an inch from the beam. If the fastening was a through fastening and it had been put in properly, the washer would have been tight and there would be no slackness. We decided to test the fastening, and obtained a hammer and gave it two or three hits with the hammer, and when we struck the bolt with the hammer the bolt and the knee went back into their original position. By striking the bolt and driving the knee into its original position it caused the washer to tighten up. The bolt was approximately in the hanging knee of the number 1 hatch on the upper deck on the starboard side.

4. On the said eighth day of September instant the said Aleck McDougall, the rigger, also told me that where augers were broken in the keel there were dozens of dummy fastenings put in on top of the broken augers without drawing out the broken pieces. We did not test this.

And I make this solemn declaration by virtue of the *Statutory Declarations Act* 1911, conscientiously believing the statements contained therein to be true in every particular.

(Sgd.) F. J. MURCHISON.

Declared at Sydney, New South Wales, this sixteenth day of September, One thousand nine hundred and twenty, before me—(Sgd.) G. J. SLY, Notary Public, Sydney.

[Exhibit 56.]

DECLARATION.

I, Douglas Woodward, of 73 Carey-street, Leichhardt, in the State of New South Wales, bridge carpenter, do solemnly and sincerely declare as follows:—

I am a bridge carpenter by trade, but have been working on the *Braeside* assisting the shipwrights. I was engaged in the work of putting in the fastenings, and there was a leading hand over me whose name was Sid May, and under his directions I then supervised the work, and there were six borers and four dumpers, making ten in all working under me.

I was working there from the 31st July, 1919, till the ship was launched on 23rd April, 1920. I left employ in June.

In addition to the putting in of fastenings I was engaged first of all on the port side working outside the ship.

Arthur Young was the foreman shipwright on the *Braeside*, and in fastening the through bolts on the port side of the *Braeside* my instructions were to put a through fastening at about every sixth frame, and to put dumps in in the place of the other through fastenings. There ought to be where each plank crosses each frame one through fastening and one dump, and where two planks butt through there ought to be two through fastenings and two dumps, but my instructions were to put one through fastening about every sixth place instead of one in every place.

To the best of my recollection these instructions came from either Arthur Young or Sid May. I, however, did not obey these instructions. I put a through fastening at about every other place where one ought to be. I cannot say exactly why I did this, but it certainly made the work last longer. We had, in fact, started the work from the plan. In point of fact, what my mate Sinclair and I did was to compromise between the plans and the instructions.

I was working on the outside of the port side and not on the inside. When I had finished working on the outside of the port side, Sid May told me to go down to the starboard side and to put in dummies so as to make it look like the port side. I was supplied with a large number of dummies—that is, short pieces of bolt from 4 to 7 inches long with a head riveted on, so that they looked like the riveted end of a bolt, and I went down on the inside of the starboard side and put in a large number of these dummies—about two hundred and fifty.

These were placed by me in the places where there was a through fastening missing, and the part of the ship where I was working was in the lower hold about amidships—about the after end of No. 1 hatch to the forward of No. 4 hatch—that is about sixty frames, and there would be in the places where I was working about six planks crossing sixty frames. There ought, therefore, to be one through fastening, at any rate, where every plank crossed every frame, that is to say, something like three hundred and sixty, and this is the place where I put in about two hundred and fifty dummies.

I did not go over to the port side, but I could see it from where I worked, and at the stage the through fastenings looked complete.

When I speak of putting in about two hundred and fifty dummies, I mean this was the number that was put in by my gang working under me.

In addition to this there were a number of dummies put in through the knees, both the hanging knees and the lodging knees on the port side, in the main deck and 'tween deck. I could say there were about eighty dummies put in in the hanging knees and lodging knees by my gang. I cannot say what others put in.

In the case of the knees, the dummies measured from 14 inches to 25 inches. The length of the through bolts through the knees was from 31 to 41 inches.

I have seen other dummies lying about, and I have heard men talking about them, but I can only speak of what I saw done myself.

There was another gang working as well as my own.

Forward and aft the ship was pretty well fastened with through bolts. I did not personally put in any dummies forward or aft. The dummies that my gang put in were entirely in this amidships section of about sixty frames.

I have been told, but I cannot speak from personal knowledge, that in the case of the sole-beams most of the through fastenings were omitted and dummies put in.

In my gang, amongst others, there were Jim Wellings, George Butler, Les James, Paddy Collins, Jack Teale, Ted Cullen, Hughie (Chic) McManus, William Humphreys.

With regard to the *Burnside* I know that a considerable number of ungalvanized dummies were put in and the heads painted.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the *Oaths Act* 1900.

(Sgd.) DOUGLAS WOODWARD.

Declared this 13th day of October, in the year of our Lord One thousand nine hundred and twenty, at Sydney, before me—(Sgd.) H. H. RUSSELL, Notary Public, Sydney, New South Wales.

I have also signed written statements by Thos. Batch, Albert Glasscock, and Thos. Clout. The whole of this evidence was voluntarily given. Naturally, when we heard of the statements made to Captain Maxwell and Captain Murchison by workmen in the employ of Kidman and Mayoh, we desired to have the evidence in black and white. That is why we obtained these declarations and written statements. If necessary, a large number of other men who have been on the job can be called as witnesses either before this Committee or in the Courts. We do not take any responsibility as to the accuracy of the statements. We forwarded them to the Government officially on 10th November. Previously, we had intimated verbally to the Government that these statements had been made, and no doubt it was because of that fact that Kidman and Mayoh wrote to the Department saying that certain rumours had been circulated. We first communicated information regarding these declarations to the Government shortly after Captains Maxwell and Murchison made their declarations on 16th September. On 20th September, we wrote to the Prime Minister—

[Exhibit 57.]

Burns, Philp & Co., Ltd., Sydney, 20th Sept., 1920.

The Honorable,
The Prime Minister of the Commonwealth,
Melbourne.

Dear Sir,

Braeside and Burnside.

We deem it right to place on record the fact that we have received information most seriously disquieting as to the construction of the *Braeside*, and we enclose copy of each of two statutory declarations of Messrs. Murchison and Maxwell upon the subject. We may mention that copies have been already supplied to the Commonwealth Acting Executive Officer, and for your information we also enclose copies of two letters which we had to-day written to the Executive Officer and to Messrs. Kidman and Mayoh.

There is a further matter which ought to be mentioned. Messrs. Kidman and Mayoh have mentioned in a letter to us that arbitration proceedings are about to commence: we presume with the Commonwealth Government. This is the first intimation we have had as to any arbitration proceedings, and we think it right to point out to you that we cannot be bound by any arbitration proceedings to which we are not parties.

In the interests of the Government and ourselves, we suggest that no steps should be taken by the Government without reference to us, and, indeed, that no steps should be taken until the fastenings of the ship have been very fully examined and tested.

We may point out that if we are entitled to reject the vessels, the Government are entitled to reject the vessels; and it can serve no useful purpose for the Government to engage in arbitration with the builders which can have no binding effect as between the Government and ourselves, particularly while the serious matter suggested as that indicated in the enclosed declaration remains not investigated.

Yours faithfully,

BURNS, PHILP & COMPANY LIMITED,
Per (sgd.) F. WALLIN.

Certain negotiations were in progress between the Government and Kidman and Mayoh in regard to matters in dispute between them, and we did not wish to prejudice the negotiations; but as time went on we considered it our public duty to advise the Government verbally of the information which had come into our possession. Within a week or a fortnight of receiving the sworn declarations, I went to Melbourne, and personally advised the Prime Minister's Department of them. As a result, certain tests have been made by the Government. We made application to Kidman and Mayoh, and to the Government to be allowed to test the fastenings. We laid stress on the need for examining the fastenings, and pointed out that if we are entitled to reject the vessels the Government are entitled to do so. We have been refused an opportunity to test the fastenings. Our superintending engineer has a method for testing them electrically. I believe that method has been adopted by the Government, but the tests have not extended to that particular section of the ship where, according to the declarations, the trouble exists. We asked that the *Braeside* should be docked so that the fastenings might be thoroughly tested. The allegations relate mainly to the fastenings in the *Braeside*, but there are statements in relation to the *Burnside* also. In order to test whether or not any defective fastenings are in the *Burnside* it would probably be necessary to take off the keel, but that would not be as expensive an operation as the examination of the *Braeside*, because the *Burnside* would not have to be docked. We were not officially consulted in regard to the reference of the matter to this Committee. We protested against the Government entering into arbitration proceedings and taking over the vessels on our account. I believe the men who have made the sworn declarations and written statements will be available to give evidence. They are all resident in the neighbourhood of Sydney.

174. *To Senator Newland.*—We were not supplied with a copy of the original specifications prior to the negotiations with the Government for the purchase of the ships, but during the course of the negotiations, about November last, we were supplied with a copy of the original plans and specifications. The plans I have are numbered 752 and 759, and, I understand, are the amended plans approved by Mr. Heron. So far as my knowledge goes, the alterations made on behalf of our firm did not affect the stability of the *Braeside*. The 6 inches of false keel would add strength to the ship, whilst the placing of the donkey boiler on the deck instead of on the 'tween deck, thus avoiding the cutting of the beams, would also aid in maintaining the strength of the ship. These vessels were originally designed as barquentines, and anything affecting their stability would be compensated for in the original design. We did not suggest any alterations to the hatches. The ships were not very far advanced in October, 1919, when the negotiations for the purchase by us commenced. The final agreement to purchase was made on 22nd January, and the *Braeside* was not

launched until April. We were not in a position to make a thorough examination of the vessel when in course of construction, because the contractors would not allow us to do so. Captain Maxwell was on the job for the purpose of advising and assisting in regard to the rigging. Mr. Snellgrove was in consultation with Kidman and Mayoh regarding the keel, the donkey boiler, the foremast, the rigging, and compliance with the requirements of the Navigation Act as to accommodation, but our officers had no opportunity of examining and passing work already done under the supervision of others. We did not try to intercept and override the work of any other authority, but after the *Braeside* was launched and developed a hog, Mr. Snellgrove and the other experts considered that something was vitally wrong. They contended that there were several causes for the hogging, one of them being defective fastenings. In prosecuting that idea, Mr. Snellgrove touched on tender ground, and he was refused permission by Kidman and Mayoh to carry out his investigations; in fact, our men were ordered off the ship. When Captain Maxwell first heard of how the fastenings had been put in, and when he attempted to make further investigations, Kidman and Mayoh wrote to us to say that we would not be allowed to have a man on the ship. As prospective buyers, we were in an invidious position. When the Government were proposing to take over the vessels and make them seaworthy, we thought we would drop out without making any further fuss, but when arbitration proceedings were mooted, we considered we had a public duty to put forward our views and certain statements which had come into our possession. We had already intimated our willingness to do so, and had supplied the Prime Minister with copies of the statements. It will be seen that, as quickly as possible, we communicated to the Government the information we possessed. On the 31st October, 1919, Mr. Snellgrove had a general look over the *Braeside*, in consequence of which he submitted to us the following report:—

[Exhibit 58.]

REPORT ON COMMONWEALTH HARDWOOD VESSELS.

Sydney, 31st October, 1919.

Two hardwood vessels are being constructed for the Commonwealth Government by Messrs. Kidman & Mayoh, at their shipbuilding yards, Mortlake. An inspection was made on Thursday, 23rd instant, in company with Mr. Heron, Lloyd's surveyor.

The principal dimensions are—

Length, 240 feet B.P.; 260 feet overall, approximate.
Breadth, 44 feet.
Depth of hold, 20 feet.
Moulded, 24 feet.
Dead weight, 2,700 tons.
Capacity for copra, 1,900 tons, at 80 cubic feet per ton.

The vessels are being constructed of hardwood, and the method of construction, while not being unique, is a distinct departure from the recognised practice for wooden vessels. The plans have been submitted to Lloyd's and approved, and the building is being carried out under the supervision of the surveyor to Lloyd's at this port, and when finished should be very staunch craft. It is proposed to sheath the bottom with turpentine wood.

The original proposal was to fit them with two sets of Bolinder crude oil engines, but it is understood that the latest idea is to make them sailing vessels only of the fore and aft schooner type, having five masts and topmasts. If this is done, there is no reason why they should not be quite satisfactory.

The cargo arrangements as projected are very complete. Large hatches are provided for, and ample winches and derricks, and a donkey boiler, also steam windlass.

The most advanced vessel is almost planked, and it is understood should be launched early in January; the other will not be ready until some time later.

Taken generally, the vessels should turn out quite useful craft, and if finished under Lloyd's supervision, should leave little if anything to be desired as sailers. As power vessels they would not be an economic proposition.

If purchase is entertained, the condition of the purchase should be drawn up by the company's solicitors, covering completion strictly to specification, Lloyd's classification and over-sea-going certificate.

Accompanying this report are three plans which have been lent by the builders.

(Sgd.) W. G. R. SNELLGROVE,
Superintending Engineer.

31st October, 1919.

Mr. Snellgrove furnished no details of the workmanship in the vessels. The function performed by Mr. Lucas in connexion with the negotiations to purchase was merely to convey to the Prime Minister's Department the offer made by our office in Sydney. Mr. Lucas is not an expert in shipbuilding, and we obtained no report from him. At that time, he was plantation manager and island inspector, and we merely took advantage of his presence in Melbourne to get our offer placed before the Government. I am not qualified to state the cost of altering the *Braeside* to barquentine rig, but I know that the amount which Kidman and Mayoh are claiming is considered to be extremely high. I have no idea how the *Braeside* became hogged. Captain Grainger will answer any question of that kind on our behalf.

175. *To Senator Foll.*—As the *Braeside* was hogged, and we had received advice from our surveyors that the ship was unseaworthy, we would not have proceeded with the agreement to purchase without contesting the matter. We had arrived at that decision prior to receiving the statements from employees of the contractors regarding the defective fastenings. I do not know whether Lloyd's surveyor and the Government inspectors were constantly on the ships during construction. I know that the Government inspectors were supposed to be on the spot, and I believe they were there frequently. But there is a lapse of time between inspections, sometimes a week and, perhaps, ten days, and quite a lot of work can be done in that time and covered up. Two ships were in course of construction, and work was proceeding both inside and outside; one inspector could not be everywhere. I am not qualified to say when the dummy bolts were put in the ship. We have statements to the effect that they are in the ship, and we desire to either prove or disprove the allegation. We have been prevented from testing the truth of these statements; therefore we completely wash our hands of the ships.

176. *To Mr. Parker Moloney.*—When we arranged to purchase the ships from the Government, no mention was made of a dead weight of 3,100 tons. We did not take into consideration any definite dead weight. I considered the vessels only in regard to their value to us as copra carriers. We are engaged in gathering copra in the islands, and we bought them because of their capacity by measurement. Copra is a light cargo, averaging about twice the usual measurement of 80 cubic feet to the ton. We are more particularly concerned in the carrying capacity of the ships in cubic feet. It was subsequent to the negotiations that I read in the press the price which the Government had contracted to pay for the ships. Prior to that date, we did not know the terms of the contract. We had asked to be supplied with a copy, and could not get one. Our Melbourne office made an application on our behalf, presumably to the Ship Construction Branch or the Prime Minister's Department. I cannot say whether any negotiations took place between the Government and any other firms with regard to purchase. On 20th September, 1920, when we communicated with the Prime Minister's Department in regard to the dummy bolts in the ship, we wrote also to the Ship Construction Branch; from the latter we received a reply. I do not know whether that reply was regarded as covering both our letters. The sworn

declarations by Captains Maxwell and Murchison were sent to the Prime Minister's Department on the same date. The following correspondence followed:—

[Exhibit 59.]

Commonwealth of Australia,
Prime Minister's Department,
31 King-street, Melbourne,
23rd September, 1920.

Messrs. Burns, Philp, & Co. Ltd.,
Bridge-street, Sydney.

DEAR SIRS,

Braeside.

I have to acknowledge your letter of 20th instant, and also to confirm having received on 16th instant the statutory declaration referred to.

I wish to record my view that, in the first place, these declarations simply repeat the statements of another man who was not on oath at the time he made the statements, and also it would appear impossible for a large number of dummy fastenings referred to in the declarations to be fitted.

It is admitted that in boring certain holes for fastenings a certain number of augers may have broken in the timber and the holes been plugged. In this case another hole has been drilled in the vicinity to take the necessary fastenings. Further, in drilling similar holes, in certain instances the holes may foul another fastening or other ironwork, and in this case the hole has, of course, had to be plugged. You will appreciate that such incidents are bound to occur in the construction of a wooden ship, and are dealt with as above in ordinary wooden shipbuilding practice. Further, my inspector, Mr. Brown, and Lloyd's surveyor are quite aware of these matters. Unless proved to the contrary, my view is that the statements made by the persons in the statutory declarations very probably refer to these matters, and are made in ignorance, and in point of number are probably exaggerated.

As, however, I consider the matter serious, I have requested that arrangements be made for the fastenings to be examined, as far as reasonably possible, without disturbing the material in the ship unduly. Such an examination should give a very fair indication as to what truth there is in the statements referred to above, and we can be guided by the results of this inspection as to what further examination, if any, might be necessary.

With regard to the arrangements made with Mr. Mayoh in connexion with pulling out bolts, &c., that gentleman has withdrawn his agreement to these, and the matter will therefore be temporarily in abeyance. I am, however, pursuing the matter, and do not intend to let it drop.

I shall be glad if you will let me have particulars of the electrical test you propose to apply to the bolts.

With regard to Mr. Mayoh's refusal to allow Mr. Snellgrove to proceed on board the vessel, I have taken advice, and provided Mr. Snellgrove goes on board with my consent and knowledge, and in company with one of my inspectors, he will be at liberty to do so. I am, therefore, authorizing Mr. Greenlees and/or Mr. Brown to take Mr. Snellgrove on board the vessel at any time considered advisable, and I am informing Mr. Mayoh to this effect.

I will write you further regarding the tests after I have communicated with Mr. Mayoh, and after I have heard from you regarding the nature of the electrical tests you propose.

Yours faithfully,

(Sgd.) K. WATSON,
Acting Chief Executive Officer, Commonwealth Ship Construction.

[Exhibit 60.]

30th September, 1920.

The Acting Chief Executive Officer of Shipbuilding,
Prime Minister's Department, Melbourne.

DEAR SIR,

Braeside.

Your letter of the 23rd instant is to hand.

We are perfectly aware that in the building of ships certain of the bolts are through bolts and certain of them are what are called dumps—that is to say, in effect, large nails.

The dumps, necessarily, have less strain than the through bolts, but are sufficient in the places where they are put. The function of the through bolts is, of course, to give the main strength. The dumps are merely subsidiary fastenings. Nobody can be deceived by these two methods of fastening, because the through bolts show both on the outside and inside, whereas the dumps show only on one side.

We are also aware that certain holes, owing to augers breaking or to the fouling of other fastenings, have to be abandoned as positions of through bolts, and in these cases the holes already made are either plugged or fitted with dumps. There, again, there could be no confusion and no deceit.

The complaint in this case is that, according to our information, a large number of fastenings are made to appear to be through fastenings, which are not in fact through fastenings. In other words, they are "dummies."

The seriousness of the charge arises from this deceit and from bolts being made to look like through bolts when they are not in fact through bolts. Even if there were two dummies opposite, owing to a hole being defective, it would at once appear on inspection. In this case, according to our information, a short piece of a bolt with a washer and the end riveted so as to catch the washer has been driven in opposite a dummy so as to make it appear that the fastening is a through fastening.

We are not prepared to admit (1) that this is common practice; (2) that it can, under conceivable circumstances, be legitimate practice. Nor do we think that you personally would so contend.

We are glad to hear that you propose to make a thorough inspection, and note with approval that Mr. Snellgrove's suggestion as to electrical test will be considered.

The apparatus has been shown and explained to Mr. Greenlees. It consists of two (2) lamps in series with an accumulator, as per sketch attached, the circuit being completed through the fastening. If the fastening is not complete the lamps will not show a light, thereby indicating that the bolt is defective. A pair of telephones will also be used for communication from the inside of the vessel, where one operator will be stationed, to a similar operator on the outside of the vessel.

We also note with approval your determination that Mr. Snellgrove shall be present at the test in spite of Mr. Mayoh's refusal to allow Mr. Snellgrove on board the vessel—a refusal which, under the circumstances, looks to us significant.

We are, yours faithfully,

Burns, Philp, & Company Limited,
per (Sgd.) F. WALLIN.

[Exhibit 61.]

Commonwealth of Australia,
Prime Minister's Department,
Ship Construction Branch,
31 King-street, Melbourne,
5th October, 1920.

Messrs. Burns, Philp, & Co. Ltd.,
Bridge-street, Sydney.

DEAR SIRS,

Braeside.

I duly received your letter of 30th September regarding testing fastenings on the above vessel, and I note your remarks.

It has, however, been decided that this testing will be carried out by the staff of this Department, and I am arranging accordingly.

Yours faithfully,

(Sgd.) K. WATSON,
Acting Chief Executive Officer, Commonwealth Ship Construction.

[Exhibit 62.]

8th October, 1920.

The Acting Chief Executive Officer,
Commonwealth Ship Construction,
31 King-street, Melbourne.

SIR,

Braeside.

Your letter of the 5th instant is to hand; and much surprises us in view of your letter of the 23rd ultimo.

You will, of course, understand that no tests made in the absence of our representatives will affect us in any way whatever in view of the information in our possession.

Yours faithfully,

BURNS, PHILP, & COMPANY LIMITED.

Mr. Snellgrove was not allowed to go on the boat. He did not attempt to go aboard after we received the letter from Mr. Watson saying that he would write to us further regarding the tests after he had communicated with Mr. Mayoh, and after he had heard particulars of any electrical tests we proposed to make. Between that letter and the one which followed, Mr. Snellgrove was preparing an electrical apparatus, and no doubt Mr. Watson was instructing Kidman and Mayoh to allow our representative to go on board. Soon afterwards we sent to the Department particulars of the electrical apparatus we proposed to use, and we were told not to go on with the tests, as the Department itself would carry them out. We have not been represented at the tests made by the Government. It was in reply to our letter to the Acing Chief Executive Officer on the 20th September that he refused us permission to make the tests. That refusal was concurrent with our statement that we would not take over the ships because we were refused permission to prove or disprove

the allegations that dummy bolts had been used. Our letter of the 20th September, 1920, was our first intimation to the Government that we were not prepared to take delivery of the ships. We wrote to Messrs. Kidman and Mayoh on the same date. Our refusal to take the vessels was concurrent with that letter. The reason why we still desired our representative to be present at the tests was that Kidman and Mayoh had issued a writ against us, and we had to defend the action. In self-defence, we demanded reasonable access to the *Braeside*. The Government proceeded with the tests without our assistance. We had been told previously by the contractors to keep our men away from the ship. They could only go back if they were invited by the Ship Construction Branch. We were not notified, and given an opportunity to be represented at the tests. Mr. Watson's letter telling us that the Department itself would proceed with the tests was a definite refusal of our request to be allowed to test the fastenings. If our representative had gone on board, he would probably have been forcibly removed. To some extent, we were satisfied with the plans for the construction of the ship. When our Mr. Snellgrove first saw the plans, he reported that they were an innovation, but apparently he thought they would suffice. None of our experts expressed any opinion as to the likelihood of the ship hogging after launching. When the hog did occur, they examined the ship in dry dock. I am not in a position to express an opinion as to the number of dummy fastenings improperly used in the *Braeside*. Certain statements have been made to us by men who worked on the job, and we have not been allowed to prove their accuracy or otherwise. All the men who are mentioned in the declarations and written statements can be subpœnaed.

177. *To Mr. Atkinson.*—I am not aware of any alterations to the ships asked for by us beyond those I have already mentioned. We had arranged with the contractors to pay them for some of the alterations they made at our request. The litigation that is pending practically refers only to the barquentine rig. If dummy bolts have been used in the way indicated by the statement I have submitted, the *Braeside* is unseaworthy. As a layman, I imagine that insufficient bolting must weaken a ship. Whether the hogging is entirely due to defective fastenings I do not know, but I think the fasteninges are partly responsible. The sworn declarations and written statements which I have placed before the Committee were given voluntarily. Captain Maxwell was told certain things by some of the men, and naturally when such serious statements were made, he reported them to us. When we asked him if he was prepared to make a statutory declaration regarding what he had been told, he replied that he was. He said that he did not know whether the other men were prepared to make sworn declarations, but he would ask them. The first statutory declarations made by Captains Maxwell and Murchison were sworn on the 16th September, and immediately forwarded to the Prime Minister and the Ship Construction Branch. It was in support of those original declarations that the other declarations and statements were subsequently sent. When we received the declarations made by Captains Maxwell and Murchison, we decided not to proceed with the purchase, but we obtained the further declarations because Kidman and Mayoh had issued a writ against us.

178. *To Mr. Mathews.*—I have carried through all the negotiations with the Government; Mr. Lucas merely conveyed an offer from me. I have full power from Burns, Philp, & Co. to negotiate the purchase. The firm now emphatically refuses to accept delivery of the ships under any condition, and has surrendered all rights under the contract, even if the Lloyd certificate should be obtained. The ships are not what we thought they would be, and we do not want them at £45,000 each. We have already paid certain sums to Kidman and Mayoh, and we intend to claim a refund of them as a counter claim to Kidman and Mayoh's claim against us. In effect, Kidman and Mayoh are still the owners of the ships. We own no ships of the size of the *Braeside*, and we have had no experience of vessels of that kind. I do not think any of our ships ever developed a hog unless it was through running aground, or some other accident. I cannot say whether when we agreed to the ship being let down 3 inches in dock, we intended to refuse to take delivery. Our action was dependent upon the report of the marine surveyors after inspection. That report would be placed before our Board, and considered. If, at that stage, Lloyd's had been prepared to give a certificate, we would still have contested the agreement to purchase the ships. I make that statement in the knowledge of certain reports we have received. I think the decision to allow the ships to drop 3 inches in dock was arrived at by the shipbuilders and surveyors. In the light of the evidence we gained as a result of the inspection in dock we would not have taken the ship over even with a Lloyd's certificate. Our letter of 20th September is founded upon the advice we received from our experts after such inspection as we were permitted to make. When the ship was docked we were still the prospective purchasers, and it was only fair that we should be permitted to examine the vessel and know what had happened to her. Kidman and Mayoh endeavoured to prevent us making an inspection, but our representative went on board, notwithstanding their opposition. The following correspondence bears on that point:—

[Exhibit 63.]

Kidman & Mayoh, Shipbuilders,
25 O'Connell-street, Sydney,
10th July, 1920.

Messrs. Burns, Philp, & Co. Ltd.,
Bridge-street. Sydney.
Attending Superintending Engineer.

DEAR SIRS,

Braeside.

Pending the dispute that is now taking place regarding the above ship, we shall be glad if you will give instructions to Captain Maxwell and Captain Murchison to remain away from the works until such time as the dispute is sett'ed one way or another between ourselves and the Commonwealth Government.

They are taking up duties which we think they should not do, such as, for instance, yesterday they were taking soundings all round the ship, and as a result a statement was made that the vessel is aground at low water.

According to our investigations they are entirely in error, and it is this sort of thing that we wish to prevent.

Yours faithfully,

(Sgd.) KIDMAN & MAYOH.

[Exhibit 64.]

Kidman & Mayoh, Shipbuilders,
25 O'Connell-street, Sydney,
10th July, 1920.

Messrs. Burns, Philp, & Co. Ltd.,
Bridge-street, Sydney.
Attending Superintending Engineer.

DEAR SIRS,

Braeside.

As far as we can gather up to date, the *Braeside* will be put into dock next Tuesday afternoon, and the pumping will commence early on Wednesday morning. By noon the vessel should be high and dry, ready for inspection.

Will you please let us know if you propose that Mr. Snellgrove should represent you on this investigation. If so, we shall get an admission ticket to the dockyard for him.

We do not wish you to invite any outside persons to examine this ship, as the matter must be left to the Commonwealth Government officials to report.

Yours faithfully,

(Sgd.) KIDMAN & MAYOH.

[Exhibit 65.]

Sydney, 12th July, 1920.

M. L. Shepherd, Esq.,
Secretary, Prime Minister's Department, Melbourne.

DEAR SIR,

Braeside.

We beg to confirm the following urgent telegram which we despatched to you to-day, reading—

> Kidman and Mayoh declining allow our company's expert surveyors to be present at docking of *Braeside* on Tuesday and Wednesday. Will you kindly have manager Cockatoo Dock instructed permit following gentlemen to examine ship on our behalf:—Captain Grainger, Captain Vine Hall, Messrs. Thompson, Macartney, Morrison, Drake, and Snellgrove, and oblige.

Attached are copies of Messrs. Kidman & Mayoh's letters to us of the 10th instant, from which you will note the attitude they have adopted with respect to this ship.

The *Braeside*, as you have been advised (verbally) has developed a considerable hog since being launched, which indicates a very serious weakness in the vessel.

With a view to ascertaining the cause of the fault, we arranged for Captains Grainger and Spinks, surveyors, Messrs. Morrison and Drake, practical shipwrights, and Messrs. Thompson and Macartney, consulting engineers, to survey the *Braeside* in company with our superintending marine engineer, Mr. Snellgrove.

Some of these gentlemen have issued preliminary reports (as per copies enclosed), but desire to complete their survey while the vessel is in dock before making their final reports and giving their suggestions.

Yours faithfuly,
BURNS, PHILP, & COMPANY LIMITED.

P.S.—Since writing the above we find we have omitted to include the name of our marine superintendent, Captain Green, and accordingly sent you a further telegram, reading—

> Glad if you would add name of marine superintendent, Captain Green, to those inspecting *Braeside* in Cockatoo Dock on Wednesday.

In reply, we received a telegram stating that Mr. Curchin would be visiting Sydney and would consult with us regarding the inspection we desired. On the 14th July, Kidman and Mayoh wrote to us—

[Exhibit 66.]

14th July, 1920.

Messrs. Burns, Philp, & Co. Ltd.,
Bridge-street, Sydney.
Island Department.

DEAR SIRS,

Braeside.

We are duly in receipt of your letter of 12th inst. with reference to surveyors inspecting the above ship.

In reply to same, as you are aware, this vessel is being constructed for the Commonwealth Government, and is being docked at our expense, to see if any damage was done during launching, and for the reason that the ship can be cleaned.

We have an objection to a number of outside persons examining the ship at this stage, as we do not see any necessity for same. We have no objection to your employees, managers, or directors seeing the vessel themselves, but we fail to see that you have any good reason for asking outside men to inspect the vessel.

We have no dispute or law case with you regarding the ship, and there is no necessity for evidence being obtained from outside sources.

Captain Cuthbert, representing the insurance companies, will inspect the ship on behalf of the insurance companies, and Mr. Curchin's representatives and Mr. Heron will also make an examination. We consider that this is quite sufficient.

There is no question of denying admission to anybody that you propose, as most people can get admission to the dock if they go the right way about it. Our objection against outsiders visiting the ship is on principle only, and we think, if you were in our place, you would take up the same same stand.

Yours faithfully,
KIDMAN & MAYOH.

Notwithstanding that protest, our surveyors did go on board. The position in regard to the ships at that time was very serious and we wanted to ascertain exactly what the trouble was. Our impressions in regard to the faulty fastenings are based on the advice of Captain Grainger and other experts. They advise us that the *Braeside* is not seaworthy, and on their statement we act. The statements made by the workmen lent colour to the reports of our own officials. Our officers had not been allowed to test the ship in order to discover whether dummy bolts had been used. We are not concerned as to the increased value of the ships by reason of the dead weight being greater than 2,600 tons; we did not approach the Government in the first place.

179. *To Mr. Boyd (through the Chairman.)*—The dead weight capacity of the ships is not our first consideration. In this instance we were buying ships to carry copra, and we expected to send them wherever the best market price for copra was obtainable. That might be in Europe or San Francisco or New York. If they went to New York, we would not be likely to bring them back in ballast, but that would depend on the cargo offering. If a ship went to San Francisco we would bring back a cargo of lumber. Although we have surrendered our rights of purchase, we are appearing before this Committee to give evidence, as we regard that as our public duty to the Government and the people. Of course, we are considering our own interests, too. Our five American wooden schooners are registered in the United States of America, where there is a subsidiary company called Burns, Philp, & Co., San Francisco. The vessels are really owned by that company, which was formed three or four years ago. I decline to answer as to whether or not the schooners are registered in America in order to evade the conditions of the Navigation Act; they were on the American register when we bought them. Before we made the offer to purchase the ships, Mr. Snellgrove had made an inspection of them and had submitted a report. I do not know that we received any other reports. We did not receive about that time a copy of the specification to which the ships had to be constructed. The specifications of which we had a copy were those for the original six ships, but I understand that new specifications were agreed to about 29th November, 1918. The specifications would not have influenced us in regard to the purchase. We entered into the contract with the Commonwealth Government on the condition that the vessels were to be completed and seaworthy and obtain Lloyd's certificate. Even if Lloyd's had issued a certificate for the *Braeside*, we would not take her in her present condition because she does not comply with the contract in regard to seaworthiness. We offered £40,000 each for the vessels because we considered that that was all that they were worth to us. It is reported that in some instances there has been a fall in the price of shipping, and in other instances that prices have risen. Between the date of our agreement to purchase and the time of the inspection of the *Braeside*, there were some fluctuations in the shipping market, but they made no difference to our position. We were quite prepared to honorably abide by our contract. The department did not tell us what would be the cost of the vessels; we were not interested. We were not informed that at that time the Government had paid about £7,000 in excess wages over and above the contract price, or that the ships were likely to be of greater dead weight capacity than was at first anticipated, or that a large sum of money had been expended in supplying galvanized bolts in place of plain bolts. We did not know what the ships were costing the Government, although I subsequently read the contract price in the press. Payment for extras carried out for the Government was never discussed by us; those details did not come into our consideration. After we agreed to purchase, Mr. Snellgrove was our representative on board the ship, and Captain Maxwell attended on the *Braeside* as the prospective master. He was put on board at the request of the contractors so that his technical knowledge should be at their disposal in connexion with the

placing of the blocks and other rigging. On 23rd September Captain Maxwell submitted the following report to Mr. Snellgrove:—

[Exhibit 67.]

The Superintending Engineer,
Messrs. Burns, Philp, & Co. Ltd., Sydney.

DEAR SIR,

For your information I wish to hand the following report:—

When the drawings for the steel foretop were made and I saw them I asked Mr. Barber how he proposed to sling the foreyard. He said it would be slung from a band under the bolsters, which would be made on the job, and so was not shown on the plans. I again mentioned the matter when the foretop was being fitted, saying, "Don't forget the sling band before you put on the bolsters," and I was told that it was under way. But the job was completed, and the lower rigging over and set up, and still no provision was made for the sling. They then proposed to hand the foreyard from the cheeks of the foretop from back to back angle irons, or a through bolt, neither of which are any good, as the foretop as a whole structure has sufficient to do to carry the lower rigging without having the moving weight of the foreyard and sail in motion hung from the forward ends of the cheeks of the top, as they propose to do. The band will have to go close down to the top, as if not the slings will foul the forestay. To do this means coming up the rigging again. None of the fore rigging is properly set down on the bolsters, and the chaffing gear on the eyes of the rigging is not sufficient—the leather only going barely round the bolsters with single service—and bad service at that—too open and slack.

The iron rigging-screw hearts are very rough, and the score has no canvas or any chaffing material around them, and the rigging has been turned in with only single service on the wire round the heart. In its present state it will last a very short time as the rough cast-iron in the heart will chew the service through with the working of the rigging, and that means turning out all the rigging to re-serve.

The rattling down has been done badly, poor seizings being put on all the battens. All the battens are now loose, and with the rigging not being set down, will be all out of line when the rigging is set up. Where sheer rattlings were to be put on Mr. Mayoh wanted to put a wooden batten, and this is of no use whatever. Sheer rattlers must be made of ratline.

The ends of the rigging should have been metal capped, but the builders refused to do this, and leather was substituted after much argument.

The topmast rigging is also not set down properly, and is insufficiently leathered and served at the eves.

The lowermast cap band is not in the correct position, being too far up the pole topmast, making the upper topsail smaller than the lower, which is wrong. Mr. Barber said that Mr. Heron shifted it up to strengthen the top, but the former said he would see it would be put right, and would arrange with the sailmakers to alter the sails accordingly. There are also two eyebolts to go on the cap band for the fore lift blocks. These were to be tapped on in the most suitable place for working. Any other eyebolts that were missing and had not been forged on the bands were also to be tapped on; some of these have already been done.

When the lowermast cap was being fitted I went aboard one morning and found that against the rigger's protest it has been fitted in position below the foreyard band, and the mast has been shaved to fit the band and a hole bored to take the bolt. I said, "That is not the right place for that band," and told them where it ought to be. I was then told that it was going to stop where it was. Captain Murchison then came along and wanted to know also, "What it was doing in that position?" which was wrong. Later on in the day it was shifted up to its right position.

The builders also promised to put on the small jackstays at the yardarms for the head-earrings of the sails. These I have asked for several times, but it has not been done yet.

None of the parells have yet been leather lined. Mr. A. Mayoh wants to line them with leather belting, but that won't do, as the metal fastenings in the belting will score the mast when the belting gets warm.

The main topmast stay is also not correct. It is a single now and should be double, and should be properly led through leads and set up to eyebolts in the deck at the foot of the foremast. They suggested setting it up with a strop round the mast, which is proper jury rig.

As far as I know there are no foot ropes, lifts, brace pennants, or halyard wire pennants made yet. The foot ropes especially should be made under strict supervision.

I am, sir,

Yours faithfully,

(Sgd.) W. J. MAXWELL.

Sydney, 23rd September, 1920.

He had previously made a statutory declaration in regard to the defective bolting. Three days before that report was submitted we had written to the Department in regard to the dummy fastenings, and had intimated our intention to give up the contract. Captain Maxwell had previously reported verbally to Mr. Snellgrove. I did not send a copy of his report to the Government or the contractors. On 1st March we wrote to the contractors: "Captain Maxwell proceeds to your yard to-day, and any assistance you can render him will be appreciated", but prior to that date Kidman and Mayoh had expressed appreciation of our determination to appoint a man to assist them by advising in regard to the rigging of the *Braeside*. Captain Maxwell's statutory declaration shows that he saw dummy bolts being made, but did not know for what they were intended; as soon as he learnt what was being done, he reported the matter to us. He was sent there primarily to attend to the rigging. We commenced to make inquiries regarding the alleged defective fastenings as soon as we received information about them. Mr. Snellgrove had earlier formed certain impressions on account of the hog. A number of men besides those from whom I have produced written statements have made verbal allegations, but are not prepared to put them in writing. The statements already submitted were volunteered by the men. The following telegram was sent to Albert Cook, 53 Denison-street, Rozelle, on the 18th September:—"Would like you meet me Burns, Philp office 9 o'clock Monday morning.—Snellgrove." He was one of the men who made statements to Captains Maxwell and Murchison. When the statements were reported to us Captain Maxwell was asked to interview the men and ask them if they were prepared to put their statements in writing. He reported to Mr. Snellgrove that they were ready to make written statements; hence the telegram to Cook. I do not know whether every man to whom we sent similar telegrams attended at our office. All the statements we have received have been submitted to the Committee. I do not know whether our representative interviewed a number of other men who refused to make statements. I was not present at any conversation during which any promise of employment was made. There is no truth in the statement that Burns, Philp, and Company or any of their responsible officers made any offer of a bribe or anything else. You ask me whether it was on the statements of the employees of Kidman and Mayoh that we made charges of fraud against the contractors; that question relates to the case that is now before the Court, and should, therefore, be answered by our legal representative. I admit that the pleas which we submitted to the Prime Minister, and which are now before the Committee, also relate to the action before the Court. We are not responsible for the statements made by other persons, but we regard it as our duty to put them before the Committee. It would not be our duty to put forward any statement anybody chose to make, but we do so in this instance because something has happened to cause the hogging of the *Braeside*. We sent the main declarations by Captains Maxwell and Murchison soon after we received them, and then collected further evidence, which we forwarded to the Prime Minister on 10th November, in support of the information we had previously sent. We do not take the responsibility of conducting our case before this Committee because we have not been permitted to enjoy the privilege of having legal representation, as we should have in Court. The following are the particulars of Kidman and Mayoh's claim against us:—

[Exhibit 68.]

The plaintiffs claim £8,038 8s. 3d. for debt and £5 0s. 8d. (besides fees properly paid for service) for costs, and if those sums be paid to the plaintiffs or to their attorney within the time limited for your appearance further proceedings will be stayed.

The following are the particulars of plaintiffs' claim :—

1st March, 1920, to date.

	£ s. d.	£ s. d.
Labour and materials in connexion with sails, as per our estimate	1,208 5 0	
Sheet No. 1	162 6 9	
		1,370 11 9
Labour and materials in connexion with yards, as per our estimate	1,361 8 0	
Sheet No. 2	570 0 0	
		1,931 8 0
Labour and materials in connexion with wire rigging, chain wheels, rigging screws, ironwork, wood blocks, capstan, use of floating crane, sundries, and architect's fees, as per sheet 3	5,000 0 0	5,000 0 0
Part cost of management staff, use plant, &c ...	...	500 0 0
Contract for false keel and sheathing with Muntz metal for two ships	...	1,338 0 0
Contract for painting one extra coat of copper paint, as instructed by you on *Braeside*		55 4 6
		10,195 4 3
CREDIT.		
March 26—By cost of oregon spare as per your invoice ...	1,487 16 0	
May 4—By cans on account ...	639 0 0	
		2,156 16 0
		8,038 8 3

The plaintiffs also claim interest on £8,038 8s. 3d. of the above sum from the date of writ until judgment at the rate of £8 per centum per annum.

There is nothing in that claim which has anything to do directly with the fastenings, but we refuse to pay for any work done upon a superstructure which rests upon a faulty base. I do not think our firm received a letter from the Government recently, asking us whether or not we would accept delivery of the ships. Mr. Snellgrove was refused permission to go on board the ships before we refused to accept delivery. When he tried to carry out tests he was refused the opportunity, and Kidman and Mayoh gave us notice two or three times to withdraw our men. We prefer ships classed by Lloyd's if we can get them. Our five American schooners were originally constructed in America and are classed there, but the small auxiliary schooner (the *Makoa*) is classed with Lloyd's. Lloyd's certificate shows that a vessel is of good character and is regarded as a favorable risk. The five American ships are not necessarily inferior to the one that is classed at Lloyd's. The copra carrying capacity of the *Braeside* has been variously estimated at from 1,700 to 1,900 tons. I presume the measurements were made by Captain Butler, one of our stevedoring men, and Mr. Snellgrove. The freight on copra, from the islands to San Francisco, is about 17 dollars per ton. I am not qualified to say whether or not the *Braeside* is unseaworthy. In my opinion hogging is a serious defect.

180. *To Mr. Brown (through the Chairman).*—The negotiations in regard to the purchase of the vessels arose out of our difficulty in chartering suitable ships at that time. We were continually chartering boats, at the rate of about fifty a year, and I think about 25 per cent of that number would be for loading in Sydney. At various stages of our negotiations for chartering, we encountered obstacles; at other times we could get a fairly easy run. Probably, the negotiations started by somebody representing our firm speaking to Mr. Shepherd about the difficulty we had experienced in getting charters and Mr. Shepherd then asking us if we desired to buy any vessels. It was some three months before any finality was reached in regard to the purchase. Having regard to the fact that the vessels would not be completed within six months, the Department would have had very little basis upon which to call for tenders. In the circumstances I do not think it would have been possible for the Department to get down to bed-rock negotiations with possible purchasers, because it had not then got the specifications of the ships which were being built. When the proposal was first mooted by Mr. Shepherd, I think it was put out merely as a feeler. I in turn had to report to my Board the possibility of the ships being purchasable, whilst Mr. Shepherd, no doubt, had to report to the Minister the result of his conversation with our representative. Our file contains the following memorandum regarding a diver's operations at the berth where the *Braeside* was moored at Kissing Point:—

[Exhibit 69.]

PARTICULARS OF DIVERS OPERATIONS AT KISSING POINT, 23RD JULY, 1920.

Launch with punt left Cockatoo at 8.15 a.m., and arrived at Kissing Point at 9.15 a.m.

Diver went down at 9.55.

At Bow. Three feet of soft silt tapering at 40 feet to 2 ft. 6 in. soft silt. Then a bed of thick shell covered with silt and mud underneath amidships. Abreast of gangway or wharf, about 30 feet out, 9 inches of silt and hard ground underneath, the ground then slopes away aft with soft silt 18 inches to 2 feet. Abreast of after dolphin very soft mud, 3 to 4 feet.

The bottom shows where ship rested plainly, the silt being heaped up on both sides where bilges rested.

Diver finished at 11.15 a.m.

Launch and punt started back to Cockatoo at 11.30 a.m.

I will ascertain whether we have a signed report by the diver and the officer under whose direction he worked, and if we have, I shall submit copies to the Committee. Our letter of the 20th September to the Prime Minister was concurrent with a letter to the Acting Chief Executive Officer. As the outcome of the correspondence that followed, we were told that the departmental officers would conduct the test of the fastenings. We replied to that by saying that if we were not represented, the tests could have no binding upon us. We have acted in good faith throughout and have never at any time tried to shirk any of our responsibilities, but seeing the condition in which the *Braeside* is, we say that we will not take it over. Our letter of 20th September did not convey our final decision not to take over the boat. We put certain questions and gave certain information, and pointed out that if we were entitled to reject the ships, the Government too were entitled to reject them. We asked that the ships be tested. The department could take that letter as an intimation of our attitude in regard to the ships. Later, when Mr. Shepherd was in Sydney, a definite statement was made in the course of conversation that we would not take over the ships. It was for the department to decide whether, in view of pending litigation, it was justified in conducting the tests with its own officers and not disclosing the results to either the contractors or ourselves. The reason for the department's action was not explained to us. The financial adjustment between ourselves and Kidman and Mayoh will depend upon the result of this Committee's investigations, and the court case that is now pending. To a certain extent we are remaining passive until we know what the action of the Government and the contractors will be. Following Mr. Shepherd's conversation with me in Sydney I wrote the following letter to him on 28th September:—

[Exhibit 70.]

Sydney, 28th September, 1920.

DEAR MR. SHEPHERD,

I have given to our Chairman a short memo. of the understanding you and I came to yesterday about the *Braeside* and *Burnside*, viz., that Burns, Philp and Co., Ltd. agree to an abandonment of the contract entered into with the Commonwealth Government on the 22nd January, 1920, for the purchase of these vessels, and that the Commonwealth Government will adjust Messrs. Kidman and Mayoh's claim against

Burns, Philp and Co. Ltd. for alterations, ordered by us in the general settlement which they are now about to negotiate with Messrs. Kidman and Mayoh, it being understood that Messrs. Kidman and Mayoh will refund to us the amount of £669 we paid to them for the false keel and muntz metal sheathing on the *Braeside*, and will also pay us for the timber we supplied to them for spars and derricks, amounting to £1,492 12s. 9d.

I forgot to mention yesterday that, in computing the extra cost of rigging the vessels as barquentines, there will be an amount to be credited per contra by Kidman and Mayoh to the Government for value of labour and material not incurred as originally estimated for rigging as schooners.

We are not looking for any reimbursement of expenses of supervision of our marine surveyors and superintending engineer, or wages of our captains, whose practical experience and expert advice have been at Messrs. Kidman and Mayoh's disposal, although this expense amounts to fully £500 per ship.

As to the advantages of the barquentine rigged vessel over one of any other rig for deep-sea and coastwise voyages, you will be pleased to have a verbatim extract from the *Marine Review* (New York) of August, 1920, vol. 50, No. 8, page 459, as confirmation of our opinion. This article states:—

> "The barquentine possesses a decided advantage in the opinion of many seamen over the barque or ship, and that it is easily handled owing to absence of a large number of square sails, and again, the barquentine possesses practically all the advantages of a schooner for making to windward with the added value of square sails for running free."

Hoping the whole question will be amicably settled.

I am. yours truly,

(Signed) F. WALLIN.

M. L. Shepherd, Esq., Secretary,
Prime Minister's Department, Melbourne.

The witness withdrew.

Albert Cook, Shipwright, employed by Kidman and Mayoh, sworn and examined.

181. *To Mr. Boyd (through the Chairman).*—On 18th September I received a telegram from Mr. Snellgrove asking me to meet him at the office of Burns, Philp & Co. at 9 o'clock on the following Monday morning. I kept the appointment. Later, I informed Mr. Mayoh of my conversation with Mr. Snellgrove and signed the following written statement:—

[Exhibit 71.]

22nd September, 1920.

STATEMENT BY ALBERT COOK, SHIPWRIGHT, 56 DENISON-STREET, ROZELLE.

On the 18th September I received a telegram signed by Mr. Snellgrove asking me to call upon Messrs. Burns, Philp, & Co. at 9 o'clock on Monday morning, 20th September.

In accordance with this, I went down and saw Mr. Snellgrove, who said to me, "We will guarantee you a foreman shipwright's position for twelve months if you will consent to give some particulars about the defects in the fastenings on the *Braeside*, particularly the dummies in the knees."

When he mentioned this I told him that I had been working for the present company for over two years and I was satisfied with them, and did not see where I could gain anything by changing over to Burns, Philp, & Co.

Mr. Snellgrove told me there would probably be a law case and that they could subpœna me and make me give evidence. I then said to him, "You can subpœna me all right, but you cannot make me give evidence." He said, "When you come before our solicitor he will turn you inside out." I told him I did not fear his solicitor as to what he could do. I told him all I could say would be to tell the truth, and this would do him no good for the object he wanted.

I then said, "It is no use me taking up any more of your time," and I left.

Mr. Snellgrove paid myself and the foreman rigger two hours' wages and travelling time and tram fares. He paid us this at the finish of the conversation.

During the interview with Mr. Snellgrove, Alex. McDougall, the foreman rigger, was also present.

I told Mr. Snellgrove that I had worked on the job since the keel was laid, and had never seen any dummies put in, nor any shabbly nor imperfect work.

McDougall did not have anything to say with regard to the work, as he had not been on the construction of the ships.

At the same interview, before Mr. Snellgrove made any reference to evidence or defects in the ship, in addition to offering me a job, he also offered a foreman rigger's job to McDougall.

McDougall did not make any reply to this, but left me to do the talking.

When Mr. Snellgrove made the offer to McDougall it was also conditional on his giving some particulars of defects in the fastenings on the *Braeside*, the same as he offered to me.

McDougall told Mr. Snellgrove, "I have never seen any defects nor anything put into the ship which should not have gone in," and that he could not given them any assistance.

I have never discussed the question of dummy fastenings having been put into the vessel in place of genuine fastenings with McDougall in the presence of either Captain Murchison or Captain Maxwell.

I have never informed Captain Murchison that there are any dummy fasctenings in the ships, and I have never described to him how dummy fastenings might be identified from genuine fastenings.

I have never pointed out to either Captain Maxwell or Captain Murchison which fastenings I considered were dummies, and I have never informed either of them where to look for dummy fastenings in the construction of the vessel. As I have previously stated, I have seen none.

(Sgd.) ALBERT COOK.

That statement is absolutely correct. The only other person present at the interview with Mr. Snellgrove was Alex. McDougall. I did not know exactly why Mr. Snellgrove had sent for me, although I thought Burns, Philp, and Company were after something. They wanted to use me for a purpose, but I was not ready to be used. Mr. Snellgrove told me that if I would give his firm the information they wanted, they would guarantee me a twelve months' job as a foreman shipwright.

182. *To Senator Foll.*—I have worked on the *Braeside* since she was commenced and was on board practically every day for a few hours; therefore, I saw most of the work done on her. I never saw anything in the nature of dummy fastenings put into any part of the vessel. Not many could have been put in without my knowledge, because it takes some time to bore the holes and insert the bolts. The only instruction I have heard from the contractors was to put proper workmanship into the vessel. If we used a piece of timber that was not up to the mark, we were told to take it out. There was strict supervision over the construction, and I have seen the Government inspector and Lloyd's surveyor at the yards; I cannot say that I have seen them on the boat. Mr. Brown was there almost daily and could take full stock of the work that was done. He and Mr. Heron were there frequently enough to see the class of material put into the ship. If dummy bolts had been put into the ship, the representatives of the Government and Lloyds would have seen them.

183. *To Mr. Parker Moloney.*—Mr. Snellgrove gave me the impression that he believed there were dummy fastenings in the ship and he wanted me to tell him where they could be found. He asked me definitely whether there were dummies in the boat, and I told him that so far as I knew there were not. I think Captain Maxwell must have informed him that I knew of some crook fastenings in the ship, and in consequence of that statement, he had the idea that I could help him to find the defective bolts. I dare say that in guaranteeing me employment he meant to guard me against any punishment that might be inflicted by the contractors for telling the truth, but nothing was said about dismissal from my present employment.

184. *To Mr. Atkinson.*—Glasscock, Clout, and Woodward were working in Kidman & Mayoh's yard and I saw them daily. The workmen could have put in a few dummy bolts unobserved by me, but not many.

185. *To Mr. Mathews.*—Prior to receiving the telegram from Mr. Snellgrove, McDougall and I had had a conversation on the deck of the *Braeside* with Captains Maxwell and Murchison in regard to dummy bolts; we never went below, and nothing I said to Captains Maxwell and Murchison could justify them in believing that I knew of faulty fastenings, unless they misconstrued something that was said. On the job,

the men were talking amongst themselves about augers breaking and bolts fouling other bolts, and some of the holes having to be plugged. Those plugs would probably appear like dummies; they were just driven in. They were not made to look like a bolt with a washer on, but some large bolts may have been cut up and used as dumps. Wooden plugs may have been put into some of the false holes if they were not very deep. So far as my knowledge goes, not many holes were filled up with an article made to look like a bolt. The only conversation I heard amongst the men on the subject was in regard to the fouling of other bolts during drilling. I told them that hundreds of bolts were being put into the ship that ought not to be put in, because I considered there were too many bolts, and that the timbers were only being weakened by the insertion of other fastenings. A number of these long bolts, bought in connexion with the original contract for six ships, were cut into lengths and used as short bolts. I never saw any of them less than 12 inches long. The bolts were cut by Tom Batch, the blacksmith, or his assistants. I know that a good many long bolts were cut up. The keel bolts would be cut into lengths of 12 or 14 inches, according to requirements. Not many of the thick keel bolts have been cut into such short lengths, those that were cut were mostly the smaller ones of 1⅛ inch diameter. I do not know whether Captains Maxwell and Murchison overheard the men talking about dummy bolts that were not necessary being used in the ships. Amongst a lot of men there are always some who will surmise things and discuss the defects of the job. I was surprised when I received the telegram from Mr. Snellgrove, because I did not know why he wanted to see me. He told me that Captain Maxwell had informed him that I knew of some bad fastenings in the ships; Burns, Philp and Company had purchased the vessels from the contractors, and if I would give them the information they wanted they would guarantee me twelve months' work. I think he meant that if I were dismissed, he would fix me up with employment.

186. *To Senator Newland.*—I remember a conversation with McDougall on 8th September regarding dummy bolts. There was a conversation also with Captain Maxwell, McDougall, and myself, but I do not remember dummy bolts being discussed. Any statement that I said I knew where there were thousands of dummy fastenings in the ship is not true. Nothing was ever mentioned about 20 tons of dummy fastenings. So far as I know there has been no general use of dummy bolts.

187. *To Mr. Brown (through the Chairman).*—The supervision by the Government inspector (Mr. Brown) was thorough. He was on the job almost daily and remained for a good part of the day. I had never met Mr. Snellgrove before the interview at his office, and had no knowledge of the subject which he broached. I did not tell Mr. Mayoh that I was keeping an appointment with Mr. Snellgrove. I received the telegram on a Saturday and interviewed Mr. Snellgrove on the following Monday morning. I have put in fastenings, including about half-a-dozen through bolts. My conversation with Captains Maxwell and Murchison on the ship was not very long. Captains Maxwell and Murchison were complaining about the ships not being built to standard, and I told them that, so far as I knew, they were being built all right. Somebody had told them previously that there were many dummy fastenings in the ships, and I replied that I knew nothing about them. That conversation took place on a Friday or a Saturday. Captain Maxwell was fishing for information about the bolts, but I did not volunteer any. I have no knowledge of bolts having been cut and washers riveted on the ends before they were driven.

188. *To Mr. Mathews.*—When I kept the appointment with Mr. Snellgrove I came from the *Braeside*, at Glebe Island. I was the only man working on the ship at that time.

The witness withdrew.

Alexander McDougall, rigger, employed by Kidman and Mayoh, sworn and examined.

189. *To Mr. Boyd (through the Chairman).*—I identify my signature on the following written statement I made concerning a conversation I had with Mr. Snellgrove:—

[Exhibit 72.]

STATEMENT BY ALEX. McDOUGALL, RIGGER.

22nd September, 1920.

I received a telegram, signed by Mr. Snellgrove, on the 18th September, asking me to call upon Messrs. Burns, Philp, and Co. on Monday morning, 20th September, at 9 o'clock. I did not know what I was wanted for, but I went down in company with Albert Cook, a shipwright working on the *Braeside*, who was also asked to call upon the firm named. In the interview Mr. Snellgrove said, "We will guarantee you a foreman rigger's position for twelve months if you will consent to give some particulars about the defects in the fastenings on the *Braeside*, particularly the dummies in the knees." I left the talking to Albert Cook, but I said, "I have not seen any defects, nor have I seen anything put into the ship that should not have gone in, and that I could not give them any assistance." Mr. Snellgrove, at the close of the conversation, paid Cook and myself two hours' wages and travelling time and tram fares.

I am a foreman rigger, and have not been on the job since the commencement, and know nothing whatever about the shipwright's part of the construction. I have never discussed the question of dummy fastenings having been put into the vessel where genuine fastenings should have been used with Cook or any other person in the presence of either Captain Murchison or Captain Maxwell. I have never told Captain Murchison that there are any dummy fastenings in the ship, nor have I ever described to him how such fastenings might be identified. I have never indicated to either Captain Maxwell or Captain Murchison which fastenings I considered were dummies, and I have never informed either of them where to look for dummy fastenings in the construction of the vessel. The fastenings in the ship do not concern me as I am not a shipwright.

ALEX. McDOUGALL.

Witness—Thomas Bailey, timekeeper, shipyard.

I did not know what Mr. Snellgrove was after, but I think he must have been trying to buy evidence from me. I have heard the evidence given by Albert Cook as to what took place at the interview, and I agree with him.

190. *To Senator Newland.*—I never saw a dummy fastening put into the ship. I was never working on the ship; I was engaged on the rigging all the time. I remember a conversation between Captains Maxwell and Murchison, Albert Cook, and myself, but I do not recollect saying anything about dummy fastenings. I did not hear it said that many thousands of dummy bolts had been put into the ship, and certainly never said that I could point out the portion in which the dummies had been used. I did not go into the hold with the two captains; if anybody said I did, his statement is false.

191. *To Mr. Parker Moloney.*—I understood from Mr. Snellgrove that he was after confirmation of statements which he believed to be true, but it struck me that he wanted me to make a false statement, seeing that I had never worked on the ship and was not a shipwright. I did not know that he had in his possession a statement by Captain Maxwell. I swear that I never said that there were 20 tons of dummy fastenings in the ship. I did not know what was in her. I never heard any statement to that effect by anybody connected with the ship. The conversation with Captains Maxwell and Murchison and Albert Cook might have taken place on 8th September, and the telegram asking me to call at the office of Burns, Philp, and Company might have reached me a week later. During the conversation on the deck of the *Braeside* I

was talking mostly about the rigging. Captain Maxwell is telling a falsehood if he says that I said to him, "Do you know there are thousands of dummy fastenings in the ship?" I certainly was surprised to get a telegram inviting me to call at the office of Burns, Philp, and Company. After the interview with Mr. Snellgrove I went to work on the *Braeside*. I did not tell Mr. Mayoh immediately afterwards about the interview, but later I did, and he asked me to put it in writing. I have not received any benefit or consideration for writing the statement.

192. *To Mr. Mathews.*—I have not previously worked in a shipyard in Australia. I have worked as a rigger in the Old Country, but not regularly; I have been to sea. I have seen the men engaged in bolting the ship, but I take no notice of work that does not concern me. I was never near the blacksmith's shop. There is no other rigger of my name on the *Braeside*. Cook and I have been working together for the last twelve months. I have never spoken to Captains Maxwell and Murchison about bolts, but I have conversed with them about the rigging. I do not agree with Cook's impression that Mr. Snellgrove was not trying to bribe us. He may have been offering a bribe or merely looking for information. I suppose the offer of a job was made by Burns, Philp, and Company for their own benefit, because they were trying to find out something. I will not say that they tried to mislead me, but they wanted information.

193. *To Senator Foll.*—I have talked at different times with Maxwell, Murchison, and Cook on the *Braeside*. Cook and I were working close together on the occasion under discussion, and I suppose that was the reason why we came together in a conversation with Captains Maxwell and Murchison. I have never seen anything at the yards which would lead me to believe that any part of the work was being scamped, nor have I heard any conversation regarding the use of dummy fastenings. I have seen both Mr. Brown and Mr. Heron on the *Braeside* and the *Burnside* very often. Mr. Brown was there nearly all the time, and I do not think dummy fastenings could have been used without his and Mr. Heron's knowledge. Their attendance was sufficiently regular to enable them to find out if anything shady was taking place.

The witness withdrew.

Sidney Walter May, shipwright, employed by Kidman and Mayoh, sworn and examined.

194. *To Mr. Boyd (through the Chairman).*—My opinion of the fastenings in the *Braeside*, of which I was foreman-in-charge, was expressed in the following signed statement:—

[Exhibit 73.]

"Bar-ea-mul," Blascull-street, Granville,
8th October, 1920.

STATEMENT BY SIDNEY W. MAY, SHIPWRIGHT.

To whom it may concern.

This is to certify that I am a shipwright by trade and have had a number of years' experience in wooden shipbuilding in all its branches.

I have been employed by Messrs. Kidman & Mayoh for about eighteen months, was in charge as leading hand on boring and fastening all the outside planking of the *Braeside*, personally measured for every length of through bolts and dumps required for fastening the planks on to the sides of vessel.

Considering the whole of my time was devoted to the fastenings, I can assure you, gentlemen, there were no such things as dummies, for during my experience as shipwright I fully realize the responsibility of defective fastenings.

In conclusion, gentlemen, I make this statement without fear of any contradiction whatsoever, also my ability as a shipwright can be verified through an application to Mr. David Drake, of Balmain, also Messrs, Morrison & Sinclair, shipbuilders.

I have the honour to be, gentlemen,

Your obedient servant,

(Sgd.) SIDNEY W. MAY.
8th October, 1920.

I was not asked to write that letter, but I heard rumours in the yard that false statements had been made regarding the workmanship and material used in the vessels, and being a good unionist and mechanic, I considered it my duty to make a statement in protection of my fellow-workmen.

195. *To Mr. Atkinson.*—I have received no consideration for making the statement; it was made voluntarily and because of allegations that were detrimental to my fellow-workers. There are no dummy bolts in the *Braeside*, unless they were put in at night when I was asleep. Workmen could not put in a number of dummy bolts and deceive me into believing that they were genuine. As a practical man, I could detect the dummies at once, even if I went away and came back a few minutes later I could detect whether a bolt inserted during my absence was genuine or a dummy.

196. *To Mr. Mathews.*—Edward Woodward was employed at the yard under me. He has been away from the yard for a number of months. He took his tools on to the *Burnside* after the *Braeside* was launched. He was a bridge carpenter by trade. I was in charge of the boring of the holes and the driving of the fastenings, and in order to get the work done speedily and faithfully, I picked out two of the best mechanics and appointed them leading hands on the respective sides of the vessel in order to see that the work was well done. Woodward was a pretty good tradesman. Arthur Young is still there and is an assistant foreman. I do not think Woodward left through any trouble with the employers. He seemed to be always treated with respect, and he had no ill feeling against Kidman and Mayoh. The statements he made in his declaration are false. I never gave him instructions such as he alleges. If after boring for twenty inches we could not get a through hole, we used an eighteen inch bolt. If the hole was only six to eight inches, a wooden plug was used and another hole was bored close to it, in which an iron dump was driven. There are times when it is absolutely necessary to use small fastenings, but they are not detrimental to the ship. So far as my knowledge goes, no dummies were made to look, with the aid of washers, as if they were genuine bolts; statements of that sort are too ridiculous to answer. The only occasion when Thomas Batch, the blacksmith, cut up bolts was when we ran short of twenty-inch fastenings and had only bolts of twenty-four or twenty-eight inches. At those times I would send him a few of the longer bolts to be reduced. I am not aware of any eight-inch bolts having been used except that in places where it was impossible to get a through fastening, dumps of eight to ten inches may have been inserted: those iron dumps are preferable to wooden plugs. I never used dumps that were made to look like bolts and never instructed that any should be used.

197. *To Senator Foll.*—I have never been approached by a representative of Burns, Philp and Company or any other firm for information regarding the work on the ships. If ever I saw defective material on the job I called the attention of the foreman over me to it. Every day in the week one heard conversation among the men regarding the use of dummy bolts, but I put it down to their ignorance. These statements were only made in pastime. I have never heard any serious allegations made amongst the employees in the yard regarding dummy bolts.

198. *To Mr. Parker Moloney.*—Captain Maxwell was ignorant of shipbuilding, for he has come to me to ask questions that a schoolboy would not ask. Any fastenings that he saw being made were not dummies. In regard to Captain Maxwell's statement that he saw a bolt in a knee so loose that he was able to knock it into place, the explanation is that the timber in the knee shrank, leaving the washers on the heads of the bolts loose. When the bolt was hit with a hammer, it went

home and the washer was tightened at the same time. Captain Maxwell's statement does not prove that dummy fastenings were used. I had to do with nothing else but the fastenings, and I was seldom away from the ship. The Committee can test the accuracy of the allegations by employing practical men to test the fastenings. It would not be necessary to dock the ship in order to test the fastenings above the water line and those below must be tight, otherwise the ship would sink. If dummy fastenings had been used in the keel, the vessel would not be afloat to-day, but the ship is making practically no water. If dummy fastenings had been used, what holds in position planks that are 8 to 12 inches wide and 4 inches thick? It would be impossible to use dummy fastenings in a ship of this character. I have never heard the men complain about the conditions of employment at Kidman and Mayoh's yard, although there are times when they are a little upset. I do not think that any of the men have been led to make statements against the employers because they were dissatisfied. Their statements would be made quite honestly.

199. *To Mr. Brown (through the Chairman).*—It is possible that when the bolt referred to by Captain Maxwell was struck with a hammer and forced up three-quarters of an inch it would protrude through the opposite side, and, when discovered, would be punched back again; the projecting piece would be cut off with a saw and the end clinched. I have seen Mr. Brown, the Government inspector, on the job; sometimes he is there all day, and at other times I have not seen him for two or three days. He is not there every day; but he might visit the yard without my seeing him. I am sure he was not at the yard every day, and I will not swear that he was every second day; he was there more than twice a week. I had a very good opinon of him as an inspector until he gave a certain order, which convinced me that he was not the man I took him to be. He ordered 3 x 1 battens to be nailed over open seams in the planking in order to prevent the oakum coming through. That was done, but it excited the ridicule of the shipwrights.

(*Taken at Sydney.*)

THURSDAY, 18TH NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Mathews,
Senator Newland,	Mr. Parker Moloney.
Mr. Atkinson,	

Frederick Wallin, further examined.

200. *To the Chairman.*—I am advised by our marine surveyors that our representatives were not consulted in regard to letting down the keel of the *Braeside* 3 inches when she was in dock. When they arrived on the scene, the ship had already been let down on the block, and they protested. Captain Grainger, our head marine surveyor, will give evidence that he did not concur in that action.

The witness withdrew.

Thomas Batch, blacksmith, sworn and examined.

201. *To the Chairman.*—I am now employed at Mort's Dock, but until recently I was employed by Kidman and Mayoh, whose service I joined on 7th November, 1918. I gave a written statement to Mr. Snellgrove, superintending engineer at Burns, Philp, & Company, in regard to the fastenings in the *Braeside*. Mr. Snellgrove called at my house, and asked me if I had made any dumps in the course of the construction of the *Bracside* and the *Burnside*. I said that I had, but I asked what that had to do with him, and who he was. He then explained that he was a representative of Burns, Philp, & Company, and he asked the lengths of the dumps. I replied that they varied from 4 to 14 inches. I gave him a written statement. He asked me questions, and wrote down my answers, which I signed. I told him that I had made dumps of from 4 to 9 inches out of scrap pieces, and from 9 to 14 inches out of long bolts, which were brought to me to be cut. I was engaged on that work until I was put on another job, and I then instructed another man to proceed with the making of the dumps. They varied in diameter from 1 inch to 1¼ inches; the majority were of 1¼ inches diameter, and were nobbled over at the ends like a clinch. They were not pieces that could be used as dowels. Some thousands of the dumps were made by me and other workmen. I do not suppose I made above 150, and not more than 2 dozen of them would be only 4 inches long. I was never told for what purpose these short bolts were to be used, and I never asked. I was on the boat a couple of times, but I did not see what was being done with the dumps. Others who were engaged in making dumps were Tom Kavanagh, Victor Milliner, Harry Madden, Mike Hannor, and Bert Glasscock. I do not know of any men who have driven dummy bolts into the *Braeside*. William Humphries told me that he had driven some in, but I never saw any driven in, and I cannot say that any have been put in. I cannot say for certain that H. McManus and "Chic" McManus and Harry Thompson have driven dummy bolts into the *Braeside*. H. McManus said he had driven the dummies in, and I said to him, "Dummies and dumps are two different things." What I term a dummy is a short bolt with a washer, and driven into a hole to represent a through fastening. The men I have mentioned were driving bolts into the *Braeside*, but whether or not they were dummy bolts, I do not know. I saw young McManus driving bolts into the bottom of the ship, but I cannot say whether they were dummies or true fastenings. I have not seen Bert Glasscock for months. I never bothered my head as to what the dummy bolts were used for. I thought probably the shipwrights were short of material, and were therefore using dumps made from long bolts in order to fasten the planks, and keep the job going. A 4-inch bolt would be a dummy, because it could not hold a 6-inch plank. Other blacksmiths beside myself were engaged in making dummy bolts. I was engaged in making them at different times, perhaps for two or three days altogether. I saw the Government Inspector, Mr. Brown, walking about the yard, but I never spoke to him. I did not know what the 4-inch bolts were for, or whether they were being put into the ship; they may have been merely put in the cabin door. All I know is that they were made, and were taken from the blacksmith's shop. I never thought it worth while to mention the matter to the authorities; that was not my concern. I was not being paid for that purpose; a man was inspecting the work, and it was his duty to attend to this matter.

202. *To Mr. Mathews.*—I suppose Mr. Snellgrove asked me to see him because somebody had informed him that I had made dummy bolts. The dummy bolts must have been used, or they would not have been made. I heard nearly everybody in the yard talking about the use of dummy bolts; it was common talk. A short bolt with a washer riveted on it to represent a true fastening is a dummy. Kavanagh had nothing to do with the driving of the dummies; he was engaged in making them. Hannor, too, was making dummies. I never bothered my head to ascertain how the dummies were being used; that was the inspector's duty. Some of the dummy bolts were being made

while the *Burnside* was in course of construction. I left Kidman and Mayoh's yard four weeks ago next Friday. Dummies were being made right up until April. The making of them was completed about the end of that month. At that time the *Burnside* was pretty well planked. I cannot say whether the dummies were used on both vessels, but they were being made while the *Burnside* was being planked.

203. *To Senator Newland.*—I was in the employ of Kidman and Mayoh when I made the statement to Mr. Snellgrove, but I did not take any steps to inform my employers that somebody else was inquiring into the conduct of their business. Mr. Snellgrove came to my house, and I could not turn round and tell him a lot of lies for nothing. You cannot insult people when they come to your house. I know the difference between dummies and dumps—a dump is a legitimate and honest fastening; a dummy is a dishonest fastening. Through the use of dummy bolts, a ship might fall to pieces, or open up and leak. I was not concerned as to the condition in which the ship might put to sea. The Government had a man supervising the work, and it does not pay employees to go about telling inspectors their duty. It would be an exaggeration to say that 20 tons of dummies have been put into the ship. A great many of the short bolts were used as dumps. There may have been 15 tons of dumps and dummies combined. If the contractors had purchased a large number of long bolts for the four ships that were cancelled, they would be acting legitimately in cutting them up for use as short bolts on the *Braeside* and *Burnside*, rather than waste the material. I suppose one dummy was made to every 5,000 dumps. I claim that all the 4-inch bolts were dummies, but whether they were put into the ship, or are still in the yard, I cannot say. A bolt that is not fastened on both sides is a dummy. My written statement made no distinction between dummies and dumps. When Humphries told me that he had put hundreds of dummy bolts into the *Braeside*, I could do nothing but believe him. He said that he could chalk the places where they had been put in, but that statement would be difficult to prove. If the inspector knew his work, he would not allow dummy bolts to be put into the knees supporting the beams of the decking.

204. *To Senator Foll.*—I do not know whether any dummies were used on the ships; I never saw any put in. I do not know of any faulty workmanship. I did not go about inspecting the ships in order to find faults. Burns, Philp, and Company offered me no inducement to make a statement; they did not offer me any employment. I cannot say why the representative of the firm came to me for information about the fastenings. I saw Captain Murchison on the ship, but I had no conversation with him concerning the vessel. I personally made about two dozen bolts of from 4 to 5 inches in length. I cannot say how many were made altogether. I saw two or three other men making them, and some would be made when I was not present. The number of dummy bolts would not be great; I do not think they would number 100, including probably not more than a dozen 4-inch bolts. I said in my signed statement that Tom Kavanagh was employed in making dummies from before Christmas, 1919, until a few days after the launching of the *Braeside* on 23rd April last. I meant that he was employed in making dumps and dummies. I said also that Victor Milliner worked for about two weeks making short dummies in lengths of 4 inches upwards. He ought to have made about 100 per day, and during the two weeks ought to have made at least 1,000. My written statement means that he made at least 1,000 dumps and dummies combined. Bolts of from 9 to 14 inches might be made from scrap pieces. The work was sent direct to Milliner and not through me, but I saw him on several occasions making very short bolts. My written statement refers to dumps and dummies. Dumps can be used as dummies. I do not think that a person reading my statement would assume that the men had been engaged in making dummies only, not withstanding that I said, "By dummies I do not mean dumps, but short pieces of bolts with a washer on and the end clinched or riveted to hold on the washer." I did not point out that my statement referred to dumps as well as dummies, because I did not see that there was any difference. An order was given to make the short bolts, and they might be used as either dumps or dummies. If a short bolt was driven with a washer, it was used as a dummy. Whether a bolt was a dummy or a dump would depend on how it was used. When I wrote that, by dummies I did not mean dumps; I suppose that somebody had told me that the bolts were dummies. I did not trouble to ask the men as to what they were doing with the short bolts. A 4-inch bolt cannot be used as a dump in a 6-inch plank, and I do not think that it should be used as a fastening in any part of the ship. I, personally, made about two dozen 4-inch bolts; that number allows a good margin. I saw the other men making two or three short bolts a day, and then they might not make any more for several days; they were not constantly engaged in making short dumps; they made them as they were required. I never made more than one short bolt at a time.

205. *To Mr. Parker Moloney.*—I adhere to my written statement that Victor Milliner was engaged for about two weeks in making short dummies in lengths of 4 inches upwards. I referred to bolts of from 4 inches to 14 inches. He was on that job for about two weeks, and he made whatever bolts were ordered. He would make about 1,000 bolts in the two weeks. I am not certain that they were dummies, and I cannot say whether or not they were used in the ship. There may have been more dummies than dumps or *vice versâ*. I do not say that in that time Milliner made 1,000 dummies, but I do say that all 4-inch bolts are dummies, and that if the others were used with a washer they were dummies. I do not say that a 14-inch bolt, driven in from the outside, is a dummy. I wish to alter my written statement by saying that Milliner was making dummies and dumps, but how many he made of each, I do not know. I do not wish the word "dummies," wherever used in the written statement, to represent dummies and dumps, because I consider that every bolt of from 4 to 6 inches is a dummy. Paragraph 5 of my statement also refers to dumps and dummies. I cannot say whether a bolt from 4 to 6 inches long could be used for any other purpose than faking. Such bolts may have been used to plug holes in which the auger had fouled other bolts. That would not be faking if a through hole was bored alongside. The 4-inch bolts could be used for a legitimate purpose. I again say that I do not know whether the short bolts were put into the ship at all. I have had no disagreement with Messrs. Kidman and Mayoh. I left their employment voluntarily and was on the best of terms with them when I left. I had no intention of leaving their yard when I made the statement to Mr. Snellgrove, but when I saw that work was becoming slack and that I would have to look for another job sooner or later, I decided to leave at once. I expect that if dummy fastenings were used in the keel the ship would soon show the effect. A wooden ship cannot be built without using some short fastenings; there is no ship afloat without a few dummies in her. I was not asked by Mr. Snellgrove to make a sworn statement.

206. *To Mr. Atkinson.*—The assertions contained in paragraph 9 were based on what Humphries had told me. I read over the statement before I signed it, and I thought it was all right. I am not a highly educated man, who can pick out the fine points in a written statement. The statement was first written in my house

by Mr. Snellgrove, who later brought to me a typewritten statement which I signed in the presence of A. H. Etherden, a clerk in the employment of Burns, Philp, and Company. Mr. Snellgrove's brother also was present at the interview. No shorthand notes of the statement were taken. I do not know Mr. Wallin, and I cannot say why he said that I had written the statement voluntarily. Burns, Philp, and Company asked me to give evidence, and I gave it; I did not approach them. The making of that statement did not influence me in leaving the employment of Kidman and Mayoh. I obtained employment at Mort's Dock two or three days after I left the shipyard at Kissing Point. When I left Kidman and Mayoh I had no idea of going to Mort's Dock. Had I been asked to make a statutory declaration I would not have done so without obtaining legal advice.

207. *To Mr. Boyd (through the Chairman).*—I have worked on four or five wooden ships besides the *Braeside*, and my statement that there is no ship afloat without a few dummies in her is based on my own experience. Part of my knowledge of the construction of ships has been gained through seeing repair work done. It is not of much use to insert a dummy in a hole in which an auger has broken, but it would serve the same purpose as a wooden plug. I might have made a dozen, or six, or eighteen 4-inch bolts; I cannot say definitely. It would be incorrect to say that I have been making dummies for the purpose of enabling Kidman and Mayoh to commit fraud. That would be a wrong interpretation to place upon my written statement. I repeat that there was about one dummy to every 5,000 dumps. The short bolts produced could be used as either dumps or dummies. The average weight of 5,000 dumps would be more than 6 lbs. each, so that there would be one dummy to thirteen tons of dumps. I do not think that proportion excessive. Of course, there might be thirteen tons of bolts in a ship, but they might not be through fastenings. I have no personal knowledge of how many tons of bolts are in the *Braeside*. If, as you inform me, there is 110 tons of bolts on the ship, there would be, according to the figures I have mentioned, nine short dummy bolts, but there might be other longer bolts. I did not make more than twenty-four short bolts, and I do not know whether they were put in the ship or remained in the yard. When Mr. Snellgrove saw me he did not offer me employment or consideration of any kind for making a statement. I did not know who he was until I asked his name. He did not tell me why he wanted my statement, and I did not ask him. I signed the statement without having any idea of the purpose for which it was intended. The contractors did not ask me to make any short dumps; my instructions came from Mr. Barr, the shipyard manager. He did not offer me any extra pay for doing the work. I did not get any profit or advantage from making defective fastenings for the ship. I did not wilfully assist the builders to deceive the Government. I did the work as I was instructed, and raised no objection. The dummies and dumps were cut from long galvanized bolts which may have been bought for the four cancelled ships. There was nothing wrong in cutting them up into short lengths. I was never instructed to be secret in regard to the cutting of bolts. I regarded that job as part of the ordinary work, and I did not bother about anybody. The thought never struck me that if the contractors were asking the workmen to carry on dishonest practices they were laying themselves open to blackmail. It would be possible for the contractors to make arrangements with their workmen to quietly carry on dishonest practices, but it would cost them an enormous amount of money. No such arrangement was made with me. It would be cheaper to be honest with the job than to attempt to bribe 300 or 400 men. I was in charge of the blacksmith's shop all the time I was on the job, and all the work carried out there was done with my knowledge and under my instruction. I knew everything that took place in the smith's shop. I had an interview with Mr. Arthur Mayoh in the manager's office about seven weeks ago in regard to the fastenings, and I was asked if I had given a written statement to Burns, Philp, and Company regarding the making of bolts and dumps. Mr. Barr, the shipyard manager, also was present for part of the time. I did not tell Mr. Mayoh what was contained in my statement to Mr. Snellgrove. I told Mr. Barr that the number of short bolts and dummies I had made was about two dozen. I did not see any dummy bolts except those made in the smithy: I did not make more than twenty-four myself, and I do not think that more than 100 altogether were made.

208. *To the Chairman.*—I made and signed the following statement to Mr. Snellgrove:—

[Exhibit 74.]

I, Thomas Batch, of "Marie," Junction-street, Gladesville, Sydney, in the State of New South Wales, blacksmith, declare as follows:—

1. I am in the employ of Messrs. Kidman and Mayoh, of Kissing Point, Sydney, shipbuilders, as a blacksmith, and joined their service early in November, 1918.

2. At various times during the foregoing period I was told off to cut up long bolts into short lengths, varying from 9 inches to 14 inches long.

3. I am aware that bolts of from 4 inches in length were cut up from scrap pieces, and to my knowledge Victor Milliner, c/o Mr. Haws, Ryde-road, Gladesville, who started work at Kidman and Mayoh's yard the latter part of November, 1919, as a blacksmith, worked at ordinary work for about two weeks making short dummies in lengths of 4 inches upwards.

4. Thomas Kavanagh, St. John's-road, Glebe, was also employed making dummies from before Christmas holidays, 1919, until a few days after the *Braeside* was launched on the 23rd April.

5. Harry Madden, Hatton-street, Ryde, was employed as a striker from February, 1920, until after the *Braeside* was launched making dummies varying from 4 inches to 9 inches in length.

6. Mike Hannor (address not known) was also employed making dummies similar to the above from the first week in December, 1919, to February, 1920, when he left Kidman and Mayoh's employ.

7. The shipyard management did not mention what these short pieces of bolts were to be used for. By dummies I do not mean dumps, but short pieces of bolts with a washer on and the end clinched or riveted to hold on the washer.

8. William Humphries, Belmore-street, Ryde, told me on the 29th September, 1920, that he had put hundreds of these dummy bolts into the *Braeside*, and could chalk the places where he put them. He stated they are in the lodging knees and hanging knees and through the ship's side and bottom; these are in place of through fastenings, and have washers under the riveted heads to make them appear like a through fastening. Humphries further stated that he had driven them with a "rattler" (air hammer).

9. H. McManus and Chic McManus, of Belmore-street, Ryde, and Harry Thompson have also driven dummy bolts into the *Braeside*.

10. Bert Glasscock, "The Hermitage," Marsden-road, Dundas, a striker in the employ of Kidman and Mayoh, informed me that on the port side amidships of the *Braeside* under ceiling inside bilge head keelson there are dozens of auger holes in the anchor stocks and floors without any through fastenings, short dumps having been driven in instead from the outside planking, leaving a large part of the hole on the inside of the vessel without anything in it, and these have become filled up with builders' rubbish.

Dated at Sydney this thirtieth day of September, One thousand nine hundred and twenty.

(Sgd.) THOMAS BATCH.

Witness—(Sgd.) A. H. Etherden.

That statement represents my answers to the questions that were asked of me. I did not intend to convey the impression that dummy bolts were being made in the shipyard for any fraudulent purpose, and I do not think that the statement would leave that impression. I had no wish to convey any impression when I told Mr. Snellgrove that Humphries had put hundreds of dummies into the *Braeside*, in the hanging knees, the lodging knees, and the ship's side and bottom. I merely told Mr. Snellgrove what the men had told me. I believe I did tell Mr. Mayoh and Mr. Barr on 8th October

that no small dummies were made in the smith's shop by anybody else but myself, and that if any others were made, they were made without my knowledge. I know that other men had made a few short bolts, but I did not know exactly how many. I was in charge of the shops, but I was busy with other work, and I could not be standing over the other men. I gave them instructions to make any bolts, long or short, that were required without waiting for me, but generally the instructions passed through me.

209. *To Senator Foll.*—If the statement I made to Mr. Snellgrove is used for the purpose of alleging fraud against Kidman and Mayoh, it is being used for a purpose for which I did not intend it.

The witness withdrew.

James William Clark, Acting General Manager, Commonwealth Naval Dockyard, Cockatoo Island, sworn and examined.

210. *To the Chairman.*—I have been at Cockatoo Island since 20th October, 1912. I served my apprenticeship in the Royal Dockyards, Chatham. I have had nothing to do with the building of wooden ships, although I have repaired them. Most of the Commonwealth wooden ships have been attended to at Cockatoo Island during the last twelve months. I have not inspected either the *Braeside* or the *Burnside*, but I have seen them. The Ship Construction Branch has submitted to me plans showing proposals for inserting additional timbers to strengthen the *Braeside*, and has asked my advice about the carrying out of that work. If the *Braeside* were sent to Cockatoo Island my staff could carry out the work of repairing and strengthening the vessel, but I could not guarantee that she would be seaworthy afterwards. We have a highly-trained, scientific staff that is competent to recommend the alterations that are necessary for stiffening the *Braeside*. I would prefer that any alterations should be recommended by an outside authority, but I have a staff competent enough to deal with the matter. I do not know of any engineers in Australia who have had special experience in the building of large wooden vessels, but if the *Braeside* were docked at Cockatoo Island my staff could carry out any work that might be required. We could not dock her for at least six weeks, because there is already one ship in dock with her bottom out, and our programme is full until the middle of December with repairs to the *Australia* and other warships. It would be possible to dock the *Braeside* after that, but other work would be delayed. If the *Braeside* were put into a private dock the alterations and repairs would have to be done by contract.

211. *To Senator Foll.*—I saw the *Braeside* in dry dock and noted the hog in the keel.

212. *To Mr. Parker Moloney.*—Hogging is due to three broad causes—faulty design, faulty workmanship, or undue stress during or after launching. I have not gone into the design, and I know nothing about the workmanship that has been put into the vessel. So far as my information goes, the ship may have sustained some damage at the launching, and I understand from the diver's report that she has been aground. The design was passed by Lloyd's, and the ship was built under the supervision of the Government and Lloyd's surveyor; therefore both design and construction should be all right. The only two other possible causes of hogging are damage sustained at the launching or grounding.

213. *To Mr. Atkinson.*—When I saw the *Braeside* in dock she had a hog of 2 feet 7 inches. Whether or not the hog was subsequently reduced I cannot say.

214. *To Mr. Mathews.*—I have seen many wooden ships that were hogged. At Bermuda we had a small gunboat that had a hog of 1 foot 9 inches, but as it was used in still water and was never subject to any sea stress, we did not worry much about the hog. We had a small sailing ship, the *Lindstol*, in dock at Cockatoo, which had a hog of 9 inches. The old *Victory* and other wooden warships were very much hogged, but they had so much flexibility owing to the many gun ports that they were bound to hog. A good precaution against the hogging of a wooden ship is diagonal bracing. One expects a little hogging in a hardwood ship of the size of the *Braeside*. The American-built ships that we docked for the Commonwealth were hogged about 2 inches. I should say that a hog of 2 feet soon after launching would be excessive, and I should not care to go to sea in a ship hogged to that extent. If the boat is strengthened and recaulked she might be all right. Packing of the keel in order to strengthen it would be very difficult to carry out satisfactorily, because the additional timber would have to be incorporated with the keel. It might be done, but I question whether it would be worth the expenditure. It would be necessary to take off the false keel and chop into the main keel.

215. *To Mr. Boyd (through the Chairman).*—I do not think I have seen a vessel with a greater hog than that in the *Braeside*. The hog of 2 feet 7 inches is measured from the line of the keel to the top of the arch; one of my officers took the measurements and reported them to me. I am a ship-builder at present, but I have had a lot of experience in warship designing. I am a member of the Institute of Naval Architects. I cannot say whether the *Braeside* is faulty in design; I have never gone into the question. The scarphs in the longitudinal beams can be stiffened, but it is usually accepted that a joint is not as strong as the timber itself; that is particularly the case with a butted joint. Neither of the docks at Cockatoo will be available until 17th December.

216. *To Mr. Brown (through the Chairman).*—I estimate that the stiffening of the *Braeside*, the recaulking of the bottom, and all the works shown on the departmental plan will cost about £25,000. The substitution of timber fore and aft members in lieu of steel has been discussed, and if that is adopted it will reduce the estimate by about £2,000. My experience of wooden vessels is so limited that I do not care to express an opinion regarding the hogging of the *Braeside*.

217. *To Senator Foll.*—I would not like to express an opinion as to whether the *Braeside* will be likely to get a first-class Lloyd's certificate after the expenditure of £25,000 in stiffening her.

218. *To Mr. Boyd (through the Chairman).*—I would not like to say definitely until I have gone into the question whether the expenditure of any sum of money upon alterations will put the *Braeside* right. From the evidence I have heard I should say that all the structure of the ship is stressed, and it will be a difficult job to restore her to a condition of seaworthiness. I would rather wash my hands of the whole job. There is nothing to show that there is anything wrong with the *Burnside;* she was built to Lloyd's plans and under Government supervision.

219. *To the Chairman.*—If the Government desire that a special examination shall be made of the *Braeside*, with a view to reporting as to what can be done to make the ship seaworthy and to strengthening the *Burnside* before launching, my staff can do the work. I do not yearn for the job, but if I am told to do it I will. So far as I know, there is no evidence that the *Burnside* will hog.

The witness withdrew.

Albert Glasscock, Striker, in the employ of Kidman and Mayoh, sworn and examined.

220. *To the Chairman.*—I have been in the employ of Kidman and Mayoh since 29th November, 1919. Not long after I started at the shipyard, my mate and I

were told by Batch, our foreman, to rivet some heads on 1-inch and 1¼-inch galvanized iron bolts similar to those produced. We were on that work for about three weeks. The dumps would be in lengths of from 4 to 14 inches. I cannot say how many of them were 4 inches long, but they would number hundreds, and they were made during the construction of both the *Braeside* and the *Burnside*. I made a statement to Mr. Snellgrove in regard to the work I did. He came to my place in a motor car at night with another gentleman. I went out to the car, and Batch introduced me to Mr. Snellgrove, and asked me if I would make a statement for him. Batch was in the motor car with Mr. Snellgrove and another gentleman. I think there was also a skipper from one of the boats. Mr. Snellgrove asked me questions, and I answered them. Batch was the foreman smith, and I worked under him, but I am now working with another mate. Two smiths are employed at the yard. I take my orders from him, and he would take his orders from the manager. Mr. Snellgrove wrote down my answers to his questions, and I signed the statement in the motor car. The statement was witnessed by a young fellow who accompanied Mr. Snellgrove. I was not given any idea as to why the statement was wanted. Batch did not ask me to make the statement, but he informed me on the previous day that Burns, Philp, and Company might come out to my house to get a statement from me. I made on an average 100 of the 4 to 14-inch bolts per day. I do not know the difference between dumps and dummies, and I do not know for what purpose the bolts were used. I have never made any statement about dummy bolts being put in the ship. I was not offered any consideration for making the statement to Mr. Snellgrove. Early in September, I went on board the *Braeside*, at Glebe Island, in company with McManus, Gale, and Gibbs, under instructions to clean up the chips and carpenters' rubbish about the decks in the holds. After lunch, Gibbs and Gale were cleaning up the rubbish in the bottom floor, and Gibbs drew my attention to a number of holes which were without dumps, but were filled with chips. The holes could be easily seen. Mr. Barr came on the ship, and told Gibbs not to clear out the holes, but to merely sweep up the deck. The holes were discernible to anybody who removed the chips and sawdust. The following is a true copy of the written statement I signed:—

[Exhibit 75.]

I, Albert Glasscock, "The Hermitage," Marsden-road Dundas, in the State of New South Wales, striker, in the employ of Kidman and Mayoh, declare as follows:—

1. I joined this firm on the 29th November, 1919.

2. When I was at Kidman and Mayoh's about a fortnight, I was ordered to cut off the short ends of the long bolts from 4 inches to 14 inches. I was riveting heads for at least a fortnight, assisting Victor Milliner; that is to say, I riveted heads on to short ends of 1-inch and 1¼-inch galvanized mild steel pieces that had been cut off longer bolts. We averaged making 100 of these a day.

3. Tom Kavanagh, of Glebe, and Harry Madden, of Ryde, were also making these dumps, and continued doing so after I was taken off doing this work.

4. About three weeks ago I was sent down in the morning to the *Braeside*, lying alongside White Bay Silo Wharf, in company with Len Gibbs, Bert Gale, and Chic McManus, to clean up the chips and stuff in between the frames in the bilges on the port side, and whilst doing this discovered a number of auger holes countersunk ready for the fastenings, and I could feel down about 9 inches and feel no fastening, but merely found rubbish and chips. We cleaned out a good number of these holes, and while these holes were being cleaned out by Gibbs, Mr. Barr, the shipbuilder (so Gibbs informed me), said not to clean out any more of them, but to merely brush over the top of them and take up the loose stuff.

Dated at Dundas, this thirtieth day of September, 1920.

(Sgd.) ALBERT GLASSCOCK.

Witness—(Sgd.) A. H. Etherden.

I do not wish to amend the statement in any particular. When Batch asked me to make a statement to Mr. Snellgrove, he did not give me any idea of the value or importance of it, or why it was being sought. He merely told me that very likely Burns, Philp, and Company would call at my place to get a statement in connexion with the inquiry into the condition of the ships. He did not make any suggestions as to the nature of the questions that would be asked; he did not tell me I would be questioned about the making of dummy bolts. I was not asked to make a sworn statement. What I have related was all that occurred between Batch and myself.

221. *To Senator Foll.*—I made some bolts 4 inches in length. I and my mate were engaged in making dummies or dumps for at least three weeks, and we made about 100 per day. I never asked the reason why the 4-inch bolts were being made. It never occurred to me that it was peculiar that 4-inch bolts should be made for insertion in 6-inch planks. I understand nothing about planking. I did not at any time think that the 4-inch bolts were being made to counterfeit long bolts, nor did I ever hear any person say that 4-inch dumps were being used instead of bolts. I never saw any dumps put in the ship, and I do not know whether or not they were used. Mr. Snellgrove did not make me any offer of employment. As Batch had told me that an inquiry regarding the ship was to be held, I concluded that Mr. Snellgrove's interview with me was in connexion with it. I tested the empty holes in the *Braeside* with a 9-inch nail. I cannot say what the holes were for. In accordance with Mr. Barr's instructions, we did not clean out any more of the holes, and we left the ship at 4.30 p.m. I thought it strange that holes should be bored, and not filled with anything except rubbish. I did not inform Kidman and Mayoh that I had been approached by Burns, Philp, and Company, and I never made a statement of any kind to Mr. Mayoh. I am still in the employ of the firm. Only the iron work in connexion with the ship came under my notice, and I saw nothing except the dumps to lead me to believe that Kidman and Mayoh were not doing a fair job. I thought it peculiar that long bolts should be cut up, and heads riveted on to each piece; those fastenings did not look good.

222. *To Mr. Parker Moloney.*—My orders came through Batch, but I have done work without his knowledge, because he was not always in the shop. If orders had been given to me by anybody else, I would have told Batch. All the work I did while making the dumps was known to him. If Batch says that there was only one dummy to 500 dumps, he did not know what he was talking about, so far as our work was concerned. Batch's evidence in that respect is unreliable, so far as it concerns the work of my mate, Victor Milliner, and myself. I told Milliner that I had made a statement to Burns, Philp, and Company, but I do not know whether I told him that I had spoken of having made hundreds of 4-inch fastenings. I am sure that we made over 100 of them, but I cannot recollect whether the number was 200 or 300. The chips and sawdust in the empty auger holes on the *Braeside* were not tightly jammed, but loose. I did not think that the rubbish had been put in the holes in order to cover up something that was wrong. I think the rubbish had just dropped into the holes. Batch did not tell me that Burns, Philp, and Company had asked anything about dummies.

223. *To Mr. Atkinson.*—When my mates drew attention to the holes in the *Braeside*, no suggestion was made as to why the holes had been left in that state. I do not recollect whether or not I told Batch anything about the holes before I made the statement to Mr. Snellgrove. Why he approached me and told me that Burns, Philp, and Company would come to me for a statement I do not know. I am not aware of whether or not they approached Milliner for a statement. Batch knew I could give information in regard to the holes, but he did not tell me that they were what I would be asked about. He did not indicate the lines upon

which I would be questioned, nor did he say that he had mentioned me as a person who would be likely to make a statement to Burns, Philp, and Company. Mr. Snellgrove asked me questions about the holes in the bottom floor of the ship, but I did not know where he had obtained his information. I noticed about two dozen of those holes, all of them on the bottom floor of the *Braeside*. Neither Batch nor anybody else mentioned employment or any other consideration for making the statement. I would have been prepared to make it on oath, because I knew that what I said was true. I have no complaint in regard to my relations with Kidman and Mayoh. I have no idea why the holes were left in the floor of the ship; I cannot say whether they represented an attempt to scamp the work. My mates had found the holes and pointed them out to me; we did not have any conversations amongst ourselves about them.

224. *To Mr. Mathews.*—There are only four of us employed in the smith's shop, and we never went outside the shop to mix with the other men at lunch-time. There was never any talk regarding slumming in the ships. I thought the empty holes in the floor of the *Braeside* were peculiar, and I had the same opinion regarding the riveting of heads on to short dumps. I may have talked in the smithy about these short fastenings, but I do not remember what I said. I did not say anything about the short dumps being peculiar. It was the style of the head and not the length of the bolt that I considered strange. Gibbs, Gale, McManus, and I did not comment upon the unfilled holes. I know those three men only through meeting them at work. I had not discussed the ship with them before we met on the *Braeside*. On returning to the shipyard I may have spoken to Batch about the unfilled holes. There was no general talk about unplugged holes and slumming of work.

225. *To Senator Newland.*—The empty holes were in the bilge of the *Braeside*, and could be seen by anybody who raked the rubbish out; they looked as if they had been left there purposely or through carelessness. It is possible that some of the bolts had been drawn while the ship was in dock and not replaced, but there was no evidence of that. The unplugged holes that I saw extended for about 12 feet. I did not look to see if any fastenings had been omitted from the sides of the ship. If I were taken on board the *Braeside* I could pick out the exact spot where I saw the empty holes. Milliner and I were engaged in the same work in the smithy; we were both employed on the same dumps. A bolt with a burred head would not hold as well as one with a riveted head. If the short bolts were put into the ship for a legitimate purpose they would be the better for having a head. There was nothing extraordinary in the fact of Milliner and myself being instructed to put heads on the bolts. I thought the short bolts were being used for quite an honest purpose.

226. *To Mr. Boyd (through the Chairman).*—The unplugged holes I saw on the *Braeside* were in the ceiling just off the floor. I could indicate the place to the Committee; the empty holes were not in the floor. I repeat that Milliner and I were engaged for three weeks in making bolts from 4 inches to 14 inches long. I did not intend to convey the impression that I was making 4-inch dummy bolts all the time. I did work heads on to some 4-inch bolts, but I do not recollect how many. If I was only making about 100 per day for three weeks I could not have made thousands of 4-inch dummies. I did not say that thousands of these bolts had been made by me; I made not less than 100 4-inch bolts. We counted all the bolts we made during the day, but we did not keep tally of the different lengths. I am only guessing that I made over 100 4-inch bolts. I did not attach much importance to the fact of Burns, Philp, and Company sending a representative to my home. I had no motive in making a statement to Mr. Snellgrove; I was not to get any gain. Batch asked me if I would make a statement, and I agreed. I thought I was pleasing him. I am well satisfied with my employment with Kidman and Mayoh. I did not think I was doing anything strange in giving evidence to an outside firm against my employers without notifying them. I did not think that the 4-inch dummies were being made for the purpose of saving money by inferior work. I do not know whether any were put into the ship. If Batch said that there was only one 4-inch dummy to every 5,000 dumps, he may not have been aware of how many short bolts were made by Milliner and myself. I will not say that his evidence is unreliable.

227. *To the Chairman.*—I cannot say how many 4-inch dumps my mate and I made. I have said that we made 100 bolts per day of all sizes, and that in the three weeks we made not less than 100 4-inch bolts. I am sure that we did make over 100 4-inch bolts in that time.

228. *To Senator Foll.*—I do not know the Government inspector by sight and cannot say whether or not he visited the smithy. So far as I know, there were no outside supervisors in the smith's shop.

The witness withdrew.

Arthur Sidney Young, shipwright and assistant foreman, Kidman and Mayoh's shipyard, sworn and examined.

229. *To the Chairman.*—I joined the service of Kidman and Mayoh at the beginning of January, 1919, and I have been employed wholly on the *Braeside*.

230. *To Mr. Boyd (through the Chairman).*—I have heard the statements that holes were driven in the ceiling of the *Braeside* and have been filled with rubbish. The fact is that the ceiling is only partly fastened. The statements made in regard to holes do not relate to the ceiling at all, but to where the ceiling has been lifted to uncover the floorhead keelson, where I know there are holes that are not filled up with bolts. On fourteen or fifteen occasions the shipwrights have appealed to me as to what they should do when they could not drive a bolt right in and yet could not get it out. I gave permission to cut the bolt off and to work a head on the end that remained in; then I put a dump alongside it to compensate for the shortage; nothing else could be done. When a bolt begins to bend and to develop a cauliflower head it is impossible to drive it further or to pull it out; the only thing we can do is to cut off the bolt flush with the outside of the planking, put a head on it and donkey it through, and then put a dump alongside. The dump has been put in alongside in every case. Those were my orders, and I have seen that they were carried out. In regard to the unfilled holes in the *Braeside*, we lifted the ceiling over the floorhead keelsons and put pillars into the ship while she was in dock, and that is the reason why the keelsons are exposed at the present time. There was no attempt to fill or cover them up in any way. They are still open to inspection. When I was boring the holes at the beginning of the ship I took it upon myself to bore for double fastenings through the floorhead keelson and through the floor head-locking keelson. Subsequently Mr. Barr drew my attention to the fact that the plan stipulated only a single fastening, and we decided to stick to the plan in detail. So a through fastening was put in one hole and the hole alongside was left empty. That is for a length of 40 feet at the most, on the starboard side for'ard. It is incorrect to say that the holes were bored in the ceiling. There are no vacant holes in the ceiling. Some of the surplus holes I bored were filled with dumps and others were not. The holes were bored right through the floorhead keelson and the frame, but they are no detriment to the ship. I know of no holes that have been filled with rubbish and then plugged

with a 4-inch dummy bolt. I would not stand for such a practice. We received no instructions from the contractors on any occasion to slum the work. There was no scamping in connexion with the bolting, as far as I know. I served my time with Manson and Sinclair. In my estimation the workmanship is a credit to the men who were engaged on the ships. I had a lot of diluted labour to contend with, but we have turned out a good job. I cannot say who ordered the making of 4-inch dummies. I did not see any; if there should be one or two in the ship, they have been put in without my knowledge, because I would not stand for that sort of thing. We used a lot of short bolts. They are used as set bolts in order to set up a plank, or in order to hook to them a clamp with which to pull a plank into position. In the course of work we were using all sorts of short bolts, but they were not left in the ship; they were taken out and used again. The shortest fastening bolt I have put in the ship was 10 inches. That was inserted where a 12-inch bolt was supposed to go, but owing to fouling another bolt it had to be nipped short. I have no knowledge of bolts of from 5 to 7 inches having been made for any purpose. I had an absolutely responcible man in the person of Sid May as leading man in charge of the fastenings. He received all his instructions from me, and saw that they were carried out. Of course I could not look at every bolt that was put into a big ship like the *Braeside*.

231. *To the Chairman.*—Thomas Clout was working under me. I sent him with Sid May to push on with the job. They both had free access to the fastenings plan. Batch, the blacksmith, was not directly under my charge, but if I wanted any iron work done, I sent an order to him. I do not remember giving any orders for short bolts, 4 to 6 inches in length. All the dates mentioned in regard to these bolts were subsequent to the fastening off of No. 1 ship. I know of no order having been given for dummy bolts. The only other person besides myself who would give instructions as to the size of dumps required would be Mr. Williamson. Mr. Batch would get his instructions from Mr. Barr, Mr. Williamson, or myself. I never ordered 4-inch dumps with a clinched head for any purpose in connexion with the work on the ship. I might have used a dozen or eighteen bolts with a burred head and a washer in place of an ordinary dump in order to pull into position a big ceiling plank; for that purpose one would require a short dump with a very big head. Such a bolt is a dump, used for a special purpose, and is not a dummy fastening. I never received any instructions to depart in any way from the plans and specifications, nor was I ever offered any increased payment by way of bonus or otherwise for reducing the cost of the work.

232. *To Mr. Parker Moloney.*—I was employed on the *Braeside* from the fastening of the scarphs of the keel. I had a lot of difficulty with labour because, although the majority of the men were fairly good tradesmen, willing workers and good with their tools, they had not a shipwright's knowledge and experience. For the first nine or ten months I had to put up with inferior labour before I could get a sufficient number of shipwrights on the job. The ship did not suffer in any way, although the work was delayed. The men were good tradesmen and did good work, but until they gained experience they had to wait on my instructions as to what they should do next. You ask me whether experienced men or inexperienced men would have given a better job. My answer is that shipwrights are experienced men, but there are good and bad tradesmen among them. The men other than the shipwrights were inexperienced in that class of work, but there were good and bad tradesmen among them. The bridge and wharf carpenters did the work as efficiently as did the shipwrights, but they did it much slower. The ship has not suffered through the use of diluted labour. I would not allow the men to chop into any piece of timber until they understood thoroughly what they were to do. Only in regard to time did the ship suffer through our inability to get experienced labour. It did not often happen that we could not drive a 12-inch bolt the full length and had to cut off the end. In boring holes and driving bolts, we were constantly fouling different things, especially in the ceiling, where dumps had been driven from the opposite side. Many of the bolts overlapped. It is far better to nip the end off a bolt that cannot be driven the full length to plug the hole, than to rebore the plank, thus riddling the ship with holes. In the whole frame there might not be more than half-a-dozen of such instances. I do not believe the statement that one of the smiths made over a hundred 4-inch dumps. I do not think anybody gave instructions to Glasscock regarding the making of bolts, because he was only a striker, and if any bolts were wanted, the order would be sent to the smith. It would be possible for Glasscock to make a hundred short bolts without my knowledge, because I was confined to the bottom of the yard, but he could not make them and leave them lying about without Mr. Brown or somebody else seeing them. I know of no 4-inch dumps having been put into the structure. A lot of short dumps have been used in the *Burnside* as pin fastenings between the clamps, in the scarphs of the clamps, and in the ceilings, in order to prevent longitudinal movement of the beams. In an 8-inch clamp a 7½ or 8-inch bolt would be used. In the frame the bolts would be 12 inches, and in the 5-inch ceiling they would be only 4 inches long. Not many 4-inch dumps were used throughout the ship. They were used in the *Burnside* at the request of Lloyd's surveyor. In the four sets of clamps there might be a hundred of these pin fastenings. It is possible for the dumps to have been used on the *Burnside* without my knowledge; I have been on that vessel only since the *Braeside* left Cockatoo dock, approximately three months. In December, 1919, the *Braeside* was all planked, and the ceiling had been put in by Christmas. The photograph produced, taken on 12th June, 1919, shows that the ship was even then well advanced. During the following six months we were subject to certain delays through lack of timber, but we were proceeding with other work. The 4-inch pin fastenings were used on the *Burnside,* but not on the *Braeside,* as far as I know. I was informed that they were used at the request of Mr. Heron, as an extra stiffening on account of the first ship having hogged.

233. *To Mr. Mathews.*—When the *Braeside* was launched I noticed, before she touched ground on the opposite bank, that she was hogged. The shipwrights noticed the hog in the waterline on the ship's side. There were no whisperings in the yard amongst the responsible men that the hogging had been caused by defective bolting. There may have been "side-shows" amongst the workmen, but I heard nothing of them. I heard nothing about dummy fastenings until Burns, Philp, and Company commenced to stir the matter up. No question was ever raised in regard to the fastenings during construction; everything was passed as satisfactory before the launching. As a rule we do not put washers on dumps. I am surprised at a fellow like Glasscock, who is just a lad out of the bush, having the hide to express an opinion as to whether a bolt was a dump or a dummy. Some people might think that a dump fitted with a washer was intended for deception, but I have explained that we used those dumps to assist us to pull a plank into position when we were short of big-headed dumps, and also to plug holes in which the bolts had broken off or fouled other fastenings. We put a compensation dump fitted with a washer alongside those holes; the dump was strengthened by the washer. A tradesman, looking at the fastenings in the ship, would not know the difference between a

bolt and a dump. The washered dumps were not used to deceive, but only to give a more effective job. I admit that I gave instructions for them to be used as plugs on fourteen or fifteen occasions. When the head of a bolt develops a cauliflower, the fastening cannot be driven in; there is no alternative but to cut off the spreading head and use another short bolt with a head on to drive in the broken one.

234. *To Senator Foll.*—Nothing was ever said to me by the men in the yard about dummy bolts having been put into the ship until Burns, Philp, and Company became busy, and Batch said that he had made dummies. Then there was general talk amongst the men. I have seen Captains Maxwell and Murchison on the boat, but not in conversation with the men. I have conversed with them in regard to different jobs, and they have told me of a couple of things they would have preferred to have been done better. I did some things they required, but they were jobs of no consequence. They never complained to me about anything being seriously wrong with the ship, nor did they ever ask me to express any opinion in regard to it. I was about the ship a good deal and nothing serious could have happened without my seeing it. The Government inspector and Lloyd's surveyor were frequently on the ships. The Government inspector was at the yard on four or five days every week, and when he was there he remained nearly all day. Of course, if the men set themselves out to do something wrong they can deceive the supervisor, but I do not think Mr. Brown missed anything. He never complained to me in regard to the bolting. Anything he instructed me to do I carried out, including the pulling out of timbers at different times. Lloyd's representative was on the job every two or three weeks. He used to spend a few hours there and could see what was being done. I never had any conversation with him.

235. *To Mr. Boyd (through the Chairman).*—Mr. Brown, the Government inspector, was on the ships from week to week, and I have seen him in the blacksmith's shop. If Batch has said that no inspector ever went near him that statement, in my opinion, would not be true.

The witness withdrew.

Alfred Douglas Sellar, shipwright, in the employ of Kidman and Mayoh, sworn and examined.

236. *To the Chairman.*—I am a bridge carpenter, but have been working in the yard of Kidman and Mayoh as a shipwright for two years. I have been employed on both the *Braeside* and the *Burnside*.

237. *To Mr. Boyd (through the Chairman).*—I have taken a turn at practically every class of work in the shipyard, including the boring and the putting in of clamps. I knew that a number of men in the employ of Kidman and Mayoh were being approached by Burns, Philp, and Company to make statements in regard to the work on the ships. I, too, was asked for information early in October by Captain Maxwell. I do not remember the date, but it was on the Wednesday following Eight Hours Day. Later, I received a telegram from Mr. Snellgrove. He came to my house and asked me what I knew about defective work on the *Braeside*, and I told him I knew of none. He then went away and I had no further interview with him. Captain Maxwell saw me and asked if we were using any dummies or dumps. I told him that I did not know what a dummy was, and that I knew nothing of the information he was after. Both he and Mr. Snellgrove told me that they were anxious to get evidence about the fastenings. Nobody else was present during the interviews. Neither of those gentlemen made any direct offer to me, but they told me it would be worth my while to give evidence. I told them that I was too well known to the Master Builders' and Contractors' Association, and if I did such a dirty thing as was suggested I would be blackballed for life. I was not in possession of any information detrimental to the ships. I do not know whether Captain Maxwell was representing Burns, Philp, and Company when he spoke to me. He did no more than hint that it would be worth my while to give them a statement, and that they could keep me in work. I would not like to say of any man that he had tried to bribe me. I saw no attempt to cover up the work on the ships by using dummy fastenings. I saw no scamping of work or any attempt to hide anything. In my judgment, nothing was done in connexion with the use of dummies or dumps that was apart from ordinary shipwrights' work. So far as my knowledge goes, the contractors put honest work into all the fastenings.

238. *To the Chairman.*—In the interviews with Captain Maxwell and Mr. Snellgrove there was no suggestion that I should manufacture evidence. They were simply trying to get information, and I could not give any. I think they were looking for the truth. I was never at any time given instructions that would tend to the scamping of the work in any way. I had to carry out my work faithfully, whatever I did. I was never offered any commission or bonus if I could save money to the contractors by inferior work.

239. *To Mr. Mathews.*—Neither Captain Maxwell nor Mr. Snellgrove offered to bribe me; they merely told me that if I lost my job through giving them information they would get me another.

240. *To Senator Newland.*—I had a sort of roving commission on the ship, and therefore had a better opportunity of seeing everything that went into the ship. I am secretary of the Wharf and Bridge Carpenters' Union, and in interviewing the men on different occasions I was all over the job at lunch times and sometimes during working hours. When Mr. Brown and other heads were on the job there was no smothering up of defects or other acts of concealment; the men proceeded with their work just as if the bosses were not there at all. A large number of augers, probably 400 to 500, were broken during the drilling of the holes at different times, but, except on rare occasions, the broken tool was taken out and mended. If we could not get the broken part out of the hole we filled it with a wooden treenail and bored a fresh hole into which an iron dump or through fastening was placed. In every instance in which we could not remove the broken auger treenails were inserted. I do not know of dumps of from 3 to 5 inches having been put in on top of broken augers. Any man who did that sort of thing should be kicked. As secretary of the Union I would have reported any man who did it. I would not permit the lives of fellow unionists, the members of the Seamen's Union to be risked; that would be a scandalous thing.

241. *To Mr. Parker Moloney.*—I have used 4-inch bolts, and it is possible that Glasscock made over 100 of them. In joining a long scarph, we would drive in short bolts to hold the chain at either end of a union screw. That is the best way of pulling the joint together. After the job was done, the short bolt was taken out. I have used those short bolts for a perfectly legitimate purpose. The remainder of them may be found in the yard to-day, or in the ditch alongside the ship. The fact that a number of men were engaged in making short bolts does not of itself signify anything to the detriment of the ship.

The witness withdrew.

Herbert Charles Brown, further examined.

242. *To the Chairman.*—The Department received information from Burns, Philp, and Company to the effect that they believed that irregular practices had gone on in connexion with the *Braeside* and the *Burnside*. The Department thereupon appointed officers to

carry out certain tests in order to prove the accuracy or otherwise of those statements. The tests are not in progress at present, but they are not yet complete, and it will not be possible to complete them while the *Braeside* is in the water. I submit the following report by the officers appointed to make an investigation of the fastenings:—

[Exhibit 76.]

22nd October, 1920.

K. Watson, Esq.,
Chief Executive Officer,
Commonwealth Ship Construction,
31 King-street, Melbourne.

Dear Sir,—

"Braeside" Electrical Test for Through Fastenings.

We have to report that the above test was carried out on the 20th, 21st, and 22nd October, 1920. The apparatus used for ascertaining whether the fastenings were through or otherwise consisted of a 12-volt battery connected to two metal-pointed grips each fitted with a 6-volt lamp to run in series, so that when the grips were applied to the ends of the fastenings, inside and outside of the ship, the completing of the circuit, revealed by the lighting of the lamps, showed the bolt to be a through fastening. (See attached sketch.)

In addition a telephone outfit was employed for communication between the inside and outside of the vessel. A commencement was made on the port side of the vessel, because of the convenience offered by that side being next to the wharf.

In the 'tween decks seven tests were made in the port side and two on the starboard side. Below the lower deck the fastenings to the lower edge of the clamp were tested in three places on the port side and two places on the starboard. In all, 126 fastenings were tested in the 'tween decks, and out of this number, contact could not be obtained in eight cases. In one of these cases it was known that the fastening was not through, but in the other seven cases, four on the port side and three on the starboard were in the way of long scarphs vertically fastened, and it appeared that difficulty had been experienced in getting a through hole clear of the vertical fastenings.

Below the lower deck, 97 fastenings were tested, and of this number contact could not be obtained in seven cases. These seven cases were situated near the throat of the knee, and had every appearance of being through fastenings, and it may be that these fastenings were clenched on the frames to hold the knees in position during construction.

We would point out that the absence of hammer marks on the washers does not indicate the nature of the fastenings, because in several cases fastenings were found to be through where the washers showed no sign of hammer marks.

As a result of the examination of the fastenings we are satisfied that this work had been faithfully carried out.

Yours faithfully,

(Sgd.) A. M. GREENLEES.
PETER MILLER.
S. GILBERT PATIENCE.
W. A. BROWN.

No later report has been submitted, but it is proposed to make further tests. So far as I am aware, no tests of the fastenings on the *Burnside* have been made. On receipt of the above report, Mr. Watson wrote to Mr. Greenlees as follows:—

[Exhibit 77.]

26th October, 1920.

Mr. A. M. Greenlees,
C/o Naval Dockyard,
Cockatoo Island.

Dear Sir,

S.S. "Braeside."

I duly received your report regarding tests on through fastenings, and I also note that you and the others associated with you appear satisfied with the result of these tests.

The actual figures you put forward only show tests on about 223 fastenings, and among these with fifteen fastenings you failed to make contact.

I take it, however, from your examination of the vessel, you are satisfied that in the majority of these cases the fastenings were clenched in some inaccessible position.

I would suggest some of the fastenings below the water-line be examined when the ship goes into dock. I wired Mr. Mayoh yesterday, again asking him when he intended to dock this vessel, as it must be done this month.

Referring to tests, I enclose for your information copy of reply I have sent to Mr. Mayoh, who requested copy of your report. I am not disposed to give a copy of this report to either Messrs. Kidman and Mayoh or Messrs. Burns, Philp, and Co.

Yours faithfully,

(Signed) K. Watson.

(Taken at Melbourne.)

WEDNESDAY, 24th NOVEMBER, 1920.

Present:

Mr. Gregory, Chairman;

Senator Foll,	Mr. Mackay,
Senator Newland,	Mr. Mathews,
Senator Plain,	Mr. Parker Moloney.
Mr. Atkinson,	

Malcolm Lindsay Shepherd, Secretary to the Prime Minister's Department, sworn and examined.

243. *To the Chairman.*—As an indication of what led the Government to decide to receive applications for the construction of wooden ships, I have brought with me a few typical newspaper cuttings published in May, 1917, all more or less condemning the Government for not having taken earlier action in regard to the construction of ships. There was a great deal of newspaper controversy about shipping, and the press was condemning the Government for not realizing that ship-building was one of the most important things that Australia could do in connexion with the war. In fact, there was a strong agitation from all quarters. The Government had already in operation a shipping line of fifteen ships, and it was the desire of the Prime Minister to get more ships to carry the freight of Australia, which had then accumulated to an enormous extent. Every port was congested with cargo. The newspaper articles referred to, amongst other things, the possibility of building wooden ships in the Commonwealth. They emphasized that we had plenty of timber, and that wood construction was not so highly technical as steel construction, which, at that time, was impossible, because we could not get the steel. The Government had already let contracts for the building of wooden ships in America, and Mr. Hughes announced that he was prepared to let contracts locally. The first contract was let to Hughes, Martin, and Washington. Mr. Hughes, of that firm, indicated that he could build wooden ships, and was willing to do so. After protracted negotiations, an agreement was drawn up between the Commonwealth Government and Hughes, Martin, and Washington for the construction of six wooden ships of a dead-weight capacity of about 2,600 tons each. The arrangement was made more or less hurriedly, and probably all the provisions we should have made had we had time to give the matter more consideration were not included in the original contract, but it was the basis of all subsequent contracts. The Government were then constructing steel ships. It was then generally announced that any other firm who could build wooden ships would receive consideration. Soon after, we received offers to build ships from the Wallace Power Boat Company, through the firm of Kay, Macnicol, and Company, who also introduced the fact that Kidman and Mayoh could and would build ships. Then a contract was let to a company in Western Australia to build six ships. The basic price of all the contracts was £26 per ton. That was considered a reasonable price at the time because of the agitation from all quarters of Australia for more ships, and still more ships. We had millions of tons of wheat we could not lift, although it had been sold to the British Government, as well as wool and immense quantities of metals. Coastal cargo also was congested. In consequence of these conditions four contracts were let for the construction of twenty-four wooden ships. Construction proceeded; but when the Armistice was signed, the shipping position changed more or less, and the market price for wooden ships fell considerably. The first difficulty with wooden ships is to get insurance, and people will not buy them if they can get steel vessels. The enormous quantity of shipping released as a result of the Armistice altered the shipping position throughout the world. That was the

strongest factor which influenced us in deciding to cancel the contracts. The cancellation of the first contract was mainly due to the fact that we doubted the ability of the contractor, the Wallace Power Boat Company, to finish the job. They were in financial difficulties, and we could not be sure that we would get the ships within a reasonable time, if at all. It was considered advisable to cancel the contract let to Hughes, Martin, and Washington because they had not made great headway with their contract. They were in somewhat the same financial difficulties as was the Wallace Power Boat Company, and we felt that the ships when completed would not be sufficiently valuable to justify the cost of completion. The company would have required considerably more capital than they had put into the venture in order to enable them to complete the ships. They had either to reconstruct and get more capital, or lean upon the Government for funds. The position of Kidman and Mayoh was very different. They apparently had plenty of funds; they had made considerable progress with one ship, and fair progress with the second ship, and they had practically all the material in the yard, and much of it worked up ready to be applied to the completion of the boats. A committee consisting of Mr. Curchin, Admiral Clarkson, Mr. Eva, and myself, dealt with this matter, and we took the view that so much work having been done on two of the ships, if they were completed, we would get them at a price which, when credited with their selling value, would be no more than the cost of cancellation. As a matter of fact, the two ships were subsequently sold for £45,000 each, which represented a loss of less than £5 per ton, the average price at which the other contracts had been cancelled. The main considerations which influenced the Committee in deciding that Kidman and Mayoh should complete two ships were the amount of work done on the vessels, the financial ability of the firm to complete the contract, and the fact that a couple of wooden ships could be utilized in Australian waters, particularly in the shipment of copra from the islands. The copra trade at that time was in a difficult position, and we could utilize two ships, but not many more, in that traffic. I am not able to say whether the Department had plans prepared or they were prepared by the contractors. I merely had to do with the preparation and signing of the contract. So far as I knew, when the contract was signed, there were no plans or specifications in existence. The contract provided that the plans and specifications should be subject to the approval of the Chief Executive Officer, and all subsequent dealings with the contractors were carried out by Mr. Curchin without consulting me. Mr. Curchin, who arrived in Melbourne about the second week in December, 1917, had the final say in regard to all plans. The only plans which have come under my notice were those which Mr. Mayoh brought to me from time to time in order to explain points in regard to which there were differences between himself and Mr. Curchin. I do not think that Mr. Curchin had had any previous experience of the building of wooden ships. I have no official knowledge of the plans. On technical matters Mr. Curchin refused to take any notice of me. I was only concerned with the policy part of shipbuilding, and it was frequently necessary for Mr. Curchin to submit points to me for decision by the Minister. The agreement with Kidman and Mayoh provided that they should build the ships according to the amended plans and specifications as approved by Lloyd's, and the Chief Executive Officer, and should obtain for the ships, when completed, first-class Lloyd's certificates. My interpretation of the agreement was that the contractor had to submit plans for all work to the Chief Executive Officer for his approval. It would be the contractors' duty to prepare the original plans of the ships. Mr. Brown, the Government's inspector, was on the job throughout, and at one period there was a second inspector there. I remember that I had an argument with Mr. Curchin as to the necessity of having two inspectors. I understand that Lloyd's surveyor visited the yards once a week, but I have no personal knowledge of his inspections. Early this year the Government arranged to sell the two vessels to Burns, Philp, and Company. A condition of the sale was that the Government undertook to supply vessels that would obtain Lloyd's classifications, character A1, under special survey. That was merely an extension of the terms of our contract with Kidman and Mayoh. We sold the ships, subject to their completion in accordance with the contract, which provided for a pass by Mr. Curchin and Lloyd's surveyor. I assumed that if the contractors constructed to plans which had been approved by the Chief Executive Officer, after having been amended, and approved by Lloyd's, and under the supervision of the Government inspector and Lloyd's, they would obtain the necessary certificates. The possibility of not obtaining the certificate never entered our heads. We thought it was a foregone conclusion that the certificate would be forthcoming when the ships were completed. We depended upon our experts to see that everything was satisfactory. If the plans were defective, where does the responsibility lie? There is a good deal of difference of opinion as to where the responsibility lies if the plans are defective. My view is that we have more or less to stand by what we passed. The plans were submitted to experts, who were supposed to be capable of dealing with them. They varied, amended, and approved of them, and I have always contended that we cannot entirely absolve ourselves of responsibility. That opinion actuated me in the actions subsequently taken. Mr. Curchin held a different view. He took no responsibility whatever; he said the responsibility was entirely on the Contractor to deliver the ships with Lloyd's certificate, and that the responsibility of providing proper plans and specifications rested upon the contractor alone and not on him. But in view of the fact that he passed all the plans and amended some of them I cannot see how we can escape all resposibility. His action in connexion with the plans connotes some responsibility. The contract gave the Chief Executive Officer unlimited power. I have remarked once or twice that if Mr. Curchin had told Kidman and Mayoh that they must put gold knobs on the doors, they would have had to do it. He could alter the plans as he liked, and he did, in fact, alter them. The sale to Burns, Philp, and Company originated in this way: Mr. Wallin, of that firm, comes to Melbourne frequently to discuss various matters with the Department. Burns, Philp and Company have the Pacific mail contract, and we hold them under an obligation to lift the copra from New Guinea, and generally to look after the interests of the Pacific islands, with which we have a contract. Towards the end of 1919 copra had accumulated at Rabaul to a considerable extent, and the regular ships had not been able to lift it. Burns, Philp and Company were short of ships, having recently lost two. I was continually pressing them to lift the copra because we were having difficulties with foreign companies, who demanded the right to trade with late German New Guinea. Their ships were calling at Rabaul with cargo space available, and they demanded the right to lift the copra. We would not allow that, and I pressed Burns, Philp and Company, through Mr. Wallin, to make shipping available for the purpose. The responsibility was upon them to get the copra away, because the Government policy was to allow that copra to be carried only in British ships and to British ports. The company was short of ships, and I incidentally remarked to Mr. Wallin, "What about buying our wooden vessels in Sydney?" The proposal appealed to him immediately, and he promised to look into it. I told him that the Government would be prepared to

consider a reasonable offer. I did not discuss the matter at all with Mr. Lucas. His duties with the company had nothing to do with shipping. Mr. Wallin subsequently made an offer of £40,000 each for the ships. I considered that fairly satisfactory, and I took him straightway to see Mr. Watt, the Acting Prime Minister, at Clifton Springs. He agreed that the offer sounded fairly satisfactory, and he decided to refer it to the same Committee as had dealt with other shipping matters, viz.:—Mr. Curchin, Admiral Clarkson, Mr. Eva, and myself. The Committee decided unanimously that it would be good policy to sell at the price offered. We made inquiries about the price of ships, and were fortified with the knowledge that wooden ships in other parts of the world were selling at very low rates. We consulted Mr. Larkin, the General Manager of the Commonwealth Shipping Line, as to whether we should sell the ships at £40,000 each. We told him that their dead weight without engines was approximately 2,700 tons, and that delivery of the first vessel would be likely to be made about February; we asked him to let us know at what price such vessels could be sold in the United Kingdom. On the 11th December he cabled to us—

> Reported American schooners similar size recently sold here £5 per ton dead weight, and although Australian probably better, strongly recommend acceptance anything near price mentioned your telegram as in my opinion no prospect of obtaining similar figure here or continent.

We had been endeavouring to sell the wooden steamers built for us in America, and the best price we could get for them was £10 per ton. The Committee considered that the offer of £40,000 each was a very good price and recommended its acceptance. At that time we had not decided to omit the Bolinder engines and machinery, but Burns, Philp & Co. offered to buy the ships without engines, which they did not want. I do not think that they would have offered £40,000 each for the ships except that they wanted them to lift the accumulated copra. Knowledge of that enabled us to put a little pressure on them in order to get a satisfactory price. I had made inquiry as to the possibility of selling in other quarters, and could get nobody to look at the ships. However, I thought we could get more than the £40,000, and the Minister told me to try. As a result of further negotiations the purchase price was increased to £45,000 per ship, which worked out at a loss of less than £5 per ton. We had paid £5 per ton for the cancellation of four ships, whilst this purchase showed a loss of less than £5 per ton, and that fact weighed with the Cabinet in agreeing to the sale. There were the further advantages that we had gained some experience in the building of wooden ships, work had been provided, and two additional ships were being placed on the Australian register. I think the original offer was subject to completion within a reasonable time and included a bonus for earlier delivery. The contractors expected to be able to deliver in February last, but Mr. Curchin expressed considerable doubt as to their ability to do that and said it would be inadvisable to sell subject to a time limit. Burns, Philp and Company eventually agreed to buy the ships when completed, and we could hold them to that agreement if completion occupied three years, subject, of course, to Lloyd's certificate being obtained. We are not holding them to the contract. When I was in Sydney with the Prime Minister towards the end of September, Mr. Mayoh called on me and told me of the difficulties in regard to the completion of the ship. He complained of not having been able to get any satisfaction. I told Mr. Hughes of his complaint, and together we went to Glebe Island to inspect the *Braeside*. Mr. Hughes was favorably impressed with the look of the ship, and he authorized me to notify Burns, Philp and Company that they had 48 hours in which to make up their minds as to whether or not they would accept the *Braeside* as she was. They replied that they would not accept the ship, and they asked to be released from their contract. Mr. Hughes has announced in Parliament that they have been released, and we consider they have nothing whatever to do with the ships now. I told that to Mr. Wallin personally, and he asked about the expenditure his firm had incurred in making alterations to the ship. I replied that that was a matter that would have to be gone into, and he said there would have to be a settlement on satisfactory terms. I told him it was unlikely that we would pay for the whole of the work that had been done on their behalf; what we did not require we would not pay for. When Burns, Philp, and Company first asked for the alteration to barquentine rig, I said there was no objection and that they would arrange the matter with the contractors, with the approval of the Chief Executive Officer and subject to their making arrangements with the contractors as to payment. For those alterations we would accept no responsibility, but we would have no objection to any agreement they could make with the contractors. Any additional cost incurred by Burns, Philp, and Company was to be borne by them. I thought that the sale, at a loss of less that £5 per ton, was a more advantageous arrangement than the cancellation of the ships altogether. I knew what amount we had spent, and Mr. Curchin had told me definitely that there were no extras for which the Government would have to pay the contractors. The contract was for the construction of two ships, each of 2,600 tons dead weight, at £26 per ton, or £67,600 per ship. We cancelled the engines, which, according to the Chief Executive Officer, reduced the contract price by £27,400. There were deductions for other items which reduced the cost of the ship. All moneys we had paid up to that date were taken into consideration. We assumed that the first ship would be finished in January, and the second ship in May, and that we would only have to pay extra wages for that period, but the extra payment on account of wages since that date has amounted to a considerable sum. I repeatedly pressed Mr. Curchin to get a definite decision as to the time of delivery, which was much overdue. The ships were to have been delivered twelve months ago, and we have been paying excess wages ever since. I urged Mr. Curchin to make a definite arrangement as to the extension of time to be allowed for the completion of the ships, and then to put the penalty clause in operation; the penalties would have balanced our excess payments, more or less. That has not been done, although I believe that a notice in regard to the enforcement of penalties was issued. In the agreement with Burns, Philp and Company, there is a clause providing for preference. They asked for that preference, but there was no necessity to do so, because we do give preference to Australian ships, and do not give the right to any other but British ships to trade with Rabaul. Burns, Philp and Company own some small schooners trading in the Islands. It may be that most of their vessels are nominally owned by a subsidiary company in the United States, and that the vessels are registered there. They have a line of steamers trading to the East, which are manned with coloured crews, and we have no control over them. We are concerned only with the ships that trade in the Commonwealth and with the Islands. They only keep on the Australian register the ships that are under contract to us. On two occasions when the mail contracts have been under review, I have had their books examined in order to verify the statements they make that their ships are run at a loss. Each examination has shown that to be correct. Notwithstanding the Government subsidy the ships engaged in the contracts are run at a loss. Of course, they have trading concessions and interests which compel them to run ships to the Islands, but they are not compelled to operate them under Australian conditions. They could register the vessels in any other country, and not be subject to Australian conditions.

I did not take any exception to the preference clause in their letter, because it was asking for something which is already extended to anv British ship, and particularly to an Australian ship. What the firm did desire in the first place was a preferential right to lift the copra for a continental port; to that I would not agree.

244. *To Mr. Atkinson.* — The compensation paid to Hughes, Martin, and Washington was more than that paid to Kidman and Mayoh. I negotiated the terms of settlement, and spent a week in Sydney for the purpose. After long negotiations I secured the right to cancel the contract on an alternative basis—either that we should do the cleaning up or that they should do it. At that time the War Service Homes Commission had just come into existence, and was requiring a lot of timber. I saw lots of magnificent timber in the shipyards, and the thought occurred to me that it and the site might be suitable for the building of War Service Homes. I therefore made an agreement with the contractor which gave us the right to realize on the assets if we chose, with the object of affording the War Service Homes Commissioner an opportunity of deciding whether he wanted the site and the timber. He turned down that proposal, and we then authorized a settlement on the basis of the contractors doing the cleaning up. A committee, consisting of Admiral Clarkson, Mr. Curchin, Mr. Eva, and myself, was appointed to consider the basis of the agreement I had arrived at with the firm. We recommended that the Commonwealth should pay to the company £62,640 in addition to the amount of £9,860 already paid as progress payments, making a total of £72,500, the company to do the cleaning up. This worked out at £5 5s. per ton for the whole contract. It was also arranged that the company's profits on the clean up were to be limited to £10,000, and of all profits in excess of that amount the Commonwealth was to receive 50 per cent., provided that in no circumstances should the total profits of the company exceed £15,000. The Department allowed that profit notwithstanding the unsatisfactory state of the contract, because it was the best terms we could get. The company had not stopped work. We knew they had to get more capital into the business before they could complete the contract, but they said they could get the capital. I do not think that the Department could, by reading the contract strictly, cancel it at any moment. The time within which the ships were to be delivered had not expired, and the contractors might have said that they could complete within the contract time. They had not made great progress with the construction, but they had large quantities of timber in the yard. I consider that the offer of Burns, Philp and Company of £45,000 for each of Kidman and Mayoh's ships was remarkably good. The American Government have been endeavouring for some time to sell their wooden steamers—not sailing ships—and they were offering one batch of seven ships at an average price of 90 dollars per ton. I have no hesitation in saying that we could buy wooden steamers, completed and in the water, for £10 per ton. I cannot say whether or not the United States Government require that those ships shall be purchased by people within the States. The ships are advertised for sale abroad, and we know that, in connexion with the cancellation of their contracts, they paid as high as £13 per ton on ships, the keels of which had not been laid. The cancellation of contracts cost the American Government £20,000,000. I do not think we could get £10 per ton for the two ships being built by Kidman and Mayoh. Mr. Larkin has advised us to sell our wooden steamers at £10 per ton; that includes engine and machinery, and the ships are actually at sea. He informed us that American schooners of similar size were sold in London at £5 per ton. If the Commonwealth should receive these boats in a few months, they can do the work for which Burns, Philp and Company originally bought them. We could utilize them to lift the copra at Rabaul. There is about 5,000 tons of copra accumulated there, and we shall have to make some effort to move it. If we cannot get these ships for the purpose, we must put a steel steamer on the job. If we can get these ships finished and put them on that trade, there is enough work to keep them employed for some time, and the profits would pay for them in about a couple of trips. All the copra in German New Guinea belongs to the Expropriation Board. Copra was selling last week at about £39 per ton. If we could buy it at £39 per ton, and ship it to Great Britain or America, we could get £56 per ton, according to the latest quotation from Britain. A month earlier the price was about £70 per ton, and the copra could be bought in the islands at £40 per ton. If these ships are economical to run, as we hope they will be, and they can lift close on 2,000 tons of copra each, the difference between the purchase price in Rabaul and the selling price in Britain would show a handsome margin of profit. I do not know that the Department could claim the whole of that profit unless it actually bought the whole of the copra, and took the market risk. But it does not matter whether the profits are credited to the shipping line or to the Expropriation Board; the Commonwealth will get them just the same. I believe that a couple of trips would wipe out the capital cost of the ships. Even if they did not pay for themselves, they would pay Australia indirectly, because if we do not put these wooden vessels into the trade, we shall have to put on a steel vessel which would be more valuable for lifting wheat and other cargo. In my opinion the completion of these boats is most urgent. We shall have to make an early decision as to what we shall do with the copra. While it remains at Rabaul it gives an excuse for other countries to say that we are not dealing with the islands fairly, that there is a large amount of copra to be lifted, we cannot lift it ourselves, and will not allow others to do so. Burns, Philp, and Company have advised me that they intend to put the *Malaya* on to lift the copra as far as Sydney. The Government policy is to retain as much of the island trade as possible for Australia, and bring to Sydney all the copra that we can handle. The contract ships will not lift all the copra estimated to be available at Rabaul in any one year. There will still be enough copra to keep the two sailing boats fully employed. We want as much as possible of the copra to be sent to Sydney, because that has been the principal selling port for many years. I was present when Kidman and Mayoh entered into the second agreement with the Commonwealth. I do not know why an extension of time was not provided for. I have repeatedly urged Mr. Curchin to get a definite understanding on the subject. We knew that the contractors could reasonably claim some extension of time, for instance, on account of the shipping strikes, but no definite extension has been fixed. It was the responsibility of the contractors to get an extension of time.

244A. *To Senator Foll.*—The responsibility for the construction of the ships and the obtaining of Lloyd's certificate vests with the contractors. They signed the contract which contained that provision. We cannot accept the responsibility. The Chief Executive Officer, who is the man upon whose opinion we relv, says that the responsibility does not rest upon the Government. Personally, I do not see how we can absolve ourselves of all responsibility; we are under a certain moral obligation, although, by a strict interpretation of the contract, we have no responsibility. I am anxious that the ships should be put into trade right away, with or without Lloyd's certificate. I would not worry about the certificate; from my point of view, it is more important to get the ships than to get the certificate. We would have to insure that the ships are thoroughly seaworthy for the protection of our crews.

If we could get an absolute assurance that the ships were thoroughly seaworthy, I would not hesitate to put them into commission, even without a certificate. But I would want definite assurance on that point, otherwise, if an accident happened, the Government would be held seriously liable in regard to the crew. I do not know if all the other Government ships are on Lloyd's register. All the ships we have built in Australia have Lloyd's certificate because they were built under the supervision of that society. Even should we not be able to get Lloyd's certificate, I have great faith in Australian timbers, and there is the additional fact that the ships were built under the strict supervision of our technical officers, whose duty would be to point out any defects in them. They should not have allowed the contractors to proceed if they thought the ships would not be seaworthy. My own impression is that the weights of the timbers are excessive; I understand that they are specified to be of the same size as American soft woods, although they are hard wood and much stronger. Certain serious charges have been made by Burns, Philp, and Company regarding the condition of the boats. They sent their statutory declarations to me, and I forwarded them to the Committee. It seemed to me that the matter did not concern Burns, Philp, and Company except from the point of view of public duty. They hinted at charges some time ago, and I immediately told the Chief Executive Officer to have the allegations inquired into. I understand that certain tests of the fastenings were carried out, but are not yet complete. I think the statutory declarations were made after the forty-eight hours' notice which the Prime Minister gave to Burns, Philp, and Company. They told me some time ago that there was a suspicion that something was wrong with the ships, and they were having the matter investigated. I told them that tittle-tattle was no good, but I immediately called the attention of the Chief Executive Officer to the statements, and asked that they should be inquired into. I am sure that at that time they did not have the statutory declarations or they would have supplied them. My figures regarding compensation are based on the contract price. The contractors claim that the dead-weight capacity of the boats will be 3,000 tons, but they do not take into consideration the fact that they will have to allow for the weight of the engines and machinery that are not being put into the vessels. The Chief Executive Officer told me that there were no extras. If it were proved that the dead-weight capacity of the ships was 3,100 tons my figures would be completely altered, and the compensation for the four cancelled ships would be increased. The dead weight has to be ascertained on certain data, and then a deduction must be made for the omission of the engines. Any extra weight put into the ships for the purpose of strengthening them would have to be taken into consideration and deducted. Under the contract, the *Braeside* would not be accepted by us until she was fit for sea, and was passed by the Chief Executive Officer and Lloyd's surveyor. Any additional weight added to the ships in order to render them secure would reduce the dead-weight capacity. I assume that if the Government take over the ship, Burns, Philp, and Company will have a claim to be repaid by some one the money they have paid to the contractors. If we finish the ships with the rig ordered by Burns, Philp, and Company, I should say that we would be more or less bound to pay for the value we received. If we do not do that the question of liability will have to be fought out between Burns, Philp, and Company and the contractors. If we used the false keel we should pay for it. We are not responsible for the alterations Burns, Philp, and Company made, and these adjustments will be matters for negotiation. I told Mr. Wallin that the Government were not in the habit of treating people unfairly, and the claims of his firm would be considered on their merits. I think Mr. Curchin consulted the Crown Solicitor before we compensated the other companies. Legal advice was obtained before the £52,000 was paid to Kidman and Mayoh, but only in regard to the drawing up of the agreement. The Government made attempts to get offers for these vessels from others than Burns, Philp, and Company, but we could not get anybody interested in them. During the last few months we have been endeavouring to sell wooden steamers, and the prices offered have been very low. The market for copra is weak at present, the price being only £39 per ton as against £45 per ton a few months ago. The last return showed a total of less than 300 tons of copra in Sydney. The quantity in Sydney has been up to 3,000 tons, and, generally, there is over 1,000 tons there. The present quantity of 300 tons is the lowest I have known.

245. *To Mr. Mathews.*—The wooden ships were originally looked upon as a war measure only; we wanted ships of any sort, and practically at any price, and we went extensively into the question of building concrete ships. If we could have got these two ships at the time when they were supposed to have been delivered, with the rates then ruling, they would have paid for themselves very quickly, and it would not have mattered whether or not they were any good subsequently. The Government have five wooden steamers in the Australian trade, but they are no good for copra. There are two or three drawbacks about them. The insurance is very high, and they cannot be taken anywhere in ballast because they have no ballast tanks; that means that they must ship artificial ballast. We have tried to use them for carrying coal to New Zealand, but we found that we would have to leave 500 tons of coal in the ship as return ballast, or else ship another 500 tons of ballast. It is not because of the difficulty of getting freight, but because they are expensive to run that we are anxious to sell them. They are built with wooden rudders and steam steering gear, and nearly every one has had trouble with the rudder. The Commonwealth takes its own insurance risk; therefore, we are not under the heavy obligation that a private owner would be under. The Ministerial Department is not concerned with the actual construction of the ships; that is a matter for the Chief Executive Officer entirely. The Construction Branch, on the other hand, has no concern with the Government shipping policy. Whilst there might be a moral responsibility upon the Government, the contractors have full legal responsibility for producing the ships to Lloyd's requirements. Although Lloyd's accepted the plans and supervised construction, they have no legal responsibility. I should say that they would treat the Government in this matter in the same way as they would treat any other shipbuilder. When these agreements were entered into, the departmental officers did not make any particular inquiry into the qualifications of the firms who said they could build wooden ships. They all claimed to be able to build them. Kay, Macnicol, and Company were supposed to be the experts, and they were associated with the contractors. Mr. Hughes, of Hughes, Martin, and Washington claimed to be a shipbuilder; Mr. Mayoh did not; but he had many years' experience in the construction of bridges and other engineering work involving problems of strains and stresses similar to those in shipbuilding. We knew that Kidman and Mayoh had no shipbuilding experience, but they were associated with Kay, Macnicol, and Company, who were supposed to have the experience. In arranging compensation for the cancellation of contracts, we more or less took the terms of the cancellation of the first contract as a basis, although it was not altogether a reasonable one, because the contractors' position was rather hopeless, and possibly if we had waited and forced them, we might have been able to wreck them financially, and get out of the contract without compensation. But we had paid them a great deal of money on account of material they had

ordered, and while they said they could not go on, we had to continue the payment. We might have been involved in payments amounting to two or three times what we paid in compensation, without getting anything for our money except the material. They had made progress with one ship, and I think it is still in the yard, just as they left it. We allowed the contractors a percentage of profit because they had honestly endeavoured to carry out the contract. They had worked for a considerable time, and had put a lot of money into the job, and it seemed reasonable to allow them a certain percentage of profit, because it was the Commonwealth's desire that the contracts should be cancelled. Hughes, Martin, and Washington contended for a specific amount of profit, but I would not agree to that. I told them that we would allow them a profit of £10,000, and they could have a greater profit if they chose to earn it. If, in the realization of the assets, they could earn £15,000, after sharing with us all profits in excess of £10,000, I would be satisfied. My view was that unless we made some arrangement of that kind, they would not have worried much to get the best possible return on the realization of the assets. They finally accepted our terms, and when the proceeds were divided we got a return of about £3,000; their total profit was about £13,000. The Wallace Power Boat Company asked for £150,000 for the cancellation of their contract. We eventually paid them £50,000. Hughes, Martin, and Washington asked for £100,000, and I think the settlement eventually cost us about £65,000. All the contractors claimed a high figure, because they professed to be very anxious to finish the job. Mr. Mayoh asked for considerably more than £5 per ton for the cancellation of the four ships, and I think I had to threaten him with the War Precautions Act on one occasion. In paying Wallace Power Boat Company £5 per ton as compensation we did not allow any profit. According to the figures we have in our possession, after they had paid for all their material, and carried out all their obligations, they had no hope of making any profit. When we sold the ships for £45,000 each, the Department was not concerned as to the extra dead weight for which the Government would have to pay the contractors. The Chief Executive Officer told me that there were no extras to be taken into consideration. The additional dead weight would be an extra. He knew that the ships had been enlarged, but he did not take much account of that; he did not think it would add materially to the dead weight. He thought an increase of 100 tons would be the maximum. I think Kidman and Mayoh made an honest endeavour to carry out a satisfactory job; there is every indication of that. Mr. Curchin was always opposed to the construction of wooden ships—but I am perfectly certain that he would say that the contractors had faithfully and honestly carried out the work on the ships. So far as I am aware the workmanship has never been questioned. I certainly was surprised to receive information from Burns, Philp, and Company about defective fastenings. I could not believe it, and I told Mr. Wallin at the time that he would have to make sure of his facts in a matter of that kind. I could not believe that a firm like Kidman and Mayoh would be guilty of such practices which would almost certainly be discovered. Moreover, they were taking all the risks under the contract because they had to deliver a ship to the approval of the Chief Executive Office and Lloyd's surveyor, and Mr. Mayoh has been engaged on contracts long enough to know that he could not play monkey tricks of that kind. If defective fastenings had been put in, they must affect the ship and detract from the possibilities of getting a certificate. As a matter of fact the Department has give no credence to the allegations. I could not believe there was anything in them. Summarized, my view is that the constructions of the ships was a war measure; the contractors have conscientiously tried to carry out their contract, and the Department does not wish to deal harshly with them, although they must shoulder their own responsibility. The policy of all Governments with which I have been associated is to treat everybody fairly; the difficulty is to ascertain what the contractors are entitled to. What we are offering the contractors will not consider, and we have a very big job in trying to arrive at a settlement. It seemed that we would never get the ships or arrive at a satisfactory conclusion unless the matter was inquired into by an impartial body like this Committee. We want the ships badly and immediately. If we do not get them soon they will probably not be worth much to us. We have the trade for them now, but if completion is delayed that trade will disappear. If we get a mandate for New Guinea we shall have to throw the island open to the trade of the world, and, if the outside traders get in, it will be difficult to get them out again. If we get a start in the trade beforehand we may be able to keep it going.

246. *To Senator Newland.*—In regard to alterations of plans, I know there was a long argument over the blocks. Mr. Curchin specified bigger blocks than those which the contractors submitted. Mr. Mayoh complained, and showed me plans and blocks, and I got him and Mr. Curchin together to try to arrive at a satisfactory settlement of their business. The offer by Burns, Philp, and Company of £40,000 each for the ships was dated 26th November, 1919. On 22nd January last Ministerial approval to the sale at £45,000 each was given. No deposit was paid. There was only one offer from Burns, Philp, and Company, and an acceptance by us, both in writing; there was no formal contract. We understood from the contractors, at that time, that they could finish the ships in March and May respectively. The *Braeside* was very far forward, and was to be finished in a month or six weeks. We made no arrangements with Burns, Philp, and Company as to the amount they had to spend in order to complete the vessels; we did not care how much they spent on the ships, apart from the contract. We recognised at the time of the sale that the Government had an obligation to spend more money than had been actually spent. Kidman and Mayoh complained that the actions of the Chief Executive Officer in connexion with the blocks and the donkey boiler had delayed them. They complained also of delays in regard to the approval of plans. I know that there was considerable controversy about the donkey boiler and the blocks. The Chief Executive Officer may or may not have been responsible for those delays. He may have had justification for what he did. I have not the slightest doubt that what he did was in the best interests of the Government from his point of view. No complaint was ever made to my Department as to the character of the work put into the ships; all the comments I heard were that they had been well built.

247. *To Mr. Mackay.*—I hope that the reference of the contract to this Committee will produce a settlement of the main points in dispute, and enable the ships to be completed early. I hope to get them within three months. The earlier they are finished the more valuable they will be to the Commonwealth. We want them for a particular trade which will not last for ever. For instance, when the German properties in New Guinea are liquidated, the owners will have the right to ship their copra and sell it as they wish. At the present time the whole of the copra is controlled by the Expropriation Board. When that authority passes away the ships will not be so valuable. I do not know how long the Expropriation Board will last, but I should say a year or two. I am more concerned about the early delivery of the ships than about

Lloyd's certificate; but we must have some guarantee to show the seamen that the ships are seaworthy. The man in Australia who I think knows most about wooden ships is Mr. Farquhar. I would be satisfied with his opinion. The contractors have always evinced a desire to complete the ships, and I know that Mr. Joseph Mayoh is desperately anxious to go abroad. I believe that the contractors, having the shipyard, and being familiar with all the details, could finish the ships much more economically than could a Government Department; but we wanted the ships finished quickly, and as things have been going there did not seem to be any prospect of ever getting them. As far as we are concerned, there is no dispute in regard to progress payments. We say we have made all the payments to which the contractors are entitled on the basis of £26 per ton. The contractors contend that we have not, and we cannot get anybody to give them a definite instruction to do certain things to the ships because they say that somebody must pay them for the work. Nobody will accept any responsibility. My view is that if we take over the ships and finish them we must take the responsibility; this course would insure the completion of the ships. It is possible that the ships may prove too expensive. I have heard mention of an expenditure of £25,000 to put the *Braeside* right; such an expenditure would not be justified; it would be better to burn the ship; she is not worth £25,000 in the market. Therefore, there would be no justification for spending £25,000 on her. Mr. Curchin did not resign. His three years' engagement expired, and when we negotiated with him in regard to an extension of the term, he asked for more than the Government were prepared to give. I am sure that nothing in connexion with this shipbuilding contract caused him to leave Australia.

248. *To the Chairman.*—The Government have not at any time considered that the contractors had abandoned their contract. If the contract was abandoned the Government could step in. We have a right under the agreement to penalize the contractors for delay, and I have on several occasions urged Mr. Curchin to put that clause in operation.

249. *To Mr. Mathews.*—The Government are advancing money for the payment of wages, because the contractors say that they have no more money. They assert also that we have not paid them in accordance with the terms of the contract. I have an application from them now for a further advance of £2,000. I would be surprised to hear that the contractors have said that it is not shortage of cash that has brought about the present position. I think shortage of money is a minor consideration, because I am perfectly certain that if they wanted to put more money into the business they could get it. The real reason why they suggested closing down, and not proceeding further with the construction of the ships, was because we could not get a settlement on the points that are outstanding. I do not think they would have paid off the men; they only threatened to do it, and we get lots of threats. The contract provides that we shall make progress payments on the basis of 90 per cent. of the material delivered in the yard. We have paid practically the full value of the ships as estimated by our officers, until the question of dead weight is settled. The contractors say that if the Government do not advance another £2,000 they will stop work; but I doubt whether they would stop. It would be an abandonment of the contract if they paid off all their men and stopped work for the period specified in the contract. We have a big technical organization at Cockatoo Island, and I consider that the staff there ought to be able to complete the ships satisfactorily, and we should then be able to get a Lloyd's certificate. But I would oppose the expenditure of £25,000 in order to get the vessels certificated.

250. *To Mr. Boyd (through the Chairman).*—I understand that the partners in the firm of Kidman and Mayoh have put into the concern £15,000 each. The contractors have frequently complained to me that the Government have committed a breach of contract in regard to payments. If they feel aggrieved they can demand arbitration, and we cannot refuse it; there is no need to apply to a Court. If they stopped work they would be committing a breach of the contract, because we consider that we have paid practically the full value of one of the ships. That would be a matter for the arbitrator to decide. You must take into consideration the full contract price of the ships. They undertook to deliver two ships of 2,600 tons each, at £26 per ton. We subsequently omitted the auxiliary power, and it is easy to arrive at the total amount we should pay for the ships. We have paid nearly that amount, and if we continue paying, we shall exceed the contract price. I do not know the total weight of the machinery omitted. If the dead weight should be found to be 500 tons more than the contract tonnage, we shall be responsible for the extra £26 per ton on that 500 tons, less deductions for the weight of the engines and machinery. If it is proved that the ships are approximately 3,100 tons dead weight, the Department still owes the contractors a good deal of money. Their claim for extra progress payments in order to pay wages would not be unreasonable if we were to get the ship they contracted to deliver; but it would be unreasonable if they could not deliver that ship. We have arranged for an officer of the Commonwealth Department of Works and Railways to do the checking of accounts in the Sydney office. It is his duty to send a certificate that the money has been spent on wages. I cannot express an opinion as to whether, if the contractors have paid not less than £650 per week, they can be considered to have abandoned their contract. I do not know that the contractors have put a large quantity of timber in the after part of the ship from which the engines were taken. The £52,000 paid to Kidman and Mayoh in connexion with the cancellation of four ships was compensation to cover the expenditure they had incurred in connexion with the shipbuilding contract. We did not intend it to be profit. I believe that Kidman and Mayoh desired to cancel their contract at the time when the other contracts were cancelled. They asked for more compensation than the £52,000 we paid them. I think Mr. Curchin was totally opposed to the construction of wooden ships; at any rate, he was never enthusiastic about them. I cannot say whether, when the contract was let to the Wallace Power Boat Company, the plan submitted by Kay, Macnicol, and Company was accepted by the Government. The Chief Executive Officer knew the conditions upon which all the contracts were let. I have no doubt that Mr. Curchin considered that the alterations and demands made by him, and for which he refused to pay anything, were reasonable under clause 10 of the contract?—When we worked out an estimate of the financial results of the sale to Burns, Philp, and Company, Mr. Curchin told us that there were no extras. If the contractors considered that the demands were not reasonable they should not have accepted them. They could have resorted to the arbitration provisions of the agreement, although I admit that the Chief Executive Officer had very extensive powers; he could demand practically anything. Still, if the contractors considered that anything required by Mr. Curchin was unreasonable, they could fall back on the arbitration clause. There was an alteration after the contract was signed and the specifications drawn up for galvanizing the bolts. If I were the contractors, I would claim extra payment for that work. That amount was not taken into consideration by me, estimating that we had paid up fully all that the contractors were entitled to; it may have been taken into account by Mr. Curchin.

251. *To Mr. Brown (through the Chairman).*—Mr. Sheldon, the Australian Commissioner in America, advised as follows on 15th June, 1919:—

> 385 wooden vessels contract cancelled by United States Government, average cost 61.64 dollars per ton, total 1,124,840 tons dead weight. This is at the rate of £13 5s. 4d. per ton, total cost for the 1,124,840 tons being approximately £14,942,877. Further fifty-two cancelled, 137 tons dead weight, cost not yet compiled, probably more than above. Foregoing includes 342 vessels, construction not yet started, other ninety-five various stages from 20 to over 90 per cent. completion, mostly under 50 per cent.

I have some later information extracted from *Fair Play*. It states that Mr. Piez estimates that the loss that will be incurred by the cancellation of 1,500,000 tons of shipping will be £20,000,000 sterling, or £13 per ton dead weight. I have here a photograph of seven of 285 wooden ships which were on sale at ninety dollars per ton, or about half the cost. The information I have quoted from Mr. Sheldon was obtained at the request of the Department with a view to answering criticism in Australia. The three agreements for the construction of wooden ships were dated as follows:—Hughes, Martin, and Washington, 15th July, 1918; Kidman and Mayoh, 6th July, 1918; Wallace Power Boat Company, 15th July, 1918. I find that Mr. Lucas did deliver to me a telegram which had been sent in code from the Sydney office of Burns, Philp, and Company to the Melbourne office, containing an offer of £40,000 each for the ships without engines, if delivery was guaranteed not later than March and May respectively. In addition, the contractors were willing to pay a premium of £500 for every week that the ships were delivered earlier than the specified time. When estimating the financial result of the sale of the ships to Burns, Philp, and Company, we worked on these figures:—

Contract price of each vessel, £26 per ton, estimated tonnage, 2,700		£70,200
Amount of extras paid to date on two vessels for extra wages as the result of tribunal awards	£3,220	
Probable additional amounts to be paid for same reason	1,500	
	£4,720	
For one vessel, say, half of £4,720		2,360
		72,560
Amount recommended to be deducted by Committee appointed to make report, £13,700 for each vessel (for engines)		13,700
Deduction for sheathing		500
		14,200
		£58,360

Approximately, £21 12s. 3d. per ton.

The offer of purchase at £40,000 per vessel works out at £15 7s. 8d. per ton.

No provision has been made in any of the above calculations for any saving on account of overtime penalties, as these cannot be estimated until date of completion is actually known, and what allowance has to be made for any delays caused by action of the Department.

In the event of the vessels being sold on the basis that the purchase price would not result in a loss of more than £5 per ton, the amount that would require to be realized on each vessel (assuming that they register 2,700 tons) would be, approximately, £44,860.

At an interview which Mr. Wallin had with Mr. Watt and myself, Mr. Watt quoted £50,000 as the sale price. That Mr. Wallin promised to consider, but he was not prepared to purchase at that price. When he offered £45,000 per ship, I recommended the acceptance of the offer, and it was approved by Cabinet. We were justified in assuming that £1,500 would cover the additional wages to be paid on account of tribunal awards, because we had been told that the vessels would be completed by March and May.

252. *To Mr. Boyd (through the Chairman).*—Taken as a whole the actual compensation worked out at less that £5 per ton for all the contracts. The amount paid to Hughes, Martin, and Washington was a little more than £5, and that to the Wallace Power Boat Company, a little less than £5.

253. *To Mr. Parker Moloney.*—Mr. Mayoh told us that Kay, Macnicol, and Company would act as his architects, and they came to see me in connexion with the contract. They did not lead me to understand that Kidman and Mayoh had actual experience in the building of wooden ships, but they contended that they had, and they would act as advisers to the contractors. Mr. Curchin had simply to approve of the plans drawn up by the contractors. Before it was decided to allow the contractors to complete the *Burnside* and the *Braeside*, there was a proposal to cancel all the ships, but it seemed a cheaper proposition to finish two of them, because so much headway had been made with one, and nearly all the material for the second was in the yard. There was no separate proposal to hand them over to the Government. From a financial point of view it seemed a better proposition to cancel only four of the ships and complete the other two, because it would have been difficult to have disposed of them at the advanced stage of construction they had reached. I cannot remember the amount which Kidman and Mayoh asked for the cancellation of the contract, but I think it was so large that we would not even consider it. If the dead weight of the ships should prove to be 3,100 tons the cost of each at £26 per ton will be about £80,000, but I am assured by our technical experts that there is not the slightest possibility of their working out at that tonnage. They told me that we might assume an additional dead weight of 100 tons, but nothing like 500 tons. Mr. Curchin was very definite on that point. You have to take into consideration the weight of the engines and machinery which have been omitted from the ship although contracted for. That weight has to be deducted from the carrying capacity of the ships. We based our figures on a dead weight of 2,700 tons, which at £26 a ton, amounted to £72,560, including the extra wages. If the Government had control of the ships now, though they might not pay off the whole of the capital cost, their earnings would reduce it so that we could sell them at a reasonable price and make a profit. The Commonwealth steamers purchased during the war paid for themselves during the first twelve months. These ships are not likely to do that, but, if we can get them soon, they might reduce their capital cost to a reasonable figure. The possibility of the Government taking over the ships instead of selling them to Burns, Philp, and Company was considered, but the manager of the Commonwealth line protested against taking them over. He urged us to sell, because the value of ships of the same capacity sold in London at that time was only £5 per ton. By the sale to Burns, Philp, and Company, we were not losing more than the £5 per ton we had paid for cancellation. In this deal we were losing less than £5 per ton and were getting two ships. It was really on the advice of Mr. Larkin that we decided to sell the vessels. No defects had been noticed in the boats at the time of the sale. If, as a result of this inquiry, the ships were taken over by the Commonwealth, and Lloyd's said they were unseaworthy, I would hesitate about sending them to sea until we had some assurance that they were seaworthy. Everybody would prefer Lloyd's certificate, but a great many wooden ships have not got it, and we may not be able to get it for the *Braeside* and the *Burnside*. Of course, the Commonwealth is in an awkward position, because more is demanded from them than from private owners. We would have to get some authority to vouch for the seaworthiness of the ships before we could send them to sea. My view is that the experts

at Cockatoo Island ought to be able to tell us what alterations are required, and they should be able to vouch for the ships when completed. Their certificate with that of the Chief Executive Officer should be sufficient. If Kidman and Mayoh have not honestly carried out their contract, we are under no obligation to them: the weakness of the ship is entirely their responsibility. If there has been any attempt to evade their obligations under the contract, they should take full responsibility, and we should take none.

254. *To Mr. Brown (through the Chairman).*—If the contractors say that they do not propose to make any allowance for the omission of the auxiliary machinery when measuring the dead weight capacity, that is not according to the understanding arrived at when the arrangement to dispense with the auxiliary power was made.

The witness withdrew.

Arthur Carlile Barber, Naval Architect, sworn and examined.

255. *To the Chairman.*—I served an apprenticeship in Victoria to shipbuilding and engineering. I then went to England and served another apprenticeship to shipbuilding at Palmer's works at Jarrow-on-Tyne, where I remained for four years. At Palmer's I was engaged entirely on ship construction. We built no wooden ships. I then went on to Fairfield, and, on returning to Australia, served at Cockatoo Island for about twelve months as head shipyard draughtsman. After leaving Cockatoo Island I started in business for myself in Sydney. Four and a half years later I joined the firm of Kay, Macnicol, and Company, about 1917. They were consulting engineers, but they wished to open a branch of naval architecture, and I joined to take charge of that branch. About the middle of 1917, just after I had joined Kay, Macnicol, and Company, I saw the necessity for the construction of ships, and I made plans for a four-master barquentine. I also prepared plans for a full-powered cargo boat for Mr. Hughes, of Hughes, Martin, and Washington, and a full-powered steamer on the composite design for a syndicate formed by Sir Owen Cox. Mr. Macnicol put the plans of the barquentine, together with a specification, before the Prime Minister, but the matter was left more or less in abeyance until the arrival of Mr. Curchin. Mr. Curchin investigated the proposal for the building of wooden ships, and came to Sydney to inspect the proposed yards of Hughes, Martin, and Washington, and the Wallace Power Boat Company. Negotiations were then entered into for the building of wooden ships. Kay, Macnicol, and Company were seeking a contract on behalf of William Holmes, boat builder, of North Sydney, and the Wallace Power Boat Company. They each desired to construct two ships, but the price offering was too low. Eventually the Government was asked to consider the construction of six ships for each programme. Mr. Hughes, of Hughes, Martin, and Washington, was dealing with me in the matter, and he submitted the plans for full-powered steamers to Mr. Curchin, but the ships were afterwards converted to auxiliary schooners. The proposal for the composite vessels was turned down by Mr. Curchin upon the ground that the steel for the frames would be too much of a drain upon his steel ship programme. Kay, Macnicol, and Company proposed to build barquentines on behalf of the Wallace Power Boat Company. In about April, 1918, Mr. Curchin came to Sydney, and went into the plans with me at our office. I showed all the data I had, and he seemed satisfied. An agreement was drawn up for the building of these vessels for the Government, and it was pointed out to Mr. Curchin that the getting of Lloyd's certificate would involve a delay of three or four months, because Lloyd's surveyors in the Dominions have no power to fix the scantlings for a new vessel: all the plans have to be submitted to Lloyd's Committee in London. I produced plans to the Navigation Department and the underwriters' surveyors, and they were satisfied that the plans were satisfactory in every way. Our proposal was to build the ships entirely to the requirements of the Navigation Department and the Underwriters' Society, and not to deal with Lloyd's at all. That decision had almost been accepted when, a few weeks prior to the signing of the contract, Mr. Curchin insisted upon the plans conforming to Lloyd's A1 classification. We appealed to him several times, but he was emphatic; therefore, we had to send the plans to London. I sent fuller plans than are usually submitted; they were posted to London on 14th May, 1918. The plans and the conditions of contract were the same for both the Wallace Power Boat Company and Kidman and Mayoh. At the end of May the Wallace Power Boat Company had been promised by Mr. Poynton that they could have the contract for the six ships promised to Kay, Macnicol, and Company. That was in accordance with our request that he should allow us to transfer the contract to them. Mr. Curchin had undertaken that he would cable to Lloyd's when the contracts were signed, as he had done for Hughes, Martin, and Washington, but I found out later that he had not done so. On 26th June I came to Melbourne, and, at my request, a cable was drawn up and despatched, through the Ship Construction Branch, to Lloyd's, London, giving a full description of the vessel. A reply was received on 3rd August, and I, therefore, drew up a midship section in accordance with the cabled advice and Mr. Curchin's requirements. That allowed the contractors to get a little further ahead, but there was always some doubt about the other dimensions, and no great progress could be made before we received the original plans back from Lloyd's on 12th September. I had despatched the plans to London through Mr. Heron; they were returned to him, and he sent me copies. I, in turn, made copies, and forwarded them to Mr. Curchin. Until 3rd October the contractors could not make any appreciable progress with the ordering of material. When the plans came back, they were considerably altered. The planking, the wales, the frames, and the moulding of the frames were increased; the diagonals I had provided for in the sides to prevent hogging were taken out, and, generally, my original design was very much changed. A letter from Lloyd's accompanied the plans saying that if the ships were built in accordance with those plans they would be classified A1. I did not receive a copy of that letter until about twelve months after. The midship section which I had made previously was signed by Mr. Curchin. I sent him copies of Lloyd's plans on 3rd October, and thenceforward every detailed plan I made was sent to Mr. Curchin for his approval. There have not been many drastic alterations in the plans as approved by Lloyd's, but there were drastic alterations in other details not approved by Lloyd's, and which Lloyd's usually leave to the builders. The first plans I submitted to Mr. W. M. Hughes, Prime Minister, were accompanied by a specification, and on those plans and specification I made my estimate of the cost of the vessel, which I submitted to Mr. Mayoh and the Wallace Power Boat Company. I was always under the impression that that specification was acceptable to Mr. Curchin, and it was not until 22nd July, 1918, that he informed me that the specification was not suitable, and that he wished to have a standard specification. That was after the agreements had been signed with the Wallace Power Boat Company and Kidman and Mayoh. Almost simultaneously with the signing of the agreement these firms had taken leases of ground for shipyards, and had incurred other expenditure. Mr. Curchin drew up another specification which, I consider, quite altered the whole type of the ship and increased its cost. For instance,

I had stated quite clearly in my specification that some of the outfit had to be supplied by the owners; Mr. Curchin insisted on all those items being supplied by the contractors, and, generally, he made the ship much more elaborate. In drawing up the specifications and advising the prospective builders I had in mind a plain, wholesome ship of the type usually seen in Australian ports. Mr. Curchin's specifications produced a ship of higher class, and more resembling a steel vessel. Of course, his alterations caused a good deal of delay and unpleasantness with the Wallace Power Boat Company. I think that was one of the reasons why they asked to be relieved of their contract. No specifications were sent with the plans to London. It is usual to send Lloyd's a midship section and Lloyd's longitudinal section, showing the principal scantlings, but I chose to send three other plans, one showing the fastenings, another the details of the floors, and another the general profile, so that we might have a very clear understanding with Lloyd's as to what they wanted. On 19th April, 1918, Mr. Curchin acknowledged the receipt of plans 175, 194, 193, and 195S, and specification. At a later date we received a letter from Mr. Curchin saying that official plans had not been submitted. We replied that the plans submitted on 19th April were official. I have not seen any signed plans. One copy was handed to Mr. Curchin, and another to the Prime Minister's Department. I admit that it is usual, when entering a big contract, for the plans and specifications to be approved and accepted by all the parties. That was not done in this case, to my knowledge. Mr. Macnicol knows more as to who actually handled the plans. After he left for America, I took control of the shipping section of the office. I was in control on 6th July, 1918. I always understood that the plans and specifications had been approved, because I had never seen anything to the contrary. The contractor has not got approved and signed specifications; nothing was signed. On the receipt of the plans from London on 12th September, 1918, I noticed how much heavier the ship would be with the extra scantlings inserted by Lloyd's; that extra weight had altered the margin of dead weight for which I had provided. We, as architects, were held responsible by the contractors for the stability and dead weight of the ship. I had to design a hull to carry 2,600 tons. On receipt of the plans from London, we cabled to Lloyd's asking if we could lengthen the ship 6 feet, in order to make up the loss of dead weight due to the insertion of extra material. To that Lloyd's agreed. From that time onward we made detailed plans of everything, but we were hampered by the fact that the ship construction authorities were in Melbourne, and no body in Sydney had authority to sanction any plans. A deadlock occurred almost every month, and I was in Melbourne almost monthly in order to try to further the progress of the work. The Ship Construction Branch took a drastic view of the contract, and really attempted to make the contractors build a ship that neither they nor I had provided for. I am safe in saying that every plan—and the plans numbered fifty or sixty—was altered considerably, and had to be re-drawn. I pointed that out to Mr. Curchin on one occasion, but I think Mr. Mayoh then took exception to my communicating with the Department, and chose to do all the correspondence himself. The 25th February, 1919, was the last date on which I corresponded direct with the Ship Construction Department. It was most difficult to carry out the contract. We on the job could see little alterations that might result in speed and efficiency, but the Ship Construction Branch was always a stumbling block, because it insisted upon examining every plan. I certainly think that some of the alterations were very unfair, and were made without due consideration; some of them cost a considerable sum. It is usual in a ship of this type to have the plans prepared in, I should say, six months; whereas, I had a staff of eight draughtsmen closely engaged on the work for two and a half years, and still there are plans to be made. Yet those plans cannot be finished, because, even at this late hour, the final details of the ship are not fixed. I refer particularly to the accommodation and the position of the winches. The plans have been so altered during the contract that I do not know yet whether the Department will have two, three, or four winches in the *Burnside*, or whether they will revert to six winches. The original design provided for three winches. Then it was altered to four, later to six, with corresponding derricks and fittings, and now it is back to three again.

256. *To Mr. Parker Moloney.*—No alterations have been made since the sale of the ships, except those required by Burns, Philp, and Company.

257. *To the Chairman.*—On 4th August, 1919, thirteen months after the first agreement was signed, a new agreement was entered into; but no plans and specifications were approved and signed and handed to the contractors. They were working on the old contract and the signed specification drawn up by Mr. Curchin. Unfortunately, I do not think the original plan was ever signed, so that we have to refer to the specification drawn up by Mr. Curchin in November, and agreed to by Kidman and Mayoh and the Wallace Power Boat Company. I think that is the only specification upon which any claim for extras can be based. The specification was drawn up after the contract was signed, and I take it that would be the specification of the contract. From time to time plans were made from that specification. Mr. Curchin signed the plans submitted to him after first modifying them according to his reading of the specification. On signing the second agreement no new specification was signed and approved by the parties; we are still working under the November specification.

(Taken at Melbourne.)

THURSDAY, 25TH NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman.

Senator Foll,	Mr. Mackay,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.
Mr. Bamford,	

(Mr. H. C. Brown, representing the Prime Minister's Department; Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh.)

Arthur Carlile Barber, Naval Architect, further examined.

258. *To the Chairman.*—I produce the original plans that were submitted by us to Lloyd's, London. They were based on the usual practice in shipbuilding and the experience I had gained in Sydney. After the plans came back from Lloyd's the planking was considerably heavier; it had been increased from 4 inches to 5 inches and to 6 inches in some places. The extra thickness of that planking, owing to the comparatively short lengths procurable in that size of timber in Australia, made it more difficult to adequately fasten the planking to the frames. It would not bend so readily as thinner planking that might have been obtained in longer lengths; in addition, considerable extra weight was added. The 5-inch timber had to be free of sap and heart. That necessitated using blackbutt for the timber of the outside planking, for which I originally intended to use spotted gum. I was estimating 40-feet lengths in spotted gum;

the lengths we were able to obtain the blackbutt were from 25 feet to 35 feet. There were a few lengths of 40 feet, but not many. It was impossible to build large wooden ships with any degree of speed—and speed seemed to be the essence of the contract—on the ordinary system of framing with first and second futtocks. My design was a system of laminated frames, which had been used successfully in boats of smaller size. Lloyd's increased the size of those frames, and that made it more difficult to bend them to the required shape and to make them fit closely. The extra weight thus added to the ship helped to produce the hog. The material was very heavy in comparison with the soft wood in ships of American build. Our material is, roughly, four times as strong as oregon pine, and we have been asked by Lloyd's to use scantlings of practically the same size as those in the oregon pine ships. Therefore, the ship is much heavier than I had intended. Owing to the ends overhanging, the weights being supported by the centre of the boat, there was a greater tendency to hog. I asked for the deck beams to be spaced a little wider in order to avoid some of the weight, but that was refused. The tendency was for the ship to defeat its own ends on account of the extra weight added. Apart from the hatchways area in the decks, I think the outside planking and frames were the chief things which Lloyd's increased in size. Of course, in building a ship of this character, we had no previous experience of vessels of the same size. Although I have designed some of the largest wooden ships in Sydney, we had never jumped to such a size as 2,700 tons; 600 and 700 tons was the largest. This vessel was designed from available data and particulars which I could gather from other vessels. Of course, Lloyd's rules were used, but they were published about 1870, and have only been reprinted since, and they were scarcely applicable to present-day ships. The method of construction is different from that in American ships, inasmuch as there is no depth of keelsons. In most of the American ships built in 1917, when this design was first prepared, there were quite a number of keelsons running to a height of 11 feet and made of 24 x 24 timbers, but we found that the vessels which came out here had hogged in spite of this weight of timber. In America at that time it was considered that all these keelsons had no effect in preventing the hogging, and that the method of attack should be through the depth of floor, by making a wooden vessel to resemble the steel vessel in the depth of double bottom. The vessel derives longitudinal strength from the depth of floor transversely. We endeavoured to make these ships closely resemble steel ships, but we did not consider the question of hogging, because the extent of hogging was problematic in connexion with this new timber; it was guessed by various people as likely to be from nothing to 3 feet. Until about June, 1920, I did not consider that the hog was detrimental, although I was almost sure that after the vessel was launched the Commonwealth officials and Mr. Heron knew that she had a hog. The only detrimental effect of the hog is that when the vessel is being docked a diver has to go below to pack up the curve in the keel with blocks. A hog is dangerous only when there is some sign of excessive strain in the vessel. If we had a very rigid vessel, like a concrete ship, and it developed a hog we would say that it was not seaworthy if there were any signs of strain in the concrete; but wooden ships of this character are designed to be flexible. The laminated frames were supposed to resemble a spring and to give a certain amount of flexibility. We really did not know how much the ship would hog, but so long as the vessel was perfectly tight our object was attained. Most steel vessels hog during launching. There are some wooden vessels that are hogged to the extent of 3 feet and 4 feet. The old records show that the first ships which came to Australia were hogged to the extent of 3 feet to 4 feet, and they were not more than 150 feet long. The hog would not affect the seaworthiness of the vessel. Lloyd's did not alter the hatchways, but the Chief Executive Officer did. First of all we had three hatchways, but the total area of them was little more than the total area of the present hatchways. The amount of decking between the hatchways, however, was greater in the original plan than in the ships as built. The hatchways were increased from three to four, and an extra hatchway was added for the machinery. Another hatchway was proposed for the donkey boiler, but eventually it was decided to have just the four hatchways. Several of the American vessels which the Committee has seen have longitudinal girders running from end to end of the ship alongside the coamings of the hatchways. Similar girders would have strengthened the *Braeside,* and, in my opinion, that strength is necessary. It was not provided for in my first plan or in any amendment that has been suggested since. I most decidedly recommend that alterations of that kind should be made to the *Burnside* before she is launched. The *Braeside* has been launched and the hog has developed. Apparently to a great number of people a hog is something to be feared. It would be a shame to launch the *Burnside,* which may or may not hog to the same extent as the *Braeside,* without putting in some stiffening that would help to prevent that happening. On a careful examination of the *Braeside* I noticed a slight creep of the scarphs of the waterways in the top members, and I think that before the *Burnside* is launched some timber should be put in to prevent that creeping of the scarphs. By putting a longitudinal girder on the deck it would take the strain off the waterways.

259. *To Senator Foll.*—A longitudinal deck girder could be built in while the boat is in the water, but it would mean lifting the hatch girders. It would be an advantage in stiffening the vessel. I do not think that a lot of extra timber should be put in. The vessel is too heavy already, and any extra timber put in will tend to sink her further into the water and spoil her as a cargo-carrying ship. The girder along the deck is the line where the greatest strain takes place. These wooden ships are rather a disappointment in regard to our strength calculations. In steel vessels you can safely work on a strength of from 4 tons to 12 tons per square inch on the deck girders; in the *Braeside* there is about three-quarters of a ton to the square inch. To my mind the hog has resulted from the creeping of the material. The ship has been made up of many small pieces that are jointed together, and although they may creep only one-sixteenth of an inch, so that the movement is hardly perceptible, still it has been sufficient to allow the ship to droop down at each end. No straining or fracture of material can be seen on the *Braeside,* so that it cannot be said that the ship has broken her back in any way. The *Braeside* is a vessel that would be more inclined to hog than would the old-fashioned ship, because she is so box-like in form amidships. In order to fix the scantlings of a ship, you take the basis of strength. The basis of strength for the *Braeside*—less than 1 ton per square inch on the section—seemed to me to be remarkably low. Ample provision was made for longitudinal strength with the top deck clamps, which, in the upper deck, were 8 inches thick. The designing of a ship is similar to the designing of a bridge. You take the moment of inertia at the greatest distance from the neutral axis. In fixing the axis I took the greatest bending moment of a ship supposed to be on a wave, the height of which was one-twentieth the length of the vessel. I found the strain that would come on the waterways and the

keel, and it was then just a question of putting in sufficient material to cover that strain. Hardwood may be taken as bearing from 4 tons to 6 tons per square inch. If there was sufficient area in the material to break down that strain to less than 1 ton, it was quite reasonable to expect that the structure would be strong enough. The depth of floor was also taken into consideration as influencing the strength of the vessel. For a ship to hog the bottom must come up. By bridging the floor and making it similar to that in a steel vessel we took some precaution against the keel coming up. In dock we found that this line was only half an inch within the actual designed line, so that there was no distortion at the bilge. The hogging was due to the creeping of the joints in the waterways and clamps, the principal strength members. I did not consider the outside planking as influencing the longitudinal strength. Neither was the deck considered. After the ship was launched the butts in the upper deck planking were found to be open, and Mr. Heron, Mr. Brown, and the representative of Burns, Philp, and Company saw the deck butts opened before instructions were given that they should be recaulked. That was a clear indication that some movement in the ship had taken place. The American principle of construction is to stiffen the ship longitudinally with extra keelsons, similar to those in the *Levi W. Ostrander*. At the time I made the original plans I went on board numerous American schooners. Some of them had big steel girders, and others had deep keelsons similar to those in the *Carmen*. The American vessels which came to Australia up to 1917 had deep centre keelsons. The main keelsons were generally 24 x 24; there were two sister keelsons and two side keelsons of about the same dimensions, and two or three rider keelsons on top and then further keelsons 12 x 12 and 12 x 8 extending up to the 'tween decks. Yet all those vessels had a hog of from a few inches to a foot. The average length of the vessels was a little less than that of the *Burnside*. I refer particularly to the *Billings* and *A. K. Hall*. About 1917 there was a great controversy in America regarding the design of wooden ships. The leading naval architects came to the conclusion that some radical change would have to take place. They were building the ships on the same plan as that used thirty or forty years ago, but the dimensions had grown, and in the desire to gain greater deadweight the bilge had flattened. The older ships were more round, resembling a tube or top, but the price of modern ships is based on the estimated dead-weight tonnage, and contractors have sought to make a ship closely resembling a box in order to get greater deadweight. By making the bottom section squarer and the bilge harder, as has been done with the *Braeside*, we get more buoyancy, and, consequently, a greater strain on the vessel when she is lying in still water. The weight per foot on the square section is roughly the same right through the length of the vessel, but the buoyancy per foot is as much as forty times more in the middle section than near the ends. That means that when the ship is lying in a position of rest in smooth water there is a tendency to hog through the ends drooping on account of the unsupported weight of the heavy counter forecastle and stem. The strain in rough water is about four times as great as in smooth water. The *Levi W. Ostrander* had more keelsons than had the *Carmen*, and they extended almost up to the lower deck. They were in the form of what is known as a "hog keelson." Where you would expect the greatest hog in a ship they give the greatest depth of girder. Yet the *Levi W. Ostrander* was hogged 20 inches, and her captain told me that the hog was noticed immediately after launching. Nevertheless, the ship had Lloyd's certificate and a pass-out from Sydney after an examination by Lloyd's surveyor. When the Naval Architects found that all the additional keelsons did not prevent hogging, they looked for some other means of prevention. Ballin, the celebrated naval architect in America, ridiculed the idea of putting in all the extra keelsons, and suggested that the hog should be attacked through the depth of floor and diagonal outside planking. From an engineer's point of view the centre keelsons are not much good. The procedure in designing the scantlings for vessels is similar to that adopted by engineers in the designing of bridges—you find the greatest bending moment. The vessel is assumed to be poised on a wave; the length from trough to trough is the same length as the vessel, and the height of the wave from trough to crest is one-twentieth of the length. Firstly, a weight curve is prepared representing the whole weight of the vessel. The centre of area of the curve is in exactly the same position as the centre of gravity of the vessel. The area contained within the curve will, when multiplied by the scale to which it has been drawn, give a figure corresponding to the weight of the vessel. Over this weight curve is drawn a buoyancy curve representing the amount of displacement of the vessel when poised on the wave. The difference of the areas of these two curves is then plotted, and this curve represents the loads on the vessel. This load curve is integrated, *i.e.*, the areas are calculated and the curve is plotted from the results. This curve gives the shearing forces on the vessel; the shearing force is then integrated and a curve plotted which gives the bending moment. Having found the greatest bending moment on the vessel, the scantlings are then fixed. A neutral axis is assumed about midway between the keel and deck, and at the remotest parts from this axis the scantlings are then built up. Starting from the keel we work alternately at the top and bottom members until sufficient area of material is added to the construction to bring the stress which will come upon it to a chosen limit. For instance, if from the tests we know the material will stand a certain strain, say, 6 tons per square inch, sufficient material will be added to the design to reduce this stress to about 1 ton per square inch. Of course, due regard must be paid to other strains which are not so great, as occur in different directions, and also to the practicability of construction. Having fixed the scantlings by this method, when the design is completed, the whole calculations are re-drawn and checked and amendments made if necessary. The strain which was calculated in the case of these ships was .026 ton to the square inch in smooth water, and 4 tons on a standard wave. I have submitted my figures to a number of men who understand ship constructions, and they say that they represent a sufficiency of strength. A strain of 4 tons per square inch in steel vessels is not excessive. In large Atlantic liners it is up to 12 and 14 tons per square inch. I discussed these problems with Mr. Curchin in 1918. I showed him in my office in Sydney my figures of the strength I had arrived at, and he asked me some questions. Apparently he understood what I was talking about, and he expressed satisfaction that the strain on the keelsons and on the waterways was within a reasonable limit. I first came into touch with Mr. Hewison when I came to Melbourne at about the time of the signing of the contract. Copies of my strength curves and diagrams were not sent to the Melbourne office; they have never been asked for. I have discussed them with Lloyd's surveyor, but I have never sent any particulars of the strength calculations to the Department. Lloyd's surveyor did not go through the figures with me. I showed my books and papers to Mr. Heron, and he seemed quite satisfied as to the strength of the ship. As the plans and specifications were sent to Lloyd's, London, and to the Department, it is fair to assume

that they also went into these calculations. In order to fix the dimensions of the vessel you must go into the strength calculations; otherwise the dimensions would be mere guesswork. Lloyd's increased the scantlings, principally the frames and planking. I have made a study of ship-building, and the design of this vessel, and I thought that when we started constructions I would have been appointed architect under the contract. I discussed this matter with Mr. Curchin, who promised to recognise me as the architect, but he never fulfilled his promise. The furthest he got was to mention the architect's fees in the agreement. I had asked him on several occasions to make our fees payable by the Construction Department. That would have given me the position of architect. He did not do that. I was thus thrown back on the builders, and instead of acting as architect I have from the signing of the contract occupied the position of builder's draftsman. I have been making plans, firstly, to the approval of Mr. Mayoh; then they were sent to Mr. Curchin for further approval. Thus my position became more or less obscure. I had no authority and scarcely any voice in the construction, except to offer suggestions, which might or might not be accepted. I have done no supervision of either of these vessels beyond going on board to explain something that was not understood. But I have kept myself well posted in the construction. At Mr. Mayoh's request I shifted my office and staff to his shipyard, and I was there most of the time, but I had no authority in the yard other than what I obtained through Mr. Mayoh. Subject to the alterations made by Lloyd's, the plans on which the ships were built were those which had been designed by me but altered from time to time by Mr. Curchin.

260. *To Senator Foll.*—I have not had previous experience of hogging in vessels to any great extent. One does not usually take much notice of hogging. Steel vessels hog, and the larger the vessel the more the tendency to hog. All the super-structure of big passenger boats is divided right down to the main deck, and when the ship is at sea these two parts, which are separated by a space of 8 inches or so, with an expansion joint on top, work independently. If the super-structure were all in one piece it would break in two the minute it went to sea. To obviate that the vessel is practically cut in half. A hog would be more dangerous in a steel vessel than in a wooden vessel because the latter is more flexible. If there were a hog to a great extent in a steel ship she would shear the rivets. That has taken place on numerous occasions, due to hogging and sagging in a seaway. A hog of 24 inches at the launching is a little more than is usual, but I do not say that if the *Braeside* has hogged 24 inches that is detrimental to the ship, having regard to her structure. I have heard of the charges made by Burns, Philp, and Company that thousands of dummy bolts have been put into the ship, but I cannot say whether or not there are any dummy bolts. I have not looked for them. On one occasion after a report had been made by Captain Maxwell I did examine the ship, and found one dummy bolt to which he had called attention. My interpretation of a dummy bolt is one which does not connect two members of the structure, as it should; it passes through one member but does not penetrate the other. I saw the fastening in question on the starboard side in the *Braeside*. It was a dummy fastening, and I clearly saw the reason why it had been put there, although I did not think that its insertion was justified. A fastening driven from the outside had missed the hole in the knee. It had stopped there and from the inside a short bolt of about 4 inches had been driven, but it did not pass through the clamp. I examined the other beam-knees in the upper deck and I could not find a similar case. That is the only dummy bolt of which I have knowledge.

261. *To Senator Plain.*—I detected the fictitious bolt by taking a strip of thin steel with me and passing it up between the knees and the clamp. I could feel the edges of the fastenings. Then I struck each fastening, and by the ring one could tell whether it was a through fastening or a dump. I examined all the knees with the thin piece of steel and could feel the other fastenings extending through. Some of them may have been fastened to the deck beams and they would not show on the deck because they would be covered by the deck planking. That is the only investigation of dummy bolts I have made.

262. *To Senator Foll.*—My examination was as exhaustive as time would permit during the afternoon after I heard the report that dummy fastenings had been put through the knees. I looked at all the knees on that deck, but that was the only portion of the ship that I examined. In a great number of cases I was able to work the thin steel behind the knees at one side or the other and so make sure that the fastening was through. It would be more costly for the contractors to deliberately make dumps of the kind I have described than to insert genuine bolts. I believe that a compensation bolt was put in alongside the dummy. I found if dummy bolts were being put in the ship I would not have had an opportunity of seeing what was taking place. I was chiefly engaged either in the city office with Mr. Mayoh or in the drawing office, and I did not go down to the ship on any occasion with the object of inspecting the fastenings. If there were hundreds of dummy fastenings, as Burns, Philp, and Company allege, they would have an immediate effect on the boat when she was launched. The planks would not be fastened to the frames, and there would be indications of them bulging away as soon as the ship was put in the water. In other parts you would notice the planking or ceiling tending to pull away from the member with which it was supposed to be connected. In regard to the declaration made by one man that he found a loose bolt in a knee and by striking it with a hammer was able to knock the bolt and the knee back into place, I do not think that was possible. If such a thing did happen, it might indicate that the knee had shrunk away from the beam; I have known a knee to do that. These beams were cut from natural crooks, and the tendency when they shrink is for the wainwood to bend and the angle to become more acute. But it would not be possible for an individual to knock the bolt and the knee back to place with a hand hammer, because in order to knock in one end of the knee he would have to knock out the other end, and I do not think it is possible for a hand hammer to draw the fastenings in the lower end of the knee. The alterations made by the Department to my original plans were responsible for weakening the vessel and causing the hogging only in so far as the extra weights put on the ship tended to hog her. The Department's alterations involved a bad distribution of the hatches. Although the area provided for by the Department was less than the total area of hatches that I had in my original plan, the amount of intact decking between the hatches was greater in the original than in the amended plan. We know that the lines of strain on the deck follow round the hatches. If you have a greater amount of space in between the hatches you have a greater area to absorb the strain. If you reduce the area the strain becomes more abrupt and sharper between the hatches. It is the distribution of the hatches to which I take exception. I never made a recommendation to the contractors or the Department regarding the placing of girders along the top of the deck from one end of the ship to

the other. From the start of this contract there has been more or less war between the contractor and the Commonwealth Officer. Mr. Curchin said in the early stages of the contract that he would not allow any extras. Mr. Mayoh could not be asked to put that extra girder in without payment, and although right through the contract I could see little things that would improve the ship, I could not recommend them, because, as Mr. Curchin had said, that no extras would be allowed, it would become the contractor's duty to supply these improvements without reimbursement. I knew that the responsibility of getting a first-class certificate was on the contractors. I did not anticipate so much hogging, but when the vessel did hog after the launching I did not anticipate any difficulty with Lloyd's, because Mr. Heron had never expressed any opinion to me that indicated that he was not satisfied. He was at the yards on numerous occasions, and he saw the ship for months after she was launched. I discussed the hog and the sail areas with him. I made numerous plans for Burns, Philp, and Company and went to Mr. Heron about the extra hatches, begging him not to allow them to be put in. My duty was to supply plans to Mr. Mayoh, and he had to submit them to Mr. Heron; then they were submitted to Mr. Curchin for his approval. When I submitted a plan to Mr. Heron he would ask me what Mr. Curchin thought about it. He seemed to adopt the attitude of agreeing to anything that was acceptable to Mr. Curchin. He would not approve of any plan until it had been approved by Mr. Curchin. I had foreseen this trouble earlier, and I begged of Mr. Curchin not to build the ship to Lloyd's rules, because we had never done that in Australia before. So long as the dimensions of everything were made heavy Mr. Heron was quite satisfied. I had designed all the ironwork for a square-rigged ship. I went over the spars of the *Forest Pride* with Captain Maxwell and took all the dimensions. In my plans I almost doubled those dimensions, but when I took them to Mr. Heron for his approval he told me to put on another half inch here and there. I had, therefore, to increase the sizes again. The trouble throughout has been that he did not know much about the matter. I have examined the caulking on the *Braeside* since she was launched. On the port side under the forecastlehead a little caulking has been pressed out by the settling down of the ship. All along the sides the chunam is protruding a little. It is made of sea-shells ground and mixed with fish-oil, and when damp it swells. That gives the impression that the caulking has been pressed out, but it is no indication of strain. Originally the *Braeside* was to be rigged as a four-masted barquentine. Then it was changed to a five-masted bald-headed schooner. Later it was changed to a five-masted schooner with top masts, and now it is back to a five-masted barquentine. All the alterations were responsible for delay. The original estimate provided for standard blocks such as are usually found on vessels coming into Australian ports. In making up the first specification, I had in mind an American schooner of about the same dimensions as the *Braeside*. Standard blocks are usually supplied in sizes represented by the length of the blocks. A seaman knows the size of rope he desires immediately he knows the size of his block. In the American schooners a 14-inch block is used for a 3½-inch rope, and a 10-inch block for a 2¾-inch rope. The specifications provided that the blocks should be to the approval of the Chief Executive Officer. Mr. Curchin would not allow the contractors to order the standard blocks made by Inglis Smith and Company, but requested that the blocks should be to his own special standard. I saw Mr. Smith and asked him what Mr. Curchin's standard was, and he replied that he did not know. Mr. Mayoh then wrote to Mr. Curchin and asked for a standard. Some time later Mr. Curchin sent us some particulars of blocks, and from them I drew up plans for blocks considerably larger than the standard article. I had become so used to increasing the size of everything that I designed them bigger in the mortice, bigger in the sheave, and bigger in every way. I submitted them to Mr. Curchin, who altered them considerably and sent them back. From those amended plans the contractors made the blocks. I obtained from Pall and Gray a standard block and a piece of rope to fit it, and I took it to Mr. Shepherd's office, where I saw Mr. Mayoh and Mr. Curchin, and explained to them the ridiculousness of his requirements, but he still insisted upon having the blocks made to his standard. The plan [*produced*] shows the blocks and ropes in actual size. I am told that at sea the halyards become thinner owing to the wear, and only the bare ends which lies on the deck and never passes through the block swells. The wide sheave would have been ruinous to the rope, which would flatten out and become oval. I suppose for two or three months we were fighting over the block question, until Mr. Inglis Smith, with whom Mr. Mayoh was trying to place an order, had become so exasperated that he said he did not want the contract. Mr. Curchin further insisted upon all the blocks being tested. That is not the usual practice. It is an Admiralty practice, but is not followed in the Merchant Service. It may be done in connexion with steel vessels, but if the owner of a sailing vessel desires to renew a block he goes to a ship chandler and selects a standard block of which there are numerous makes. The clearance in the score of the standard block was not big enough for Mr. Curchin, and he altered the dimensions, increasing the space from the top of the sheave to the top of the block. A 14-inch block carries a 3½-inch rope; the thickest halyard is 3½ inches. To increase the size of the rope would be ridiculous, because the weight of the rope lying on deck would be very nearly equal to the weight of the sail, and that would prevent the sail from running down freely. There was never any mention of having a rope more than 3½ inches in circumference for the halyards. I think Mr. Curchin's attitude in regard to the blocks was due more or less to cussedness. Nothing was to be gained by having a wider space between the top of the sheave and the block. In order to make the blocks I got one of each size from a ship chandler. We took them to pieces and increased the dimensions of every part, thus giving a much stronger block than can be purchased. The eye was big enough to receive any shackle or pin. But for standardization I arranged for the centre-piece to be made one, and the beckett would be in the centre. That simplified the construction. But Mr. Curchin altered that design into short and long lugs, which made the ironwork more costly. We re-drew the plans as required by Mr. Curchin. If the ship wanted to re-place any of the blocks in a foreign port it would have to buy ordinary standard blocks. Mr. Mayoh is the only person who has patterns of these blocks, and probably they have been broken up. Burns, Philp, and Company would not have those blocks anywhere near the foremast. Their representatives rediculed the idea of these big heavy blocks, and Captain Maxwell, with Mr. Mayoh, visited the ship chandler's stores to select standard blocks, which are considerably lighter than those we were compelled to make. The four back masts of the *Braeside* that are rigged with gaff sails have Curchin blocks, but the foremast, which carries yards, has only standard blocks, which are decidedly better because they have a narrower sheave, but with a bigger diameter, to hold the rope in place. In order to get this bigger space in the mortice we had to have smaller

sheaves, which have a greater tendency to nip the rope. I cannot say what extra expense has been entailed by these blocks, but the delay has been considerable. On several occasions I have come to Melbourne to discuss the matter, and, judging by the appearance of the blocks, I should judge that they cost practically 50 per cent. more than the standard blocks. You ask me why the Chief Executive Officer ordered these special blocks. To be truthful, the fact is that there is a testing machine in Melbourne, for which work was promised by Mr. Curchin, and it was with the object of having the blocks made here and tested that he put Kidman and Mayoh to all this trouble.

263. *To the Chairman.*—Mr. Curchin wished all the blocks to be tested by some machine at, I think, Ruwolt's works in Richmond. A specific amount was set down for testing the blocks, but Mr. Mayoh could not see why he should have to pay this extra amount for testing. Mr. Curchin, in my presence, told Mr. Mayoh that he wished the blocks tested. Mr. Mayoh asked me if that was usual. I said that it was not, and that the blocks were usually bought from a ship chandler's store. I told Mr. Curchin that Inglis Smith and Company had blocks that were usually supplied to ships of this type. Mr. Curchin said that those blocks were used only for farming purposes, and he would not entertain the idea of standard blocks being used on the ships. After a lot of delay he sent us a specification of his requirements, and from that and the sample blocks I made my original plans, which were subsequently altered by Mr. Curchin in respect of every block. He altered the size of the pins, the plates, the lugs, and the depths of mortice.

264. *To Senator Foll.*—If I were the owner of the ship I would certainly use standard blocks, because there would be less wear on the rope and because the sheave is bigger in diameter and fits the ropes better. In addition to the extra cost of the heavier blocks, the cost of upkeep would be increased on account of the wear and tear of the ropes. Mr. Curchin's requirements increased the cost of the blocks by, roughly, 50 per cent. Detailed plans of every part of a block had to be made, and then the parts had to be manufactured by various engineering firms. All the blocks are brass ball-bearing. Some of the standard blocks also are ball-bearing. I took it upon myself to suggest which blocks should have ball-bearings. I specified those that would be required to run freely when a squall struck the ship, so that the halyards could be released and the sails would come down of their own weight. Some of the minor blocks had ordinary sheaves, but with brass bushes. The chain-plates are far greater in size than those usually employed in ships of this class. The chain-plates are larger, but the size of them was fixed by Mr. Heron. The ironwork for the derricks was considerably heavier; it was fixed by Mr. Curchin. Originally we did not plan to fit derricks to these ships. The ships that were coming into port at the time had a gaff on the mast and a winch below, and with that apparatus they could unload timber very quickly. Before Mr. Mayoh signed the contract there was no provision for derricks, but Mr. Curchin asked that they should be supplied. The winches were increased from three to four and then to six. Later two of the winches were ordered to be sent to Williamstown, and when Burns, Philp, and Company purchased the ships they ordered that one of the remaining winches should be sent to their store. Two of the derricks were then cut out, leaving only four. The ironwork for the derricks is considerably heavier than is usual. There was a great deal of discussion over the derricks themselves. Mr. Curchin required them to be about 17 inches in diameter, and we reduced them to 16 inches. They are of oregon pine. The average size of derricks on sailing ships is 12 inches. On oversea liners the derricks are 12 inches and 14 inches, while a 5-ton derrick will run up to 16 inches. I went all over the ships in harbor at the time we were discussing this matter and could not find one 16-inch derrick. I found that the 5-ton derricks were about 12 inches in diameter. The weight to be lifted by a derrick on these sailing ships is considerably less than the weight lifted by the derricks on an ordinary oversea liner. The derricks have to be about 50 feet long, otherwise, owing to the abrupt angle, the topping lift would tend to pull the band over the end. On a 50-feet derrick the strain is almost vertical, so there is not the bending moment that is found on a derrick with a flatter angle. The derricks on the *Braeside* would have ample strength if they had a diameter of only 12 inches, because of their extra length, which would make the strain more vertical. The construction department, however, insisted upon the diameter being 16 inches. I estimate roughly that about 200 tons has been added to the ships on account of Lloyd's requirements. I do not know the total weight added by the departmental alterations, but the weights of everything have been increased. The windlass is of a big pattern. The winch, instead of being 6 x 10 of English type, was increased to 7 x 10 and then to 7 x 12 of a very massive type, similar to those put into the Commonwealth steel vessels. I cannot see how a winch heavier than the standard can be any advantage to the boat. The extra weight affects the carrying capacity. When an owner orders a ship he wishes it to be as light as possible, because the lighter it is the greater the dead-weight of cargo he can carry. It is the object of designers to make a ship as light as they can consistently with preserving the requisite strength. Lloyd's, on the other hand, make a limit for lightness. Suppose a ship-owner requires a vessel. Lloyd's scantlings will give a certain dead-weight. If the owner wants a little more dead-weight, he can get a classification from the British corporation or some other society which is more lenient than Lloyd's. Every extra ton of weight put into the structure of a ship means a ton less of dead-weight capacity. The contractors are paid so much per ton of dead-weight. That means that if the ship can carry 2,600 tons of cargo when she is floating with the water at the Plimsoll mark, the owners pay £26 per ton. Any extra weight added to the boat means a loss to the contractor. Suppose that a standard winch weighs 1 ton and the winch ordered by the Department weighs 2 tons. Apart from the contractor paying for an extra ton of weight to the manufacturer of the winch, which is generally bought at so much per ton, he loses £26 by adding that ton to the ship, and thus reducing its dead-weight capacity. I made plans of the fair leads from a standard ship, but the Department increased them in both size and weight. It also asked for Panama fair leads. At the request of Burns, Philp, and Company, these leads were not put in the ship because Captain Maxwell pointed out that the tow ropes would not be put through them if they could be put through the mooring pipes on the bulwarks. The bollards, too, were changed. We submitted a design as copied from sailing vessels, but it was rejected by the Department, and a heavier type of bollard, which cost a good deal more money, was put in. The steering wheel was of standard type, but nearly everything that could be altered was altered. Most seafaring men with whom I have come into touch have recommended against putting a wheel house on the ship. But it was included in the specifications which Mr. Curchin drew up. Burns, Philp, and Company, however, asked that a wheel house should not be put on the *Burnside,* but that the wheel should be cased in with grating and seats on each side. The chief objection to a house is that the man at the wheel cannot see the sails through the windows. It is absolutely necessary

for the steersman to be able to see the sails, otherwise a back puff of wind may dismast the ship. Burns, Philp, and Company asked for scuttles to be built in the top of the wheel house in order that the steersman might get a view of the upper topgallant sails. There is nothing in the Commonwealth Navigation Act which compels owners to put a wheel house on a sailing vessel. Some protection at the back of the wheel is desirable, so that if the vessel is running before a heavy sea the steersman may be protected against water that comes over the poop. The steersman, however, should have an unobstructed view of all the sails. Having regard to the position and arrangement of the wheel house on the *Braeside*, the vessel might have got into serious trouble through the man at the wheel not being able to see the sails. I know we protested verbally against the building of a wheel house, but I cannot say that we protested in writing.

265. *To Mr. Mathews.*—I have every standard work on shipbuilding that I have been able to get, as well as every technical magazine, and I can show the Committee from some of the magazines the various American methods of strengthening wooden vessels with girders. The *E. Cola,* which the Committee inspected in Sydney Harbor, was one of the vessels of that type. These vessels were originally designed by Ferris as steamers, but after the armistice a number of them were sold and converted to sailing vessels. All the plans do not show strengthening beams of wood or iron right along the top deck; a number of the girders only go as far as the bulkhead. When a ship is floating and at rest, all the top members are in tension. They are like the strings of a bow. The girders running along the deck resemble the cords suspending the two ends in position. They provide a good deal of the strength that is required to keep a vessel from hogging. If I were designing afresh a wooden ship of the length of the *Braeside,* after the experience I have gained with that ship, I would certainly strengthen her with girders on the upper deck. The hogging of the vessel must strain the upper deck longitudinally. If the ship were strengthened on the upper deck the dead-weight capacity would be decreased; *i.e.,* if 50 tons of timber were needed for that strengthening, the ship would have 50 tons less dead-weight capacity. I would recommend that a top girder be put in, that the fastenings of all joints be specially locked up, and that plugs or dowels be used in the scarphs other than lock scarphs, and that extra fastenings be put in those scarphs. I do not recommend the addition of a lot of timber. My calculations show that the strain on the ship is less than a ton per square inch; that proves that we have enough timber in the ship. The hogging is due to the general settling down of the timber. The material is strong enough, but the joints are open to criticism. I would recommend that the joints of all scarphs in the longitudinal members should be carefully locked up and fastened, and dowelled, wedged, or plugged, in order to minimize creeping as much as possible. I would also place longitudinal girders on the deck from the stem to the transom, with a breast hook at each end. The longitudinal girder is much used in the construction of torpedo boats, which are subject to big deflection and great strains. It is very effective in preventing a vessel from panting. With this longitudinal strengthening fore and aft, it would not matter how many hatches were in the ship, because the longitudinal strain would be absorbed by the deck girders. It is not correct to say that in the present design one hatch would weaken the ship as much as ten hatches. If we had one small hatchway in the centre of the vessel the lines of strain would not start wide open and pass on each side of the hatchway. They would flow all over the deck and around the hatchway. With longitudinal girders we need not bother about compensation for the hatchways; we could have five or six without weakening the ship. I drew plans for Mr. Hughes, of Hughes, Martin, and Washington. He proposed a vessel of about the size of the *Braeside,* but full-powered, and with the oil engines aft. He submitted that proposal to the Prime Minister. I made another plan of a composite vessel, a larger steamer with steel frames and wooden planking on behalf of a syndicate in which Sir Owen Cox was interested. All the barquentines were designed for Kay, Macnicol, and Company. Then William Holmes, boatbuilder, and the Wallace Power Boat Company wished to build them. After the Wallace Power Boat Company obtained a contract, Mr. Mayoh secured an order for six vessels. I occupied the same position in relation to the Wallace Power Boat Company as I did in relation to Kidman and Mayoh. So far as Hughes, Martin, and Washington were concerned, I could not agree on the sections to which Mr. Hughes wished to build the ships, so I ceased to act as his adviser. He wished to build his ships with a square section on the bottom and a hard bilge. That is known as the Howe type. At about that time I received word from Mr. Macnichol, who was in America, that the Howe type was not proving successful. I communicated that to Mr. Hughes, but he insisted upon going on with his proposal, and I told him to carry it out for himself. I then devoted all my attention to the Wallace Power Boat Company. At that time we had a proposal for large composite vessels which Mr. Curchin turned down, because they would be too great a drain on the steel available for his steel ships. The ships to be built by the Wallace Power Boat Company were exactly the same as those being built by Kidman and Mayoh. I thought that a ship built with a square section as suggested by Mr. Hughes would certainly hog, and that is why I refused to have anything to do with it. It is impossible to get timber long enough for the keel without splicing. The splicing was carried out in strict conformity with Lloyd's rules, and similar to the splicing of all keels on British vessels. The keels of these two vessels are different from those of American ships. In the latter the keel is just tapered off, and if there is any movement in the centre line bolts through the keel the frame and the floor come away from the keel. In turn, the garboard strake moves. American ships have had a lot of trouble with leaking in the garboard strakes, and I reverted back to the old British style of rabbiting the keel and fitting the garboard strake into it, so that there can be no chance of it moving. The keels of the *Burnside* and *Braeside* are in lengths of 70 feet. The longest length of Australian timber in any keel of which I have knowledge was one of 89 feet in a boat I designed for the Hunter Boat Company. In America the timber is obtainable in much longer lengths. I daresay they can get keels in lengths of up to 130 feet and 140 feet. A properly spliced piece of timber would resist sagging as well as one continuous piece. The efficiency of the scarph is made as nearly as possible the same as that of the timber itself. It cannot be made quite as strong because holes have been bored for the bolts. To the extent of those holes the scarph must be weaker than the solid timber. You take the loss of strength at 20 per cent. and put in sufficient bolts to bring the remaining 80 per cent. up to the strength of intact timber. I do not attach much value to the heavy keels, keelsons, and upper keelsons. The experience of the *Levi W. Ostrander* proves that these do not prevent hogging. In that ship the strengthening of the keelsons would bring the neutral axis down lower and put a much greater strain on the top members. It is useless to put a lot of material in the bottom if you do not put compensating material on top. If 500 or 600 tons of ballast had

been put into the *Braeside* before she was launched, it is quite likely that the hogging would not have taken place. But the possibility of hogging was not regarded as serious by me or the people with whom I was associated. It was only later, when I came to Melbourne to investigate the question of dead-weight with Mr. Hewison, that any serious complaint of the hog was made. Mr. Mayoh wanted the approximate dead-weight to be ascertained, and I had brought all my figures in regard to displacement to Melbourne. Mr. Curchin asked me as to the extent of curve in the keel. I went back to Sydney and prepared two different displacement curves, showing the displacement with a straight keel and the displacement with the hog. It was not until I brought this back that any serious comment was made about the hogging of the ship. The use of extra keelsons to prevent the *Levi W. Ostrander* from hogging reduced her dead weight capacity. That system gives a less efficient ship. The cargo capacity in cubic feet is less, and the extra weight of material diminishes the dead weight tonnage. I do not think that additional keelsons in the hold would be effective in reducing the hog in the *Braeside*. All the keelsons in the *Levi W. Ostrander* were built in before she was launched, and no additional strength was put in the ship after the launching. I was told by the captain that these extra timbers had been put in in an endeavour to prevent the ship hogging. I do not think that those extra keelsons influenced Lloyd's to grant a first class certificate. In my design, strength was never sacrificed in any way in order to produce a ship with greater dead weight. That was never even considered. Ballin, who has pronounced against these heavy keels and keelsons, resorts to diagonal planking. The object of diagonal planking in conjunction with depth of floor is to prevent hogging. In the *Carmen* the depth of floor is 25 inches or 26 inches, but in the Ballin type of ship it is about 36 feet. Ballin increased the depth of floor in order to overcome the tendency to hog. The first line of planking is double diagonal. Then the outside planking is put on top horizontally. The problem of hogging has received a great deal of attention in America during the last three or four years. Because of the great demand for shipping, America started building auxiliary schooners similar to the *Braeside* as originally designed. Prior to that, there were a few large vessels of 3,000 tons, but they were not successful. The architects then commenced to confine their attention to the smaller schooners, but with the demand for tonnage during the war, they commenced to build ships of about 2,000 tons. They had a harder bilge and were more subject to hogging than were the older ships, which were more yacht-like and had a steep rise of floor. They found that after launching these vessels developed a hog, and they set themselves to devise a solution of that trouble. Some architects put a steel girder right through the centre of the ship. Others tried a steel girder on deck. Some designers resorted to deep keelsons like those in the *Levi W. Ostrander;* but nearly all of them, except ships of the Ballin type, continued to show a tendency to hog. In the Ballin ships there was a steel plate on the waterway and along the bulwarks. He realized the strain on the waterways and substituted steel plates for wood, because they permit of a more effective joint. It is difficult to make an exact comparison between the *Braeside* and the American ships. The latter have a ceiling 12 inches thick. Their clamps, ceiling, and hold ceiling are very heavy. They make the inside of the vessel the strength member, and the outside planking is merely to keep the water out. It is very difficult to state exactly why the *Braeside* hogged, but from what I have seen I am of opinion that it is due to the creeping of the joints of the material. You cannot get a perfect joint without having either stops or chocks to keep the scarphs from creeping. A very small amount of creeping has allowed the ship to straighten out. It does not need a great deal of expansion of the top members to allow the ship to droop at the ends. The ship is built to a shear, and all the planks are put in with pressure; therefore there is a tendency for everything to spring up. Before the *Braeside* was launched she tended to hog about 2 inches. When all the shores were taken from her, and she was allowed to rest on the cradle, there was a difference of 2 inches in the observation of the sights as compared with the observations taken a fortnight earlier, when all the shores and braces were in position. To that extent the ship had straightened out on the cradle. I think that if some ballast had been put in amidships it would have prevented the hog, but it would have made the ship heavier and the launching more risky. The *Braeside* weight on the cradle was almost 1,700 tons. I believe the launching weight of the cruiser *Adelaide* was only 1,500 tons. That shows how heavy the *Braeside* was in comparison with a steel vessel, and the placing of additional weight amidships would have made the launching very risky. In explanation of the fact that neither the builders, the architects, Mr. Curchin, nor Lloyd's representative suggested the strengthening of the ship on the upper deck. I remind the Committee this was a new ship, and nobody knew how the timber would stand the strain of being put in the water. A hog in a new ship would not give it any greater buoyancy and make its dead weight capacity any greater. In estimating the dead weight, you deduct from the whole weight of the ship with cargo and everything complete the light weight of the ship. By hogging the ship you do not increase its dead weight; its internal capacity is just the same as if it had a straight keel. Shipbuilders can ascertain the dead weight almost within a few tons at any time after the ship is launched. It is quite a common thing in connexion with the construction of war-ships to take the draught of a vessel and the density of the water every week in order to find out exactly the amount of displacement. The displacement gives the weight of the vessel. Then you take into account the weights of all the material to go on board, and all the material to be taken off. Thus at any time you can get the approximate dead weight of the ship. The varying density of the water is always taken into consideration. If the ship is floating in fresh water, the displacement is greater than in salt water. In the latter case you use a divisor of 35 cubic feet to the ton in order to reduce the cubic feet volume to tons. If the ship is floating in fresh water, the divisor would be about 36. If the density of the water is not known, it can be ascertained by the use of a salinometer. In regard to the wheelhouse, naturally the man at the wheel would like to be protected from the weather, and it is a good idea to give him some protection; but it is not a good idea to surround him with a house that blocks his view. I am not aware that the Navigation Act recently passed by Parliament requires that extra provision shall be made for the protection of the man at the wheel; I have not seen the new Act. If the *Braeside* were loaded scientifically, the hog might be borne down to a small degree. I do not think all the hog would come out unless the ship were deliberately loaded heavily in the centre and left empty fore and aft. Both wooden and steel vessels can be made to hog by careless loading. Even if a vessel is built seaworthy and stable, she may be made to either sag or hog by defective loading.

266. *To Senator Newland.*—I had no right to protest against the various alterations made to the plans from time to time. I was in the position of draughtsman to Mr. Mayoh, and dealt directly with him. Mr. Mayoh made a protest against letting the donkey boiler

down into the 'tween decks. From time to time we wrote letters protesting against different alterations. Nevertheless, the majority of them were insisted upon, and attention was drawn to clauses in the specifications giving Mr. Curchin the right to modify the plans. To those clauses he rigidly held the contractors. Those alterations added weight to the ship and that has tended to cause her to hog. One of the causes of hogging was Lloyd's increasing of the scantlings, and another was the different method of fixing the side ceiling which Lloyd's prescribed. The structure of the hull was left to Lloyd's, of London, but the fastenings were altered by Mr. Curchin. The additional weights contributed slightly to the hog, but to what extent I cannot say. The position of architect was denied me by Mr. Curchin. Although the naval architect was mentioned in the agreement, Mr. Curchin refused to acknowledge my firm as the architects in connexion with the payment of fees, although he had promised Mr. Mayoh and Mr. Carr, of the Wallace Power Boat Company, that he would do so. Had the fees been paid by the Commonwealth in agreement with the contractors, I would have been in the position of architect, and would have been of greater assistance to Mr. Curchin than I have been. I pointed that out to him on several occasions. I felt that I was entirely under the control of the contractors. We first got a contract, and then obtained permission to transfer it to the Wallace Power Boat Company, for whom we were to act as architects. They arranged to pay us a certain fee, and were quite agreeable that the Government should ear-mark a certain amount out of its payments for us. That put our firm in the position of architects, and to some extent arbitrators between the owner and the builder. Mr. Curchin would not fulfil his promise to do that. He said that our fee was included in the Government's payment to the contractors, and that left us entirely in the builder's hands, and there was nothing left for us to do but to act as their draughtsmen. Mr. Curchin took over the architect's duties, and, in addition he was also in effect the owner. He occupied a dual position. Kay, Macnicol & Coy. were the architects for Kidman & Mayoh, and Mr. Curchin was the architect for the Government, but we had no authority. We could not make alterations to plans without consulting Mr. Curchin, whereas he could make alerations without consulting us. I made plans and launching calculations for the launching ways of the *Braeside,* but I was not responsible for the launching. I have seen many ships launched; I have full data in regard to the launching of 20 or 30 ships, and have had a good deal to do with the preparation of launching plans. I prepared launching diagrams for the *Braeside* at various states of the tide. I have never conducted a launch for which I was solely responsible. The launching declivity was fixed and communicated to Mr. Curchin. I prepared plans and diagrams for the launching at a 6 ft. 6 in. tide, but two days before the date of launching we discovered that the tide would not come to that height. I discussed the matter with Mr. Ellery, the expert from Cockatoo Dock, and we agreed to extend the launching ways. I calculated that if the ways were extended 12 feet there would be ample water at the end to give a perfect launch. There was actually 7 feet on the outer end of the ways when the ship was launched. Instead of extending the length by only 12 feet, we found that it would be quicker to put in one length of 29 ft. 6 in., which we had ready. In order to put it in, we broke the joints of the original launching ways and pushed them further out, and then inserted the additional length. I required only a 12-feet extension to get ample water for the launching, but the ways were really extended 18 feet. That gave us 7 feet of water at the end. I was not concerned as to whether or not the end of the ways was supported, so long as the ways up to 12 feet were supported, and I had the required depth of water at that point. I showed the diagram to Mr. Ellery, and convinced him that we had a positive moment against tipping. In launching, a ship slides down until the centre of gravity is at the end of the launching ways. If the moment of weight is greater than the moment of buoyancy, the ship will tip and that will throw all her weight on the end of the way and tend to break her in two. You carry out the way sufficiently far so that the two moments when plotted as a curve do not touch, and the distance between the two curves is the moment against tipping. The *Braeside* had a positive moment against tipping all the way down, and that was borne out by the biograph picture which showed that in sliding down the ways the vessel had a pressure on the fore-foot, which would tend to sag rather than to hog the keel. In my opinion, the launching was quite successful. As the ship left the ways, she fell off. If the vessel was drawing 10 feet and there was 7 feet of water on the ways, she would drop 3 feet. She did touch ground when she dropped, but practically all merchant vessels do drop. As a rule, when launching war-ships the depth of water is greater than the draught of the ship when she comes to rest forward. Mr. Ellery did not say to me that he wanted 8 feet of water in which to launch the ship. Before we extended the ways, there was certainly a doubt as to whether we had a sufficient depth of water, but after the extension there was no doubt. As to the nature of the ground at the ends of the ways, I think the vessel grounded on a combination of mud and broken stone. A good deal of excavation had been done in order to permit the rudder to be shipped, and there was a large hole between the ways. She may have struck some of the excavated stone; but the amount of impact would be small, because there was 7 feet of water and the ship was only drawing 10 feet. That would be 7 feet from the ways to the surface of the water. The keel would be below the bottom of the ship a foot or so, so that by the time the bow went off the ways the ship would be almost water-borne. As the ship went down she took with her a wave, which left the water a little lower for a few seconds until it had time to flow back about the boat. The striking of the ground would be of no consequence, because there would be a cushion of water underneath the ship. At the launching I had a draughtsman and a foreman on board, and it was their duty to take observations through the sights erected on the deck as the ship went down, in order to advise me of any change in her form. That practice is usual with war-ships, and especially destroyers. I applied it to the *Braeside* for my own guidance. When the *Braeside* was brought alongside the wharf after the launching, the draughtsman called out to me that the vessel had gone up 16 inches, and shortly afterwards I told Mr. Mayoh what the dead weight was likely to be, and that the ship had hogged. I also told Mr. Heron, I think, and a number of other people. I made no secret of the matter. That would be within half-an-hour of the launching. The fact of the ship striking the opposite bank would have the effect of sagging the vessel rather than hogging it, because it was the heel of the keel that struck the mud. There is no doubt that it was mud. The sights on deck would indicate the extent of the hog as clearly as if they had been in the hold, but not to the same extent, because on deck I had only a range from the poop to the forecastle, whereas in the hold there would be a longer range of vision. Quite possibly 16 inches on deck might represent 20 inches on the keel. In regard to the fastenings, I made a large scale plan showing typical sections. The fastening plan which I submitted to Lloyd's, London, was returned with some alterations,

but over and above the fastenings provided for in it, other fastenings, and of increased size, were put in. The plan I submitted to London provided for one through bolt and one dump in each 12-inch plank, at every frame. When we put in an 8-inch plank, Lloyd's rules allowed us to have a single and double fastening alternately. Mr. Curchin's interpretation was that a I had provided for one through fastening and one dump in the original plan, we would have to put the same fastenings in the 8-inch plank. There are many more fastenings in the boat than were provided for in my plans when they were returned from Lloyd's. They were put in principally at the instance of Mr. Heron, and Mr. Curchin. Of course, if when making the plans I found it necessary to provide for an additional bolt, I did so. I think all the top-side wood has too many fastenings, and is considerably weakened thereby. The great number of bolts has had the effect of weakening the knees; the bolts are considerably stronger than the knees themselves. Before the bolts would yield the knee would break. In some places the knee is riddled with holes. I did not see any of the fastenings withdrawn, but I saw them when they were brought into the office. They consisted of both through bolts and trenails, and there was no doubt that both were in perfect condition. The polished periphery of the trenails showed that they had been tightly driven. I do not think that the lengthening of the ship contribued in any way to the hog. When the *Braeside* was docked, it was found that at the stem a small portion of the keel was splintered, but I believe that that was caused by contact with the chains forming the fore poppets and holding the cradle together. They passed right under the keel. There was no signs of damage which would indicate that the ship had been resting on a hard substance while at the moorings; in fact, there was a little marine growth on the turpentine keel. That keel was not painted, and the marine growth would adhere to that surface quicker than to the sides which were covered with anti-fouling paint. The marine growth extended from end to end of the keel, but I should not expect to see any if the ship had been lying on a hard bottom. The weight of the engines and machinery that were omitted was about 74 tons, but extra girders were put in. As the engines were not required, the engine seating was intended to form a continuation of the keelsons. When the engine seating was not required, the keelson had to be extended and margin girders put in. They represent extra weight. The winches are considerably heavier than the type usually fitted into sailing vessels. They would be more appropriate for a steel cargo vessel or a ship that had 5-ton derricks. They are really 5-ton winches, and of a heavier pattern than even the standard 5-ton winch. It is not usual for winches on a sailing-ship to have helical gear, but high-class steam-ships have it. It works better than the ordinary gear because it has a larger bearing surface. Winches of this type are most costly, and are not necessary to a sailing-ship. The boat davits prescribed are of the standard type. They may be a little shorter than the standard in order to allow the booms to clear them. The hatchway has a pillar on each side, and no supports on the corners; I believe it would be an advantage to have pillars in each corner, with a knee supporting them each way. My original plan provided for knees in the corner of the hatchways, but Lloyd's put them in the centre of the hatch carling. The only support of the timbers in the centre of the hatchway is the mortice of the carling into the beam. I drew plans and specifications for the alterations suggested by Burns, Philp & Coy. I think the reversion to the barquentine rig originally designed was an improvement. Burns, Philp & Coy. made structural alterations in the arrangement of the donkey boiler-house, in the forecastle and in the fore-mast. The structure of the ship below the deck they did not alter. They suggested that lights should be let into the top of the wheel-house. When the steering platform was put into position against the wheel, it was found that the man standing on it could not get a view of the sails without stooping down. If he stood up straight he gazed into the roof. At the request of Burns, Philp, & Coy., skylights were let into the roof. Even now the range of vision is very small. I had nothing to do with the work in the contractor's yard, except to explain the meaning of the plans when there was any difficulty. If the yard manager did not understand how different parts were to be put in, he would discuss the matter with me. I was in the blacksmith's shop at times, and I saw ends being cut off large bolts. There were some bolts 7 feet and 8 feet long, which had been intended for the four ships that were cancelled. These bolts were cut into shorter lengths, and it is quite likely that there were some odd ends. I have complete faith in the yard manager, and I do not think he would sanction the making of dummy bolts with the idea of covering up mistakes or omissions in the construction of the vessel. I never saw anything of the kind being done. I do not think it is true that a large number of dummy bolts were made in the yard. Had they been made, I think I would have seen them.

267. *To Mr. Mackay.*—I am still connected with Kay, Macnicol & Coy., and naturally I am anxious that my design should prove satisfactory and the ships seaworthy. In the latter part of Mr. Curchin's term of office, he was very unfriendly to me. Mr. Heron and I have been very good friends. I think that Mr. Heron was guided to a great extent by Mr. Curchin's actions in regard to the hog, because he had never made any statement to me to the effect that it was a detriment to the ship. He jokingly used to remark, "We shall all get sacked over those ships." He did not like the idea of building wooden ships, but he never raised any objection to the hog until Mr. Curchin first raised it. The progress of construction, especially at the commencement of the contract, was delayed, certainly three months, through Mr. Curchin insisting on Lloyd's classification. Another cause of delay was the compelling of the contractors to submit detailed plans to Melbourne for approval. The plans were altered in Melbourne, sent back to Sydney for re-drafting, and then returned to Melbourne. These things caused delay, but I do not say that Mr. Curchin delayed the job wilfully. If Lloyd's representative has said in evidence that the *Braeside* cannot be made seaworthy, he is decidedly wrong. The vessel is seaworthy now, and can be made better. As to whether she can be made eligible for a certificate, it is very hard to say what Mr. Heron will do. Certainly, he has adopted a peculiar attitude, but I do not know whether it will be possible to get him to retrace his steps. I certainly think that if any other surveyor were in Mr. Heron's place, he would look upon the *Braeside* with a more favorable eye. I propose to build hardwood ships in Australia when this contract is cleared up. We have experienced difficulties in getting long lengths of timber, but I am sure that with proper organization we could procure long lengths. The shipbuilding programme of 1918 came upon us as suddenly as a thunderbolt. The timber-getters did not understand our requirements. Detailed plans showing every bit of twisted timber that was necessary were made and sent to the bush. Timber-getters have told me since completing their contracts that, understanding now what is needed, they could make better deliveries in future. I estimate that it will take four or five weeks to complete the *Braeside*. A week ago I had hopes that we might launch the *Burnside* at the end of December. If the work had been pushed on, the

vessel could have been launched in December. Failing that, the launching ways will have to be extended, because they were designed for a tide that would occur in December. If the *Burnside* is launched about the second week in January, she should be ready for sea about the beginning of April. I have ascertained the dead weight capacity of the *Braeside* to be, approximately, 3,100 tons, but that is not taking into consideration the weights that are still to go on board, and which must be debited against us. They include the donkey boiler, spares, and other stores. There will be some adjustment between Burns, Philp, & Company, and the Commonweath, but whether or not that will involve a deduction from the dead weight, I cannot say. The net final dead weight capacity will be, approximately, 3,000 tons. Mr. Greenlees took off-sets of the vessel from the loft floor, and I believe that from them the departmental officers have made certain calculations. I, too, have made plans, and worked out a displacement scale. I am confident that my calculations are correct, but they are open to a little adjustment either way. The original specifications did not provide for the galvanizing of the bolts. The amended specification included the galvanizing of all bolts that would be in contact with the water. Later, Mr. Curchin arranged to have all the bolts galvanized, and to pay extra for the treatment of those bolts which were not considered to be in contact with the water. Standard blocks are tested, and proved to be strong enough. It is not unreasonable to ask that a block of new design shall be tested, but it is unreasonable to ask that standard blocks shall be tested. For war-ships the blocks are usually tested; but Mr. Curchin asked for tests, and for a brass test plate to be attached to each block. That meant that all blocks bought in Sydney would have to be sent to Melbourne to be tested, a test stamp attached to each, and then returned to Sydney. I think the University is the only place in New South Wales that has a testing machine. It is quite unnecessary to test standard blocks, because the factor of safety is very high. They are not required to take a quarter of the strain of which they are capable. The blocks that were made by the contractors were exceptionally heavy. Ample strength is a good fault, but it is not desirable to have blocks that are too heavy flapping about aloft.

268. *To Mr. Atkinson.*—I certainly would recommend that some additional strength be put in the *Braeside* before she is sent to sea to prevent any straining that may take place, but I would not recommend the expenditure of more than £2.000 or £3,000. It might be found that the fastenings in some parts could be improved, but that would not involve any serious addition to the expense. I have not made a detailed plan for stiffening the ship, but I have thought the matter out, and I am quite satisfied that there is abundance of material in the ship for strength. I would examine the vessel closely in order to see whether any strain had taken place, or whether there had been any movement of the scarphs or joints. I would put extra fastenings in those joints, and insert additional girders either along the present hatch coamings or in the deck from one end of the ship to the other. I would not recommend that the girder should be too deep, because even now there is only 7 feet of space in which the stevedores can load the vessel, and if a deep girder were put in, there would be only 5 feet of space in which to feed the hold. We would prevent the hog from getting worse if extra fastenings were put in the scarphs. Possibly we might have to bore the scarphs on the flat, and insert either square or round plugs in order to prevent drawing. If that were done, the ship could then safely go to sea. A hog does not become dangerous until some fracture in the material can be seen. The strength of the material is gauged by its limit of elasticity. When the ship has been hogged to such an extent that the elastic limit is exceeded, and there are signs of the bending of the bolts or the straining of scarphs or the fracture of material the danger point is reached. The drawing of bolts from the keel in order to see in what condition they are would be a very expensive operation, and would give no advantage. At each frame there is a through bolt connecting it with the keel. This ship has hogged 20 inches from a straight line. For simplicity of calculation, I have taken 240 feet of keel. The radius required to give that height of 20 inches from the cord to the arc is 4,338 feet. All the bolts would point to the centre of the circle. Therefore, the angle of the centre bolt would be perfectly straight. The other bolts would have an inclination to the centre of the circle, 4,338 feet below, which at the very end of the bow gives the very small angle of approximately 1½ degrees. It would be useless therefore to look for bent bolts amidships, because the direction is not changed. I dare say you would find the greatest movement in the centre through bolts in the keels. Those bolts are of 1⅞ inches diameter, and I am satisfied that the texture of that wood is not strong enough to bend such bolts; it would be inclined to yield first. Therefore, I can see no practical or theoretical advantage in knocking out the bolts. First of all, the docking keel would have to be removed, and as the spikes cannot be drawn, the keel would have to be split off. The same thing would have to be done with the false keel, because I do not think you could draw the spikes in the available room at the bottom of the dock. Having got the keels off, it would be necessary to saw off the bolts flush with the main keel. Hydraulic power would be required to drive out some of the centre line fastenings. Then when fastening the keelson on again, all the ends of the old bolts would be in the way. By calculations, or by a model, it can be easily demonstrated that the centre line fastenings are subject to hardly any movement. An examination of the keel bolts would involve the provision of new false keels and new centre line fastenings. The present ones are of 1⅞ inches diameter, and it would be necessary to substitute bolts of 1¼ inches diameter because of the distortion of the holes caused by driving out the present bolts. I saw a number of the bolts put in, and they were all driven with compressed air. I was not on the ship every day; I might have gone on board two or three times a week. Dummy bolts could have been put in when I was not there, but I honestly believe that there are no dummy bolts in the ship. My observation of the ship at that time was not sufficiently close to enable me to detect any false work. I have never heard of any instructions having been given, or any bonus offered, which would tend to scamping. So far as I know, the workmanship is faithful. If the *Braeside* is docked the copper sheathing can be removed in order to show whether or not there has been any undue strain of the keel. When you wish to examine the scarphs of the keel in cases like this, you cut a strip of metal about 2 inches wide from the scarph on each side of the keel. That will show whether the keel has been strained or damaged, and it can be done at the cost of only a few shillings. I do not think the hog in the *Braeside* is increasing, because the scarphs have not moved. I cannot see any separation of the mullock in the crevices, so I conclude that the hog is practically the same as it was. If the hog developed to a serious extent while the vessel was on a voyage, she would leak a little in rough weather. From what I can gather, the old wooden ships that came here many years ago were hogged considerably. In fact, it was a characteristic in favour of a boat if it worked a little. When the ship is loaded the tendency to hog is less than it is

in still water, because the loaded ship has more buoyancy at the ends. Therefore the possibility of the hog extending at sea beyond the elastic limit is very doubtful. For anything serious to happen there would have to be a break through all the longitudinal strength members, and that is very unlikely. The only risk would be that if the ship were hard pressed she might work a little and leak. The elastic limit would not be reached sooner with Australian hardwoods than with softwoods. The Australian hardwood has greater elasticity in tension than has softwood. In respect of the modulus of elasticity, Australian timber is, roughly, four times stronger than American timber

269. *To the Chairman.*—When the *Braeside* was put in dock, and after Mr. Curchin had inspected the vessel with the hog packed, we decided to let her down on an even keel. I and Mr. Heron were parties to that proceeding, and I believe Mr. Curchin raised no objection. If the vessel is again docked she should not be let down. She has been allowed to continue all this time with the hog in her, and I think it would be unwise to let her down on an even keel again. In making alterations to strengthen the vessel, I should let her down a little, just sufficient to allow the butts in the scarphs to come back. The deck butts have been caulked. I would clean them out and allow the vessel to come back, but I would not think of letting her down on an even keel. The straightening of the keel by filling in the hog from underneath would be an advantage in docking. If the keel were built up even and the vessel was engaged in a heavy trade as a result of which the hog began to go down, she would have a rocket keel, and that would be a nuisance in docking. Prior to the docking of the *Braeside* a docking plan was handed to the dockmaster, so that the blocking could be prepared. When she was let down, I do not think she was strained to any extent, because she was perfectly tight when she was re-floated. I did not expect her to recover her hog as she did. I thought we might be able to save some of it, but I believe that the hog has returned to the original 20 inches.

(*Taken at Melbourne.*)

FRIDAY, 26TH NOVEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Mackay,
Senator Newland,	Mr. Mathews,
Senator Plain,	Mr. Parker Moloney.
Mr. Atkinson,	

(Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh; Mr. H. G. Brown, representing the Prime Minister's Department.)

Arthur Carlile Barber, further examined.

270. *To Mr. Brown (through the Chairman).*—I stated yesterday that Mr. Curchin had instructed the contractors to test the blocks in order to find work for a certain firm which had a testing machine. What I wished to convey was that Mr. Curchin desired the blocks to be tested by a certain machine. I have no documentary evidence to support my statement, but I believe the owner of the testing machine, Mr. Ruwolt, might be able to enlighten you on that subject. Mr. Curchin submitted a specification for the blocks, and in it he distinctly asked that they should be tested. The testing of blocks for wooden ships is quite unreasonable. Mr. Mayoh has some documentary evidence on the subject which will be submitted later. I have been connected with ships and shipbuilding for about seventeen years. I served my apprenticeship in Victoria with the Australian Forge. That firm built the pilot steamer *Victoria*, a steel vessel, in about 1902, but did not engage in any other shipbuilding during my association with it. I went to England to gain further experience in shipbuilding. Upon my arrival in England, Palmer's Shipbuilding Company had no opening for me, and I went to the North-Eastern Marine Engine Works, where I stayed nine months, during which I passed through most of the Departments. Then the opportunity which had been promised me at Palmer's prior to my leaving Australia presented itself, and I remained with that firm for about four years. Next I went to Fairfield on the Clyde, where I served for about twelve months. Between the date of my leaving Australia and the date of my return there was an interval of nearly seven years. My reply to the Chairman that I spent four and a-half years in England was correct. I was four and a-half years in England and then a year in Scotland, and then I returned to London. If particulars of my whole career are required, I will produce my credentials. The fault I find with Mr. Heron's actions in dealing with the *Braeside* is that they were uncertain. Mr. Curchin would not fix anything definitely without first getting advice from others. He (Mr. Heron) was indefinite in regard to the donkey boiler. He first decided in favour of Mr. Curchin, and he afterwards decided against him, with the result that the boiler, instead of being lowered into the 'tween decks, was put on deck. He was uncertain in regard to the ironwork for the masts. I wished to get the diameter of the masts fixed early. Mr. Heron was indefinite on that matter, and on several occasions I went to the vessels in his company to measure the diameters of the masts. No doubt the correspondence will explain the position in regard to the donkey boilers, but in regard to the ironwork I think the discussions were mostly verbal. Mr. Heron and Kidman & Mayoh have never done much of their business by correspondence. I do not know that Mr. Heron has ever written to Kay, Macnicol & Co. on any occasion. I think the only correspondence I had with him was when he handed over to me copies of correspondence from Lloyd's, London. My statements in regard to Mr. Heron can be supported by witnesses. Regarding these wooden ships, I consider myself competent to criticise the actions of Lloyd's representative in Australia. The dead weight capacity of the *Braeside* is approximately 3,100 tons. My statement that the extra timbers specified by Lloyd's increased the weight of the vessel by 200 tons is approximately correct. I cannot state, without going into the figures, the extra weight put into the vessel by the alterations required by the Chief Executive Officer. The contract specified a vessel of 2,600 tons dead weight. I estimated the approximate dead weight at 3,100 tons; but it is not correct to assume that if the extra weight due to Lloyd's alterations, 200 tons, had not been added, the dead weight capacity of the vessel would be 3,300 tons, without making any allowance for what the Chief Executive Officer added. But for Lloyd's additions, the vessel would not have been lengthened 6 feet. It was because of the additional material required by Lloyd's that we asked that the length of the vessel should be increased 6 feet. If the extra 200 tons of timber had not been specified by Lloyd's, the vessel would have been built to the original dimensions. The increase of the length by 6 feet is responsible for an increase in buoyancy to overcome the increase in weight made by Lloyd's. I think it is very good designing to

produce a vessel of 3,100 tons dead weight capacity when the agreement specified a vessel of 2,600 tons dead weight, having regard to the fact that we were dealing with a practically unknown timber, so far as shipbuilding was concerned. I considered myself competent to design a vessel of 2,600 tons, but there was a scarcity of dead weight tonnage, and dead weight was needed. Therefore, it was an advantage to produce a vessel with greater dead weight than one with a smaller dead weight. If the Government were opposed to any increase in the dead weight, they would have provided a penalty for excess as they did for deficiency of dead weight. Clause 11 of the original agreement provided for a vessel of approximately 2,600 tons. But if the vessel proved to have a less dead weight capacity than that, the contractors were to be penalized. No penalty was provided for any excess of dead weight. Naturally, I inferred that it was preferable to produce a vessel larger than the specified tonnage, rather than one that was smaller. In designing a vessel it is necessary to know the exact weight of everything comprised in the structure; in order to design a ship to the exact dead weight prescribed, it would be necessary to have an exact knowledge of all weights. Our Australian timbers have varying weights. I could only calculate from previous experience of the weight per cubic foot of various timbers. Then provision had to be made for the additional items that have to be placed on board. The best I could do was to allow a little excess margin rather than work to the exact tonnage with the risk of producing a vessel smaller than was required, and thus involving the builders in penalties. Deficiency of tonnage involved the contractors in liquidated damages; excess of tonnage involved no penalty. If the dead weight exceeded 2,600 tons, the Commonwealth would pay £26 per ton. I do not regard that as a very liberal concession on the part of the Government, notwithstanding the fact that if the ship was below the prescribed tonnage, the penalty was to be only £10 per ton. The Government were prepared to pay £26 per ton of dead weight. From the terms of the agreement, I inferred that they did not want a vessel of less than 2,600 tons. It is good designing to produce the greatest dead weight possible within fixed dimensions. If I could have produced a vessel capable of carrying 5,000 tons on the same dimensions as the *Braeside*, it would have been exceptionally good designing. The Government stated distinctly that the vessels should be not less than 2,600 tons dead weight. The agreement provided that if the vessels were less than 2,535 tons, allowing the very small margin of 65 tons, a penalty of £10 per ton would be imposed. But they did not provide any penalty for any tonnage in excess of 2,600. That clearly indicated their wish. It can hardly be said that they put a penalty of £26 per ton on themselves, because they were at an advantage by getting more tonnage. Mr. Curchin recognised the architect in clause 13 of the agreement, which contains the words "Including the naval architect's fees." The agreement provides for a naval architect's fees, provided they are paid by the contractor. Mr. Curchin promised to recognise the naval architect's fees and to allot so much per month or per payment to the contractors for those fees. But when he was asked if he had allotted that money he said that it was included in the general accounts. When he was asked as to how much he had included, he said that the amount was for the contractors to fix. On several occasions he promised that he woud ear-mark a certain amount for architect's fees, as agreed upon by the contractors and ourselves. He wrote to us that the naval architects were recognised in the fees, but his statement was obscure. Mr. Curchin was not responsible for my going to Kidman and Mayoh's yards as their draughtsman, but I had no alternative. The letter from the contractors to Mr. Curchin that has been submitted in evidence, saying that they had arranged with the naval architects for your services to be transferred to their yards is correct. But had we been recognised as naval architects, as he verbally agreed to do, we would have held the same position as an architect of a building in relation to the builder and building owner. In other words, we would have been the arbitrators on all technical points in dispute between the parties. At the outset of the contract, Mr. Curchin agreed to recognise us as the naval architects. I have nothing in writing from Mr. Curchin, but I have a written acknowledgment from the other builders that they would recognise us. Had that promise been honored, I would have given my services in a different capacity, and instead of being in the hands of the Wallace Power Boat Company and Kidman and Mayoh, my firm would have been in a neutral position. The non-payment to me direct of my architect's fees placed me in the hands of the contractors. There is no provision in the agreement that the naval architect's fees shall be paid direct to architects, but the fees were to be ear-marked for us. It was agreed by Mr. Carr, of the Wallace Power Boat Company, that a certain amount would be ear-marked for us, but the Government never recognised the accounts submitted by the contractors on our behalf. If the contractors paid us £100 the Commonwealth might allow us only £40. Right through the contract Kidman and Mayoh have paid us more than they have actually received from the Commonwealth for our fees. I admit that that was the result of my becoming an employee of Kidman and Mayoh, but the Chief Executive Officer forced the position by not recognising us. The naval architect's fee was £1,500 per vessel built by Kidman and Mayoh. It was not the same for the Wallace Power Boat Company. We received £3,000 compensation from the Wallace Power Boat Company on the cancellation of the contract. I cannot state the exact fee that was arranged, but I remember that on account of Lloyd's asking for extra material to be put into the ships, the fee was reduced. Kidman and Mayoh also reduced our fee proportionately when Lloyd's increased the scantlings and decreased the possible profits. Our agreement with the contractors specified the responsibility we were to take. As naval architect, I tendered advice on numerous occasions, but it was or was not accepted by Mr. Curchin. Since the *Braeside* has been launched I have recommended that a longitudinal girder be put along the deck of both vessels. There was no advantage in recommending anything under the contract which might have increased the weight of the vessel, when it has been distinctly stated by Mr. Curchin that no extras would be allowed. I did not recommend longitudinal strengthening before the launching of the *Braeside* because I did not expect that the ship would hog so much. We knew that she would hog, but to what extent we could not say. In any case, the hogging was not considered serious until Mr. Curchin raised objection to it. When I made the statement yesterday about not recommending alterations because the contractors would not get paid for those extras, I was not referring to longitudinal strengthening, but to other details. It was my duty as naval architect to advise the contractors as to what was necessary to strengthen the vessel, irrespective of whether or not they would receive extra payment. It is not a fact that the alteration in the rig of the vessel to suit Burns, Philp, and Company necessitated the blocks on the foremast being of a different type. That firm agreed to accept for the other masts the blocks specified by Mr. Curchin, but would not accept Mr. Curchin's blocks for the foremast. I recognise some of the words in clause 11 of the hull specifications in regard to the jointing of materials, but

that specification was re-written by the ship construction branch, and some phrases from my original specification may have been embodied in it. When designing these vessels the strength was carefully calculated, and I was satisfied with the result of the calculation. I explained yesterday that, in my opinion, the hog is due to the drawing apart of the small joints, possibly only a fraction. I do regard that as a weakness. The hog would become a danger when the vessel passed its elastic limit. If a vessel was built of more or less flexible material the hog might be 5 feet without there being any sign of strain or of exceeding the limit of elasticity. Such a hog, even if it did not pass the limit of elasticity, would be awkward in connexion with docking, but the vessel might still be quite seaworthy. The Department was solely responsible for the design of the structure. Even the lines of the vessel were altered by the Department. The lines to displace a certain amount of water and give 2,600 tons dead weight, and the contour of the hull, were designed by me, and under the terms of the specification a model and a lines plan were prepared and submitted to the Department. In regard to the original plans, I did not ask the Department for assistance. They were submitted to Lloyd's, London, who modified the design. I repeat that the Department was solely responsible for the designing of the vessel, because the matter was taken from my hands by Mr. Curchin signing all construction plans, Lloyd's plans, and the arrangement plans. The contractor makes the plans to the best of his knowledge, and he submits them for approval. If the Chief Executive Officer then overrides the contractor and makes alterations and additions without consulting the contractor, he becomes responsible. Clause 5 of the agreement places the legal responsibility on the contractors, but there is a moral responsibility on the Chief Executive Officer. I submitted to Lloyd's plans which were insisted upon by the Chief Executive Officer, and in regard to which he had given me guidance plans. Although I submitted them, I often did not approve of them, and I will not take responsibility for them. But I was responsible for the original plans which I prepared. They were submitted to Lloyd's, London, through the local surveyor. He received them back, and sent them to me. I had copies made and sent them to the Chief Executive Officer. The principal alterations requested by Lloyd's were as follow:—Frames from 10 x 10½ to 13½ x 12; bottom planking, from 4 inches to 5 inches thick; side planking, from 4 inches to 5½ inches thick; wales on topside planking, from 3 feet deep x 6 inches thick to 8 feet deep x 6½ inches thick; bilge ceiling, from 4 inches to 5½ inches thick; side (hold) ceiling from 2 inches to 4½ inches thick; side ceiling ('tween decks), from 2 inches to 3½ inches thick; lower deck clamps, from 6 inches to 8 inches thick; lower deck hanging knees, from 2 feet x 2 feet alternate frames to 3 feet x 4 feet every frame; lower deck beams from 12 inches x 8 inches to 12 inches x 10 inches; upper deck waterway from 15 inches x 6 inches to 15 inches x 8½ inches; hold pillars, centre, from 10 inches x 10 inches to 11 inches x 11 inches. These alterations tended to weaken the vessel, and not to strengthen it. I have already explained in regard to the weight and short lengths of Australian timbers. My theory is that the object was defeated by increasing the scantlings to such large sizes. The increase of the planking from 4 inches to 4½ inches would tend to hog the vessel. I was satisfied that it would have had sufficient longitudinal strength if it had been built to my original scantlings, and she might not have hogged to the same extent. Certainly Lloyd's made these alterations with the object of strengthening the vessel. I have not worked out the percentage by which the timbers in the ship were increased. The following timbers were not increased in size:—Keel, centre keelson, sister keelsons, sole beams, bottom deck, upper deck beams, upper deck planking, 'tween deck planking. A few parts were left intact. Lloyd's did not alter every piece of timber in the ship. Those enumerated are some of the principal timbers in the vessel, and we could not have increased them very much even if we had been requested to do so. It would be incorrect to state that all the timbers in the vessel were increased to the extent of 33 per cent. Mr. Curchin objected to the depth of wales or topside planking of 3 feet, as submitted by me, and increased it to 6 feet in his cable. It was further increased to 8 feet by Lloyd's. That addition did not tend to strengthen the vessel longitudinally. Lloyd's approved of the plans forwarded by me, and, in reply to a cable sent by Mr. Curchin, approved of three alternative methods of arranging the ceiling: (1) Thicker longitudinal ceiling with thicker outside planking and diagonal iron straps; (2) thicker longitudinal ceiling with thicker outside planking, and ceiling edge bolted; (3) two thicknesses of diagonal planking for ceilings, with the outside planking as submitted. It was arranged to build the ship with diagonal ceilings, but, in order to facilitate construction, an alteration was proposed by me in my letter of 11th October, 1918, to fit two strakes of horizontal ceiling under the waterways in conjunction with the diagonal ceiling. I prepared a plan showing that alteration. The ceiling as finally arranged was to be edge-fastened and in accordance with Lloyd's requirements. As to whether or not the top members of the ceiling in the 'tween decks and hold have been so fastened, I cannot say; that is a question for the builders to answer. I am not fully acquainted with the fastenings that have been put into the ship. The object of the alterations recommended and submitted was to expedite the work. If some months elapsed while the alterations were being suggested, delay might or might not have been caused; that would depend upon the arrangements in the builders' yards. From memory, I should say that more half beams were cut in the original plan to provide for the hatchways than in the present plan. I do not think that more beams have been cut by reason of the present arrangement of the hatchways. The orignal design for the vessel, as contracted for by Messrs. Kidman and Mayoh, embodied a four-masted barquentine. On plans dated 26th August, 1918, I suggested that the rig be altered to five-masted schooners, either topsail or baldhead. I believe the Chief Executive Officer wrote on the 28th August, 1918, that he preferred the topsail schooner rig. The contractors may have arranged for bald-headed schooners but nothing was fixed. Alterations were made from time to time. Mr. Mayoh can explain them. I wrote to the Chief Executive Officer on the 29th October, 1918:—

> "We wired you this morning:—'Plan of modification of hatches due to extra mast posted to-day. —Barber.' Our reason for doing this is that the Wallace Power Boat Company are pressing us for the lengths and position of hatches in order that they can get the combings and carlings worked.
>
> Under separate cover we are sending you, in duplicate, proposed rigging and sail plan for your approval, so that we may have same embodied in completed plan."

Quite likely I may have made a sail plan, and Mr. Curchin altered the ship plan, as he did on one or two occasions. The object of the alterations suggested by me was to expedite construction. We could not get anything definitely fixed in regard to the masts, and for some time the contractors could not place their order, and, in consequence, missed the market. Mr. Curchin partly agreed to have hardwood masts, but nothing definite could be arrived at. On inquiry in America, the

contractors found that masts of a certain size could not be shipped out here quickly. That necessitated the rig being altered from a bald-headed schooner to a top-sail schooner. If that alteration had not been made, there would have been further delays in getting the masts shipped out. These alterations did result in some delay, but it was unavoidable because the contractors were unable to get certain things. There was delay in connexion with the plans for the rig, but it would not account for any serious delay in construction. As a matter of fact, the masts and spars were here in good time for stepping. There may have been some delays on the part of the contractors, but the masts eventually ordered were delivered in the yard a long time before the ship was ready to receive them. I cannot say how many plans have been submitted for the approval of the Chief Executive Officer under this contract; 100 would be on the large side. I do not think I have prepared 700 plans. My draughtsman informs me that there are between sixty and seventy plans bearing Mr. Curchin's marks. The Chief Executive Officer asked me in December, 1918, for a statement of displacements, light weight, &c., to the lines plan sent with my letter of the 28th November, 1918. I replied on the 6th December, 1918, that the particulars required were in hand and would be sent in a day of two from that date. I cannot account for the lapse of time from the 28th November, 1918, to May, 1920, in furnishing that information. The Chief Executive Officer had as much information regarding the vessel as I had. If he wished to know the light displacement he could work it out, just as I had to do. If I had submitted a figure prior to the launching it might have been open to criticism. Immediately after the launching my figures were verified, and the light displacement at once ascertained. When I wrote on the 6th December 1918, it was my intention to send along the information asked for by Mr. Curchin, but quite likely the matter slipped my memory. I do not think I wrote definitely complaining that the Department was delaying me in the preparation of plans, but I plainly insinuated that much in a letter written about February, 1919. I will produce it this afternoon. The Department asked me on the 10th October, 1918, for copies of plans in triplicate, so that one copy could be forwarded to the inspector at the yard. I sent a number of plans to the Department, many of them in triplicate. Some of those which I suspected that the Department would alter and cut about I did not send in triplicate; in those cases I sent only one copy, or, possibly, two. I think the Department altered all the plans which I sent with the exception of two. That did not show that my designs were faulty; it tended to show that the construction department wished to assert its authority by making these alterations. I will produce later three main plans that have been altered largely by the ship construction branch. When the length of the vessel was increased, the block coefficient remained constant. The block coefficient would only vary slightly because the length that was put in was ostensibly put in the main body. The prismatic coefficient at either end did not alter. The block coefficient might have been increased .02. That would increase the dead weight capacity to only an insignificant extent. I informed the Department in June, 1920, that the vessel was built 2½ to 3 inches deeper than the approved plans. That contradicts Mr. Barr's statement that the vessel was built to the depth approved by Lloyd's. There was a slight difference between the dimensions I took and those afterwards taken by Mr. Barr. An increase of 2½ inches to 3 inches in the depth of the vessel might increase her cargo capacity, but not to the extent of 50 or 60 tons, because the increased dimension has to be deducted from the increased displacement. If the depth were taken at the centre line of the ship it would not alter the plimsol mark, provided that the depth at the sides was not altered. It would depend greatly where the depth was taken. Suppose the depth instead of being 24 feet was 24 ft. 3 in. in the centre line amidships and the beam was 3 inches more around the bend than the original, the statutory deck line would not be altered. When the ship was found to be hogged Mr. Curchin might have wanted to know whether it was stretched or compressed. By taking that dimension, he found that the ship had bodily changed form. The hog in the *Braeside* will not in any way increase the dead weight carrying capacity of the vessel. The dead weight of the ship is not increased by the distortion of its shape. I was not present when Mr. Curchin and Mr. Mayoh discussed the lowering of the ship in dock. In order to stiffen her before refloating, pillars were inserted from the margin girder to the lower deck and from the lower deck to the upper deck to carry any possible strain from one deck to the other. Further, half pillars were put in the 'tween deck to the top deck. The shoring up of the decks from the floor-head keelsons had nothing to do with decreasing the hog. The pillars were put in to prevent transverse distortion or probable transverse movement, but when the vessel came out of dock she had less hog than when she went into dock. I have not got the correct figures.

(*Taken at Sydney.*)

WEDNESDAY, 1ST DECEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

(Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh; Mr. H. C. Brown, representing the Prime Minister's Department.)

Thomas Lewthwaite Grainger, marine surveyor, sworn and examined.

271. *To the Chairman.*—Burns, Philp, and Company having arranged to purchase the *Braeside* and the *Burnside* from the Commonwealth Government, employed me to make an examination of the ships. I first visited them early in February, and submitted a report dated 12th February. Burns, Philp, and Company desired to make certain alterations to the ship, and I was asked to give them my opinion. I was asked to advise in regard to five points—(1) What extra amount of hanging keel should be fitted; (2) whether bilge keels should be fitted; (3) whether the donkey boiler should be carried below or on deck; (4) whether the vessel should be rigged as a fore-and-aft schooner or as a barquentine; and (5) whether the blocks for the heavy running gear should be big or small, as they are shown on the plan. I visited the *Braeside* a second time after she was launched, and submitted a further report dated 30th June, 1920. I and a number of other persons sighted the hog in the keel as well as we could. I could see from the shore without any difficulty that the vessel was hogged. We went on board and measured the hog, and I suggested that more sights should be put in in order to determine the actual rise and fall of it; that was not done. The third occasion on which I saw the *Braeside* was when she was docked at Cockatoo, and, in regard to that visit, I submitted a report dated 23rd July, 1920. On the first or second occasions on which we went to the ship she was not

dry, but eventually we found her dry and could see the condition of the bottom. We asked the dockmaster if it was true that the vessel had been docked according to her true camber? In my report I had suggested that the vessel should be packed under the keel to preserve the camber, and that she should be shored at the bilges in order to preserve the shape of them. The dockmaster told me that he had received instructions to let the ship down 3 inches or more, and that had been done. The information conveyed to us was that the ship had been let down more than 3 inches. We desired to see the scarphs in the keel, but they were all covered. Two of us, therefore, approached Mr. Mayoh and asked him to uncover them, but he refused, saying that they had been uncovered once and he would not uncover them again. I did not have the opportunity of inspecting the scarphs when Lloyd's surveyor and others were inspecting the ship in dock. We were told that the vessel would be dry at a certain time, but although we went ahead of our time, she had been dry for some time and the scarphs had been uncovered and covered again before we arrived. I do not think I have been aboard the *Braeside* since or seen her, except from a passing ferry-boat. Apparently when we arrived to view the vessel in Cockatoo dock she had been dry for from three to five hours; I cannot say the exact time. Mr. Mayoh did not say anything about our being to blame for not arriving to inspect the ship in time. The only conclusion I could arrive at after seeing the vessel in dock was that she was extremely weak and that her condition had been made worse through her being lifted off the blocks and then strained by the packing being removed and the keel let down. We went inside the ship, but did not make a very careful inspection, because we expected to have other opportunities of doing that: we were there only for a docking inspection that day. I noticed that the bottom of the ship for the greater part of her length from the lower turn of the bilge on one side to the lower turn of the bilge on the other side was like an inverted saucer. That would not be the usual shape of a vessel that was badly hogged. I have seen very many American vessels that have hogged, and the hog showed very little on the bottom except in the keel; it was most noticeable at the gunwale line. It was evident that the ship had touched the blocks in leaving the launching ways, because the fore end of the keel shoe was split, but the damage was not serious. I have seldom seen a wooden ship with a contour similar to that of the *Braeside*. American ships are built on a very different plan and have a sharper bilge. The *Braeside* would not on that account alone have a greater tendency to hog. Because of her general structure she is weak for'ard. The whole structure is so lamentedly weak that it would be a wonder to me if anybody took her up. The frame of the vessel is not in any way according to Lloyd's rules and regulations for the construction and classification of wooden vessels. It is a single frame made of nine planks about 1½ inches thick and 12 inches wide, and does not even extend to the keel but is stepped into about six sections. The frames are spaced at about 30-inch centres, which leaves a space of about 18 inches between the nearest edges of the two frames. I do not think there is a wooden ship afloat with so much spacing between the frames. Into the steps in the frame what is called an anchor stock-piece is fitted, specified to reach 11 feet each side of the midship line. In clause 14 it is specified that no through fastenings are to be put in the anchor stocks; yet clause 15 specifies that the keelson is to be fastened through every floor and frame with 1⅜-inch bolts. The floors are not in the ordinary acceptance of the term part of the frame, but like them are single and quite distinct from the frame. They are fitted between each two frames and are specified to be 16 inches x 12 inches and to extend from margin plank to margin plank, every second one to be in one piece, and the alternative one of what are specified as floors and futtocks, provided that their siding is not less than 7 inches. The worked floors are to consist of long and short arms alternately, the solid floors to be not less than 12 inches x 13½ inches at the ends where they join the floorhead keelson. The practice at Lloyd's and, so far as I can learn, everywhere else, has been either to have double floors and frames throughout—that is, long and short arm floors and frames—or floor and futtocks, the frame being double throughout and to have thick strakes worked inside. This has not only been specified or done, but the diagonal iron bracings required by section 39, clauses 5 and 6, have not been specified or fitted. The floors and frames contemplated by Lloyd's are solid timber, not laminated, as is specified in this vessel, and which I personally saw could not in all cases be a close fit or continue unbroken as shown on the plan. In the case of double floors the size at the keel, if squared, would be 14½ inches and at the heads 11 inches and the spacing 34½ centres. But in the *Braeside* you have the laminated frame 13½ x 12, equalling 162 square inches of wood at the head, 30-inch centres with 18-inch space, and in an ordinary vessel two frames each 121 inches, or a total of 242 square inches at the head with 34½-inch centres and a space of 12½ inches. At the turn of the bilge, the place of the most stress generally in a wooden ship, the *Braeside* has 162 square inches of wood with a space of 18 inches; in an ordinary vessel we would have 242 square inches of wood and a space of 5½ inches. Besides all this there is the enormous advantage in the extra surface the double frame gives for fastening. You cannot in the bilge of the *Braeside* get any fastenings in two separate frames closer than about 22 inches, and all the butt fastenings have to be through a frame of only 12-inch siding, whereas in an ordinary ship at the bilge you would have two frames each 14½ inches to bolt into, and at the head two of 11 inches each for same purpose. Then, again, consider the enormously increased strength longitudinally in having the planking, stringers, &c., crossing more than double the amount of timber as supports—and solid timber at that, not a series of slabs. It is specified that the *Braeside* is to be single fastened up to 8 inches, single and double to 11 inches, and double fastened above that. As the bilge planks are 9 inches wide there must be three fastenings in each frame, so that in every .75 feet of plank and frame there must be, according to specifications, three fastenings of at least 1 inch diameter, of which, according to Lloyd's rule, two must be through; that is to say, for every three-quarters of a foot of plank and frame there must be 3 inches of iron, of which 2 inches must go through and one may be about 8 inches into the laminated frame. According to Lloyd's rule the ceiling ought to have been in bilge strakes 6½ inches thick, whereas they are specified to be 5½ inches. There are no limber strakes or ceiling in the bottom at all, but a platform raised on the sole beams specified as 9 inches x 7 inches, spaced 30-inch centres. In my opinion, that is a most serious omission, for a 4½-inch ceiling secured to the floors, frames, and the outer planks with two through fastenings and a dump or treenail adds greatly to the longitudinal strength. All of this is lost in the *Braeside*. This mode of construction has two further grave disadvantages for a sailing vessel—it raises the centre of gravity unnecessarily, and would ruin any cargo put near the ceiling outside the margin girder. It would probably make her very tender, and in conjunction with the shape of the

vessel would make it impossible to get water out of the bilges when the vessel listed to a fair breeze, and in case of the vessel being tried with a general cargo unless she was heavily dunnaged in the bilges she would ruin it. The beams are not at all according to Lloyd's rules, and the lower carlings are specified as 2 inches less moulding than the beam ends they are to take. The wales specified are for a 1,350-ton ship, and the bilge for a 900-ton ship instead of one double the size. In building a ship of oregon I would use larger timbers than in a hardwood ship. The scantling of a ship is regulated by the under deck tonnage, but that is not mentioned in the specification or the plan. Taking as a guide the size of the keel, which is specified as 16¾ inches square, the under deck tonnage would be 1,750 tons. The keelson ought to be 17¾ inches square according to the rules, but it is specified as 16 inches square. The bilge of this ship is quite abnormal for a wooden vessel. In my opinion the ship is structurally weak fore and aft. The keelson is on the floor, and there is no ceiling between the keel and the bilge. If the ship had the ordinary ceiling prescribed by Lloyd's it would help to strengthen the vessel, but the *Braeside* gets no assistance from that quarter. A great many of the American ships have longitudinal girders on deck running from forecastle to poop stem to stern, and they are of some assistance, although of minor importance in comparison with the frames. Lloyd's rules provide for diagonal bracing that is with a double frame. I have been told that with iron from one end of the ship to the other, and these plans were approved by Lloyd's Committee in London, but in her main lines the vessel is not built to Lloyd's rules. I speak from my own experience, and I am surprised at Lloyd's approval of a plan of this sort. When the *Braeside* was lying on the blocks in dock, one could see on the outside a swelling right along the bilge at each side as if the ship were constricted in two places. I have never previously seen anything of this kind in a ship. I have not gone into the question of stiffening the *Braeside* in order to make her seaworthy, but my observations justify me in saying that nothing on earth would induce me to go to sea in her. I do not think she is seaworthy, or that she can be made so. I only saw a few of the blocks; in my opinion they ought to be as large as they consistently can be, and all except the sheet blocks should be patent ones. I advised that the donkey boiler should be placed on the main deck. I do not know of any complaint having been made about the height of the boiler, nor do I know what objection was raised to placing the boiler on the main deck.

272. *To Senator Newland.*—The vessel is weak in several respects. I have referred particularly to the spacing of the frames; one does not put the studs of a house 6 feet and 8 feet apart. The *Braeside* has only laminated frames which cannot be solid even if every bolt goes right through them and the planking. I saw some timbers in the frames unevenly joined, and some of them were flawed on the outside. You can understand the longitudinal weakness of the ship when there is a space of 18 inches between the frames. The stiffness of the ship practically ends at the bilge, and the bottom is entirely on its own. The deck beams help to strengthen the ship, but in this case you have not a good foundation to build upon, inasmuch as there is a frame short in every space. The frames should be close together, pass right across the ship from top to bottom, and be joined with tie bolts. I have never known laminated frames to be used except in small vessels; the only ship I remember being built here with the laminated frames was one of only 70 or 80 tons. It would be possible to build a hardwood ship with solid frames. Timbers naturally grown to shape could be obtained, and with the mass of fastenings that is put into a ship of this kind there would not be much danger. The frames would be jointed all through, and that would tend to make them infinitely stronger than laminated frames. Every one of the fastenings in the bent timbers should go through the ship. The type of boiler used would not have affected my recommendation that it should be placed on the main deck. The vessel is extremely weak throughout, and I think it would be difficult to make her fit for sea; in fact, it would be practically impossible except with an excessive outlay, and if the ship will not pay for herself it is useless to send her to sea. I would not go to sea in her, no matter what alterations were made. On account of the enormous spacing between the frames the fastenings cannot be put in properly. I think it is too late now to alter the defects to which I have referred; the ceiling and planking are in and fastened, and additional frames cannot be put down. There is a weak spot shown in the girders at the deck line on top of the laminated frames. Generally the ship is not in accordance with Lloyd's rules. In order to get Lloyd's classification she is supposed to be according to the rules, but the proof of the pudding is in the eating—Lloyd's will not classify the *Braeside* even though they approved of the plans. My opinion is that the vessel is no good as far as strength is concerned I noticed that some of the knees were packed, and others were away from the ceiling altogether; that does not indicate good work. Those defects were noticed on our first visit to the ship, and we expected to return and investigate the matter thoroughly.

273. *To Mr. Parker Moloney.*—We noticed that four or five knees were away from the frames in the lower hold of the *Braeside;* that indicated that they had not been well fastened. However, it was a rainy day when we inspected the ship, and I was not there to make a very minute inspection. If bolts are too short or too long, and are not tightly driven and fastened, they have not the same hold on the ship as they otherwise would, and the ship would work in a seaway. The inadequate fastenings are a most serious defect. The absence of stiffening in the bilge makes that one of the weakest parts of the ship. The usual practice is to have a double floor or frame and thick strakes over it, both inside and outside. Diagonal bracing is a precaution that Lloyd's rules demand. Lloyd's might approve of plans which did not provide for diagonal bracing if sufficient stiffening were provided in other ways, but I saw in the *Braeside* no compensating stiffening to take the place of diagonal bracings. I understood that Burns, Philp, and Company had bought the ships before they asked for my opinion. I told them I would not give them a report, because I would have nothing to do with sending such a ship to sea. That was about 10th February, long before any dispute had occurred between Burns, Philp, and Company and Kidman and Mayoh. I was asked by one of the men in the shipping department what I thought of the *Braeside,* and I replied that I would have nothing to do with her. I subsequently did make a report in which I told Burns, Philp, and Company that there was nothing to which the bilge keels could be fastened. I was asked whether I would prefer that the boiler should be on the main deck or in the 'tween deck, and I unhesitatingly replied that it should be placed on the main deck. Although I said that nothing on earth would induce me to go to sea in the ship, I do not claim to be infallible; if others say the *Braeside* is a good ship, and she proves herself good, my judgment will be wrong. Burns, Philp, and Company had made their deal, presumably after efficient inspection. I am

not supposed to be their guide in all things, but they asked me a question and I told them my opinion, but they were content to go on with the purchase. The opinion I expressed then I still hold. The whole construction of the bottom of the ship is responsible for the hog. The bottom is not connected with the top of the ship in any sound way; there is no through thrust. If the vessel had been solid the hog would have pushed the top side up, and would not have shown much on the bottom, but the bilges kept a flat shape, and the ship hogged inside the bilges.

274. *To Mr. Bamford.* — I have sailed in wooden ships. I have been an associate of the Institute of Naval Architects for very many years, and an essential qualification of membership is ability to discuss the qualities of ships with members. All the leading admirals and shipping men of Great Britain are associates of the institute. I have not been on the east coast of America or in Norway; my experience of wooden ships construction has been principally in pulling vessels to pieces and repairing them. I know the theory of ship construction, and I have proved my knowledge in practice. I am not certain that the specification to which I have referred is that from which the ships were built, but I do not think there is any grave difference. I do not think there is much wrong with the timber and other material in the *Braeside* and *Burnside;* they are fairly representative of their type.

275. *To Mr. Atikinson.*—Having regard to the price of wooden ships to-day, it would be a grave waste of money to proceed further with the two vessels. A ship built at Perescola in 1916 for about £30 per ton was sold in May last for 110 dollars per ton dead weight. The prices of shipping in Australia have not dropped very much, but the English papers indicate that there is a scare on account of the drop in prices. Few wooden ships are built, and they are generally built for a special purpose. Very few of the American schooners which come to Australia have been built since 1902. Wooden shipbuilding has been in abeyance for a number of years, except for the occasional construction of ships which were not very large. We used to have beautiful wooden ships trading to Australia, carrying 4,000 tons of cargo, and as straight as a die. The planking cannot be properly fastened on a ship with a frame like that in the *Braeside,* because it does not give sufficient space for the bolts; the fastenings are too close together, and there is too much space between the timbers. You can imagine how this ship will jerk the fastenings when working in a seaway. The fastenings cannot be efficient unless they are all through, and even then the ship would be weak because of the absence of longitudinal and transverse stiffening. I do not think anybody can learn anything about the condition of the fastenings unless the vessel is put in dock so that an electrical test can be applied. That will show whether or not all the fastenings are in their place. In order to test the fastenings in the keel it would be necessary to remove the false keel; the bulk of the fastenings can be reached without doing that. There would not be any necessity for knocking the ship about in any way. The removal and replacement of the false keel would involve considerable expense, but without touching it it is possible to ascertain whether or not the fastenings are through. The letting down of the keel in dock was a grave detriment to the fastenings. I was on board the *Burnside* in February, and I formed the same opinion of her as of the *Braeside.* I am afraid the *Burnside* is too far advanced to be altered in such a way as to be made seaworthy; the ship has only half the transverse timber that she ought to have.

276. *To Mr. Mathews.*—I do not know whether anybody inspected the ships on behalf of Burns, Philp, and Company before they purchased them. The notification to Burns, Philp, and Company in regard to the inspection of the *Braeside* in dock was in writing, but I do not think it mentioned the time at which we were to go. Beyond the fact that we arrived too late for the inspection, and that the scarphs had been covered up again, we were not retarded in our examination. If we had arrived earlier we should have seen the scarphs and the keel. The hog would make no difference to the dead-weight capacity of the vessel. The *Levi W. Ostrander* also is very square at the bilge, but she and other vessels of the type were merely war products. I do not think that naval architects will build big wooden ships in future, and after the experience they have gained they are not likely to repeat that type. This design, providing for a flat square bilge, contributes considerably to the hogging tendency. When I told one of the men in Burns, Philp, and Company's office that I would have nothing to do with the ships he said that the firm had bought them, and believed them to be all right. Lloyd's do not interfere with designs; they consider only construction—the quantity and disposition of the timber and the fastenings. A designer could submit a ship like a square box, and they would not interfere with it, beyond altering the placing of the timbers and the fastenings. I have no doubt that they could have corrected structural weakness in the design of the *Braeside,* but the fact remains that they did not do it. Lloyd's, who is the greatest authority in the world, specify hardwood frames the same as softwood frames, except that if fir is used the frame must be bigger. Spotted gum is classed as a nine-years' timber for most things, and a ten and twelve years' timber for others. We reckon spotted gum one of the best of the Australian timbers, but Lloyd's only give it a high class for certain places in the planking. Ironbark is the only hardwood to which they give a twelve years' class. They make no difference between soft and hard wood, except that they ask for, say, 1½ inches more of fir than of hardwood. If the frames and the ceiling had been thicker they would have compensated to some extent for the other defects of the design. I do not express any opinion as to why Lloyd's accepted this plan, but as soon as I saw it I said that the ship would be no good. Wooden shipbuilding has been practically discontinued for so many years that the men in Lloyd's who suddenly had to take up this work probably did not know anything about wooden ships. They are scientific men, and they work out the strength of a girder on the same basis as they would for an iron ship. I do not know what Lloyd's surveyors have done, but I have always considered that this ship was weak. I never before saw such a ship.

277. *To Mr. Bamford.*—I approve of the building of wooden ships of Australian timbers. When I stated that Mr. Mayoh declined to uncover the scarphs in the keel, I was referring to the muntz metal sheathing. If the metal had been stripped off it would not likely be used again.

278. *To Senator Foll.*—In asking that the scarphs and the keel should be uncovered we desired to see if there was any defect in the keel or any movement in the scarphs; that is the defect we usually look for in cases of this kind. We arrived at the dock ahead of our arranged time, but we had nothing to do with the contractors in this matter; they were not dealing with us.

279. *To the Chairman.*—I have never served in the office of a naval architect, but I know naval architecture pretty well, and I have designed a number of ships. I am a marine surveyor, and I understand the

building of wooden ships from A to Z. I have not had experience in the office, but I have employed draughtsmen of my own. I took lessons in naval architecture in order to be able to make plans, but I have not made any for many years. I have kept a draughtsman for years and years. The ships I have designed have been mostly small, up to, say, 300 tons, but I have been at the repairing of the big ships that come to Sydney.

The witness withdrew.

William James Maxwell, Master Mariner, sworn and examined.

280. *To the Chairman.*—On the 1st March of this year I was appointed by Burns, Philp, and Company to be master of the *Braeside*. Captain Green told me that as he had appointed me to the command of the ship it would be advisable for me to go on board and see her in course of construction. I had no set duties beyond instructions to give to the builders any assistance which my practical experience suggested. If I had anything to suggest I referred it to Mr. Arthur Mayoh or Mr. Barber, or Mr. Joseph Mayoh when he was present. I went to the ship with a letter of recommendation from Burns, Philp, and Company to Mr. Mayoh. My opinion was asked by the builders in regard to several features in connexion with the fitting out of this ship. The arrangement of some of the accommodation I did not think was quite satisfactory. I suggested another arrangement which would be quite as easy and more satisfactory. I reported on these matters directly to Mr. Snellgrove. When my opinion was asked in regard to the addition of the extra turpentine keel I said it would be a good idea because the ship was flat bottomed. I reported that the cochran boiler was too high; there was no objection to the boiler except that it was too high above the forecastle head, and would be inconvenient in the handling of the sails. I conveyed my opinion to Mr. Snellgrove, and measurements were taken. The matter remained in abeyance for a long time, but I heard later that another boiler of the same capacity but not so high was to be substituted. I reported that I did not like the blocks which had been ordered; they were too big and heavy, and it would be impossible to replace them in foreign ports unless they were specially made. They could not be bought in a ship chandler's shop. They were too big in the score of the sheave. That was the only vital objection to them. My principal objection was that they could not be replaced unless they were made to order. I also objected to the deck house being built. The man at the wheel could not be covered in. I do not believe in any deck protection at all for the steersman. I remained at the shipyard from the 1st March to 8th September. I was present at the launching of the *Braeside*, but I am not able to say whether or not the launching was successful. After the vessel was hogged, and was lying at the contractor's wharf, the appearance of the sides showed that she was hogged. I did not take much notice of the hog until the vessel went into dry dock. The hog was very apparent from the appearance of her top side when lying in the water, and I noticed it particularly a couple of weeks after the launching. When the *Braeside* was in dry dock I saw her after she had been packed up with the hog in her. Afterwards they let the ship down on an even keel as she was before she hogged. When she was being refloated in the dock I was sitting on the poop, and as the vessel took the water I could see the sides of the ship come up, and the rigging which had been taut slackened. I did not like that at all. Some time later I visited the *Braeside* at the silo wharf, and while I and Captain Murchison were sitting on the hatchways talking, McDougall, the rigger, and Albert Cook, shipwright, came along and commenced making remarks about the ship. I said I should not care to go to sea with the rigging as it was. Cook then told me that the ship was full of dummy fastenings. I asked him what he meant by dummy fastenings. He replied that they were short pieces of bolts with a riveted head and a washer. I asked him what they were like, and he told me that I could see them for myself as the clinched head had no hammer marks. Captain Murchison and I went into the 'tween decks and saw several bolts with a heavy clinch, but no hammer marks on the head. When we were abreast of No. 1 hatch on the starboard side we were rubbing our fingers over the bolts, and found one washer so loose that it could be spun round with the fingers, whilst the riveted head showed no hammer marks. We procured a heavy hammer, and struck the bolt a few times, and then when we tried to spin the washer we could not; it was apparent that something had moved. On the strength of what McDougall and Cook had told us we thought that perhaps we had struck one of the dummy bolts. I do not think it could have been a dump, because in my opinion a dump ought not to be right on the point of the knee. The knee was ¾ inch away from the beam, whereas it should have been hard against it.

281. *To Mr. Bamford.*—I could locate that knee again. We also went down to the lower hold, and had a look about. Then I came up on deck, and went straight to the city. I thought that if the allegations were true, and I did not report them to my principals, I would be liable under the Merchant Shipping Act. So I reported to Mr. Snellgrove at once what I had been told. McDougall had told me that there were thousands of dummy fastenings in the ship. He as a foreman rigger would not have anything to do with the driving of the bolts. I asked him to tell Burns, Philp, and Company what he had told me, and I have had no conversation with him since. When his statement was made to me he and Cook were sitting together with Captain Murchison and myself on the *Braeside*. I have never made any reports to Burns, Philp, and Company in regard to the hull. I went to the ship on the 1st March, and she was launched on the 23rd April, and I did not take particular notice of the construction at that time. I was mostly interested in the fitting out of the ship. I had had no previous experience in connexion with the building of a wooden ship.

282. *To Senator Foll.*—I have sailed on wooden ships, but not as master. I think the biggest vessel I have sailed in was *The Northern Chief*, of 350 tons. I went to sea in February, 1907, and the whole of the intervening time, with the exception of three years, I have spent in sailing ships. From what I have been told by practical men the hog in the *Braeside* is excessive for a new ship. I have not had other experience of the hogging of big ships.

283. *To Mr. Parker Moloney.*—I used to go into the blacksmith's shop, and spend a considerable amount of time in watching the men making the iron work, and I distinctly remember seeing a couple of men clinching heads on short bolts. I never questioned them as to what these bolts were for. I saw them riveting the head, and putting washers on the short bolts, and from what I had been told by Cook and McDougall I concluded that these were dummy fastenings. I did not measure the bolts, but I think some would be from 6 inches to 10 inches. Three or four times I saw the men working at the bench, and that was the only work they were doing when I went there. The iron they were working appeared to be cold. I did not notice any bolts less than 6 inches in length,

but I did not take much notice of them. When we struck the bolt in the beam knee of the *Braeside* we did not test any other bolts. We saw a lot of others with smooth clinched heads and washers, but our attention was drawn to this particular bolt in the knee by the fact of the washer being loose; otherwise, that bolt appeared the same as lots of others. I did not notice any effect that these dumps had on the construction of the ship, but after seeing the vessel perform the concertina act when being floated in dock I began to think. The knee to which I have referred was ¾ inch away from the beam; that might have been due to either shrinkage or strain, or the fact of the knee not having been properly fitted. If it was due to shrinkage, the knee would draw out the bolt if it had not a head on the opposite end, and therefore the washer should have been tight. I considered that if what we had been told about the dummy fastenings was true the ship would not be seaworthy, and it was my duty to report the matter to the owners. Mr. Snellgrove told us to see if we could get any one else to confirm the statements which McDougall and Cook had made. I interviewed some of the men, and asked them if they knew anything about the dummy fastenings. With Mr. Snellgrove I went to see Batch, the blacksmith. We also saw Woodward and Clout, who told us that they had driven these dummy fastenings; their statements sounded genuine.

284. *To Mr. Bamford.*—I could see that the loose bolt to which I had referred passed through the knee into the beam, but I could not see how far it penetrated the beam.

285. *To Mr. Atkinson.*—The conversation with McDougall and Cook took place on the 8th September, and I believe I made my statutory declaration on the 16th September. I always keep a diary, and when I was on my way back to the *Braeside* from the office I jotted down the conversation almost word for word as it had occurred. My statutory declaration was made before a solicitor.

286. *To Mr. Mathews.*—Although McDougall was a rigger, he might have been down in the hold and seen the defective fastenings. If he has said in evidence that he never spoke to me on this subject he has not told the truth. The statements made by him and Cook were the first information I had received regarding dummy bolts, and the only conversation I have heard since on the subject has been that of the men who gave us information about them. From the 1st March to 8th September I heard no conversation about bad workmanship on the ship. A couple of men had told me that they would like to go to sea in the *Braeside*. As they were good riggers, and, as far as I could ascertain, had a good record, I told them that if everything was all right I would take them with me. After the ship was launched they did not seem so keen about going to sea in her. I construed that to mean that they were afraid of the hogging. Sailormen, as a rule, are not afraid of a hog. I personally am not frightened of the actual hog; I would consider the cause of it and the likelihood of it developing further and causing strain. I have seen plenty of hogged ships in dock, and so far as I know the sailors were not frightened of them. I have heard of a ship with a 5-feet hog being used, but I have never seen such a one. Some of the old American ships are, I believe, hogged to that extent. I have never heard sailormen talk much about hogging except when a vessel has been strained. What the sailor is most concerned about is the amount of water the ship will make. Hogging will tighten the seams in some places, and open them out in others. The most noticeable feature of the hog in the *Braeside* was that when she was flat on the blocks in dock the jumper stays between the masts were fairly taut, but when she was afloat they were slack.

287. *To Senator Newland.*—When I first went on board the *Braeside* I was struck with the roughness of her appearance. There was not much attempt to make her look well on the outside, but the shape of the hull and the general look of the vessel I rather liked. The hog alone would not have deterred me from going to sea in the ship, but when I saw her movement on being refloated in dock I felt that something was wrong with her. The movement I saw in the rigging indicated that the vessel was returning to her natural condition with the hog in her. I had expected that the hog would return. I was present in an unofficial capacity at the examination of the ship in dry dock, and I saw the keel, but not the scarphs. I noticed a lot of mud on the keel about the stern post. Under the forefoot she was damaged; that was caused by her dropping off the launching ways—an incident which could be seen by anybody. I saw no marine growth on the bottom of the ship, but she was dry, and had been touched up with paint. If the men whose names I have mentioned deny that they said there was any faulty workmanship they are not telling the truth; they did make to me the statements I have related. One of them said that there was 20 tons of dummy bolts in the ship, and another said there were thousands of dummy fastenings. They did not say that there were only twenty such bolts. When we went into the holds of the *Braeside* after the conversation with McDougall and Cook we looked for the type of riveted bolt of which they had told us. They had remarked to us that he would be "some workman" who would put a clinch on a bolt and not leave the marks on his hammer. We made no attempt to test any bolt except that in the knee.

288. *To Mr. Boyd (through the Chairman).*—I am sure that as the vessel was refloated in dock I saw the sides of the vessel rise and the rigging slacken. I cannot say whether the sides rose more than the centre of the ship. I mentioned the fact to Captain Murchison. Some of the employees of Kidman and Mayoh were present, but I do not know whether they saw it. After the conversation with McDougall and Cook in regard to dummy fastenings we went below and looked for bolts that fitted the description they had given of dummy fastenings. I could point out those we found if they are still there. I tested none except the one in the hanging knee, but we saw bolts with heavily clinched heads and washers and without any hammer marks. I do not know whether there are many dummy bolts in the ship. The man at the wheel should not be surrounded by any protecting house; a wheelhouse is a trap for the wind. The man at the wheel can hardly see out of the wheelhouse which has been built on the *Braeside*. Scuttles have been cut in the roof, but the man at the wheel has to get into awkward positions in order to see the sails. The steersman on a sailing ship should be in the open, so that he may hear every order issued to him, and also be able to watch for himself the sails and rigging. I am on friendly terms with Captain Murchison; he never ordered me off the *Burnside* for interfering with things. I made no inspection of the work of constructing the hull. The statements made by McDougall and Cook were the first hint we had from the men about the *Braeside* being unseaworthy. When I went on board the hull was finished. Very little work was being done on the structure when the ship was being caulked. I have no idea for what purpose the short bolts I saw were being used. When I first went on board on the 1st March men were still working in the holds driving bolts with rattlers. I do not know whether the bulk of the fastenings had been put in at that time. I did

not see any dummy fastenings inserted. Although I saw the men in the blacksmith's shop riveting heads on bolts, and saw bolts of all lengths, I did not take particular notice of what was being done with them. In the yard was a large stock of fastenings of all lengths. I did not see any of the longer bolts being carried about, and I cannot say whether or not they are the ones that were being cut up in the blacksmith's shop. Before the *Braeside* was docked I told Mr. Mayoh that I was looking forward to going to sea in her. I saw the *Levi W. Ostrander* in dock, and the actual curve in her keel appeared to be about the same as that in the keel of the *Braeside,* but the bottom did not look as bad; it had not the corrugated appearance of the *Braeside* and the thwartship curve. So far as I know the *Braeside* was leaking; I never saw her dry when she was afloat, but I have not been on board since the 8th September. I have never previously been in a new wooden ship. The old ships on which I have served were always wet, but I have been told by the master of an American four-masted schooner that his ship never made more than 1 inch of water per day. If the bottom of a ship rises one might expect the butts in the deck to open.

289. *To Mr. Mathews.*—The man at the wheel feels cold, and would like a house and a stove, but with a protection behind him he is subject to a worse draught than if he is standing out in the wind. I do not think the Navigation Act provisions in regard to the protection of the man at the wheel apply to a sailing ship. Until skylights were inserted in the wheelhouse of the *Braeside* it would have been impossible to steer the ship, and even now I would not like to be the man at the wheel. A weather screen can be erected at the back of the wheel, but I have never yet met a sailor who had any use for a wheelhouse. Some of the old steel ships used to have a half whaleback built around the wheel, and many a cold I have caught in it.

290. *To Mr. Bamford.*—It is advisable for the man at the wheel to be able to see the sails and know what he ought to do. I defy any man to see the canvas from the wheelhouse on a dark night. I was told that the wheelhouse had to be built on the *Braeside,* and as it would be impossible to steer the ship from the house as it was designed, the only solution was to put skylights in the roof. If an order were given to the man at the wheel on the *Braeside* to steer "full and by" he might be able to do it in the daytime by straining his eyes, but not at night.

(Taken at Sydney.)

THURSDAY, 2ND DECEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

(Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh; Mr. H. C. Brown, representing the Prime Minister's Department.)

Thomas Lewthwaite Grainger, Marine Surveyor, further examined.

291. *To Mr. Boyd (through the Chairman).*—I have never served an apprenticeship to naval architecture or to shipbuilding, but I did serve an apprenticeship on a sailing ship. I do not know how many years I served on a sailing ship. I am a master mariner, but not in sail, although I could have been. The last vessel I commanded was one of 4,000 tons. I commenced business as a marine surveyor in 1889. I have been employed by the Sydney Marine Underwriters and a great many other companies and owners, and by Lloyd's. I think the largest wooden vessel which has been repaired under my supervision was the *Reuss,* of about 2,500 tons. I have several vessels on my hands now, one of which is very near the tonnage of the *Reuss.* It is impossible for me to state the full extent of the repairs I have carried out. On the last wooden sailing vessel we handled we repaired the rudder and stem, attended to a good many of the fastenings, and took out the masts and replaced them. I could prepare plans for a vessel of the type of the *Braeside,* and calculate bending moments, stress diagrams and stability, but I have never prepared a launching diagram. By stability in connexion with shipping is meant a vessel's tendency to keep to the upright. I do not say that a hog would affect the stability of a ship. I looked over the *Braeside* on the 10th February, 1920, and submitted the following report to Burns, Philp, and Company:—

[*Exhibit* 78.]

Queensland Insurance Building,
Corner of Pitt and Bridge-streets,
Sydney, 12th February, 1920.

Messrs. Burns, Philp, & Co. Ltd.,
Sydney.

DEAR SIRS,

I have to report to you that I went yesterday with Captain Green and Mr. Snellgrove to Kissing Point to see the two wooden hulls being constructed there by Messrs. Kidman and Mayoh to give me a better idea of them than could be got from the plans.

My advice was asked on five points, viz.:—

1. What extra amount of hanging keel should be fitted?
2. Whether bilge keels should be fitted?
3. Whether the donkey boiler should be carried below or on deck?
4. Whether she should be rigged as a fore and aft schooner or as a barquentine?
5. Whether the blocks for the heavy running gear should be big, or small as they are shown on the plan?

In reply, I would advise—

1. That not more than 14 inches, including the turpentine shoe should be added below the keel and that the bolts should be reeled as far as is possible.
2. Bilge keels should not be fitted, there being nothing to secure them to.
3. That the donkey boiler should be carried above the main deck.
4. That the vessel would be greatly helped in her sailing and working capabilities by being barquentine rigged.
5. That the blocks should be large, especially all the halliard blocks, and that patent sheaves should be fitted in all except the sheet blocks.

I have the pleasure to return the three plans herewith.

I am, Dear Sirs,
Yours faithfully,
(Signed) T. L. GRAINGER.

When I first saw the ships, and decided that I would have nothing to do with them, I had the plans before me, and they spoke for themselves; it was not necessary for me to make any calculations of the strength of the ships, because no man who understands wooden ships would ever dream of building to those plans. I do not say that Lloyd's committee and Mr. Curchin did not know their business. I am not responsible for what they do, but I have my own ideas. On the occasion of my visit to the *Braeside,* to which the foregoing report refers, Captain Green and Mr. Snellgrove went with me, but I made my inspection by myself; I did not consult them. The only conversation I had with Mr. Snellgrove was in regard to the position of the boiler. I do not know whether or not the contractors have departed from the plans approved by Lloyd's, because I have not seen the construction plan

that was submitted to Lloyd's. In saying that the vessels are not built to Lloyd's rules, I refer to the printed book of rules, and I am basing my opinion on Kay, Macnicol, and Company's plan 752, which was approved by Mr. Heron on 28th June, 1919. Lloyd's rules and Lloyd's approval are two distinct things. There is no such thing as a slat frame in Lloyd's rules. I did not examine the ship to see if she was built according to the plans, but I saw that she was built with those frames, and I did not approve of them. I am strongly of opinion that it was a mistake to adopt laminated frames; I saw many of the frames buckled. I do not know that these frames were designed to overcome the timber difficulty. They ought not to have been used, because there was plenty of timber to be obtained. I cannot condemn Lloyd's; I do think it is proper to ask whether the chief ship building society in the world, which has been in existence for over 100 years, is wrong. But if Lloyd's did approve of laminated frames they were in my opinion very wrong. I have no doubt that it was possible to get suitable Australian timbers with which to build the ship on the double frame or frame and futtock principle. If these timbers could not be obtained the ship should not have been built—at any rate, not on the principle of laminated frames. I am aware that the building of these wooden ships was a war measure, and that a great many of the Allies also were building wooden ships. Laminated frames would not be as strong as solid frames. I base that opinion on Lloyd's rules, which specify solid frames throughout. Lloyd's do not mention laminated frames, and until these ships were built I never heard of them being used. If they were better than the solid frames they would have been adopted long ago. Lloyd's rules of 1917 were merely a reprint; I do not think the tables of 1888 have been altered. I have the issues of 1888 and 1917, and I can see no difference between them. In building on the double frame or frame and futtock principle it would be necessary to try to find natural frames, grown as nearly as possible to the required shape. There would be a difficulty in connexion with the grain in Australian hardwoods, but I have no doubt that it could be overcome. I am aware that everybody has a difficulty in getting timber, but I would not like to offer an opinion as to whether there was special difficulty in getting timber of the size employed in the ships. The largest wooden vessel I have designed was one of 250 tons. She was not built to Lloyd's requirements, and the plans were not submitted to Lloyd's, because it was understood that they were not taking any wooden shipbuilding at the time. None of the vessels I have constructed were built to Lloyd's class. I submitted one design to Lloyd's, but we did not build the ship because the war ended. Because of the hogging and the twisting I say that the *Braeside* is longitudinally weak. I do not know anything about the *Burnside,* but I should say that both vessels have the same fault. If the *Burnside* is not altered before she is launched she will certainly hog. It was not necessary for me to make any calculations before coming to the conclusion that the *Braeside* was weak. I have made strength calculations, but not for any vessel that was actually built. If a vessel was on the crest of a wave, and the ends were in the troughs, the greatest stress would be at the ends; the vessel would be subject to a hogging strain. The strain would be on the upper members, and the compression on the lower members. I cannot say what working stress would be reasonable in the keel and waterways of the *Braeside.* I would not make the scantlings in a hardwood ship of the same size as those in a softwood ship; the two classes of timber are quite differently specified. The softwood ships are nearly all of American origin, and they are built differently from British ships. I would follow Lloyd's rules as to the dimensions of the timbers. I have read Professor Warren's tables many times, and I do not think there is any doubt that hardwood is much stronger than softwood. If I were responsible for designing and building a ship of the size of the *Braeside* I would most decidedly submit my plans to Lloyd's for approval. If they altered my plans I would not say that they did not know their business; unless I adopted their views I would not get their classification. I know nothing about Mr. Curchin's qualifications in regard to wooden shipbuilding except what he himself told me. My object in asking Mr. Mayoh to remove the muntz metal from the keel was that I might be able to inspect the scarphs. I was asked by Burns, Philp, and Company to attend the inspection of the ship in dock; they desired me to see the condition of the bottom. I am only casually employed by Burns, Philp, and Company. I was their marine superintendent at Townsville for six years, but I have not been in their employ since 1889. I have surveyed all the American ships that have come to Sydney lately to load copra for them. I was told by Mr. Barber when I made my examination of the *Braeside,* on the 10th February, that the keel had been laid with a sag of 9 inches, and that the *Burnside* was to have a sag of 10 inches. I have no idea why that was done. The effect of a hog on the seaworthiness of a ship depends entirely on her build. The strains on a ship are greatest at the furthest distance from the neutral axis, and decrease towards the axis. The neutral axis of a vessel has to be calculated; I have no idea where it is on the *Braeside.* There should not be any strain on the timbers at the neutral axis. Campbell Holmes' book on wooden shipbuilding is a standard work, and I have read a good deal of it. What the author's experience was in regard to the hogging of wooden ships I do not know; but in my experiences it is not usual for wooden ships to hog until they are old. I could design a ship that would not be likely to hog; that does not seem very difficult, having regard to the fact that you see so many ships that do not hog. At the same time, I would not guarantee that a vessel of my designing would not hog, because I have not the money to pay if my guarantee failed. The *Kate Pederson,* which is in dock now, is as large as the *Braeside,* and she has no hog. I have talked with Mr. Heron regarding the hog in the *Braeside,* but he did not express any opinion to me. It would be very difficult to draw the bolts from the keel; in fact, I do not think they could be taken out. I did not take any measurements or use any template which would show that the bilge of the *Braeside* has altered its form; but I could see the distortion, and I advised that it should be measured. I have seen American ships that were hogged without any apparent distortion of the bilges. The *Braeside* and the *Burnside* are a departure from Lloyd's rules in respect of the frames, the thickness and square of the keelsons, the thickness of the bilge planks inside and outside, and the construction of the ceiling. Extra margin girders and floorhead keelsons have been added, but according to Lloyd's rules there should be not only sister keelsons but bilge keelsons, and so on. The margin girders are put in to hold the floors down, and I do not think they would compensate for the deficiency of strength in the frames. I saw the plans of these vessels before they were begun, and I said at once that the ships would be no good. The plans I saw were practically the same as those which are now before the Committee. I remarked to Mr. Heron that the design was weak, and that the ships would be useless. I do not remember what he said; his opinion did not trouble me, because I had formed my own. I expresed my view to Mr. Curchin, who replied that the ships were all right; he said that

Lloyd's had passed the plans with slight alterations, and he was satisfied that they would be satisfactory. I would not pit my knowledge against his in regard to naval architecture; but so far as wooden ships are concerned, I would pit my opinion against almost any one. I do not say anything about the action of Lloyd's Committee in London. The plans may have been passed by a minor official of the committee. I first noticed the hog in the *Braeside* about 20th June, when she was lying alongside Kilman and Mayoh's wharf at Kissing Point. As a result of my inspection in Cockatoo Dock, I submitted the following report to Burns, Philp, and Company:—

[*Exhibit* 78.]

SURVEY REPORT.

Barquentine "Braeside."

This is to certify that at the request of Messrs. Burns, Philp, and Co. Ltd., Sydney, I, the undersigned duly certificated marine surveyor of this port, have attended on board the new barquentine *Braeside* at various times, once before launching, once while lying at the builder's jetty, and again when in Sutherland Dock on the 19th day of July, 1920.

At the latter visit she was sitting with packing on the blocks from about 17 feet from the stem to within 12 feet from the stern post. The greatest hog showing was 18 inches nearly at the middle of her length. I was with Captain J. Vine Hall when he asked the dockmaster if he had instructions to let her down, and he replied that he was told to let her down about 3 inches, and so far as he knew it had been done.

On looking along the bottom from either end, the bottom appeared to be dished from about the lower turn of the bilge one side to the lower turn of the bilge on the other. On measuring from about 50 feet before the middle of the vessel to the middle I found a rise of about 12 inches from the normal line at about 7 feet out from the side of the keel, and gradually decreasing abaft the middle. A longer length could not be taken owing to the rise of floor becoming steeper. Looking from either end, on both sides there appeared to be two bulges gripped in considerably at two places, practically about the middle of the distance between the main and mizzen and between the mizzen and jigger masts; this showed from above the bilge to about the seventeenth plank from the keel. I measured roughly the forward flattening on the starboard side and found that it was in about 3¾ inches from the line, taking a length of about 20 feet. I was with Captain J. Vine Hall when he asked Mr. Mayoh about exposing one of the keel scarphs, and he definitely refused to do so. He said this after telling us that the metal had been off the side of the keel and had been renewed.

In launching she had apparently struck forward, for the keel shoe was split and the edges broken on the port side.

The vessel was hogged, and shows it distinctly on the sheer line. A number of measurements were taken to define the sheer, the outward thrust of the bilges, and the rise of the centre line.

The vessel's hatches are fairly large, the main one 14 feet inside, but the 'tween deck one has 26-ft. opening.

The vessel is of a peculiar construction, being single-framed with laminated frames about 30-in. centres extending to the keel in six steps with an anchor stock-piece fitted across the centre line to the top of the laminated frame about 4 feet inside the margin girder. The solid floors about 30-in. centres alternate with the anchor stock-pieces and extend to a few inches beyond the margin girder, inside which are two floor-head girders about 9 in. x 14 in. The side keelsons are placed about midway between the three main keelsons and the floor-head girders; and are 12 in. x 12 in. There is no ceiling laid on the frames or floors inside the floor-head girders, but sole beams are laid from margin girders to margin girders about 9 in. x 7 in., on which is laid a 3-in. hardwood platform. The bilge ceiling is said to be 5½ inches, and the bilge plank 5 inches; there is one bilge stringer said to be 8 in. x 12 in.

The hold beams appeared to me to have a distinct camber in two of the hatches.

The lower log of hatch coamings only extends one beam before and abaft the hatch beam, and do not extend fore and aft.

The vessel was built with a sag of 9 inches and altered to a hog of 21¾ inches, giving a total shift of 30¼ inches at the midships. The butts on the deck have been recently filled so nothing could be gathered from them. In my opinion, the vessel is very weak and unseaworthy.

Given at Sydney, New South Wales, this twenty-third day of July, 1920.

T. L. GRAINGER,
Certificated Marine Surveyor.

Although I said that it might be that because ship building in England had been so long in abeyance the present staff at Lloyd's had no experience in that branch of naval architecture, I did not mean to suggest that Lloyd's passed these plans without knowing what they were doing. There is a possibility of the plans having been passed by a minor official, although I do not say that that is the usual method by which Lloyds' approve plans. I cannot believe that responsible people at Lloyd's would pass plans such as these. If they did so they made a great mistake; they should not have approved of them. I stated yesterday that it was wrong to build the ship with a double bottom, and that the ceiling should have been fastened to the floors, anchor stocks and frames. Such a double bottom is a grave mistake for more than one reason; but the whole of the design is bad. It is not true in this case that the double bottom is stronger than a single bottom would be, because there is not the same continuity of thrust. Depth of floor should increase the strength of a vessel. The double bottom on the *Braeside* is not made to resemble the floor of a steel vessel. I visited Kidman and Mayoh's shipyard on the 29th of June, and after inspecting the *Braeside*, I made the following report to Burns, Philp, and Company:—

[*Exhibit* 79.]

SURVEY REPORT.

Five-masted Wood Barquentine "Braeside."

This is to certify that at the request of Messrs. Burns, Philp, and Co. Ltd., I, the undersigned duly certificated marine surveyor of this port, attended at Kidman and Mayoh's shipbuilding yard, at Kissing Point, to note the condition of the recently launched five-masted barquentine *Braeside*.

I now report that we saw the plans, which showed a straight keel, but were assured by the works manager and the manager that she was built with a sag of 9 inches in the keel; the sister ship now on the stocks has a sag of 10 inches.

It is reported that there was some misadventure in launching, and that the vessel also grounded after launching.

The vessel seen from the shore as she now lies with her starboard side along the stage, shows a distinct hog at the mizen rigging, at the covering board line; this is also noticeable on deck. In the lower hold the hog is very noticeable; the rise commences, roughly, about the after-part of the fore hatch. Three sights were fitted in line from close to the fore bulkhead to close to the after bulkhead.

Measuring from them to the top of the keels on the heights are forward 68½ inches, mid. 50½ inches, aft 67¾ inches.

Of course, if two or four more sights were fitted, a fuller knowledge of the hog would be obtained; another good test would be to place the vessel in dock, and let the diver pack her carefully and fit some bilge shores also, when a true knowledge of the bottom could be obtained. I would recommend this to be done after sighting her both below with seven sights and also on deck both ways. The vessel is of a peculiar construction, the frames being built of slabs about 1½ inches thick. The frame is carried toward the keel in a series of steps, I think about five, and into the ends of the frame an anchor stock-piece is worked.

Between each two frames a floor is worked, which goes out to the lower turn of the bilge, and two girders are there fitted along the joint of the anchor stock and frame and taking the floor heads. In a few instances, said to be eight or nine, the floor is scarphed, but this is said to be on opposite sides where it is the case. A margin girder is run on the inside of the floor heads at the lower turn of the bilge, and said to be bolted through the floor heads and chocks; ceiling bearers and a level ceiling are fitted, leaving a deep recess there on each side.

The vessel is very full at the bilge with only about 1 foot rise, *i.e.*, the height between a level line drawn from the intersection of the keel and plank and where the tangent from that point leaves the plank. This is what is shown by the plan.

In an ordinary full-framed ship the frames are double, but are bolted together, and where two pieces meet they are dowelled together according to the rules, and no joint is allowed unless at a long distance from that on the alternate timber, the two timbers forming a double frame carrying an efficient bearing right through from gunwale to gunwale the floors and frames, being in solid connexion and bearing, which can take, say, the bolts of a plank in each timber. The system adopted in the *Braeside* gives no such continuity or such an advantage for fastening. Nor can fastenings in such slabs be as solid as fastenings in solid timber.

In the *Braeside* there seems to be an absence of hooks and pointers. In the way of the worst of the hog in the lower holds the knees on one side are packed, and on the opposite side are off the ceiling in many cases. The day was too dark to allow a thorough examination to be made. The rudder trunk, though well built, is, in my opinion, much too long to be left without further support from beams forming partners about the line of the main deck and well kneed there; also some further knees on the horn timbers and corners of the plank.

Given at Sydney, New South Wales, this thirtieth day of June, 1920.

T. L. GRAINGER,
Certificated Marine Surveyor.

I did not see any report made by Messrs. Morrison and Drake, they are practical shipbuilders. I do not know what Burns, Philp, and Company did in regard to the alteration of the *Braeside* after I made my report.

292. *To the Chairman.*—I stated yesterday that the frames were cracked in the bending. When I first visited the *Braeside* the outside planking was partly in position.

293. *To Mr. Bamford.*—The cracks in the frames would not be a serious defect because each frame consists of a number of planks held together, and only the outer one was cracked. It is possible, however, that the others might crack.

294. *To Mr. Mathews.*—When I was at Kissing Point I formed the opinion that the double bottom would be extremely likely to make the vessel unstable, and I advised Mr. Snellgrove to ask for a set of metacentric curves for the ship and incline her to get the C.G. in order to see whether or not she was stable. I noticed also that the bulwark clamps were not continuous past the break of the forecastle and poop.

295. *To Senator Foll.*—It was about two years and a half ago that I told Mr. Curchin that the plans were not satisfactory. I met him in Melbourne, and saw one of the plans. He naturally was of opinion that if the plans were passed by Lloyds' the ships would be satisfactory, and he had no doubt about getting them approved. The plan I saw was practically the same as the one I am using now.

296. *To Mr. Mathews.*—Except for very small vessels I have never heard of anything but double frames suggested for wooden ships. I admit that another naval architect might find fault with my work, just as I am finding fault with the work of somebody else; there might be a difference of opinion.

The witness withdrew.

Thomas Charles Clout, bridge and wharf carpenter, sworn and examined.

297. *To the Chairman.*—I entered the employ of Kidman and Mayoh in about February, 1919, and remained at their shipyard for about two years. I was put off on the 27th April, 1920, but re-commenced on 8th May, and was again put off on the 7th June. My first job was in preparing and squaring the anchor stocks of the *Braeside* with a broad axe. Then I was employed for a few days in fastening the anchor stocks to the frames. I was next engaged on the outer planking, and afterwards was on several jobs with Bill Haig, until I was put on the fastenings. My foremen were Arthur Young and Sid May. I was engaged in planking the forecastle head, when I was taken off that job by Arthur Young, and placed in charge of a gang of borers and dumpers on the starboard side, under the foremanship of Sid May. I was instucted by May to put through fastenings in the planks at every third or fourth frame, and to put dumps at the other frames. There were plans in Mr. Young's office, and I was often there, and had a look at them; I did not take much notice as to whether the instructions given to me were in accordance with the plans. So far as I know, there should be a through fastening at every frame. The longest dump was about 14 inches, others were 12 inches and 10 inches, and some less. A through fastening would be from 23 to 25 inches long. I supervised the fastening of the ceiling forward and aft of amidships. The midship section from the sheers strake to about the 'tween deck was finished when I went on the job. I did a little planking on the *Burnside*. Haig and I were fixing the frames aft for some time, and we had to pull them into position with union screws. In fastening the plank and ceiling we sometimes put a dump in the hole from the outside and a dummy from the inside. The majority of those fastenings would be below the water line; but I could point out the work I did inside the vessel. The knees in which we used dumps instead of through fastenings were in the 'tween and upper decks at the fore end and the after end. I could indicate those knees to the Committee on a visit to the vessel, and the places where I put in a dump from the outside and a dummy from the inside. The first six or seven hanging knees on the starboard side of the *Braeside* at the after end are fastened from the inside with nearly all dummies, and were put in under my supervision. By a dummy I mean a short bolt used when there should be a thorough fastening, passing right through the hull and the knee. Dummies were used in the knees at the after end of the vessel, because the frames were not squared off with the planks, and the last few knees, instead of being put on at right angles, had a slight rake, and it was very awkward to put in a through fastening. In boring from the outside you could not be sure of passing through the knee, and the auger could not be used on them from the inside. I do not say that there was any attempt at slumming or anything like that in connexion with the fastenings in the knees. My written statement that I was instructed to put dummies in the inside of the portside of the *Braeside* from the floorhead keelson to the lower clamp from the bulkhead forward to the afterend of No. 4 hatch is correct, those instructions were given by Sid. May, my foreman. The dummies were put in where fastenings were missing, my instructions being to make the fastenings on the port side appear the same as those on the starboard side. The dummy bolts were $1\frac{1}{4}$ inch in diameter, and about 10 inches long, a washer being put under the riveted head of each one to make it appear like a through fastening. I would say that there were at least 200 of these dummy bolts in places where there should have been through fastenings. I understood that Mr. Barr and Mr. Young knew about these dummies. I told Mr. Young, I think, that I thought a workman should do good work that would last long, and that it was not quite the proper thing to use dummy fastenings. I was told I was paid to do as I was told. I did not mention the matter to Mr. Barr or Mr. Mayoh. I have no objection to accompanying the Committee to the ship and showing where the dummy fastenings were put in; it will be quite possible to find many of them. I put in a few dummies about 4 inches long, because I was told to do so. They were used in cases where the through hole had been bored, and a dump had been driven from the outside. I think I can show the Committee one place where that was done.

298. *To Mr. Parker Moloney.*—When I finally left the employment of Kidman and Mayoh on the 9th of June I had no disagreement with the management. I asked Mr. Williamson why I had been put off, and he told me that I knew the reason. I had no idea of the cause of my dismissal. When I drove dummies from 10 to 14 inches long where through fastenings should have been inserted, I knew that I was departing from the plans, which prescribed one through fastening through every plank at every frame. All the dummies did not have forged heads; some of them had been riveted at the blacksmith's shop. The fastenings were not properly spaced but were inserted at the most convenient places. Some of the fastenings could not be put in the proper way because the uprights of the staging were in the way; if the staging had been removed slightly they could have been put in; but where there was any difficulty like that I used dummies. A dump is a legitimate fastening, but 20-in. dumps were used in

the knees where the through fastenings should measure 36 inches or more. I think it was Sid May who instructed me to put dummies in the ceiling on the port side in order to make it appear the same as the starboard side. I am quite clear that some superior officer gave me that instruction; I knew it was wrong. I fastened the ceiling from amidships forward and aft. A section from amidships forward and amidships aft in the 'tween decks had been fastened before I started. The dummy fastenings were put in all over the ship. I could point out some of them, but they would require to be drawn in order to verify my statement. If the fastenings have not been altered since I left the ship, I could indicate a hundred or more of these dummies on the port side.

299. *To Mr. Bamford.*—The substitution of a dump in such a way as to make it appear like the through bolt that was specified was fraud.

300. *To Mr. Atkinson.*—It is possible for the dummy bolts to have been drawn and through fastenings inserted after I left the *Braeside*. The dummy bolts were still in the ship when she was launched. I made my written statement, because of a request by Mr. Snellgrove, who pointed out the possibility of loss of life if the ship put to sea without being properly fastened. I do not know how Mr. Snellgrove became aware that I was in possession of that information. If Sid May says that my statement in regard to the instructions issued to me about the fastenings is incorrect, he is not speaking the truth.

301. *To Mr. Mathews.*—The specifications provided for one dump and one through fastening wherever a plank crossed a frame, but my instruction was to use a through fastening at every third or fourth frame. For a through fastening the hole was bored right through, but other holes were bored only the length of the dump. So far as I know that was done throughout the ship. In some cases where the planks joined there would be one through bolt and three dumps. I commenced my shipbuilding experience with the Wallace Power Boat Company. I had never done any planking before commencing work on the *Braeside*. I did a little of the planking in the 'tween decks, but I had nothing to do with the top decks. On the *Burnside* I was employed only on the bolting. Mr. Brown, the Government inspector, was on the job sometimes. In some cases through holes had been bored, and they were filled with a dump and a dummy. The reason was that in attempting to put in the through fastening the bolts had deviated from the hole, and could not be driven further. In odd instances the bolt was cut off, and in other cases it was drawn out and the hole filled with a dump. When that happened no compensating bolt was put in. Holes could have been bored through all the knees from the outside, but not from the inside. We tried to do that with several of the knees, but on account of the angle at which they were set against the frames the auger missed them. In those places we used a wooden plug, but if the hole actually went through the knee we used a dummy. Another hole could have been bored, but it would be cutting away the planking. Some augers were broken in trying to bore through holes. On odd occasions the auger fouled the bolts that were already in position. When we did that we put in a dump, but if it was a place where a through fastening was supposed to be we used a dummy, which passed through the planking into portion of the frame. Such a fastening might be called a dump by some people, but if it was supposed to go right through the frame and the planking, and did not, I would call it a dummy. A dump is a galvanized piece of iron with a forged head. The majority of the short bolts had heads which had been riveted on with hammers, and were not forged; these bolts were not intended to be through fastenings. If one of these short bolts was used where we were boring for a through fastening, but met an obstacle, I would call it a dummy. I am not competent to say whether those short bolts would hold the plank to the frame. When putting a plank up we used a dump to hold it in position until it could be properly fastened. I cannot say why these dummy bolts were used. I had no conversation with the yard manager at all. When I received instructions to put through fastenings at every third or fourth frame there may or may not have been other men standing alongside. I marked out the position for the holes, which my gang then bored. I measured the length of fastenings required, and the men put them in.

302. *To Mr. Bamford.*—In bending the planks to the frames we used 14-inch dumps to hold them in position after the clamp was removed, and until the through fastenings were put in.

303. *To Senator Newland.*—Mr. Snellgrove did not offer me any inducement to make a statement about the dummy fastenings. I was out of the employ of Kidman and Mayoh when I made the statement, and I was not offered a job as an inducement. I do not remember whether there was any talk amongst the men as to the danger and unfairness of using dummy fastenings; I dare say there was. I did not think it was the right thing to do, but it was my business to do as I was told. Dumps of 10 to 20 inches long would be legitimate fastenings if they held the plank in position, but I do not know how they would stand the strain at sea. The majority of the short fastenings were driven from the outside. Although I was instructed to put a through fastening at every third or fourth frame, yet if the staging was in the way I might put the through fastening at the fifth frame. I was acting under instructions, and I am satisfied that the dummies were used for the purpose of deception or fraud. My estimate of 200 dummy fastenings refers only to the inside planking, and does not include the knees. Many hundreds of dummies were put in where through fastenings should have been used.

304. *To Senator Foll.*—In some cases the dummies were put in through holes. If the hole was 23 inches through the dump and dummy with which it was fitted could not total 23 inches, because in driving one in you would drive the other out. Therefore, the electrical test would reveal the places where dumps and dummies have been used instead of through fastenings. I think I can point out places where that test can be applied. As to whether the ship was being rendered unsafe through the use of dummy fastenings I cannot say; I am not a shipwright, and do not know much about shipbuilding, but I would not like to go to sea in the vessel. I have often thought that the ship would not be safe by reason of these dummy fastenings. I heard that a man named Worrard made a report to the Government officials regarding the fastenings. He had been put off the job before he made the report. There was conversation in the yard about dummies being put in the ship, and nearly everybody who worked on the *Braeside* could see them. The majority of the men could look at the plans if they were at all interested in them. I do not know when the report was made by Worrard. I do not know what Mr. Williamson meant when he told me that I knew why I had been put off the job. I had not spoken to either Captain Maxwell or Captain Murchison or with any representative of Burns, Philp, and Company. Williamson may have meant that I was loafing or smoking on the job. My dismissal may have had something to do with Burns, Philp, and Company, although I had not given any information to that firm. I had read in the daily press that they had purchased the *Braeside* and the *Burnside*, but I did not know whether they

had any men working on the job. When I got the sack I thought that as Mr. Brown, the Government inspector, was fairly friendly with my mate, Bill Haig, the contractors may have thought that I had been giving Mr. Brown information, and that there might be an inquiry. I saw Mr. Brown on the job constantly.

305. *To Senator Newland.*—I had a conversation with Mr. Russell and Mr. Snellgrove, of Burns, Philp, and Company on Monday last, but there was no suggestion by them as to what evidence I should give at this inquiry.

306. *To Mr. Boyd (through the Chairman).*—I saw the plan in Young's office, but I worked according to instructions. When I was instructed to use dumps and dummies in lieu of edge fastenings, the thought did not occur to me that I was assisting in committing fraud. I never thought that the contractors were trying to save money by resorting to that method. Although through holes had been bored in some cases the through bolts could not be driven. There is a tendency for a long bolt to foul one of the laminations of the frame, and to leave the hole and plough into the wood. In some cases the bolt was pretty well driven through, and if it could not be driven further it was either cut or drawn. When a bolt is drawn another through bolt is not put in. The reason was, I suppose, that there was an obstacle which prevented the bolt from being driven home. On several occasions I told May that the bolts could not be driven through. I am certain that no compensating bolts were put alongside. If that had been done there would have been three bolts on the one plank at the one frame. I was told to put a through bolt on the upper edge of the plank and a dump on the bottom edge, and in the plank immediately below to alter the arrangement, so that all the through fastenings would not come together. That system was not carried out. The Government inspector did not to my knowledge examine the holes. I cannot say how many 4-inch dummies were used. They would not number 100, but there would be dozens of them. I saw more than twenty-four, which you tell me is the number which the blacksmith said he had made. I did not put in any short bolts which the blacksmith did not make. I took the bolts from the shed in which they were openly kept near the *Braeside*. There was a man looking after the bolts, and, as a rule, we gave him orders as to the number of different sizes we required. The only concealment in regard to the fastenings was when Young or May told me one day while working inside the vessel to watch Mr. Brown. I think he meant that if I saw Mr. Brown coming along I was not to continue at the work. I do not know why I was given that instruction. Most of these short fastenings were put in the ceiling between the bilge stringer and the 'tween deck clamps. Where the dummy fastenings are in the knees through bolts were supposed to be used. Some of the dumps in the knees on the port side are chocks. I shall point out some of the knee fastenings when I am on the ship. I started putting the dummy fastenings in at about the time when the foreman shipwright started caulking. I took his place at the fastening work. I did not see the short bolts cut in the blacksmith's shop, but I know that they were cut from longer bolts. Whether or not those longer bolts had been intended for the four cancelled ships I do not know. Caulking commenced before the fastening was finished. I may have been working on the fastenings for two or three months. The men talked amongst themselves about dummy bolts, but I made no report to anybody. I am a member of the Bridge and Wharf Carpenters' Union, but I did not think it worth while to report to the union that scamping was taking place, because the secretary, Paddy Sellars, works on the job. I do not think it was necessary for the contractors to take steps to prevent the workmen talking about the dishonest work. As a rule workmen do not talk, and very little notice is taken of them when they do. In any case they usually mix with only their own class. Mr. Snellgrove called at my house in a motor car, and asked me if I would make a statement about the fastenings on the *Braeside*. He wrote down my statement as I dictated it, and I signed it in my home. I made a later statement in the office of Mr. Russell, the solicitor. I was not offered a job or a bribe of any kind, nor was I promised protection against anything that might befall me in consequence of having made this statement. I was not offered any inducement or reward for assisting the contractors in doing faulty work. When I commenced on the fastenings the *Braeside* was at a much more advanced stage than is shown in the photograph taken on 12th June, 1919. I will not swear that I started the bolting in February. My only conversation with Young about the putting in of dummy bolts was when I told him that I thought workmen should do a good job; he replied that if I wanted to stop on the job I was to do what I was told.

307. *To Mr. Brown (through the Chairman).*—I heard that Mr. Worrard had reported to the Government officials who were in charge of shipbuilding concerning the dummy fastenings. He was living in Ryde, but I do not know where he lives now. He is not in the employ of Kidman and Mayoh.

The witness withdrew.

Douglas Woodwood, bridge carpenter, sworn and examined.

308. *To the Chairman.*—I was employed by Kidman and Mayoh from about the 1st August, 1919, to early in June, 1920. I was under the foreman, Sid May, and was supervising a gang of about ten men, including Les. James, Alf. Fuller, Harry Collins, Bill Humphries, Hugh McMannice, Jim Wellings, and Fitzgerald. The two men operating the boring machine during the period in which the events related in my written statement occurred were Les. James and Alf. Fuller. I made a statutory declaration in regard to the fastenings before Mr. Russell, the solicitor.

(*Taken at Sydney.*)

FRIDAY, 3RD DECEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

(Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh; Mr. H. C. Brown, representing the Prime Minister's Department.)

Findlay John Murchison, Master Mariner, sworn and examined.

309. *To the Chairman.*—I was employed by Kidman and Mayoh for a couple of weeks from the end of August to the 10th September, 1920. I was foreman over all the men working on the *Braeside*, my duty being to see that the work was carried out properly. I was appointed by Mr. Joseph Mayoh, who instructed me to look after the work in the same way as Mr. Williamson, whom I had relieved, had done. There were plans on board the vessel, and I had my instructions as to the work to be done. I attended mostly to the rigging. There were only eight men working on the ship. I heard two of them,

McDougall and Cook, talking about dummy fastenings in the ship, and on account of what they told me I left Kidman and Mayoh's employment, because I did not wish to be drawn into any trouble. I could see that there would be trouble over the ship, because, as a sailor, I know when a job is properly done. On a Thursday morning I had a row with Mr. Arthur Mayoh over the manner in which the men were carrying out the work. I said to him, "From what I can hear I have a good mind to blow you up over the whole ship. I would not work for people like you." I intended to knock off straight away, but Mr. Barr told me I would put the contractors in a bad hole if I did not remain on the job until Saturday morning. I remained till the Saturday, and was idle for a week before joining the service of the North Coast Company. On the Monday I received a telegram, asking me to call at the office of Burns, Philp and Company, to see Mr. Snellgrove. I did not know why I had been sent for. I was asked if I had heard the foreman say that there were dummy fastenings in the *Braeside*. Burns, Philp and Company knew that I had heard that statement, and I said that I was prepared to swear to it at any time. I therefore made a declaration before Mr. Russell as to the statement I had heard from McDougall and Cook. I had been talking about the botch that was being made of the rigging, because I flatter myself I know all about rigging. I have been a master of sailing ships for six years, since I was twenty-three years old. I said I did not think the men were making a good job of the rigging. McDougall and Cook said, "That is nothing; there are plenty of dummies in the ship." I said "That is a serious thing, and I would like to know all about it. I have not any money, but if there are any dummies in the ship, I, myself, will blow up the contractors." I am aware of the difference between dumps and dummies. I asked the men what they meant by dummies, and when they explained I remarked that it was not right that they should be there. I was in charge of all the workmen on the ship. There were only two riggers working there. No direction was given to me in regard to the carpenters; but if a job was not being done to my satisfaction I went for them. I noticed that they intended to place the bits on the poop without any felt under them. McDougall and Cook stated that there were thousands of dummy fastenings in the ship; but I did not make any investigation to test that statement. I do not know whether there were, in fact, any dummies in the ship at all; but I thought it right to declare what had been told to me. I went below with Captain Maxwell, and I said to him, "If there are any of these dummy fastenings in the ship, we will look for them in the knees that have sprung away." We found a lot of washers which we could turn with our fingers. Even if the knee had shrunk, the washers ought to have been tight on the fastening. I remarked to Maxwell that if we gave the bolt a tap with a hammer, and it went back into place, I would be satisfied that it was a dummy. We gave the bolt a tap with the hammer, and it went back into the knee and the washer became tight. A lot of other washers are not tight now. The fastening to which I refer was on the knee abreast of No. 1 hatch on the starboard side in the 'tween decks. I left the job because I could see that there would be trouble over the ship, and I did not wish to be drawn into it. I am independent of both Burns, Philp and Company and Kidman and Mayoh. From what I had been told I was under the impression that a lot of improper work was being done, and I felt very indignant. There was no Government supervisor on the job on the *Braeside* while she was lying in White Bay. I only saw Mr. Brown twice. Once when he came to the ship he was not allowed on board. I received a letter from Kidman and Mayoh not to allow anybody, even the Government representative, on board. I said that I did not want to be a policeman on the ship, and I handed the letter to McDougall, with the remark, "You can carry out these instructions if you like, but I will not." I know that Mr. Brown came to the rail of the ship, and when McDougall showed him the letter he went away. Afterwards Mr. Arthur Mayoh said he had made a mistake, and that the firm did not intend to keep the Government Inspector away from the ship. The letter stated definitely that Mr. Brown was included in the prohibition. I said to him, "I will not stop you; I do not think it is right." He laughed, and said, "I will fix that up." I did not mention to him my suspicions, because I did not wish to be involved; but I told Captain Maxwell that as an employee of Burns, Philp and Company he should report the matter.

310. *To Mr. Bamford.*—Mr. Brown was on board the *Braeside* twice. He used to walk about the ship. Then I received instructions from the contractors not to allow anybody on board. Both he and Mr. Greenlees knew that I understood a great deal about rigging, and they expected me to keep Kidman and Mayoh on the right track.

311. *To Mr. Atkinson.*—I am certain that the men who spoke to me about the fastenings were McDougall and Cook.

312. *To Mr. Mathews.*—I have spent most of my time on sailing ships. I was master of the *Wild Wave,* which was forty-two years old, but I never saw any loose washers or bolts in her. No man would take the *Braeside* to sea in her present condition. A sailing ship under a big head of canvas and in a heavy seaway works a great deal. Dozens of the knees have sprung away from the beams, and in the lower hold many of them are packed to the thickness of an inch. I am prepared to take the Committee on board the ship, and show that the packing is held in position with ordinary wire nails only. It appears to me that the knees were packed after they had sprung. In the wooden ships in which I have served the knees always fitted close to the beams. That was the case with the *Wild Wave.* She was built of oak, and was copper fastened. The condition of the knees is bound to be due to shrinkage, but from what McDougall and Cook said I was satisfied that there were dummy fastenings in the ship. When a tap of the hammer sent the fastening of the knee back into position, I thought it must be a dummy fastening. I do not regard it as peculiar that McDougall, who is a rigger, should know about the fastenings; the men talk amongst themselves. If McDougall denies that he had this conversation with me he lies. I would like to have him here, and argue the matter out with him. I will go on the ship with the Committee, and point out dozens of knees that have sprung away from the sides.

313. *To Senator Newland.*—I was not on the *Braesid* when she was at the shipyard. She had been launched before I went aboard. I could see that the vessel had a hog, but that makes absolutely no difference to me. I know of many good ships with a hog. The average seaman would not be deterred from signing on in the *Braeside* if she was strengthened in such a way as to hold the hog. I was told that the timber used in the *Braeside* was two years old, and when it was said that the condition of the knees was due to shrinkage I said I did not believe a damn word of it. I thought the fault was due to bad fitting. When I went below to look at the fastenings I had nothing to guide me except what the men had told me. There is only one screw fastening in the throat of each knee. I found loose fastenings in more than one knee, and that satisfied me that the fastening had not been done properly. It is not a proper fastening, the washer of which can be turned with one finger. McDougall and Cook told me that dozens of dummies had been put in holes in which the augers had broken. The rigging also was very much wrong. The fore mast is what we call a pole mast. I do not think any ship

master ever saw a wooden pole mast, *i.e.*, the lower mast and the top mast in one. The lower topsail yard weighs about a couple of tons, and it is slung aloft from an iron band fitted about the mast. When the ship is reaching that band is bound to start working round the mast. Even in a vessel having the top mast and lower mast in two pieces we have to continually go aloft and wedge that band, and I do not know what will happen when there is only one spar. The plan made no provision for making fast the topping lifts on the fore yard. There ought to be an eye bolt to which to hook the block when the topping lift is rove through. The blocks were big, very much on the safe side; they would last a long time, but to replace the sheaves it would be necessary to have new ones made. You could not walk into a ship chandler shop and order a 6-inch sheave to fit those blocks. I would certainly prefer standard blocks. It was a mistake to use those special blocks. I do not think a practical man was consulted before they were ordered. A wiser course would have been to use blocks of a type that can be replaced in any port. A ship's carpenter could make a block, but qualified carpenters do not take service on sailing ships.

314. *To Senator Foll.*—The letter sent to me by Kidman and Mayoh instructing me not to let anybody on board the *Braeside* would be dated the first week in September. I did not notice by whom it was signed. I felt annoyed at being asked to do such a thing, and I handed the letter over to McDougall. The letter reached me after I had been on board about two or three days. After McDougall and Cook had told me about the dummies Mr. Barr came on board, and I said to him, "How is this ship fastened? From what I can hear you are a bunch of damn crooks, and I do not want to have anything to do with you." He replied to me: "Murchison, you can have that knee taken out, and if anything is wrong we will pay for it; if it is right, you pay for it." I said, "It has nothing to do with me; I am merely stating what I heard." Between the receipt of the letter from Kidman and Mayoh and my leaving the ship, I did not see Mr. Brown on board. He only called at the ship twice during the time I was there. He told me that he would fix the matter up, and be able to get on board all right. But whether he did or not I do not know. Immediately after I made the statutory declaration before Mr. Russell I went to see McDougall and Cook, and said to them: "You know what you were talking about yesterday; I have had to swear as to what I heard, and as soon as Kidman and Mayoh hear about it you will get the sack. You had better go to Burns, Philp, and Company to get a job." They were both married men, and I wanted to protect them. They did not deny having made that statement, but said that they had not expected the matter to be spoken about. I said I could not help it; I had been asked about the matter, and I had to tell the truth. I was not asked by Burns, Philp, and Company to interview the men. I did so on my own initiative, because I thought it only fair to tell them what had happened.

315. *To Mr. Bamford.*—When I heard about the fastenings on the *Braeside* I did not want to get drawn into any dispute, but I would have not left immediately if I had not been expecting a job shortly.

316. *To Mr. Boyd (through the Chairman).*—I cannot say where the fore yard topping lift is made fast. According to the plan it appears to be a little below the cap band. There were no yards aloft when I was on the *Braeside;* the job was not finished. Every ship I have been aboard had the topping lift made fast on the cap band. There is no such thing as a cap band on the *Braeside,* because she has a pole mast. There was no hook or eye to which a block could be fastened to serve as a lead for the fall of the topping lift. If I were a ship master about to equip a ship I would purchase the blocks on the *Braeside,* provided I could get them cheap enough. That is the only reason why I would buy them. The fault with the blocks is that they are too big, and that in foreign ports they could not be replaced. Of course, these blocks would last a number of years. I would buy them as cheaply as I could, because I could replace the sheaves myself. The letter I received from Kidman and Mayoh while on the *Braeside* instructed me not to allow anybody on board, and mentioned both Mr. Heron and Mr. Brown. It was dated at the beginning of September. I do not know the date on which the dispute between Kidman and Mayoh and Burns, Philp and Company started. I was invited to make the statutory declaration on the 16th September after I left the job. I did not think there was any dispute in existence, and I did not expect that the declaration would be used. I made it because I was asked to do so. I heard that Kidman and Mayoh wanted Burns, Philp, and Company to take over the ship, and that was why I was asked to make the declaration. It was drawn up by Mr. Sly. I did not know whether the matter would go any further. It was no concern of mine whether the declaration was used or not. I do not remember word for word the letter I received on the *Braeside,* but I believe I could recognise it if I saw it. I think I asked Cook to go down into the hold with me, and point out to me the dummy bolts. He did not exactly refuse, but he started to tell me how to find the fastenings for myself. I entered the service of Kidman and Mayoh through Mr. Joseph Mayoh asking me to take over the supervision of the work on the *Braeside* until I could get another job. I had not quarrelled with Burns, Philp, and Company. I left their service of my own accord. If I had quarrelled with them they would not have offered me a decent job. I do not think I ever told Mr. Mayoh that I was sick of Burns, Philp, and Company. Mr. Mayoh told me to go on board and relieve Mr. Williamson. He gave me no instructions about the work on board. Captain Maxwell visited the ship on the 8th August, and had a yarn with me. I do not remember whether he had any right to be on the vessel at that date; so far as I know he had. At any rate, I had no instruction to keep him away. I think it was on the following day that I received the letter from Kidman and Mayoh. If Maxwell had no right to be on board, Mr. Arthur Mayoh and his son were there, and they could have ordered him off. As a ship master I would not carry out the instructions contained in that letter; I did not care about them. When I joined the ship the lower rigging was not all set up, but it was turned in. I did not notice how many shrouds were up. The photograph of the 10th June shows the condition of the rigging when I went on board. I remember that some of the back stays were set. I do not know who was in charge of the rigging prior to that date. I do not think Captain Maxwell was in charge; when I was on the vessel he consulted me about everything. I understand that he was to be the master of the *Braeside.* I do not know what his duties on board were; he had his ideas, and I had mine. I would have supervised the rigging of a ship of which I was to be master. I did not say that Captain Maxwell knew nothing about the rigging of a ship. As a man who had been at sea he ought to know something about it. I told him I would not have him interfering with me on the ship; I had a sailor's growl. I was fairly friendly with him, although I used to growl at him now and then. He was on the ship a long time before I arrived, and Mr. Snellgrove consulted him more than he consulted me. I thought I was more experienced than he was, and probably I was a little

jealous. I did not report to Mr. Mayoh the result of my investigations of the fastenings because, as I have already said, I did not wish to be drawn into a row. I did not know whether or not my evidence would be used, but I thought it might be. I thought it was the duty of the yard manager to report to the contractors about the fastenings after I spoke to him. I do not know that it was my duty to acquaint my employer of what I had heard. But my conscience pricked me so much about my work that I left the ship. I personally thought that the bosses knew all along what was happening, and, therefore, I did not want to have trouble with them. I told Burns, Philp and Company I did not wish to have anything to do with the dispute. I was not afraid; the matter had nothing to do with me either way. I was not drawing a salary from Burns, Philp and Company while I was in the employ of Kidman and Mayoh. I am now second mate on the *Wollongbar*, belonging to the North Coast Company. When I asked Mr. Mayoh for work, I told him that I probably would be getting employment later with the North Coast Company, and he told me I could work for him until the other job presented itself. I do not know that I had any responsibility to report to him what I had heard about the dummy fastenings. Mr. Joseph Mayoh was all right; but I told him that if Mr. Arthur Mayoh had anything to do with me I would knock off immediately. I had had an altercation with Mr. Arthur Mayoh. I have not received any payment for work done for Burns, Philp and Company since I swore the declaration; they did not even offer me a decent job. I tested the loose bolt in the knee with a Monday hammer, such as is usually carried on a sailing ship. I have heard that the Commonwealth Ship Construction Branch have made an investigation of the statements made by me and others in regard to the fastenings, but I have not seen a copy of the report. I do not say that the fastenings were bad simply because they had no hammer marks on the heads; I simply went on what others told me. I was able to twist one of the washers with my finger. I adhere to my sworn statement that, "We decided to test the fastening, and obtained a hammer and gave it two or three hits with the hammer, and when we struck the bolt with the hammer the bolt and the knee went back into their original position." The bolt went up a little, and the knee went up with it. I have no idea of the length of the bolt. I do not know that it was a dummy; but from what McDougall and Cook had told me I thought it was. I had never seen the bolt and the knee in their original position. In making the affidavit I probably overlooked the word "original." As regards the statement that the bolt and the knee went back into their original position, I desire to amend my affidavit. I meant that the knee went back a little. I admit that if the bolt had been a dummy 4 inch long, it could not possibly have carried the knee back into its original position. The knee would probably be drawn back by a full length fastening, but if the knee had been properly fastened it would not have been so easily moved. The bolt I struck was certainly through more than one piece of timber. It was certainly not a 4-in. dummy or a bolt put into the hole merely to deceive. I said to Captain Maxwell, "A lot of these washers are loose, and the knees have sprung away from the sides and beams. The washers should be tight. If what these men are saying is correct. the fastening cannot be far into the beam. The fastening must have a bigger hold on the knee than on the beam. If the hole was driven only half way into the beam, and the knee has sprung away, a hit on the bolt will send it back into position." I did not notice if, when I drove the bolt into the beam, the lower end of the knee pulled away from the side. If it is shown in evidence that the bolts picked out as dummies are through fastenings, I will not admit that my statement was wrong, but I will say that for through fastenings the bolts were very loose. I do not believe that there are thousands of dummy fastenings in the ship, but to a certain extent I believed that there was something wrong with the ship when the statements were made to me by McDougall and Cook. I believed that some dummies must have been put in the ship or they would not have been talked about; but I thought the reference to thousands of them was an exaggeration. I do not believe the average Australian workman would do shabby work of that kind. By defective fastenings I meant those with loose washers. I concluded from what I had been told that these were dummies. I could point them out, although I do not remember exactly the knee we tested. I swear that McDougall said that there were thousands of dummy fastenings in the *Braeside*. I am not aware that he did not work on the ship until after she was launched, but I had an idea that he knew nothing about the construction. Certainly it is right to put in dumps where dumps are specified. McDougall told me that dozens of augers had been broken in the keel, and that dumps had been put in on top of them. I am not aware that he did not work for Kidman and Mayoh in August, 1919, and that all the holes had been bored, and the bolts put in before he went on the ship. If the photograph of 12th June, 1919, represents the stage of construction three months before McDougall entered the contractors' employ, he would not be likely to have any knowledge of the fastenings in the keel. I thought he was repeating what had been told him by other men on the job. I did not say in my statutory declaration that the knee fastening was a dummy; but from what the men told me I considered that it was. I meant that what I saw of the fastening was in accordance with what had been told me. I did not mean that, as a result of my own inspection, I considered the fastening was a dummy. The opinion I expressed was based on my own investigations coupled with what had been told me. I am not prepared to say that the fastening I tested was a dummy. I did not mark it with a blue pencil; I do not know if Captain Maxwell did so. I did not examine the bottom point of the knee where the fastening passes through into the clamps. There was nothing peculiar about the fastening I tested, except that I could twirl the washer with my finger. I could have put my hand between the clamp and the knee, and felt the fastenings in some cases. I do not remember having done it in connexion with the knee in question. I do not know whether the bolt I struck had fouled another fastening. If there were any short bolts in the knee I would consider them dumps, because all knee fastenings should be through. Any knee bolts that were not through and clinched at both ends I would regard as dummies. I am not prepared to say that the plan of the ship was badly drawn. I am speaking only from a sailor's point of view. If the naval architects thought that a ship built to that plan would have sufficient strength I would not say that they were wrong in their calculations. I was present when McDougall told Captain Maxwell that there were 20 tons of dummy fastenings in the ship. I have no idea of the weight of the fastenings. I did not see any short bolts being made in the blacksmith's shop or used anywhere on the *Braeside*.

317. *To the Chairman.*—From a sailor's point of view any knee fastening that did not pass right through the frames and the outside planking would be a dummy. If the approved plan specified dumps in certain places the use of them is all right. In that event, my opinion that the short bolts were dummies and not dumps would be altered.

318. *To Mr. Mathews.*—There were three bolts in the knee which I tested, and I drove in the one at the end of the knee passing into the beam. I did not notice whether the other bolts went back in sympathy with the one I struck. I do not consider that the bolt I drove home was the only one holding the knee in position. I

tried only the one bolt that was loose. The knee was hanging away from the beam ¾ inch. I did not notice whether after I had tightened the first bolt the others went in or protruded from the knee.

319. *To the Chairman.*—I had a private disagreement with Mr. Arthur Mayoh in regard to the men working on the job. He started interfering with the foreman rigger, and I asked him what he thought I was on the ship for, and whether he was of opinion that I could not look after the men.

320. *To Mr. Boyd (through the Chairman).*—When I went into the hold with Captain Maxwell to look at the fastenings I was not aware that a dispute had started between Burns, Philp, and Company and Kidman and Mayoh, but I heard that there probably would be a dispute. We discussed that probability, and that is why I did not want to be involved in any dispute. I do not remember whether it was Captain Maxwell or myself who used the hammer on the knee fastening. I did not look to see if the forcing back of the knee ¾ of an inch caused the other bolt to be loose or protrude. I believe our conversation with McDougall and Cook took place during the lunch hour. I have never seen MacDougall under the influence of drink; he and Cook were both normal at the time of the conversation. There were other men about the deck, but I do not think they were included in the conversation. The men on the job were always talking about bad work in the ship; but I did not take any notice of their talk until the dummy fastenings were mentioned. From the way in which McDougall and Cook spoke I took it for granted that what they said was quite true. I, like Captain Maxwell, saw the hog reappear in the *Braeside* as she was floated in the dock. I did not expect the hog to come up again, because I thought that the pillars which had been put in the lower hold after she had been let down on an even keel would keep her straight. I saw that the keel had a hog when the vessel was on the blocks in dock. Packing was placed under the hog, but if the driver did not pack the keel closely the hog would come down a little. While the ship was in dock she was painted. I believe that a certain amount of mud had to be washed off the keel. There might have been some slime, but there was no marine growth. I do not know that Mr. Curchin advised Mr. Mayoh to let the ship down on an even keel; but I know that she was let down. I saw the rigging slacken as the ship took her bouyancy in the dock. I heard Captain Maxwell say that while the keel was straight the rigging was taut. When a squall strikes a ship the lee riggings, which had been taut, becomes so slack at times that you can twist it round your hand. When the keel rose it resumed its hog, as the ship was being refloated in the dock the mast should rise; but I do not know what movement took place in the ship. The bilge might have come up, thus pushing in the sides. The rigging certainly did not slacken. If the hog caused the keel to rise, and take the shape of an inverted saucer, the masts would certainly have lifted. That would tend to slacken the riggings, but not if the sides moved also. If it can be shown that the keel came up 21 inches, and that the sides did not alter to anything like that extent, the rigging should have tightened. It was the fore rigging I was watching. Mr. Barber and Mr. Williamson also saw it. I heard Captain Maxwell say in evidence that he saw the sides of the ship rise. I did not see that. I did not look at the mizzen rigging. The jumper stays on the foremasts were taut when I went aboard the ship in dock, and when she was refloated they were slack. What I saw happen to the rigging would happen to any ship as she reverted from a straight keel to a hog. I heard Captain Maxwell say, "If she does that in dry dock, what will she do in a sea-way"; his statement did not alarm me. I did not expect the hog to come back as much as it did, and I was disappointed to see what happened. You ask me if the following letter is the one I received on the *Braeside*:—

[*Exhibit* 80.]

Foreman in charge of *Braeside*,
Watchman in charge of *Braeside*,

Will you please note that nobody is to visit this ship excepting the following persons:—

Mr. Heron, Lloyd's surveyor.
Mr. Greenlees, representing the Government.
Mr. Brown, representing the Government.
Mr. Watson, representing the Government.
Mr. Hewison, representing the Government.

These gentlemen are to be allowed on the ship at any time they care to come, during working hours, but are not to be allowed on board after working hours, or Saturday afternoons or Sundays.

Nobody else must be allowed on the ship unless they produce an order written by ourselves.

Yours faithfully,
K. & M.

That is certainly not the letter I received. It said distinctly that I was not to allow on board anybody, including Mr. Brown and Mr. Heron. I forget whether anybody else was mentioned.—[*Plan of rigging of foremast of "Braeside," indorsed by Lloyds surveyor, produced.*]—I disapproved of the plan of the sails. As a sailing ship man, I would pit myself against Mr. Heron. The sails are wrong. I do not think the lower topsail band is effective. I was not consulted about the design of the iron work for the foremasts as shown on the plan produced. I was in the drawing office a few times, and discussed this matter with the draftsman. I considered that the iron work was not suitable, and suggested to Mr. Barr, I think, that if the band was to be put on soft wood, hardwood slats should be fitted in order to prevent the iron chafing into the mast. That suggestion was not carried out. Mr. Barber often discussed with me details of the rigging. I did not say that the iron work shown on the plan would suit the masts. I stated in the drawing office that it was no good.

The witness retired.

Douglas Woodwood, bridge carpenter, further examined.

321. *To the Chairman.*—I was not recognised as a foreman; but my foreman, Syd. May, looked to me to get the fastening work done. I was in charge of ten men, comprising six borers and two dumping squads. The foreman shipwright on the ship was Arthur Young. When we first commenced dumping and boring, about the end of November, 1919, he started me off with the planks. I was given a copy of the plans, and told to work according to them. They showed how the ship should be fastened, and I followed them in respect of the fastenings down to about the water ways in the 'tween decks. Then, about December, I was told to spread out the through bolts to about every fourth or fifth frame, instead of putting one through every plank at every frame; but we had started working according to the plans, and it did not seem reasonable to spread the through fastenings so much. All the upper planking had been fastened according to the plan, which showed where each plank crossed each frame there should be one through fastening and one dump, and where two planks butt on the frame, two through fastenings and two dumps. I did not follow May's instructions to spread out the through bolts to every fourth or fifth frame; but I put them in about every alternate frame. May did not ask me why I had not carried out his instructions; he seemed quite satisfied. I do not think any of the workmen heard him give the instructions because we were standing on the staging at the time, and I was working on my own, marking the planks for the borers, and measuring the length of dumps and bolts to be put in. I made one mark wherever a through fastening was to go, and a different

mark for the dump. For the first fortnight, Billy Sinclair was working as my mate; but I think he left the job before May took charge. What Sinclair and I did was to compromise between the plans and the instructions. I cannot say positively that Sinclair was with me when May was made leading hand, or whether he had left the job prior to that. I think he was there when the instruction about spreading the through bolts was given, but I cannot say that we discussed it; I believe we did. When I received the instruction I consider that the through bolts were being placed rather far apart, having regard to the fact that previously we had been working according to the plan. The Government Inspector, Mr. Brown, was rarely on the staging; I may have seen him once or twice during the three or four months I was engaged on the boring. Later we went into the lower hold, and put in dummies on the starboard side. The portside had been fairly well fastened, the through fastenings being at about every second frame; but on the starboard side they had been put in about every third or fourth frame. I put in dumps in order to make the starboard side appear like the port side, so far as through fastenings were concerned. The length of the dumps was about 6 or 7 inches. They were put in between the bilge stringer and the clamps, and a few between the bilge stringer and the margin girder. They would be easy of detection if they have not been touched since they were put in. I must have put in from 200 to 250 of these dummies. There were two boys working in the smithy for nearly a fortnight doing nothing but riveting heads on short bolts. I saw the bolts lying on the ground where they had been thrown after they had been cut. When they were brought down to the ship they were lying all over the floor about the margin girder. The thickness of the planking into which I drove the bolt would be about 4 inches. I do not consider it was my place to make any comment about this work when I had a superior officer over me. The borers in my squad were Les. James and Alf. Fuller, and the labourers who were putting in the bolts were Chick MacMannice and Billy Humphreys. The short bolts were made to appear as if they were through fastenings. Compared with the port side the starboard side looked very bare on account of the lack of through bolts. Dumps were put in from the outside where the through bolts should have been. Then, in order to make the ceilings on both sides look alike, these short bolts with riveted heads and washers were driven into the holes. Between 70 and 80 dummies were driven into the port side hanging and lodging knees from the inside; the dumps that were used were from 14 to 24 inches long. The plan I had distinctly showed three through bolts holding the knee to the beams, and four through bolts from the knee through the frames. A dump is used only to hold the knee into position while it is being through fastened. Only three bolts were driven through the frames, although the plan showed four. I had nothing to do with the bolts from the knees through the beams. We attempted to put in the bolts through the frames and the knees, but when through various courses we could not insert a through bolt we put in dummies. The same thing happened with the lodging knees. I believe it was Arthur Young who gave us the instruction. We were told to put three through fastenings in every beam, but in some instances we failed to do that. Perhaps an auger broke or took a wrong direction, or struck a dump from the other side. In boring we had to leave the seams open for the caulking. I saw half-a-dozen holes that were crooked or ran into a seam, and those were left. A plug was driven from the outside through the planking, and a dummy was inserted from the inside. All the bolts and dummies on the *Braeside* were galvanized, but in the *Burnside* some black iron dumps were used. There must have been 200 of those black iron dumps in the planking. At that time I was planking on the *Burnside,* and other men were boring and dumping, and the black bolts went into the planks I was putting up. These black iron dumps were kept behind the door in the tool shed.

322. *To Mr. Atkinson.*—Arthur Young made no remark to me which would indicate that he knew I was not working according to the plans. He did not explain to me why he wanted me to put three fastenings through the knees instead of four. I consider that a short bolt, occupying a place that should be filled with a through bolt clinched at both ends is a dummy. Some of the dummies were put in where it was possible to drive a through bolt. Dumps were driven from the outside through the planking into the frame, and dummies from the inside through ceiling and into the frame. Those dummies would not be as effective in the ceiling as a through bolt. The plans provided for through bolts from the outside clinched on the inside. Clout put the dumps in from the outside, and I drove the dummy bolts from the inside. The port side was fairly well fastened amidships with through bolts, but the starboard side was defective. I did not hear from Arthur Young or any responsible person on the ship any explanation of the reason for using short bolts instead of through bolts.

323. *To Mr. Mathews.*—I had never previously worked on a wooden ship. I am now back at my trade as a bridge carpenter. Never in bridge construction have I known one bolt to foul another. If that did happen I would put in a compensating bolt somewhere. None of these dummies were put in the ceiling, because we could not drive a through bolt. It was all clear going; the through holes had been bored without any obstacle being encountered, but short bolts were driven in. One heard casual mention amongst the men of the number of dummies that had been put in the ship. I never heard of a dummy being used in bridge construction. The substitution of short bolts for through bolts would mean a saving of money to the contractors. In bridge construction I have never known of dumps being driven from both sides of a pile in lieu of a through anchor bolt. I think the fastening plan upon which I worked was the same as that now before the Committee. It was lent to me by Arthur Young until I could gain a correct understanding of the boring. None of the men under me saw the plans unless they picked it up and looked at it casually. The plans were not posted in the office near the ship, but were rolled up and put in the rack. If a man was found loitering about there he was asked for an explanation. When Young instructed me to put three bolts in the knee instead of four he had the plan before him; I think he told me to omit a particular bolt. Having regard to the size of the knees I think that three proper through fastenings would have been ample. I never had much time to study the plan, but I think it showed the positions of the majority of fastenings and dumps. I never received any written instructions elaborating or modifying the plans; all my instructions were verbal. They were secret to this extent that I was on my own, and if anything was required the leading hand came to me and gave instructions. I regarded the instruction about the fastenings as peculiar, but I have known something of the same sort of thing on other jobs.

324. *To Senator Newland.*—The dumps were cut and sent to the smithy, where heads were riveted on them, and if there was no labourer available to bring them down to the ship I went to the smithy and carried them down. I did all the marking and measuring of the holes and ordering of the bolts. I was not regularly supplied with short bolts; I ordered them when I wanted them from the man in charge of the bolt heap. Sometimes 200 bolts of various sizes would be ordered at a time. I would write down the number of the

various sizes I required; I am not confounding a dump with a dummy. A dump may be a legitimate fastening, and I could see that dumps ought to be put in certain places. The short bolts which have been put in the ceiling on the starboard side are useless; I knew that when I put them in. If a 25-inch bolt in the knee would not draw with the rack of the ship it would be all right, but a bolt that went right through the frame and the knee and was fastened on both sides would have no chance of drawing. When I commenced on the fastenings the planking and knees were in place, temporarily fastened with dumps. Therefore, it cannot be said that we were using these dummies in order to hold planks in place. There were about 400 back iron bolts concealed behind the door in the toolshed, and when they were put in the *Burnside* a boy was sent round with a brush to daub the heads with grey paint. They had not all been used at the time I left the job. The foreman knew of their use, but I do not think that Mr. Brown, the Government inspector, did; I do not know of any other inspector having been there.

325. *To Senator Foll.*—The idea of painting the heads of the black bolts was to make them appear as if they had been galvanized. I think I could point them out. I was planking on the starboard forward at the time of which I am speaking. I think it was because of his age that Mr. Brown did not come on the staging more often. It was not safe for an old man. A younger man ought to have been on the job. Mr. Brown was generally at the yard in the morning. He arrived about 10 o'clock, and left to catch the 12.30 boat at Putney.

326. *To Mr. Parker Moloney.*—I left the employment of Kidman and Mayoh in June, not because of any disagreement, but because on another job I could get paid for the Prince of Wales' holiday. Until we reached the waterways of the 'tween decks there was no spreading of the through bolts. If Mr. Brown had gone to the blacksmith's shop he could have seen the dummy bolts lying there. I think he seldom went to the far end of the yard. He never saw me using those bolts. I used them in the lower hold on the starboard side. He came there, but care was taken to keep the dummies covered. They were laid alongside the sister keelson, so that unless he walked to the edge of the floor and looked down he could not see them. They were placed there purposely by my men so that they would escape the observation of the inspector. The instructions came from Mr. Young, who said to me, "Watch old Brown." I passed that instruction on to the men. I knew that I was doing something wrong; but it was not my place to expose it. There were superior officers over me, and it was my duty to do what I was told. The thought occurred to me that the lives of the men who went to sea in this vessel would be in danger. I, myself, would not go to Manly in the ship. I continued putting the dummy fastenings in according to instructions. A through fastening in the ceiling measures from 23 to 24 inches. The dumps put in from the outside would average 14 inches, and the dummies driven in from the inside 6 inches. I do not think that there would be much saving to the contractors, so far as the quantity of material was concerned, but there might be a little saving of the time occupied in riveting. I would not care to say that the contractors had some object in using these short bolts. I knew that the use of the dummy fastenings and the deliberate covering of them up in order that they might not be seen by the inspector was wrong; it was not by any means an honest practice. I do not think the contractors saved much money by it, and I do not know what their object was. I have stated that there should have been 360 through bolts in the ceiling where I put in 250 dummies. That means that about 110 through bolts were put in. Clout's gang was working on the outside of the ship driving the dumps. I cannot say who told me that most of the through fastenings in the sole beams were omitted.

327. *To Mr. Boyd (through the Chairman).*—The ungalvanized dumps that were used measured 14 inches, and were driven through the planks. I did not mean to use the word dummies in connexion with them. I meant dumps; they are generally put through the planking in order to hold it in position. I am prepared to show the departmental officers where the black dumps are in the *Burnside*. I have no idea where they were made. They were brought into the yard, and were stacked behind the door in the tool shed. They were about 1 inch in diameter, and 12 or 14 inches long. They were the ordinary length of the dumps used in the *Braeside*, but the latter were galvanized. The man in charge of the bolt heap said to me, "Don't use too many; we are short of dumps." These black bolts were driven right home. I was instructed to put a through bolt in every fifth or sixth frame, and I compromised between the instruction and the plan. In putting the dummies in the ceiling of the lower hold I was carrying out instructions, but I knew what I was doing was wrong. A man is paid to do what he is told, so long as it is a fair thing. As to whether or not this instruction was a fair thing, I am not a ship-builder, and cannot say. I considered that the use of dummies instead of through fastenings was weakening the ship, and might endanger the lives of the men who sailed in it. But I did not object until I was approached by the representative of Burns, Philp and Company. Then I made a sworn statement. I repeat that I would not go to Manly in the *Braeside*. Three through bolts in the knees, if properly fastened, would be ample to hold the knees to the frames; but there is a number of knees in which even the three through bolts have not been inserted. The men under me put between 70 and 80 dummies into the lodging and hanging knees on the port side. By dummies I mean bolts that ought to go through and do not. If the knee were bolted according to the plan it would have three through bolts and two dumps. I am not aware that the contractors submitted to Mr. Brown and Mr. Heron a plan providing for three through bolts in the frames instead of four. When I started to bore the knees, Young told me to put three bolts in them. Probably that was the result of the discussion with Mr. Brown and Mr. Heron. I would not be surprised if Mr. Young said in evidence that Lloyd's approved of that alteration. The fourth fastening in the knee is a dump used merely to hold the knee in position while it is being fastened. I do not see any reason why Kidman and Mayoh should have used the dummy fastenings. As to whether there was any attempt to keep this practice secret, my observation is that the more barefaced you do a thing the less notice is taken of it. Syd. May was in charge of the fastening of both the inside and outside of the ship.

The witness withdrew.

Arthur Young, recalled, and further examined.

328. *To Mr. Boyd (through the Chairman).*—I wish to explain what happened in regard to the bolting of the knees. When we started this work, we had not gone very far before the augers fouled other bolts, and it appeared as we would have to bore the knee to pieces in order to put in the clinched bolts shown on the plan. A consultation was held with Mr. Brown, and also Mr. Heron, I think, and it was decided that rather than riddle the knees in order to get the specified fastenings in, we should cut the number of fastenings down and keep them good. It was arranged that three through fastenings would be sufficient. On several occasions I was called on to decide as to what should be done, where a through bolt had got off the lead. I told the men to cut it on the outside, and to insert a compensating dump on the inside. Since I have been on the

Burnside I received instructions about two months to put extra fastenings in the knees. Mr. Heron said that he wanted three through bolts and one dump in each arm of the hanging knees on the upper deck, and four in the upper arm, and six on the bottom arm of the hanging knees in the 'tween decks. Mr. Barre gave me that instruction. The bolts were brought up to Kissing Point, and delivered in the shipyard from Malley Brothers, the galvanizers. Every bolt I saw on the job was galvanized. I saw no black bolts put in the *Burnside,* and, so far as I know, no bolts in that ship were painted to make them look as if they had been galvanized. I have been on the *Burnside* only about four months, and nothing of the kind has happened during that time. If black bolts were being put in I think I would have heard about them. I never gave Woodwood any instructions to put dummy bolts in the *Braeside.* If I had found him doing that I would have asked his reason, and if the explanation was satisfactory I would have understood his action. It is possible that he put in some short bolts without my knowledge, but I do not think that he would be acting under the instructions of a superior officer. May, who was in charge of the fastening, was entitled to give Woodwood orders. The only other persons who had authority to do that were Mr. Barre and Mr. Mayoh. If the contractors wanted a job done in my department, the instruction would be given to me, and I would pass it on. I never gave any instruction that dummies should be put in the ship. I emphatically do not believe that there are as many dummy fastenings in the ship as Woodwood says.

329. *To the Chairman.*—It was impossible for Woodwood to have put 250 dummies in the side-hold ceiling without my knowledge. He could have gone to the blacksmith's shop and got dummies without my knowing of it. My duties did not take me to the blacksmith's shop. I was not in the yard much. I was confined to the ship, and if I wanted anything from the yard I sent messages by a boy. It was not possible for men working in subordinate positions to order the manufacture of a large quantity of 4-inch to 7-inch bolts, have them brought to the ship, the holes bored, and the bolts driven, without my knowledge. If the dumping squads required any bolts or dumps they went to the bolt shed for them. If any of the bolts had to be cut a squad of men took them up the yard with an order from the man in charge. There was no need for Woodwood to go to the blacksmith's shop at all. I was up and down the ship the whole time, and glancing about at the work that was being done. If there had been any scamping of the through fastenings in the planks and frames I should have noticed it, especially as one side is said to be fastened with a through bolt at every second frame, and the other side with a through bolt at every fourth or fifth frame. I did not notice any great difference between the two sides. I received plans and definite instructions as to where the bolts were to be put in. I gave the plan to Woodwood, and he understood it. He says that he fastened the upper planking according to the plan, and that afterwards he received orders from Syd. May to spread the through bolts. It was I who sent Clout to May. I always had a big squad working directly under me on the deck work. I trusted May, and I do not think my trust has been betrayed. He is a competent shipwright and a trustworthy man. Mr. Arthur Mayoh was in supreme charge of the yard. The next man in authority was Mr. Barre, and under him Mr. Williamson. The latter two worked on the ship; Mr. Williamson was confined to the *Burnside* and the yard. Towards the completion of the ship he came on the *Braeside* to put up the ceiling, and from that time onwards he was about the ship a good deal.

330. *To Mr. Bamford.*—The diameter of a hole depended on the length of the bolt to be inserted. If the bolt was 14 inches long the hole would be bored one-sixteenth tight. If it was 24 or 26 inches long you could not bore it one-sixteenth tight for the whole distance. Suppose the bolt was 1⅛ inch diameter, the hole would be bored a neat size for portion of the way, and then one and one-sixteenth towards the finish. With the hole bored one-sixteenth tight, the fastening if it had a good forged head like the dumps we were using would have a good draw.

331. *To Mr. Mathews.*—I will not swear that there is a through bolt in every plank at every frame on the *Braeside.* The plans do not require that. There were supposed to be seven treenails in each frame. The treenail is a through fastening, but it does show conspicuously. The plans provide that there shall be either a treenail or a steel through fastening in every plank at every frame. The original plan showed one through fastening and one dump at every frame. I cannot guarantee that there is either a treenail or a through bolt in every plank at every frame. There is a large number of through fastenings, but I will not swear that none have been missed. There might be one through fastening left out in every frame, but where there is no through fastening we were relying on the knee fastening. To the best of my knowledge the through fastenings in the hanging knees go right through the ship to the outside of the planking. I do not think the statement is correct that there is a through fastening in only every third frame, but it is quite possible that there is only a through fastening at every other frame. I issued no orders to the men to compromise with the plans. It is incredible that all these through fastenings have been missed. I believe that with few exceptions all the through fastenings are in the ship; the number missed might represent 5 per cent. So far as I am aware an honest attempt was made to put a through bolt in every plank at every frame. If that has not been done I am surprised. I do not know how those bolts could have been omitted without my knowledge.

332. *To Mr. Boyd* (*through the Chairman*).—I gave Clout no instructions to put dumps in the outside planking. If he says I did I emphatically deny it. The omission of the edge fastenings from the clamps might have been due to a certain extent to neglect on my part. It is hard to understand why many of these things are done. I had particularly to do with the fixing of the clamps. The edge fastenings were started in the midship section right enough, but we were going for our lives, and the others might have been overlooked. When we had the timber we were pushing on with the work as fast as we could.

333. *To Mr. Parker Moloney.*—It was possible to have put the edge fastenings in the clamps. There is a section on each side amidships, where the edge fastenings have been omitted. Nobody was more sorry to discover that than I was. I regard the omission as serious, because I should have seen that the fastenings were put in. At the time I had a lot to do, and I had a big squad of men under me. I will not accept all the responsibility for the omission of the fastenings. I cannot accept the whole of the responsibility for a tremendously big job like that. The other men who must share the responsibility are Mr. Barre and Mr. Mayoh. My attention was never called to this matter. I cannot say whether they noticed the omission of the fastenings; if they did, they should have drawn attention to it. The omission escaped my own notice. It was when the vessel was in the water that I realized that the edge

fastening of the clamps had not been done. The plans specified one edge fastening at every 5 feet, and unless one looked carefully into the clamps he would not notice that the bolts had been left out. The edge fastenings are in the clamps of the *Burnside*. Since I went on to that ship from the *Burnside* I have had nothing else to do but look after the fastenings and the one small squad of men. I have inspected every bolt that has been put in. I admit that the omission of edge fastenings from the clamps is considered serious, but it was an absolute oversight. Had I thought of these fastenings or noticed that they were being left out, I would have had them put in. I should say that 50 of these edge bolts have been omitted.

The witness withdrew.

Charles William Hamer, rigger, sworn and examined.

334. *To the Chairman.*—I reside at Penhurst. I was employed by Kidman and Mayoh, first on the *Burnside*, and then on the *Braeside*. On the *Burnside* I was engaged as a labourer in helping to erect the frames on the port quarter. I was then transferred to the *Braeside* for general painting and docking work. I went there as a rigger, but I was told to help the painters and carpenters. I was engaged on the rigging at first, and commenced with the splicing of wires. I have made a statutory declaration before Mr. Russell in which I stated that when the lower shrouds of the jigger and spanker masts were put up some of them were too short. Where the lower end of the shrouds came round the heart, the turn in was found to be too short, and would only take three seizings instead of the four specified. In order to make the turn in long enough in same cases a piece of wood dowelling was added, covered with parcel and serving, to make it look like a rope. In other cases a round tube made out of kerosene tin and filled with sand was added, parcelled, and served. The fourth seizing was put round the dowel or the kerosene tube. The usual leather cap was in these cases put over the end of the wood, or the tin tube, as the case might be. I helped to do that work. The foreman rigger, McDougall, was in charge, but he did not help in these operations. When the shrouds were found to be too short he said that the length would have to be increased in some way. We used our own discretion, and put in what additions we thought fit. Our work was seen by McDougall. This happened to approximately nine shrouds, possibly one or two more or less. The work was done under the direction of McDougall; he did not tell us to use tin or wood: but he did tell us that the wires had to be lengthened. What we did is not a common practice in rigging. There were twenty shrouds on the jigger and spanker masts. The counterfeiting of the ends of the wire ropes could have been done without the knowledge of McDougall if he was away from the job. While it was being done he was about, and he knew what we were doing. The fourth seizing has no grip at all on the turn in of the rope, but only on the false end. The result is that the shrouds are not as strong as they should be. If this false end received a knock it would come off.

334A. *To Mr. Atkinson.*—If the ship were at sea and the dummy end broke away there would be a tendency for the other three seizings to break, and the shroud would come adrift. The object of adding these false ends was to give a uniform appearance, the fourth seizing being at the same level on all the shrouds. The same object could have been attained by cutting the longer shrouds to the same length as the shorter ones, and putting the seizings closer together. I made a statutory declaration before Mr. Russell on the 2nd December. I left the employment of Kidman and Mayoh in September pending the result of the inquiry. We were all put off the job with the exception of two riggers; but were told that when the work was resumed we would probably be sent for again. I did not remonstrate with McDougall over the putting in of dummy ends. I was there as a servant, not as a master. If a man is supposed to be running a job, let him run it. I suppose we were all responsible for the idea of lengthening the turn in by the addition of dummy ends. I made the statutory declaration in consequence of a conversation with Captain Murchison. I met him on Monday, and he asked me what I thought about this inquiry. I said, "It is a funny case, and the ship has funny rigging." Captain Murchison has always been a gentleman so far as we were concerned, and he said he was disgusted with the men who would make statements on oath and then go back on their word. I mentioned what I knew about the rigging. He asked me if my statement was true, and I said that it was. On the Thursday I made the statutory declaration. The adoption of these methods of fixing the rigging did not save the contractors any money or time. In fact, it took longer. It was due to the fact that the first shrouds were cut too long or the later ones too short.

335. *To Senator Foll.*—When it was found that some of the shrouds were too short new shrouds should have been cut or the longer ones should have been reduced to the size of the others. The dummy end was added in order to enable the fourth seizing to be put on. That seizing is useless and weakens the shroud. The same practice was adopted with the shrouds on both sides of the ship. This was done while the *Braeside* was alongside the wharf at Kissing Point. Captain Murchison and Captain Maxwell were on the boat at the time. I do not know whether they were primarily responsible for the rigging; we received our instructions from McDougall. I think the shrouds were put up prior to Captain Murchison coming aboard. I did not draw anybody's attention to the use of dummy ends. I did not think it worth while to mention the matter to Captain Murchison.

336. *To Mr. Parker Moloney.*—The cutting of the longer shrouds and the placing of the seizings closer together would not have occupied more time or entailed more expense, but the substitution of new shrouds would have done so. McDougall had told us to do our best to cover up the shortage, but he did not tell us what method to adopt. We are not acting under his instructions in adopting the method we did; that was our own conception. If the seizing was carried away in rough weather, and the shrouds came adrift, the ship might lose a mast. I was quite aware of the seriousness of what I was doing, but I thought I should obey instructions. What I did has the effect of considerably weakening the shrouds.

337. *To Mr. Boyd (through the Chairman).*—I am an able seaman and a rigger. McDougall did not give us specific instructions as to how to fix the fourth seizing, but told us to lengthen the shrouds in the best way possible. Where a wooden dowel was used it was merely set on the end of the turn in. I do not consider that a practical way of fixing a shroud, but I did it because I was told. If I were told to lengthen a rope I would splice a piece on to it. The turn in of the shrouds measured about 5 feet from the bottom of the dead eye. On each shroud there were four seizings of 4½ inches; the first one commenced about 2 inches from the eye, and there was a space of 12 inches between each. I am certain there was not 7 feet of turn in. There was no necessity to leave a space of 12 inches between each seizing, but as the first shroud had been seized in that way we wanted to keep all at uniform intervals in order to make a more ship-shape job. The seizing keeps the ends of the shrouds from sliding through the dead eye. The shroud would not have been weakened if the distance between the seizings had been only 6 inches. With 5 feet of turn in there would have been room for the four seizings without using dummy ends if the spaces between had been only 6 inches. Where the dummy

ends are, the length of the turn in cannot be 5 feet, or four seizings 12 inches apart could have been put in. I do not know what was the shortest length of turn in from the dead eye on either the jigger or spanker masts. Although a space of 6 inches between the seizings would have been sufficient it would not have been in accordance with general custom. I do not suppose the contractors knew anything about the dummy ends. Our orders were to space the seizings 12 to 14 inches apart. I do not say that we were given instructions to use dummy ends for the purpose of putting the fourth seizings on, but that was what we did. I did not use the piece of kerosene tin filled with sand, but I did use the wooden dowel. By reducing the intervals we could have put on six seizings, and each seizing would have been just as effective as are those which are wider spaced. I knew that the slumming of the work would make the ship unsafe for the men who had to work it. I put the dummies on the top of the turn in, but the seizing was put on by the man who was following me. The length of the kerosene tube would be about 9 inches. I could locate the shroud on which it was used. I have already admitted that it would have been better to reduce the longer shrouds in order to get a uniform job. Although McDougall did not give us specific instructions, he knew the method that would have to be adopted; he saw what was being done. I felt that I had no responsibility to do the work properly. I have had no communication with Burns, Philp, and Company in any way.

338. *To Mr. Mathews.*—I covered the dowel, put a leather cap on it, and served it to represent a rope, and another man came along and put the seizings on. Unless the dummy ends were looked for they would not be noticed. This method was resorted to only for the sake of uniformity. I think three of the longer shrouds had been seized before we found out that the others were shorter; that was the only reason why we practised this deception. There were no workmen but the riggers on the ship at the time. I have never previously heard of any deception of this sort having been practised.

(*Taken at Sydney.*)

SATURDAY, 4TH DECEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Maloney.

(Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh; Mr. H. C. Brown, representing the Prime Minister's Department.)

Richard Williamson, foreman shipwright, sworn and examined.

339. *To the Chairman.*—I have been in the employ of Kidman and Mayoh for one year and eleven months; Mr. Arthur Mayoh is engineer-in-charge of the shipyard; Mr. Barr is in charge of construction; and I was assisting him as foreman. I served my time at John Brown's shipyard at Clydebank. I have had experience of the construction of composite ships in the Old Country. I was employed on the *Braeside* for about three months before last Christmas. My duties were to block and shore the ships in readiness for launching, and to organize the men about the job. I was not directly concerned in the appointment of the bosses of each gang. Clout came under the control of Mr. Young. I had nothing to do with the fastenings in the *Braeside;* but if I saw anything wrong I spoke about it. Arthur Young was about the job all the time. I only went there to assist on the outside of the ship in order to get her ready for launching as quickly as possible. After the launching of the *Braeside* I was employed on the *Burnside*. Mr. Barr watched the plan. The construction was very simple, because templates were prepared in the moulding loft. Plans were available, and I inspected them from time to time, in order to carry out my duties efficiently. I had a copy of plan 706A showing clearly the fastenings that were required, and we worked to that plan. That was the instruction to the men. I know that the fastenings have been put in the *Burnside* according to the plan. I have heard the statement that a large number of dummy fastenings had been put in the *Braeside;* but I think that is the talk of ignorant men who are mistaking dumps for dummies. A dummy is a short bolt put in one piece of timber in order to blind the hole and represent a through fastening. A dump passes through two or three pieces of timber. I have never seen any dummies in the *Braeside*, and I know that there are none in the *Burnside*. The plans showed clearly the number of bolts to be put in the scarphs. Very few of the fastenings have been omitted from the scarphs on the *Burnside*. In the tests recently carried out by the departmental officers for Mr. Farquhar, the places where edge fastenings were located were marked with paint, but there are fastenings which could not be located, because the scarphs were too tight to admit the testing knives. I reckon the scarphs in the *Burnside* are well fastened, although a few bolts may be missing. Mr. Brown, the Government Inspector, was on the job nearly every day, and for most of the time. The supervision was efficient. He tried to do his duty; but there should have been another man to help him; he had too much to do. It was not possible for a large number of dummy bolts 4 to 7 inches in length to be made in the blacksmith's shop, and taken on to the ship without the inspector's knowledge. There are no dummies in the *Burnside*. I ordered most of the dumps that were cut in order to use up the longer bolts we had purchased for the cancelled ships. Most of them were put in the *Burnside*, and Mr. Brown saw them. They were from 10 to 14 inches long. No 4-in. dummies were made to my knowledge; but the men did use short pieces of iron in connexion with the union screws. I commenced working on the *Braeside* about October, 1919. It was absolutely impossible for Woodward to have put dummies in the ceiling on the starboard side of the *Braeside* where through fastenings should have been. He must mean that he was putting in dumps. His statement is not true, or I would have overheard something about it. I read his allegation in the press; it is ridiculous. He must have been talking about dumps 10 to 14 inches long. No boss with any conscience would allow dumps of 4 to 7 inches to be used. I do not think there can be any truth in the statement that the men were instructed to put the through fastenings in the planks at every third or fourth frame instead of at every frame. I had nothing to do with the planking or fastening of the *Braeside*, and I never heard of any such instruction having been issued. I believe the men on the *Braeside* had a fastening plan for their guidance. We on the *Burnside* had one all the time. The only trouble we had in regard to the carrying out of the plans was in connexion with the edge fastenings in the ceiling. The plan specifies continuous edge fastenings in the ceiling; but the edge bolts could not be put in. After the frames were in position, the clamps were put on in order to hold the ship fair. We then put in the bilge stringer, and started to build up the ceiling from the bilge, but as we approached the bottom clamp it was impossible to use the auger on the upper planks of the ceiling, or to drive in the vertical fastenings. In consequence, there is a depth of about 3 feet in the ceiling

immediately under the clamps which is not edge fastened. In the recent tests, approximately the same number of edge fastenings were found in the *Braeside* as in the *Burnside*. The markings would indicate that about 30 per cent. of the edge fastenings had been placed in the *Braeside*. I would not say that 50 per cent. of the fastenings are in. I am not aware that the edge fastenings were specified to compensate for the loss of strength through not being able to fit diagonal ceilings. I heard something about Lloyd's having cut out the diagonal ceiling, but I cannot say whether or not edge bolting of the horizontal ceiling was substituted. When we found it impossible to put the edge fastenings in the upper strakes of the ceiling the matter was referred to Mr. Mayoh. I do not know whether Lloyd's were consulted; the Government Inspector was not. No effort was made to compensate in some other way for the loss of strength through the omission of edge bolts. The only method thought of was to skew fasten the ceiling after it was put up. But that was not done. I do not think the omission of edge bolts would have a serious effect on the vessel. They do not strengthen the ship at all; she will be equally as seaworthy without them. The through fastenings give sufficient strength. Thirty per cent. of the edge fastenings are in the *Burnside*; 70 per cent. are missing. I do not think the longitudinal strength is affected. She is riddled with through fastenings and dumps from inside. As soon as I saw the plan showing the edge fastenings in the ceiling I said it would be impossible to put them in. I do not think the edge fastenings could have been got in by boring the planks before they were put into position; the result would hardly be worth the expense. We have put round dowels in the ceiling in order to bind the lot together. I dare say square dowels would have been better, because they would not have moved so readily if the timbers were working. I think that the dowels would have about the same value as vertical fastenings. We inserted them on our own initiative in order to make up for what we could not do. I was present at the launching of the *Braeside*, and thought it was efficient. I did very little work on the vessel after launching. Arthur Young was in charge of her while she lay at the moorings at Kissing Point. She was sitting in the mud at times. I dare say that the hog in the *Braeside* is greater than is usual in a new ship. It is usual for a wooden ship to hog. I anticipated that she would hog to the extent of the 9-in. camber, with which she was built. The omission of the edge bolting would have no influence whatever in causing the hog. The rising of the floor caused the hogging, and vertical fastenings in the ceiling would not have prevented that. Nobody interfered with me in any way. I carried out what I thought was right according to the plan. My instructions were to build the ship closely to the plans, and to make it as good as we could. Whenever I found it was impossible to carry out a specification I compensated for it in some way. The management always approved of any work I did. I was present when the *Braeside* was put into dock. When she was let down on a straight keel the rigging slackened; but we screwed it up, and when she was refloated, it was all tight. In fact, Captains Murchison and Maxwell told Mr. Joseph Mayoh that the union screws had too much strain on them, and asked that they be slackened up. Captain Maxwell said in evidence that when the ship took her buoyancy in dock the rigging slackened. The fact is that when the ship was afloat the rigging was too tight.

340. *To Mr. Mathews.*—I acted under instructions in connexion with the launching of the *Braeside*. When she was on the blocks, and before she was let down on to the ways, I had a suspicion that she would hog. We are always prepared for a wooden ship to hog, and the *Braeside* was built with a sag of 9 inches in order to counteract the hogging as much as possible. She might have hogged slightly when the blocks were moved from the ends. The after block was left under her as long as we could keep it there until the water came up. In the *Burnside* there is one through bolt and one dump in every plank at every frame. I am positive that none of the through bolts have been omitted, except where one bolt fouled another, and we had to cut off the head and clinch the end. In such cases a compensating bolt was put into the hole from the other side. The *Burnside* is fastened as she should be, and I think in some respects is over-fastened. There are a lot of iron fastenings in places where treenails are specified. The planking on the *Burnside* was not completed before the *Braeside* was launched. No instructions were given after that date in regard to the through bolts; we carried on as before. I never heard that the through bolts in the sides of the *Braeside* had been omitted; I consider that she is well fastened. I believe that the bolts which had to be cut off through fouling would not represent more than 5 per cent. of the total. I do not think either ship was weakened by the omission of the edge fastenings. If it had been possible to use the boring machine on the upper part of the ceiling just below the clamps, it would have been possible to get the bolts in. I dare say it was possible to have put more holes in by hand boring, but I do not think it was practicable to bore through the deck into the edges of the ceiling. There was every chance of fouling other bolts. The ceiling could not have been put on before the deck clamps were in position; the lower deck clamps must be put in before the other work can be proceeded with. Although the plans provide for edge fastenings it was impossible to put them in. Perhaps we might have managed to fasten the ceiling more than we did, but we could not put the bolts within 2 ft. 6 in. of the clamps.

341. *To Senator Newland.*—I was never instructed to watch the Government Inspector when he was on the ship, but I always did watch him; one naturally always watches an inspector. I was not told to watch him so that the men would not be discovered doing inferior work. I always condemned any bad timber that was put into the ship. There was one piece that I personally pointed out to Mr. Brown and cut out. One of the outside planks on the *Burnside* is being removed now, because it is defective. At one time we kept the dumps out of Mr. Brown's sight, but latterly he saw them, and said they were all right. He said he would like to see the usual head on the bolts, but the ones we were using were good enough. The same bolt was being used all the time. We ran short of dumps, but we had plenty of longer bolts, and we wanted to use them up. Those we used were only to fasten the planks until the through bolts were put in. In the shipwright's yard in the Old Country we used to put the heads on the dumps ourselves. We sometimes dumped both ends of a piece of iron on the anvil in order to spread them, and then cut it, thus making two dumps. Skew fastenings could be put into the ceiling, and they would compensate for the omission of the edge fastenings; I never thought much about the matter. We all knew that the edge fastenings were not in, and could not be put in, but we knew we could compensate for them in some way. The only compensation that has been put in are the edge dowels every 5 or 6 feet. They connect up the whole ceiling into one girder, and have the same effect as edge fastenings. I am satisfied that as many bolts as are provided for in the plans have been put in the clamp scarphs. An odd one may be missing, but not many. In the edges of some of the scarphs we have driven 8-inch dumps which will act as a dowel to prevent lateral movement. When the *Braeside* was refloated in dock the rigging was so tight that we were afraid the union screws would strip. The strain on the shrouds was caused by the

bottom of the ship rising and pushing up the masts; the sides could not have come up. The mast went up, and the sides went down; that tightened the rigging. Captain Maxwell was inspecting the ship on behalf of Burns, Philp, and Company, and was supposed to make any recommendations that he thought necessary for the improvement of the rigging. Nothing unusual happened at the launching of the *Braeside;* it was a good launch. I was on board the vessel, and as she left the ways I felt no bumps that would cause any damage. I found out about the hog as soon as the ship came alongside the wharf. It was about 15 or 16 inches, in addition to the camber of 9 inches.

342. *To Senator Foll.*—The first I heard of dummy fastenings in the ship was Batch's statement to Burns, Philp, and Company. I never heard mention of dummies in the yard, although I was certain to have heard of any conversation on the subject. At lunch time, I was usually at my own home. I repeat that about 35 per cent. of the specified edge fastenings had been put in. Mr. Mayoh and Mr. Barr knew about the omission of the others as well as I did. Mr. Brown did not know at the time, but he did eventually. I consider that the omission of the edge fastenings will have very little effect on the strength of the ship. I have never sailed in wooden sailing ships, although I went to sea for ten years. I have no personal experience to guide me in estimating the working of a ship's timbers in a sea-way. The insertion of dowels would assist to compensate for the absence of edge fastenings. I have seen that method resorted to for tying two pieces of timber in order to increase their strength. The sole reason for the omission of the edge fastenings was that we knew that we could not get most of them in, and I do not think the ship could have been constructed in any way which would have enabled them to be put in. The plans are to blame, because they provided for something that we could not possibly do. I consulted Mr. Mayoh about the edge fastenings, and he said, " Never mind them." All the keel bolts are in both ships as specified. I know nothing about black iron bolts having been put into the *Burnside*, and painted to represent galvanized bolts. I never saw them. I did see some ungalvanized bolts on the job. I think they were put in the ceiling. At that time we were waiting for bolts from the galvanizing factory, and as we could not get them, the ungalvanized bolts were sent to us. They were used, although galvanized bolts were specified. I do not know of a boy having been sent to cover the heads with grey paint in order to make them appear as if they had been galvanized. We have to paint the bolts in any case. There may be 50 or 100 black iron bolts in the ship, but not any more. I did not see them used. I am positive they are not in the outside planking. I cannot say whether the attention of the Government Inspector was drawn to the fact that we were not able to get galvanized bolts, and were using black bolts instead. There are some edge fastenings in the third strake of the ceiling. We might have fastened another strake, but not more. We said from the start that we could not get all the edge fastenings in, and I discussed the matter with Mr. A. Mayoh and Mr. Barr. We could have edge fastened the ceiling higher than we did, but we could not have got all the bolts in. We should have put them further up the ceiling, and I forget why we did not. They may have been overlooked. The omission of them would save very little time and very little money. When we found that we could not edge fasten the last 2 feet in the ceiling we did not worry much about the other part. We had an idea that we might have to do something else. The rigging of the *Braeside* was in charge of McDougall. I was in charge of the ship, and I told Captains Murchison and Maxwell that I would be only too pleased to receive any advice that they could give us in regard to the rigging. I was informed by the contractors that Captain Maxwell was coming on board to give any assistance he could. It was to the interest of both captains to see the ship properly rigged. I told both of them to ask for anything they wanted, and we would supply it. They were there to overlook the work on behalf of Burns, Philp, and Company. If any faulty work was done in connexion with the rigging they had an opportunity of seeing it, and reporting it to their principals. They did not report to me any fault in the rigging. At one time they spoke about the seizings, but I think McDougall convinced them that they were all right. I knew nothing of dummy ends having been fixed on the shrouds, until I read about them in the press this morning. Captains Murchison and Maxwell must have been about the ship when that work was done. The rigger who apparently did the work was sacked about three months ago. If the foreman, McDougall, did not know anything about these dummy ends the chances are that Captain Murchison knew nothing about them. It was possible for this faulty work on the shrouds to have been done without Murchison seeing it. McDougall was engaged in cutting the rigging; he would not allow the others to do it. There were eight riggers on the job, and two worked on each mast. I am quite sure that if Murchison had noticed what was being done he would have spoken about it.

343. *To Mr. Parker Moloney.*—I admit that 70 per cent. of the edge fastenings were omitted; but I do not regard that as important. I think I was a little senior to Young. He may have said that there would have been no difficulty in putting the edge fastenings in; but I say that there would have been a great deal of difficulty. If the job had been easy they would have been put in. It was impossible to put them in the top planks of the ceiling. The planks are 12 inches deep, and the edge bolt would have been 2 feet long. Even if it had been possible to bore the hole there was no room under the clamps for driving the bolt. I do not agree with Young's statement that the omission of the edge fastenings is serious. Mr. Mayoh, Mr. Barr, and Mr. Young were responsible for the fastening of the *Braeside*, and I would share the responsibility with them in regard to the *Burnside*. It was not possible to build the ship to shape without putting in the clamps before the ceiling was attached. I am not aware that the ceiling was to be edge fastenend from the gunwale to the lower turn of the bilge; the plan does not show any edge fastenings around the turn of the bilge. A 2-ft. hog shortly after launching is excessive, but I would not say that it would be any great peril to a ship at sea. It may indicate that the ship is weak somewhere. I reckon that her weakest part is in the bilge. She is well stiffened elsewhere, but she might have had pillars from the bilge to the 'tween deck. However, she is built according to the plan. Twelve through bolts are specified for each sole beam. I do not know whether they have been omitted from the *Braeside*, and I cannot be too sure about the *Burnside*. Some bolts may have been missed out of each beam; but I do not think any have been omitted. The *Burnside* is not completed yet. If the plan provides for twelve through bolts in the sole beams they should be there. I do not know whether Lloyd's specified edge fastenings of the ceilings as an alternative to diagonal ceilings.

344. *To the Chairman.*—The plan to which I worked was 706A, but it had no red ink alterations, or the words written in red ink " Ceiling edge fastened to lower turn of bilge."

The witness withdrew.

Herbert Charles Brown, Chief Clerk and Accountant, Prime Minister's Department, recalled and further examined.

345. *To the Chairman.*—The plan I have handed in is the construction plan for the *Braeside* and the *Burnside*, as finally approved by the Chief Executive Officer. The red alterations were made by him when

the plan was submitted by the contractors, and I understand that immediately afterwards it was returned to the naval architects for the contractors with all the modifications shown in red.

The witness withdrew.

Richard Williamson, recalled, and further examined.

346. *To Mr. Parker Moloney.*—The plan to which I worked did not show edge fastenings to the lower turn of the bilge, and in any case I do not see how they could be put in the bilge satisfactorily. Suppose this modified plan had reached us, the *Braeside* was planked up to about 'tween deck before we commenced to put the ceiling in, so I do not think the edge fastenings could have been attended to. They have been omitted from the *Burnside* also. If the plan shows that they should be in their omission is serious. We are to blame for not doing the job; but I do not see that much harm can result.

347. *To Mr. Bamford.*—I have been to sea in an iron sailing ship, and have had experience of building iron ships. I have never seen galvanized bolts put into iron work, except on destroyers or other Government ships. When the end of a bolt is riveted over a washer, the galvanizing at that point is destroyed. Therefore a galvanized bolt has no greater protection than has an iron bolt in an iron ship; it has just the covering of paint. I see very little advantage in galvanizing. Even had we been able to bore the holes in the last two strakes of the ceiling, the clamps would have prevented us from driving the bolts home. We could not have put in the fastenings from below.

348. *To Mr. Atkinson.*—The *Burnside* has all the through fastenings holding the planks to the frames. I reckon they are all in the *Braeside* too; but I do not know. Because we could not get the edge fastenings in the upper planks of the ceiling, some of the others might have been neglected; but I reckon the dowels are compensation for what has been left out. So far as construction is concerned, the ship is not weak. I think a wooden ship would work in a rough sea much as an iron one does. I do not think there will be much working of the horizontal timbers, because they are too well tied to the frames.

349. *To Mr. Boyd* (*through the Chairman*).—Kidman and Mayoh gave me instructions to take measurements and sights of any alterations in the form of the *Braeside* when she was launched. The ship was launched at noon, and a junior draftsman on board reported to Mr. Barr the result of the observations through the sights on deck. The ship might have scratched her fore foot when leaving the standing ways; but the damage was nothing worth speaking about. It was subsequently made good, the repairs occupying a couple of hours. When the ship was docked the bottom was covered with marine growth. I examined the bottom thoroughly, and found marine growth on the turpentine keel, and all along the hull; some was adhering to the Muntz metal. The upper clamps are well fastened, but it was impossible to put the edge fastenings in the scarphs between the two clamps. No instructions were given to depart from the plan. I would not have derived any benefit from giving instructions to do shoddy work. I saw that the plans were followed as far as possible, and I would not do shoddy work for anybody. A dummy bolt would be one put in for the purpose of deception. The use of dumps was no deviation from the plan. In every case in which the bolts have been omitted from the scarphs of the clamps it is because it was impossible for them to be put in; it certainly was not because of any instructions to leave them out. In my opinion, the design of the ship made it impossible to bore the holes for the edge fastenings in the ceiling. The ship could not have been built by putting in the ceiling before the clamps.

(Taken at Sydney.)

MONDAY, 6TH DECEMBER, 1920.

Present:

MR. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

(Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh; Mr. H. C. Brown, representing the Prime Minister's Department.)

Herbert Hewison, Chief Draughtsman, Commonwealth Ship Construction Branch, sworn and examined.

350. *To the Chairman.*—I have occupied my present position for three years. Prior to that I was for twenty years in the designing office of Swan, Hunter, Wigham, and Richardson Limited, Wallsend. I was in the Department when the Commonwealth decided to commence the construction of wooden ships. Mr. Curchin was Chief Executive Officer. Contracts were let to Kidman and Mayoh and other firms, and subsequently cancelled, except that it was decided to allow Kidman and Mayoh to complete two ships. I had nothing to do with the preparation of the plans; my concern was the checking of them when they arrived in the office. Plans were prepared by Kidman and Mayoh, or their Naval Architects, Kay, Macnicol, and Company, and submitted to the Chief Executive Officer for approval. We asked the contractors to obtain Lloyd's approval before sending the plans on to us. The main plans—midship section, profile, and fastening plan—were approved by Lloyd's, London, before they were submitted to the Department. We have consulted with Lloyd's occasionally, but the main consultation would be between Kay, Macnicol, and Company and Lloyd's. Only in regard to minor details did the Chief Executive Officer alter the plans without consulting Lloyd's. The departmental copy of the original plans approved by Lloyd's have been handed to Mr. Farquhar. The midship section altered and approved by Lloyd's was plan 193S. The original midship section submitted to Lloyd's showed a longitudinal ceiling with a certain depth of planking. Lloyd's increased the thickness of the ceiling and outside planking, and added a note in red, "Diagonal iron straps fitted outside frames 6 inches x $\frac{5}{8}$ inches at 6 feet apart, or ceiling edge bolted from lower turn of bilge to gunwale." The edge bolting was to be in conjunction with the longitudinal 4½-inch ceiling. In a cable which Mr. Curchin sent to Lloyd's on 27th June, 1918, he proposed diagonal ceilings throughout, and that was at first adopted by the naval architects to the builders. I hand in blue print, now marked 611B, which was approved by Mr. Curchin on 8th August, 1918, and shows a double diagonal ceiling from the bilge to the upper deck, each strake 2 inches thick. Later, the contractors wrote to Mr. Curchin, stating that they had found some difficulty in fixing the diagonal ceiling up to the gunwale, and asking for his approval to the putting in of two longitudinal members at the top. Subsequent to that the contractors asked that longitudinal ceilings should be fitted throughout in lieu of diagonal ceilings, and be edge bolted in accordance with Lloyd's requirements. That alteration is referred in the following letters:—

[*Exhibit* 81.]

No. 4 Bridge-street, Sydney,
20th November, 1918.

H. W. Curchin, Esq., Chief Executive Officer, Commonwealth Ship Construction, 31 King-street, Melbourne, Victoria.

DEAR SIR,

With regard to fitting the diagonal ceiling in two thicknesses from gunwale to bilge, this necessitates keeping the inside of the frames clear, with the result that we cannot fit the

'tween deck clamp. Owing to not being able to tie the ship across in the neighbourhood of the 'tween decks, we find that the frames, due to the climatic conditions, are not keeping fair. We, therefore, would like you to consider a modified arrangement of ceiling, as per enclosed sketch. We have discussed this question with Mr. Heron, and it has met with his approval. If this method of fitting edge-fastened ceiling is adopted, it will greatly facilitate the speed of construction, as the workmen could be employed on either side of the frame without waiting until such time as the diagonal ceiling was ready for laying.

Trusting that the proposed method will meet with your approval,

Yours faithfully,
(Sgd.) A. C. BARBER.

[*Exhibit* 82.]

22nd November, 1918.

Messrs. Kay, Macnicol, & Co., 4 Bridge-street, Sydney.

Auxiliary Schooners.

DEAR SIRS,

I have your letter of the 20th inst., together with sketch, showing modified arrangement of ceiling, and note your remarks.

The sketch is approved and returned herewith.

Yours faithfully,
(Signed) H. W. CURCHIN.

Mr. Mayoh next visited Mr. Curchin and asked for his permission to fit a heavier horizontal ceiling in lieu of the diagonal ceiling. Sketch 667, submitted on the 20th November, showed 5½-inch planking on the outside, 4½-inch ceiling in the hold, and 3½-inch ceiling in the 'tween deck. Mr. Mayoh asked for approval for 5-inch planking on the outside, and 5-inch ceiling on the inside. That was approved by Mr. Curchin. On the 3rd March the contractors wrote to Mr. Curchin as follows:—

[*Exhibit* 83.]

Kidman & Mayoh, Ship Builders,
City Office, 25 O'Connell-street, Sydney,
3rd March, 1919.

H. W. Curchin, Esq., Chief Executive Officer, Commonwealth Ship Construction, Melbourne.

Auxiliary Schooners, Drawing No. 706A—*Fastenings.*

DEAR SIR,

We are obliged for your letter of 28th ult., returning plan 706.

We are sending you, by this post, two copies of 706A, which is in substitution for 706. Kindly let us know if this plan of fastenings meets with your approval.

We are also returning you original copy of beam knee fastenings sent with your letter of 20th November last.

Yours faithfully,
(Sgd.) KIDMAN & MAYOH.

And Mr. Curchin replied—

[*Exhibit* 84.]

13th March, 1919.

Messrs. Kidman & Mayoh, 25 O'Connell-street, Sydney.

Fastenings.

DEAR SIRS,

Under separate cover I am returning blue print No. 706A of fastenings sent with your letter of the 3rd inst., details approved as amended in red.

Kindly send me as early as possible an additional copy for the use of my inspector.

The remaining copy of print 706 is also returned.

Yours faithfully,
(Signed) H. W. CURCHIN.

On plan 706A I wrote in red ink, "Ceiling to be edge-fastened to lower turn of bilge." That was only bringing the plan up to Lloyd's requirements as indicated by them in red on plan 1938—"Diagonal iron straps fitted outside frames 6 inches x ⅝ inches at 6 feet apart, or ceiling edge-fastened from lower turn of bilge to gunwale." I regarded the edge fastenings as important. So far as I can ascertain, we received no acknowledgment of our letter of 13th March. I have no written proof that the contractors received plan 706A as altered in red, but I have seen it in Kidman and Mayoh's office, and I have discussed it in Melbourne with Mr. Mayoh and Mr. Barber. As a result of that discussion we slightly altered the edge fastenings in the clamps and waterways. In modifying plan 706A I marked where additional fastenings were to be put in the knees, and where edge-bolts were to be put through the waterways, beams, and clamps. I did not think it necessary to indicate by red lines in the bilge ceiling that edge fastenings should be put there, because I had written a note to that effect on the plan. I am not a practical shipwright, but I think that the edge fastenings could have been put in the ceiling plank by plank. No objections to the edge fastenings has been mentioned by the contractors to the Department. I swear that Kidman and Mayoh had plan 706A as amended in red in their possession. We have no official acknowledgment from them that they received the plan, but we did not always get such an acknowledgment. At no time during the construction have I discussed with Kidman and Mayoh or any of their representatives the omission of the edge fastenings. We asked the contractors for copies of all the approved plans, and as the letter of 13th March shows, we asked for a copy of 706A as amended for the use of the inspector; we have not received it. I only visited the shipyards twice or thrice during the period of construction. I think that whenever Mr. Curchin was in Sydney he took the opportunity of inspecting the ships. I should say that he saw them every three months. I was never in the working office near the ship. The duty of the Government Inspector was to superintend the construction of the vessels and to give contractors any assistance they wanted. If we received copies of the plans from the contractors we sent one to him. He never reported any departure from the plans except in respect of one or two minor details. He could see the working plan at the yard, and therefore could have notified the Department of any departure from it. I suppose he had access to the drawing office. An inspector can generally go through an office and sight any plan if he so desires. It is quite possible that plan 706A without the departmental modifications in red was placed before the Government Inspector. I admit that that would not be fair to him. Mr. Brown had no plan of the fastenings in his possession. We asked for a copy to be sent for the use of the inspector, but it was not sent. Several times we asked the contractors to send the approved plans to us in triplicate. That was done in some cases, but in the majority of cases it was not. Plan 706A was never in the possession of the Inspector; he might be able to see a copy at the works at any time, but I cannot be certain of that. I know that the tracing was in the possession of the contractors. Besides the amendment in regard to the edge fastenings in the ceiling, the through fastenings in the knees, and the vertical fastenings in the clamps and waterways; the fastenings in the locking keelson were altered from 7 ft. 6 in. to 5 feet apart, and the fastenings in the centre keelsons from 8 feet to 4 feet apart. That was not done originally in the ship, but I understood from one of the representatives of the contractors that at a later stage Mr. Brown asked for the fastenings in the centre keelsons to be placed at intervals of 4 feet. I cannot say whether at that stage any of the ceilings had been put up.

351. *To Senator Foll.*—The Department asked Kidman and Mayoh to supply a plan for the inspector because they had the tracing, and it was easy for them to take off an additional copy. The Department could not make a copy unless we first made a tracing, and we had not the staff to do that. We had the steel ships to consider, and as it was usual for the contractors to make prints from their tracings, we did not consider it necessary to make a tracing from the print. We sent to Mr. Brown a copy of all plans we received from the contractors in triplicate, and the plans we did not receive from them we naturally supposed the inspector would see at the works.

352. *To Mr. Atkinson.*—The main difference between 706A, to which Mr. Williamson said he worked, and 706A, as finally altered and approved by Mr. Curchin, is that the latter has a note in red ink, "Ceiling edge fastened to lower turn of bilge." So far as I can see, Mr. Williamson's plan has no red ink corrections.

353. *To Mr. Bamford.*—All the suggestions made by the contractors and accepted by Mr. Curchin were not carried out in their entirety, nor were all the instructions issued by Mr. Curchin to the contractors.

354. *To Mr. Parker Moloney.*—The inspector should have had full access to plan 706A at the contractors' yard. It is generally understood that the owner's representative shall have access to any plans he may require to see. In the first place, the responsibility of supplying the owner's representative with the plans as finally approved rested with the contractors. From a certain date we asked for all plans to be sent to us in triplicate. There is a letter on the file in which the contractors say that our request to have triplicate copies would receive attention. The onus was on the contractors to provide copies of all plans. We did not ask them to supply the inspector with plans, but we asked them to send each plan to us in triplicate, so that we could send a copy to him. When they did that, we furnished Mr. Brown with a copy. They did not supply us with a third copy of 706A. I know definitely that the contractors had in their possession plan 706A, as amended in red, and, so far as I know, the Government inspector had access to it.

355. *To Mr. Mathews.*—I dealt with the contractors through the Chief Executive Officer. Alterations in the plans were discussed with him before being sent back to the contractors. Mr. Brown dealt directly with the Chief Executive Officer. The overseers at the yards in which the metal ships are being constructed for the Commonwealth receive a copy of the midship section, a specification, and a longitudinal elevation; but they do not get detailed plans. Those are all the plans which are necessary to carry on the inspection of the ship. The midship section shows the whole of the scantlings. It is not considered necessary to give them the whole of the working plans, but they have access to the builder's plans in the yard. The same system was followed in connexion with the wooden ships to the extent that the inspector received what plans we had to give him. I do not think that the wooden ships were regarded by us as the Cinderellas of the Department.

356. *To Senator Newland.* — Plan 193S shows the heavier ceiling and bigger knees that Lloyds required. Plan 706A was prepared from 193S. The Naval Architect would probably make a detailed plan of each type of fastening at the contractors' drawing office. I have reason to believe that such a plan was made. On account of the curvature of the sides, it may not have been possible to drive edge bolts through more than one plank at a time. I cannot say what calculations were made by the contractors' architects in regard to the added strength given to the vessel by using short vertical dumps, which held only two planks. I do not know how the contractors proposed to drive the bolts into the ceiling under the clamps as shown in the plan, but from their letter one would infer that it could be done. They put forward that proposal as a substitute for diagonal ceiling. In regard to the bolting of the clamps, the contractors suggested that, instead of a long vertical fastening passing right through the waterways, beams, and clamps, two bolts should be put in, the one from the top and the other from the bottom, and overlapping each other. According to plan 611B, the clamps would have been put on the face of the diagonal ceiling. Even though the clamps and the bilge stringer were fixed before the horizontal ceiling was put in, it was still possible to get the edge fastenings in a portion of the ceiling, but the clamps prevented them from being driven into the upper planks. The practicability of the contractors' proposal depended on the method of construction. They probably had a method in view when they put forward their plan, and it would be for practical men to say how the work should be carried out.

357. *To Mr. Boyd.*—On the 26th February the contractors wrote to the Chief Executive Officer as follows:—

[*Exhibit* 85.]

26th February, 1919.

H. W. Curchin, Esq., Chief Executive Officer, Commonwealth Ship Construction, Melbourne.

Plan No. 706.

DEAR SIR,

We are obliged for your letter of the 25th inst., enclosing copy of letter from Messrs. Kay, Macnicol, & Co., relative to mid-section and fastenings.

We shall be glad if you will please return to us the two blue prints, No. 706, sent you with the letter from Kay, Macnicol, & Co., on 24th January.

Owing to difficulty in getting certain bolts driven in the 12 x 8 clamps, and in ceilings under same, we are making alterations to these plans. When you receive the new drawing of this we shall show upon same the plan of beam knee fastenings.

Your kind attention will oblige.

Yours faithfully,

KIDMAN & MAYOH.

The last paragraph in the letter infers that a difficulty has been experienced in getting the edge fastenings into the clamps and ceilings. To that letter Mr. Curchin replied:—

[*Exhibit* 86.]

28th February, 1919.

Messrs. Kidman & Mayoh, 25 O'Connell-street, Sydney.

Auxiliary Schooners.

DEAR SIRS,

I have to acknowledge your letter of 26th inst., having reference to plan 706, submitted to Messrs Kay, Macnicol, & Co. I return one of the prints herewith, and will return the remaining prints when the new drawing is submitted.

Kindly return the approved copy of the beam knee fastening sent with my letter of 28th November last.

Yours faithfully,

H. W. CURCHIN.

That letter indicates that the contractors were preparing a new plan. It was followed by the letters of the 3rd March and 13th March—[*Exhibits* 83 *and* 84]—already in evidence, and relating to the substitution of fastening plan 706A for 706. Mr. Mayoh, and, probably, Mr. Barber, discussed that plan in Melbourne after the 13th March when the further alteration to the beam knee bolts was made. The plan was accepted by Mr. Curchin on the 14th April, 1919. Mr. Mayoh said that it would be difficult to put vertical bolts through the waterways beams and 'tween deck clamps as required by the departmental alterations in red, and he asked to be allowed to adhere to the proposal shown on plan to drive from the top a bolt passing through the waterway and beam, and catching two clamps from the top, and another bolt from the bottom to hold three clamps. That was agreed to, and plan 706A amended accordingly, representing the final agreement between the contractors and the Department. The through bolt in the 'tween deck clamps and waterways was not demanded; we reverted to the old proposal of one long bolt driven from the bottom and another bolt driven from the top. Those bolts have been inserted in some places, but not throughout the ship. In the lower clamps there are not so many of the edge fastenings as there are in the upper clamps. Plan 706A, to which the contractors worked, was not in accordance with the agreement made with Mr. Curchin at the interview in Melbourne on 14th April, 1919, because the following alterations in red which appear on the approved plan are not shown:—The through bolts in upper deck

clamps, alterations to 'tween deck clamps, through bolts at the butt of ceiling planks, length of fastening on top of ceiling, alteration of fastenings of centre and sister keelsons from 8 feet apart to 4 feet apart (afterwards done), alteration of edge fastenings of margin girder to locking keelsons from 7 ft. 6 in. centres to 5 ft. centres. Note at the side planking, "See drawing No. 672 for outside fastenings." Alterations to the fastenings in the clamps, as shown in typical section clear of hanging knees. Note at bottom of that typical section, "Ceiling edge fastened to lower turn of bilge." Substitution of through bolts for dumps in bilge planking, edge fastening of margin girder to locking keelsons at 5 feet apart, double fastenings through margin girder instead of single fastenings, alterations to bolts of hanging knees in both upper and 'tween decks. Note in way of bottom planking, "See approved drawing 672 for outside fastenings and also drawing 871." Note at bottom of plan, "Through bolts as per sketch 681 and 672." In plan of upper deck beams alterations to hanging knee fastenings, alteration of fastenings through centre and sister keelsons from 8 feet to 4 feet apart, alteration to sketch of outside planking, and reference to fastenings alteration to sketch of hatch combing. Note on bottom of plan referring to frame fastenings, "See approved plan 681." Deletion of note referring to alteration of fastenings in anchor stocks and frames, and alteration to text of fastenings of outside planking. So far as I know, the only departure from the departmental plans made by the contractors was in respect of the bolting of the 'tween deck clamps. They did not to my knowledge object to a number of these alterations on the ground that they did not comply with the specifications. These alterations might be discussed with either the Chief Executive Officer or myself or with both of us, but Mr. Curchin would tell me of all discussions he had with the contractors relating to my work. In isolated instances when alterations were made to the plant by the Department the contractors were asked to supply a clean copy with the alterations incorporated, but so far as my recollection goes we did not ask in writing for a clean copy of 706A as amended in red; Mr. Curchin may have asked for it verbally. I do not think it was necessary; it would have been only multiplying the plans. Our inspector would have received a copy of the plan as amended by us if the contractors had sent us a third copy as requested. The silence of the contractors in regard to our alterations to 706A was tantamount to an acknowledgment that they had accepted the plan as amended. I have no knowledge of any objections by the contractors to any of those alterations, except the bolts in the 'tween deck clamps. Any objections made by the contractors and accepted by the Chief Executive Officer would be shown on the plan, or a new plan would be substituted.

358. *To Mr. Brown (through the Chairman).*—A third copy of amended plan 706A not having been supplied by the contractors, the Department assumed that the inspector had access to that plan in the contractors' office. Having regard to the general custom in connexion with ship-building that assumption was reasonable. It would be very unreasonable for the contractors to submit to the inspector a plan which was not in accordance with that finally approved by the Chief Executive Officer.

359. *To Senator Foll.*—In regard to the carrying out of the alterations marked in red on plan 706A, so far as I can see, the through bolts at the butts of the ceiling planks have been put in, and the fastenings through the sister keelsons have been spaced 4 feet instead of 8 feet. I understand that this was done at a late date, at the request of Mr. Brown. I cannot explain how, if the contractors were working solely to unamended plan 706A, they made some of the minor alterations shown on the amended plan. I did not know that they were working to the original 706A plan until it was shown to me by Mr. Arthur Mayoh last Sunday morning. I certainly assumed that the contractors had seen the finally approved plan.

360. *To Mr. Bamford.*—I visited the ships with Mr. Curchin about three times. The inspector was on the job to see that the ships were properly constructed. Also, the ships were being built under Lloyds' survey. In the building of any ship, the integrity of the builder has to be relied on to a great extent. I do not think we appointed anybody to take Mr. Brown's place while he was ill or absent on leave; but latterly Mr. Greenlees has been on the ships, and he would keep a general oversight of the work. As edge fastening was Lloyds' alternative to diagonal straps, I attached great importance to it.

361. *To Mr. Mathews.*—When we amended plan 706A I first altered the contractors' plan and then our own. I sent the former to the contractors, with the letter of the 13th March, and I certainly thought they were working to it, as altered by me. We have not had any acknowledgment of the receipt of that letter, but I saw the plan last Tuesday in the office of Mr. Arthur Mayoh, at Kissing Point.

362. *To Mr. Parker Moloney.*—We had a look at plan 706A, without the amendments, and I asked Mr. Barber to let me see the approved plan, which at the time was lying on the table. It is an exact duplicate of approved plan 706A now before the Committee, except that some of the through bolts shown in red on the plan, by mistake are scored out with green pencil.

363. *To Mr. Boyd (through the Chairman).*—I have between 70 and 100 of these plans, but not all of them have been altered in red. If a lot of alterations have been made in a plan, it is customary for the contractors or architects to have a clean tracing made and sent to the yard. If the alterations are not numerous they are transferred to the working and office plan at the same time.

364. *To Senator Foll.*—It was the responsibility of the contractors to make a new tracing of 706A, if necessary, after the departmental alterations had been made in red. The Department prepared no plans at all.

365. *To the Chairman.*—When any plan was finally approved it was probably initialed by me on behalf of Mr. Curchin, but not by the contractors.

The witness withdrew.

Arthur Carlile Barber, Naval Architect, recalled, and further examined.

366. *To the Chairman.*—The original midship section 193S prepared by me was sent to London, and came back with Lloyd's alterations marked in red. In order to expedite the work a cable was sent to Lloyd's by Mr. Curchin in June, 1918. When the reply was received from Lloyd's by cable I went to Melbourne and prepared midship section 632 (produced), in accordance with the terms of the cable. That plan was submitted to the Chief Executive Officer, who made the amendments shown in red. From that amended plan another plan, 611B, was made, embodying all Mr. Curchin's modifications. It was approved and signed by him on 8th August, 1918. That is the plan on which the ship was built, and it shows diagonal ceiling from the upper turn of the bilge to the gunwale. After that plan was made difficulty was experienced by the contractors in fitting the diagonal ceiling. The original plan showed an ordinary ceiling with wooden struts and ties. Lloyds cut that out, and asked for an ordinary ceiling to be fitted 3½ inches in the 'tween deck and 4 inches in the hold, and they attached a note, "Diagonal

iron straps fitted outside frames at 6 inches x $\frac{7}{8}$ inches at 6 feet apart or ceiling edge bolted from lower turn of bilge to gunwale." The cable sent to London by the Chief Executive Officer proposed, "Double bottom ceiling 12 inches x 3 inches, bilge ceiling 12 inches x 4 inches, garboard 12 inches x 5 inches, planking 4 inches thick, wales 6 feet x 6 inches. . . . . diagonal ceiling continuous from bilge to gunwale double 12 inches x 2 inches, with one thick strake 12 inches x 6 inches at lower edge of same near upper turn of bilge." In their reply cable Lloyd's said, "Diagonal ceiling proposed compensates diagonal plates and ordinary ceiling." It was proposed to build the ship with the diagonal ceiling, and there was no mention of edge fastening the bilge ceiling. During the construction the contractors found that it would be difficult to keep the ship fair unless they could put in the clamps before the ceiling. In a letter to the Chief Executive Officer on the 11th October, 1918, I wrote:—

[*Exhibit* 87.]

Kay, Macnicol, & Co.,
4 Bridge-street, Sydney,
11th October, 1918.

H. W. Curchin, Esq., Chief Executive Officer, Commonwealth Ship Construction, 31 King-street, City.

DEAR SIR,

Under separate cover, we are forwarding you keel plans, with amendments, which you desired. On referring same to Mr. Heron, he specially asked that we should add some 1⅛-in. fastenings to the stem and deadwood aft. These you will see marked, and we trust they will meet with your approval.

We are also forwarding you sketch No. 639 in duplicate, showing arrangement of half beams and method of securing same to hatch carling. If this method meets with your approval, we will have it embodied in the deck plans.

Sketch 640 is a modification of the ceiling in way of upper deck clamp. As the ceiling at side is specified to extend from underside of waterway to bilge, we naturally conclude that you desire them to be fitted in long lengths. This method of construction would necessitate all the ceiling on the side being secured before the deck beams could be put in place, and in order to overcome this, we take the liberty of making the suggestion that two strakes of ceiling should be laid horizontal at underside of waterway, so that the clamp could be secured and the deck beams fastened, which would help us considerably in tying the ship together during construction.

With regard to the deadwood knees shown on plan No. 608AW, we have departed from the specification considerably in the moulding of these knees. Clause 26, page 9, of the specification requires them to be moulded 15½ inches. This, we think, is an oversight, and we have taken the liberty of drawing them with a moulding of about 6 feet. In order to reduce the difficulty of getting these large knees, we have shown on the plan, in dotted lines, an alternative arrangement, where three knees could be used to make up the moulding. The siding of these knees would be the same as the stem and fore-end of keel.

Yours faithfully,
(Sgd.) A. C. BARBER.

On the 14th October, 1918, I received the following reply from Mr. Curchin:—

[*Exhibit* 88.]

14th October, 1918.

Messrs. Kay, Macnicol, & Co., 4 Bridge-street, Sydney.

Auxiliary Schooners.

DEAR SIRS,

I have to acknowledge your letter of the 11th inst., and following drawings in duplicate:—

608AW. Arrangement of keel and keelsons.
640. Sketch of ceiling, and
639. Sketch of joints at beam ends.

I note your remarks regarding the 1⅛-in. fastenings to the stem and deadwood aft, required by Mr. Heron. This is in order.

Sketch No. 639—Joints at Beam Ends.—This is in order, provided Lloyds' approval is obtained.

Sketch No. 640.—Sketch of Ceiling, &c.—I quite appreciate your difficulty in tying the vessel together during construction, and have no objection to raise to your proposal, provided Lloyds' approval be obtained. With reference to the fastenings in this quarter, great care should be taken in the bolting of the covering boards, &c., to insure good watertight work. A sketch should be submitted at an early stage showing fastenings proposed. The air ports should be placed as high as possible.

Sketch No. 608A.—I note your remarks regarding the moulding of the deadwood knees, which is in order. I have no objection to the arrangement shown dotted where three knees are used to make up the moulding. The arrangement of the scarphs of the floor head, keelson, and margin girder cannot be accepted as shown. Please re-arrange these to clear.

I return one copy of the plans herewith, and will be pleased to have an amended copy at your earliest convenience for my inspector, as requested in my letter of 10th instant, where triplicate copies are asked for.

As intimated to you some time ago, I will be obliged if you will obtain Lloyds' approval of any plans before submitting same to me.

Yours faithfully,
H. W. CURCHIN.

I produce sketch 640 which accompanied the letter. On the 20th November I wrote to Mr. Curchin the letter already quoted by Mr. Hewison—[*Exhibit* 81]—asking for permission to fit ordinary ceiling, and accompanied by sketch 667. We received Mr. Curchin's approval dated 22nd November—[*Exhibit* 82.] The specification was drawn up on the 23rd September when sketch 667 was in the minds of everybody, and was modified on the 27th November. It is provided, "Ceiling to have six strakes of 9 inches x 5½ inches at each side from margin girder to upper turn of bilge. From the upper turn of bilge to the gunwale ceiling to be 5 inches thick between decks and 5 inches in hold, and to be edge bolted." From that I understood that the ceiling in the hold and the 'tween decks was to be edge bolted, but there was nothing in the specification that called for the ceiling in the bilge to be edge fastened. Sketch 667 referred to Lloyd's plan 193S as amended. That plan and Lloyd's cable distinctly show that the diagonal ceiling compensated for the edge fastening. So that diagonal ceiling is the ceiling referred to, and made longitudinal in the sketch and agreed to in the specification. Lloyd's did not actually ask for the ceiling below the bilge stringer to be fastened. Plan 706 was made and sent to Mr. Curchin, and at our request was returned. Plan 706A was substituted, and that is the working plan with which we have been dealing during this inquiry. Two copies of it were sent to the Chief Executive Officer, and one of them was returned with amendments in red. On receipt of the amended plan, Mr. Mayoh and I went to Melbourne to discuss it with Mr. Curchin. The alterations made on the plan were not acceptable to the contractors because they could not be carried out. There was, for instance, the vertical bolt through the waterways, beam, and 'tween deck clamps The Chief Executive Officer required that bolt to pass from the waterway to the underside of the lower deck clamp. It would be, roughly, 5 ft. 8 in. long. The height from the top of the waterway to the underside of the beam was 6 feet, and it was impossible with a space of only 4 inches to drive a 5-ft. 8-in. fastening into the clamps. That was pointed out to Mr. Curchin, and he agreed to revert to the original 706A, which provided for one dump to be driven down from the waterway into two clamps, and another to be driven upwards into three clamps. Also, the Chief Executive Officer required the fastenings in the upper deck waterway and clamps to be in one length, extending from the upper side of the waterway to the underside of the clamps. It came down through the beam and passed through the clamps behind the knee. Apart from the area of timber which it would take out of the clamp it would obstruct the driving of the through fastenings in the knee. It would have been almost impossible to put any through fastenings in the knees and the clamps, and it was agreed to revert to the original plan—to drive a bolt down through the waterways, beams, and two clamps, and in between the frames drive up a vertical bolt to

overlap the other. I have not any written confirmation of that arrangement. It was made verbally between Mr. Curchin and Mr. Mayoh, and, I believe, Mr. Hewison also was present. That arrangement of the clamp fastenings appears on the working plan. In regard to the amendment of the through fastenings in the floor and planking, the plan showed a number of red lines to indicate through fastenings in the floors. It was pointed out that, according to the specifications there should be one through fastening and one dump through each plank at each frame, but as the floors were intermediate with the frames there was no necessity to put in additional fastenings, therefore they were not called for in the specifications. It was admitted that the ship construction branch had made a mistake, and it was agreed to delete the red marks. That was all done verbally when I took the plan down and explained the matter to the Chief Executive Officer, who put on the working drawings the corrections he wished to be made. When the Chief Executive Officer sent us any plan showing any alterations in red, I had a clean copy made and sent back to him, and if he approved it was sent to the yard. No plan was sent to the yard unless it was first approved by the Chief Executive Officer. Some of the plans may have been sent to him as often as six times. The yard has no corrected plans; all the working plans are clean. In regard to the alteration to the fastenings in the anchor stocks, plan 681 showing the modifications required had been already approved and issued to the yard, so it was not necessary to issue Mr. Curchin's note on plan 706A. In regard to the outer planking, the Department deleted the note, "Treenails to surveyor's satisfaction." We had decided not to use treenails, so there was no necessity to put that in the plan, because plan 672 had been issued to the yard and covered the note in regard to treenails. There was another note about the fitting of through bolts in lieu of dumps in the half beams to carlings. It was pointed out that if the through bolts were driven on the straight their length would be greater than the distance between the beams, so that it would be impossible to drive them in. I was firmly of the opinion that Mr. Curchin agreed to waive that requirement. As regards the through bolt that was asked for at the end of the knees, it was pointed out that it was additional, and was being asked for by the contractors in order to hold the knees in position while they were being fastened, and that the bolts shown in the plan were in excess of Lloyd's requirements. The spacing of the edge bolts in the keelsons 4 feet instead of 8 feet apart was carried out in the construction, but was not put on the working plan. It was, however, put on a working sketch, and the bolts are, in fact, spaced 4 feet. The only omission was the edge fastening in the locking keelsons and floorhead keelsons. They were shown on the plan as spaced 7 ft. 6 in., but I believe they were altered to 5 feet, although that correction was not made in the margin of the plan. That alteration has not been carried out. The specification does not ask for any special spacing there. Of the two extra fastenings shown in the end of the floors, one has been put in after, I understand, discussion between Mr. Heron and Mr. Brown, when it was shown that the floorheads stopped there, and that the fastening in the centre was sufficient. The specifications said that the edge fastenings in the ceiling should be spaced 5 feet apart. I have nothing in writing to show that the Department agreed to dispense with those fastenings except the specification drawn up after we had made the proposal to fit ordinary ceilings. The specification was modified, and it did not ask for any edge fastening in the bilge ceiling, although it did require it in the hold-side ceiling. Mr. Heron was interested in the edge fastenings, and he read Lloyd's note on midship section 193S as referring to the ceiling right down to the bilge. The difficulty of putting in those edge fastenings was pointed out to him. I was of the opinion that the edge fastening had been put in. Mr. Heron asked me to prepare a plan to be sent to London showing the fastenings as fitted. The plan was again altered to 706B, a copy of which has been sent to London showing that the fastenings in the upper strakes of the ceiling were not put in, but that treenails had been substituted as compensation. In the full belief that there were some edge fastenings in the bilge ceiling, I showed them on plan 706B. Within the last few days some persons have said that the bilge ceiling has not been edge fastened, and other have said that it has been. I thought that the fastenings had been put in, otherwise I would not have shown them on plan 706B. It was on the advice I received from the yard that the edge fastening had been done that I added it to the plan. I think the advice came from Mr. Barr, and Mr. Arthur Mayoh was certain about it. I know that it was impossible to get the fastenings in at the ends owing to the curvature; what would apply to the midship section would not apply at the ends. It is easy to put fastenings in the clamps on a straight side, but they cannot be put in at the ends where the curve is so much greater. Because Mr. Heron was interested in the edge fastenings, I think they were put in the hold ceiling entirely to please him. The letter from the construction department to my firm on the 22nd of November, 1918, deals with the reversion to the plan showing the ceiling changed from diagonal to longitudinal and increased from 3½ inches in the 'tween decks to 5 inches as stipulated in the specification, which was modified five days after the receipt of the proposal to fit the ceiling longitudinally. The only reference to edge fastening was in regard to the 'tween deck ceiling and the holdside ceiling. Nothing was said about the bilge ceiling being edge fastened. My opinion was that there were to be edge fastenings 5 feet apart in the ceiling from the upper deck clamps to the bilge stringer. In addition to the 5-inch ceiling an extra lower deck clamp over and above Lloyd's requirements was added. The original plan provided for three lower deck clamps, but the contractors put in a fourth, which would compensate to a great extent for the omission of the edge fastenings from the ceiling. The proof of this contention is in the corrected specification agreed to by Mr. Curchin's Department on the 27th November, 1919. I made no clean copy of 706A as amended by the Department in red ink. We pointed out that the amendments were not workable. Mr. Curchin wiped them out, and we were thus back to the original 706A. So far as I know, there is no official correspondence on that point. But I know that Mr. Mayoh went to Melbourne and discussed the matter with Mr. Curchin. I understood 706A was approved by him. In accordance with Mr. Heron's request to supply Lloyd's with a plan of the fastenings in the ship as built, I brought 706A up to date and marked it 706B. A copy of it was sent to London three months ago. Plan 706A showed edge fastenings extending up to the clamps. These have been taken out of 706B, but an additional fastening has been put through the bilge stringer to the planking, another additional fastening through the bilge ceiling, and others in the upper strakes of the lower deck clamps and 'tween deck clamps where it was impossible to put in the edge fastenings. With the exception of the edge fastenings in the bilge ceiling, which I firmly believed had been put in, 706B is a true plan of the ship as constructed. My interpretation of the specifications and Lloyd's cable was that they were not necessary in the bilge ceiling, but I believe some effort was made to please Mr. Heron by putting in some

edge fastenings. That applies more particularly to the *Burnside*, although most of these fastenings are in the *Braeside* also.

367. *To Mr. Mathews.*—I carried on correspondence with the ship construction branch till about January or February, 1919. From that date onwards Mr. Joseph Mayoh conducted all the correspondence for the Department. I personally forwarded plan 706 to the Department, but 706A was submitted to Mr. Curchin through Mr. Joseph Mayoh, and through him it was returned to me from the Department. The impossibility of carrying out the departmental alterations was conveyed to Mr. Curchin by personal interview. It was almost impossible to describe these things in writing, and practically every month Mr. Mayoh and I journeyed to Melbourne to discuss matters with Mr. Curchin and endeavour to reach some finality. Plan 706A as altered in red ink was not accepted by the contractors. They could not put into the ship something that would detract from its strength; if they knew that something was wrong it was their duty to draw the attention of the Chief Executive Officer to it, because he has acted as the architect for the ship. We have only verbal evidence that the contractors satisfied Mr. Curchin that his alterations in red were not necessary. I have not seen any edge bolting in the ceiling below the bilge stringer. I know that part of the ceiling below the 'tween deck clamps could not be edge bolted, and that was pointed out to the Chief Executive Officer, Lloyd's surveyor, and the Government inspector. I believe they agreed that it could not be done. In regard to the hanging knee, we pointed out that the dump to which Mr. Curchin objected was merely for the purpose of keeping the knee in position while it was being fastened, and that the knee already had more through fastenings than Lloyd's required. I understood that if we complied with Lloyd's requirements we would be all right, no matter what happened to the ship. My plan provides for one through fastening at each plank at each frame, whereas Lloyd's rules require only single fastenings for 8-inch planks. The contractors would have been acting according to the rules if they had put only one through fastening at each frame, but they put in an additional dump. I was satisfied that there were too many fastenings in the outside planking. I submitted to Mr. Curchin a plan on which every alternative frame had a through fastening, but Mr. Curchin altered it to provide for a through fastening in every plank at every frame. He made no difference between 12-inch planks and 8-inch planks, although according to Lloyd's rules the double fastening was only required for 12-inch planks. We built the ship according to his alteration. If there is not a through bolt in every plank at every frame the ship is not built according to the plan. The yard had a clean copy of corrected plan 672. The departmental suggestion in regard to the edge fastening of the bilge ceiling was embodied in Lloyd's cable of 25th July, 1918, and midship section 193S. According to my interpretation, Lloyd's did not ask for edge fastenings in the ceiling below the bilge stringer; their reference was to the diagonal ceiling on the sides. When the Department thought that further strengthening was necessary, Mr. Curchin asked for it to be provided, for, notwithstanding any approval by Lloyd's the vessels were to be built to the satisfaction of the Chief Executive Officer. It appeared to me that the departmental officers had misunderstood the meaning of the words in Lloyd's cable, "Ceiling edge bolted from lower turn of bilge to gunwale." My interpretation was that the ceiling below the bilge stringer was never submitted to Lloyd's to be edge fastened. I do not remember in Lloyd's rules any provision of the kind. Lloyd's views special designs under special conditions. You can submit any design to them, apart from their rules, and they will tell you what has to be done. The scantlings may be a great departure from those prescribed in the rules. There is this clause in their rules at page 37, "With regard to the ceiling planking and the efficiency of its fastening, it will be required that the planking shall be properly shifted and fastened so that there will be at least either treenails or through bolts in each plank of the ceiling in every timber." Nothing is mentioned there about edge fastenings. I do not think the weakness in the bilge contributed to the hogging. Observations were taken in dock as to the rise of floor, and I was informed that the rise was only ½ inch less. If the ship has hogged 20 inches and the rise of floor has only altered ½ inch, that alteration might have taken place during the building. But the bilge has not shifted, because the rise of floor is constant. I thought at first that the bilge was weak, and I discussed with Mr. Mayoh the putting in of pillars. When the ship was put down on a straight keel I looked to see if the hold pillars had shifted, but I could not find any sign of them having moved. When the vessel was in dock it was suggested that the bilge was weak, and that had allowed the bottom to spring up. To test that theory I put in temporary pillars from the margin girder to the 'tween deck beams on each side. I thought they would prevent the keel from coming up again, but they had no effect. If the bilge had been less square and more tapering they would have assisted to have prevented the hogging. If the ship had been like the section of a pipe throughout its whole length it would not have hogged, because the strain would have been uniformly distributed. That does not mean the strength in the bilge gives strength to the keel and prevents hogging. All the plans altered by Mr. Curchin were filed and kept in the shipyard office for reference, and anybody could see them by asking for them. I always understood that the working plan was 706A unaltered by Mr. Curchin.

368. *To Senator Foll.*—Plan 706B, which was sent to Lloyd's, is not correct in so far as it shows edge fastenings in the bilge ceiling. I was firmly of the belief that they had been put in, but within the last few days I have had reason to believe that the plan is not correct. I admit the responsibility of a naval architect to make sure that the plans he sends to Lloyd's are correct. I am not at the shipyards every day, and I have to rely a good deal on the management for information as to what was done. I asked if the edge fastenings had been put in, and I was informed that they had been. Mr. Heron was there at the time, and he asked me to show the edge fastenings in the plan. If Lloyd's gave a decision on that plan they would be acting on information that is not correct. I must ascertain definitely if the edge fastenings are in the bilge ceiling, and if they are not, I shall notify Mr. Heron accordingly. It was almost impossible for me to find out whether or not they were in. The planks of the ceiling were fitted so closely that it would be difficult to locate the bolts. I do not regard the omission of edge fastenings as serious. Those that were put in were inserted only to satisfy Mr. Heron. On numerous occasions we looked at the fastenings, and there was a lot of talk about the edge fastenings of the ceiling. This matter was not within my province, and I did not always go down to the ship with Mr. Heron. He asked for the edge fastenings to be put in because he interpreted Lloyd's note on the midship section to mean that they were required. The agreement provides that the ships shall be constructed to the approval of the Chief Executive Officer, but he did not instruct that edge fastenings should be put in. The Department referred to Lloyd's cable. If the Government officers were determined to have the edge fastenings put in they

would have submitted a sketch when they knew there was a difficulty in putting them in. For instance, they went to a great deal of trouble to mark in red on plan 706A where they wanted the fastenings in the clamps and other places put, but so far as the ceiling is concerned there is only an obscure note that might mean almost anything. They do not show where the fastenings are to be put in, how they are to be put in, or how they are to be spaced. All the additions shown in red ink on plan 706A have been left out of the ship except the altered spacing of the edge fastenings in the keel. The fastenings in the margin girder were altered on the plan from 7 ft. 6 in. to 5 feet apart, but they were put in at intervals of 7 ft. 6 in. I did not notice that alteration because it is not shown on the margin of the plan which the Department sent to the contractors. That was an oversight. The other alterations in regard to the clamp fastenings I would not have allowed under any conditions, because the area taken out by the bolts would have defeated the object aimed at. I was present when the verbal arrangement was arrived at in regard to the red ink alterations by Mr. Mayoh and Mr. Curchin in the presence, I believe, of Mr. Hewison. I cannot say whether any decisions on the plans were made when Mr. Hewison was absent. I am almost sure he was always in the room. The through fastenings in the knees for which Mr. Curchin asked were over and above what Lloyd's required, and we put in an additional dump to facilitate construction. Mr. Curchin said it should be a through bolt. Had his instructions been carried out it would have been necessary to insert another dump in order to tack the knee in place while it was being fastened. To that extent we did not follow Mr. Curchin's instructions. The edge fastenings in the ceiling would not have had much influence in preventing hogging. In calculating the strength of the ship, I only allowed one-fortieth to the ceiling.

369. *To Mr. Parker Moloney.*—Lloyd's approved plan stated that diagonal straps were to be fitted outside the frame 6 in. x ⅝ in., "or ceiling to be edge-bolted from lower turn of bilge to gunwhale." But Lloyd's instruction to us that we could fit diagonal ceiling from the bilge stringer to the gunwale dispensed with that clause. They did not ask for the bilge to be edge-fastened if a diagonal ceiling was fitted. They said that the diagonal ceiling compensated for the plates and ordinary ceiling. The diagonal ceiling was twice altered. Edge-bolting was substituted for the diagonal ceiling on the 22nd November, 1918, and it was proposed then to edge-fasten it. But the difficulty of fastening it was pointed out, and the ceiling was then increased from 3½ inches to 5 inches as compensation for the edge fastening. You suggest that when we dispensed with the diagonal ceiling we should have reverted to edge fastenings right down to the lower turn of the bilge. That is not so; the diagonal ceiling compensated for the edge fastening and the strapping. Plan 706B, which I have sent to Lloyd's, differed from 706A in the following particulars:—The edge fastenings of the upper two strakes of the ceiling were taken out; a fastening between the first and second strakes of the ceiling of the hold has been taken out; a fastening shown in the upper strakes of the 'tween deck ceiling has been omitted; an additional bolt through the bilge stringer and top strake of the bilge ceiling into the frame was put in; certain fastenings in the bilge ceiling and some treenails were added. I repeat that there was an understanding between the contractors and the Government representative that the edge fastenings in the bilge ceiling should be omitted. This arrangement should have been made known to Mr. Hewison, because there are palpable mistakes in red on 706A that are almost disgraceful. For instance, the vertical bolt through the waterway, beam, and clamp would have riddled the clamp and made it practically valueless, and would have made it impossible to drive the through bolts in the knees. There was no excuse for putting that long bolt in. The bilge ceiling fastenings were possible. I am sure Mr. Hewison would be told about what was arranged if he was not actually present at the interview. He must have some knowledge of what was done.

370. *To Mr. Bamford.*—The original frames specified were 10 inches x 10 inches laminated. Lloyd's approved of the lamination, but increased the size to 12 inches siding and 10½ inches moulding. I consider the laminated frame stronger than the solid frame, notwithstanding the bend to the bilge. When I first drew plan 706 I intended to put through fastenings in the frame. Then I thought I would get a better job by reeling the fastenings. I believe that the holes were bored neat through the planking and smaller in the frame. At any rate, they should have been. The tight fit should be in the frame. I realized that my future and the future of the shipbuilding depended greatly on the success of these ships, and I implored Mr. Curchin to recognise our firm as architects so that I could be of value to him by giving him the benefit of my experience. The Government were good enough to agree to the completion of two of the ships, and thus give an opportunity to promote the industry of shipbuilding. I am very dissatisfied with what has occurred. All the mud that has been thrown at the vessels and the publicity which the charges have received in the press are deplorable for Australia's sake. The building of wooden ships was a war measure, and the ships had to be built with the labour that was obtainable.

371. *To Mr. Atkinson.*—When I was sending plans to the Department I made it my business to send them in triplicate. I was always under the impression that Mr. Mayoh sent a triplicate of plan 706 when it was asked for by Mr. Curchin. Trouble was experienced in putting the edge fastenings in the bilge ceiling, but I practically left the matter in the hands of the Government inspector and the yard manager. The question of putting in edge fastenings was raised by Mr. Heron from time to time. I have never heard that the Ship Construction Department pressed the contractors to put them in. The bilge ceiling is not of great importance as a strength factor in the ship. Having regard to the number of through fastenings from the outside planking to the ceiling, the additional strength edge bolts would give would be very small. I believe that all the through fastenings are in the bilge; they should be. It is serious to omit any fastenings that are required, because the vessel is only as strong as its fastenings. Quite likely there may be two more planks in the bilge than are shown in the drawings. Every fastening which the plan shows in the bilge of the ship ought to be in, and so far as I know, is in.

372. *To Mr. Mathews.*—It is not evident to me that the Chief Executive Officer considered that the bilge of the ship ought to be strengthened when he altered 706A. All that was apparent to me was that he wanted to put red marks on the plan. He has marked an additional through fastening where the specification says there should be only one through fastening in each frame. I do not regard that as evidence that he desired to strengthen the ceiling. He made those alterations for the same reason as he altered all important plans—simply for the sake of putting red marks on them.

373. *To Mr. Brown* (*through the Chairman*).—The agreement between the contractors and the Government provides for the construction according to plans approved by Lloyd's and the Chief Executive Officer.

They have been built to the approval of the Chief Executive Officer; I have not heard of any disapproval. Lloyd's approved midship section 193S provided for edge fastenings in the ceiling from the lower turn of the bilge to the gunwale if 3½-inch ceiling was used. That thickness of ceiling was not used. Five-inch ceiling was fitted as compensation, I believe, by agreement, and indorsed by the specifications drawn up by the Department. There has been no request by Lloyd's for the bilge ceilings to be edge-fastened with the exception of the note to which I have just referred. An alternative method was mentioned in Lloyd's cable of the 25th July, 1918. I again say that Lloyd's approved fastening plan does not ask for edge fastenings in the bilge ceiling. There is a big difference between Lloyd's approved plans and those approved by the Chief Executive Officer. Plan 706A provides for edge fastenings in the ceiling, but 611B does not call for them, and that is the plan approved by Lloyd's and the Chief Executive Officer. For proof that the Chief Executive Officer approved of the omission of the edges fastenings from the ceiling, I refer the Committee to the specifications, which do not say that edge fastening of the bilge ceiling is required. I do not think we have any other authority for the omission of the fastenings. I cannot say wheter the *Burnside* has been built according to plan 706A as approved by the Chief Executive Officer. Detailed sketches of a number of items embodied in plan 706A have been prepared by me for the guidance of the constructors; the only one of these I recollect is a small plan of the coaming of the hatchways. No plans were handed over by me to the contractors to enable them to carry out the alterations marked by Mr. Curchin on plan 706A. Plan 706A without the departmental modifications in red was handed to the yard foreman to work on. We did not carry out the alterations made by the Chief Executive Officer to plan 706A, because he subsequently withdrew them. I have not proof of that in writing. I think the only object he had in mind when he made the alterations in red was to hamper the progress of wooden shipbuilding. Lloyd's made their alterations within reasonable limits. The Chief Executive Officer had no limits. His alterations to plans 706A were rescinded by him, and we worked to the original 706A. All the other plans amended by the Chief Executive Officer were carried out because I persevered with them, and in some instances made as many as six redrafts in order to reach finality. I had to fill my office with a staff of draughtsmen, and I became tired of making plans. A copy of 706B has not been submitted to the Department. No action has been taken yet to notify Lloyd's of the inaccuracies in plan 706B, but I intend to ascertain definitely what errors have been made, and correct them. I prepared a plan showing the fastenings to be put in the outside planking. As I am not the inspector on the job I cannot say with any accuracy whether those fastenings have been put in according to the plan. It provides for more fastenings than are required by Lloyd's rule. The plan of page 39 of Lloyd's rules shows the fastenings for a double frame vessel, but that makes no difference. The outside planking of this ship was increased by Lloyd's on account of the wide spacing of the frames. Therefore, the scheme of fastenings prescribed on page 39 applies. Lloyd's do not say that if the frames are widened more fastenings are to be put in. I consider there are ample fastenings in plan 672 showing the arrangement of fastenings in the outside planking, but Mr. Curchin wished to hold me to the first plan submitted to Lloyd's, wherein I stipulated one through fastening at each frame. I had no alternative but to obey him. Lloyd's give us two alternatives for the ceiling—(1) diagonal ceiling to dispense with iron straps, and (2) longitudinal ceiling edge fastened. Having regard to the structure of this ship, the edge fastenings shown in Lloyd's plan are of minor importance. Lloyd's are the recognised authority on shipbuilding, but I do not think they place great reliance on the edge fastenings to compensate for the strength that was lost when the diagonal ceiling and iron straps were omitted. That may have been their object in specifying edge fastenings, but I repeat that they are of minor importance. I have heard evidence to the effect that 70 per cent. of the edge fastenings in the ceiling have been omitted, but I do not know if that is true. I have taken only one-fortieth of the ceiling into my calculations of strength. I do not rely much upon the ceiling for strength. I have calculated the clamps and the keel as intact strength areas.

The witness withdrew.

William Henry Sinclair, Carpenter, sworn and examined.

374. *To Senator Newland.*—For about five months towards the end of last year I was employed in connexion with the construction of the *Braeside,* and I have come voluntarily to contradict certain evidence given by Woodward. He stated that he and his mate, Sinclair, received certain instructions regarding the through fastenings in the frame, and they compromised between the instructions and the plan. That is a deliberate falsehood. I am the Sinclair referred to, and I worked with Woodward. Mr. Williamson gave me a plan and told me to mark in the port side of the ship. I marked the places for the holes, the borers made the holes, and I measured them and marked the length of bolts to go in each. The plan showed a dump and a through fastening in every plank at every frame, and during the time I was attending to that portion of the work the plan was adhered to. There were some instructions in regard to a treenail at every sixth frame. Whether or not Woodward is confusing the treenails with the through bolts I do not know. I was told that these treenails were to be cut out, and 1¼-inch through bolts substituted. I had the holes bored for the through bolts, and then I received further instructions that the treenails were to be used. All holes for bolts were bored 1-16th of an inch tight, and I had to rebore these for a neat fit for 1¼-inch treenails. Woodward had as much chance of seeing the plans as I had. He was still employed at the shipyard when I left. What he did after my departure I do not know, but during the time I worked with him he was not regarded as responsible for the fastenings. I received no instructions to skip any of the through fastenings. I was told to work to the plan, and I asked for no further instructions. I am not a shipwright, but as a carpenter I could read and follow a plan.

375. *To Mr. Parker Moloney.*—Woodward was working under me, and it was absolutely impossible for him to have done what he says, except after I left the shipyard on the 4th December, 1919. His statement is a libel on my character as a tradesman, because I compromise for no man.

376. *To Mr. Mathews.*—I do not know the reason for changing from treenails to bolts, and then back to treenails. I think they were to be put through the planks besides the clamps. In making holes for through bolts I have known the borers to foul a dump coming from inside. In those cases we put in a treenail and bored a fresh hole for a through fastening. Those through fastenings should be visible. Such occurrences were not very frequent. I do not think they represent 5

per cent. of the through holes. I heard no conversation to the effect that there was not a through bolt at every frame. I was concerned only with my own section, and I saw that it was right. Whenever we met an obstruction we filled the hole with a wooden treenail, never a short dummy bolt. I never heard of any man on the ship using dummy bolts.

377. *To Mr. Boyd (through the Chairman).*—When I left the ship the planking was finished with the exception of a few planks aft. The planking was only tacked on with a dump, and the through fastenings were put in later. So there would be many through bolts to be put in when I left the ship. I saw no short bolts used where longer ones were specified. If Woodward says that he received instructions while I was on the ship to spread out the through bolts to every fourth or fifth frame he is telling a lie. I assume that he was subordinate to me because the plan was given to me. Woodward was not a practical tradesman. As a working mate I could not rely on him. I could not leave him to set a bevel or do any job which required accuracy. He was an incompetent tradesman.

(Taken at Sydney.)

TUESDAY, 7TH DECEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

(Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh; Mr. H. C. Brown, representing the Prime Minister's Department).

Arthur Carlile Barber, recalled, and further examined.

378. *To Mr. Boyd (through the Chairman).*—Yesterday, in answer to Mr. Bamford, I said that I was dissatisfied with the vessel. By that I meant that it was my desire to build up a new industry, but all the difficulties that have arisen in regard to the hog and the allegations about the unseaworthiness of the *Braeside* have made the position very unsatisfactory. I am not dissatisfied as to the stability or the unseaworthiness of the ships. They are strongly constructed, but in view of what has happened I think they are capable of improvement. We have gained a good deal of knowledge since the *Braeside* was launched. Mr. Curchin agreed to the suggestions made by Mr. Mayoh and myself regarding the alterations prepared by Mr. Hewison, and marked in red ink on plan 706A, and I left his office with the impression that he had approved of that plan without the alterations. Therefore, there was no necessity to send any more plans to Melbourne. In my original strength calculations I did not take into account the decking, but on account of the suggestions by Mr. Curchin that it was reasonable to make some allowance for the decking I did so in subsequent calculations. The bottom planking and sides of the ships were taken into account, but only for compression. The members marked in red were the only ones which I considered should be calculated in tension or compression. Mr. Curchin recommended that it would be reasonable to take into account the outside planking, but as it is only butted it could not have added greatly to the longitudinal strength; therefore, I have calculated it only in compression. No account was taken of the side or bilge ceilings or the bottom. As these members are butted I do not think it is fair to count on them much for the strength of a wooden vessel. Mr. Curchin did not ask for the decking to be edge fastened. That would have been absurd on account of the caulking. I did not allow any value to the ceiling for longitudinal strength. I relied on the upper deck waterway, upper deck clamps, lower deck waterways, lower deck clamps, bilge stringer, margin girder, keelson, locking keelson, sister keelsons, and the keel to take the longitudinal strength. The strength diagram shows in red the most important strength construction, namely, the keel, keelsons, clamps, and margin girders. The second in importance is the outside planking shown in blue, and calculated in compression only. Of the deck and the 'wales, only one-fortieth of the area was taken, and that was in tension only. Mr. Curchin said that I was entitled to claim that there was a certain amount of strength in the frames and outside planking. There is no necessity to put edge fastenings in the outside planking. The purpose of the planking is to keep the water out, and the ceiling as a rule is to keep the cargo from the frames. I have never been asked to put edge fastenings in the outside planking. If that were done the seams could not be thoroughly caulked. I was always of opinion that the outside planking was too thick. Lloyd's asked that the ceiling should be 5 inches thick. I had provided only a 3-inch ceiling for a double bottom ship, because I thought that was all that was necessary. It was not specified that that ceiling should be edge-fastened. Clause 30 of the specifications read—

> *Semi-double bottom.*—The whole of the semi-double bottom to be thoroughly constructed of best selected materials in order that the function of each and every member may contribute adequately to the strength of the vessel. Large limber holes to be left in all floors at keel and extra limbers to be made where deemed necessary. Ceiling to be 12in. by 3in. hardwood.

That shows that the ceiling was arranged 3 in. thick simply to prevent the cargo from getting into the bilge. It was never intended that it should be edged fastened; it was rather thin for that. Edge fastening would weaken instead of strengthen the hold ceiling. If bolts of the diameter specified for edge fastening the ceiling above the bilge stringer had been put in the bilge ceiling, they would have had a weakening effect; there would have been a 1⅛ in. bolt in a 3 in. plank, and that would decrease the area of the timber, and reduce its section and strength. The 1⅛ in. bolt, if inserted edgewise, would decrease the strength of a 12 in. by 3 in. plank four times. It would correspondingly reduce the effective width of an 8 in. plank. The boring of a hole in timber has the same effect as a hole bored in a plate or angle iron. In making my calculations, I provided for the full width of the timber minus the holes for the fastenings. My duty was to prepare drawings to the approval of Mr. Mayoh, Lloyd's, and Mr. Curchin. I issued orders to the foreman or workmen engaged in the construction. In my agreement with Kidman and Mayoh, I did not undertake to supply plans which would enable them to obtain Lloyd's certificate. Clause 5 of the original agreement provided that—

> The said plans and the construction and completion of the vessels shall be conformable in all respects to Lloyd's highest class under special survey and the requirements of the Navigation Act and regulations thereunder, and so as to enable the ship-builders to obtain a certificate from Lloyd's surveyor certifying that the vessels conform with Lloyd's highest form and the requirements of the said Navigation Act and the regulations, provided that the said vessels have been constructed in accordance with the plans and specifications.

The alterations by Lloyd's and the Government officers, in a number of instances, made it impossible for me to comply with the terms of the contract. I have every confidence that if Mr. Curchin had left the matter to me and Lloyd's surveyor my plan would have produced a ship for which the contractors would have been able to obtain a certificate from Lloyd's. Beyond preparing plans for Kidman and Mayoh I had nothing to do with the actual construction of the ship. I cannot state definitely the date on which Mr. Heron asked me if there were any edge fastenings in the bilge ceiling; it would be about the end of June or the beginning of July, after the question of the hog had cropped up. I made inquiries as to the edge fastenings about the time the plan was corrected in August or September. A sketch was made, discussed with Mr. Heron, and issued to the yard, showing some fastenings in the bilge ceiling. That would be early in the construction of the vessel, about March or April, 1919. I looked for it last Saturday, but was unable to find it. I have the original somewhere, and I believe Mr. Heron may have a copy. I did not show those fastenings on plan 706A, because at that time it was considered that edge fastenings were not needed and they came more or less as an after-suggestion by Mr. Heron. It was at his suggestion that the sketch was made. It could not be put on plan 706A at the time it was issued, because it had to be approved and methods of construction devised; that would have delayed the issue of the plan. It was no part of my duty to see that the fastenings were put in in accordance with the approved plan. I heard Mr. Hewison say that he saw, in Mr. Mayoh's office last Sunday, plan 706A with Mr. Curchin's red ink alterations on it. All the drawings altered by Mr. Curchin are kept at the ship-yard office, and can be produced at any time. Clean plans are made from the corrected drawings and issued, and it is to these that the builders work. The plan to which Mr. Hewison referred was kept in a separate bundle for the purpose of reference only. Mr. Hewison raised the question on the ship that the working plan was not the one approved. I said that I had not brought the initialed plan down to the ship because of the rain, but if he came to the office he could compare the two. The plan with the red ink alterations represented Mr. Curchin's suggestions, and after an interview with him it was agreed, and understood by me and I believe Mr. Mayoh, that the red ink markings were not necessary. I say definitely that plan 706A, with the red ink alterations, is not the approved plan. Mr. Hewison is wrong if he says that the red ink alterations were the outcome of a consultation between Mr. Curchin, Mr. Mayoh, and myself in Melbourne. Quite likely, Mr. Hewison may not have heard the finish of the interview. I understood we were to revert to the original 706A. At that interview we agreed definitely with Mr. Curchin as to what alterations should be made and those that should not be made. I heard Mr. Hewison's statement in evidence that the contractors' silence in not acknowledging receipt of the altered plan was taken as implying acceptance of it. But there was not much silence in the interview in Melbourne; we had considerable argument over the plan, as a result of which I understood that we decided what alterations should be made. I do not think there was need of any further acknowledgment. It is not correct to say that the ships were built to the contractors' plan and not to the plan approved by the Department. Plan 706A, as marked in red, does not represent the final arrangement and approval of Mr. Curchin. The timbers of the ships were built in in the proper sequence. Most decidedly, the proper method was that adopted by the contractors. namely, to fix the clamps after the frames were in position, and before the ceilings were put in. In the building of the *Braeside*, the outside planking was attached first and then the ceiling. On the *Burnside*, however, ceiling and planking were put on together to a great extent. The American method is to fix the ceiling first. The order in which the timbers are put in depends on the method of construction adopted.

379. *To Mr. Brown* (*through the Chairman*).—If the ships had been constructed to my plans without the amendments required by Mr. Curchin I would have been able to obtain a Lloyd's certificate for them. We cannot get a certificate for the *Braeside* now because of the condition she is in. The extra weight of material put in to the ends of the vessel has helped to cause the hog. The beams were increased in size, and their spacing was altered. On the original plan they were spaced 37 inches amidships and 42 inches at the ends. Mr. Curchin insisted on them being spaced 37 inches throughout the length. That extra weight helped to produce the hog. Other contributory factors were the extra winches, the extra windlass, and the extra heavy work aft. But the most important considerations is that if Mr. Curchin had availed himself of our experience as architects, quite likely he would have produced some improvements during construction. If necessary, I shall be prepared to furnish further evidence of amendments made by Mr. Curchin which have tended to prevent us getting Lloyd's certificate. Plan 706B was prepared to represent the ship as built, and was sent to Lloyd's, London, for their information. It was asked for by Mr. Heron after the vessel had hogged. Quite likely it was forwarded to London in connexion with the application for Lloyd's classification. I have no knowledge of why it was done. I do not think it necessary to cable to Lloyd's, London, regarding inaccuracies in the plan until I am satisfied that all the fastenings shown are not in the ship. I am told by some men that the edge fastenings are in, and by others that they are not. I do not know which statement is right.

380. *To Mr. Bamford.*—Standing at the stem of the vessel and looking aft along the bilge the hull appears to be flat in one or two places. I do not say that the ship is perfect. The frames were bent into position, one at a time, and it was very difficult to avoid splintering the wood if it came from near the heart of a tree. The splintering was only small. The representative of Lloyd's and the Government saw it, and they ordered to be removed any piece which they considered to be defective. American vessels are constructed with all the strength inside, the outside planking being more or less for the purpose of keeping the water out. The ceiling is mainly to keep the cargo out of the bilge, and I do not think there is any necessity to edge-fasten it at the bilge. There is no need to recess the washers in the sole beams and the keelsons, but counter-sinking is necessary on the outside planking.

381. *To the Chairman.*—Plan 706A was approved only verbally. I have nothing in writing to show that it was approved. When we did away with the diagonal ceilings and substituted longitudinal ceilings it was necessary to provide compensating strength. That was done by edge fastening the ceiling in conjunction with an increase of the ceiling from 3½ inches to 5 inches. I have always been under the impression that finality in regard to the fastenings was reached in Melbourne when Mr. Curchin agreed to waive the amendments which he had marked on 706A. Although the agreement provides that the plans must be approved by the Commonwealth, the only approval of 706A was verbal. Mr. Heron had a copy of the plan, and was guided by it when making his inspections of the ship. It showed edge fastenings in the side ceiling, but not in the bilge ceiling; it contained no alterations in red ink. Mr. Heron was under the impression that the bilge ceiling

was to have some edge fastenings. This matter was discussed with him, and at his request a sketch was prepared showing edge fastenings in the ceiling. It was seen by Mr. Heron and Mr. Brown, and was then sent to the workshop. Therefore, the men in charge of the construction should have put the edge fastenings in in order to satisfy Mr. Heron and comply with that sketch. Personally, I do not attach much importance to edge fastenings in the bilge ceiling. The original plan which I submitted to London did not provide for diagonal ceiling, but only for struts and ties. But in his cable of 27th June, 1918, Mr. Curchin increased the depth of the 'wales and specified that the ceiling should be "diagonal continuous from bilge to gunwale double 12 inches x 2 inches, with one thick strake 12 inches x 6 inches at lower edge of same near upper turn of bilge." That was not included in the plans that were sent to London. After dispensing with the diagonal ceiling, edge fastenings were suggested in accordance with Lloyd's requirements as written in red on midship section 193S. If the diagonal ceiling had been put in, Lloyd's did not require any edge fastenings in the bilge ceiling. Lloyd's gave us the alternative of a diagonal ceiling or edge fastening the bilge ceiling in conjunction with a 4½-inch ceiling in the lower hold and a 3½-inch ceiling in the 'tween decks. Had we built the ships with diagonal ceiling there would have been no necessity to edge fasten the bilge. That was very clearly shown by the specification drawn up by the Department after the contractor's request to be allowed to fit horizontal instead of diagonal ceiling had been acceded to. The specification provides, "From the upper turn of bilge to gunwale, ceiling to be 5 inches thick in the 'tween deck and 5 inches in the hold and edge bolted." That means edge fastening from the bilge stringer to the gunwale. It does not mean that the bilge ceiling shall be edge fastened. Plan 706A is not marked as having been approved by the Chief Executive Officer. It is marked, "Approved as amended in red, subject to Lloyd's approval and specification requirements." Mr. Heron raised no objection to the plan showing the omission of edge fastenings from the bilge ceiling. I did not ask him to sign the plan, although no doubt he would have done so; that was an oversight on my part. He had a copy of the plan, and I naturally concluded that it met with his approval. It was certainly in accordance with the specification.

382. *To Mr. Atkinson.*—A tracing of 706A was prepared, and two copies were taken off and sent to the ship construction branch, where they were modified in red. Subsequently the modifications were waived, and further copies were taken off and issued to the yard. In other words, as a result of the consultation with Mr. Curchin in Melbourne we reverted to the original 706A with the exception of the keel fastenings, which I showed on another plan. Of course, it was understood that some of Mr. Curchin's markings were covered by other plans which were already in the yard. For instance, there is a note referring to the outside planking and Plan 761. That plan had been already issued. Having reached an agreement with Mr. Curchin all we had to do was to go straight ahead with the original 706A. I stated yesterday that 706A as altered in red ceased to be the approved plan after our conversation with Mr. Curchin. Plan 706A without the alterations was the approved plan.

383. *To Mr. Mathews.*—I thought the 4-in. planking was thick enough for Australian hardwood. It is too difficult to bend 5-in. hardwood around the curved ends of the vessel, and there will always be a tendency for the timber to straighten out. If the ship had been built of thinner planking it would not have required so much strain to pull it into place, and the "hog" would not have been so pronounced as it is now. I am sure that I convinced Mr. Curchin that the extra through bolt he required in the knees would weaken them. We agreed to put in the through bolts in the keel 4 feet apart, and that was done. Mr. Curchin agreed to waive the long bolts through the waterway, beam, and clamps, and to substitute one bolt from the top and another from the bottom. He had asked for a through bolt from the waterway, through the beam and three clamps directly behind the beam knees. It was pointed out to him that that through bolt would reduce the area of material in the wood, as well as prove an obstruction to the through fastening in the knee, and we suggested a reversion to the original proposal for a bolt driven right through the waterway, beam, and two clamps, and another driven upwards between the beams, and taking three clamps. Mr. Curchin put a note on the plan at the 'tween deck, "Kidman and Mayoh's proposal accepted." We understood that he came to the same decision in regard to the upper deck knees. I always understood that the Government knew that the contractors were working to the original 706A. The Chief Executive Officer did not at any time suggest that edge fastenings should be put in the 3-in. ceiling.

384. *To Senator Foll.*—The elasticity of Australian hardwood is greater than that of oregon pine, but is much stiffer to bend. If the walls were 10 inches thick, it would be almost impossible to bend the timber to the ship. If the planking had been thinner, it would have bent to shape more easily, and would not have had the same tendency to return to the straight. I repeat that vital alterations to the plans were made by verbal arrangement between Mr. Curchin, Mr. Mayoh, and myself. There have been times when we have had to do things by verbal arrangement; a lot of shipbuilding work is done verbally. Lloyd's instructions are generally given verbally, and those of the Government inspector are given in that way. Nearly 100 plans have been confirmed in writing, and a big alteration like that arranged with Mr. Curchin in connexion with 706A should have been set down on paper.

385. *To Mr. Parker Moloney.*—Mr. Curchin signed plan 706A, as marked in red, after he had agreed to waive those modifications, but he did not sign the copy which he gave me. Our plan was on the table during the discussion. He did not initial the alterations on it, but he initialed them on his own plan. For instance, he initialed on his plan the deletion of his proposal for edge fastenings in the ceiling, in the 'tween deck. As I have already said, we carried out his requirements in regard to the through fastening of the keel. Those fastenings should have been shown on working plan 706A, but that and certain other alterations were shown on other detail plans. Plan 706A, marked in red, is, I think, the only fastening plan that is marked with Mr. Curchin's approval. If the Committee were to ask me to put before them the last definite plan signed by Mr. Curchin, I would produce 706A, marked in red.

The witness withdrew.

Mourits Charles Neilsen, rigger and seaman, sworn and examined.

386. *To the Chairman.*—I was working for Kidman and Mayoh for six weeks during 1919. I recommenced on the 6th January last, and am still with them. I have been at rigging work for twenty years, off and on.

387. *To Mr. Boyd (through the Chairman).*—I have worked on the rigging of the *Braeside* from February last to the present time. The shrouds were cut by Hamer and Fred Carlson to measurements given by MacDougall. MacDougall made no mistake in the length, but Hamer cut some of them 2 or 3 inches short. That would not have prevented the putting on

of four seizings, or the shrouds deriving the proper strength from the seizings. I asked Hamer one day what he intended to do about the short shrouds. He showed me a piece of galvanized-iron piping, which he said he intended to put on. I said that it was too thick for the wire, and he then said that he would find something else. He obtained a piece of tin, which he intended to put on; but whether or not he did so, I do not know. The purpose of putting on the dummy ends was to give the shrouds a uniform appearance. I suggested to him that he should cut all the shrouds to one length, and he obtained a batten from MacDougall for the purpose of measuring them. In my opinion, the rigging, as it stands to-day, is a good honest job, and its stability is not affected by the false ends.

388. *To the Chairman.*—I did not personally inspect the shrouds which Hamer completed; but I am satisfied that the seizings are efficient, and that there is no danger in the dummy ends. Every shroud is properly seized; the false ends were put on merely for the sake of uniformity.

389. *To Senator Newland.*—MacDougall was in charge of the rigging, but I do not know whether he saw Hamer lengthening the shrouds with the false ends. I was working on the port side, and Hamer on the starboard side. I could have done a similar job on my side without the boss noticing it, but I would have told him about it. No instructions were given to scamp the work; we were sent there to do the job to the best of our ability. No fault was found with the rigging. I have known false ends to be resorted to before: they have no effect on the strength of the shrouds. I personally have never used a dummy piece in order to make up for the shortness of a wire. The dummy ends put in by Hamer were about 4 inches long.

390. *To Mr. Mathews.*—The first seizing is 1 inch above the dead-eye, and there is an interval of 12 inches between each seizing. Even the top seizing held the end of the turn in to the shroud. Standard rigging has four seizings on the shrouds and three on the jib stays.

391. *To Mr. Parker Moloney.*—Captain Maxwell was about the ship, but he was principally concerned in the fitting up of the cabins. He never interfered with us in the fitting of the rigging, although it would have been his place, as prospective master of the ship, to see that the rigging was properly done.

The witness withdrew.

Henry Basil Thompson, rigger, sworn and examined.

392. *To the Chairman.*—I have been employed by Kidman and Mayoh for four or five months. We have been engaged in making duplicate rigging for the *Braeside* and the *Burnside*.

393. *To Mr. Boyd (through the Chairman).*—I was engaged on portion of the rigging of the *Braeside*, and I saw four or five dummy ends put on the shrouds. The longest was about 5 inches. Even the shortest of the shrouds was long enough to take four seizings. Our instructions were to put double seizings on the lower part and two single seizings on the top. There was no necessity to use a dummy end, but it was resorted to for the purpose of uniformity more than anything else. The ropes had been cut too short, and the dummies were used to hide the defect. Hamer told me that he had made a mess of the rigging, and asked me what was the best way out of it. He put portion of the blame on a man who is now deceased, by saying that he had allowed that man to have too much of his own way. The turn up of the rigging is already too long, and the false ends can be no detriment. As a practical man, I say that the rigging of the *Braeside* is first class. I have worked in almost every part of the ship, and the rigging is first class throughout, in respect of both workmanship and material. Hamer was far from being a practical rigger.

394. *To the Chairman.*—It was generally understood that we were to do a first class job. I have known two or three hours to be spent in undoing unnecessary work ordered by Captain Murchison. The shrouds have not suffered any loss of strength by reason of the addition of these dummy ends. A turn-up of 4 feet is ample. We were working under the direction of MacDougall, Mr. Williamson, and Mr. Barre. I do not know why Captain Murchison was on board, but this dummy work on the shrouds was done while he was there. Captain Murchison could not have seen these dummy ends without climbing. There were planks across the rigging, which hid the work that was being done; there were more planks than were necessary. There was nothing to prevent any overseer seeing the work that was being done.

395. *To Mr. Bamford.*—We had no instructions to do other than a first class job. As a matter of fact, Captain Murchison complimented my mate and myself on some of the heavy work we did.

The witness withdrew.

Alexander MacDougall, foreman rigger, recalled and further examined.

396. *To the Chairman.*—I was in charge of the riggers on the *Braeside*, and it was my duty to see that the specifications and instructions were effectively carried out. I had twelve men under me, including Neilson, Thompson, and Hamer. My attention was never called to any defect in Hamer's work on the shrouds. He could have put in dummy ends without my knowledge, because I had to be up the yard attending to other rigging. The only others on the ship who had authority to supervise the rigging were Captains Murchison and Maxwell. I understood that Captain Murchison was there to look after the interests of Burns, Philp, and Kidman and Mayoh, and he had a free hand to alter anything as he wished. He had simply to walk about the ship and watch the work. Captain Maxwell was there at the same time; he was just looking about the ship. The two captains had more opportunity than I had of detecting any defective work, but they never reported any. The first intimation I had that anything was wrong with the rigging was the newspaper report of Hamer's evidence. I examined the shrouds, and found about six dummy ends, measuring from 4 to 5 inches. He had cut some of the shrouds about 5 inches too short, with the result that some of the turn-ups were shorter than others. That shortage would not detract from the strength of the rigging. Hamer's work does not make the shrouds he attended to weaker than the others. I am quite satisfied that the rigging is all right. I suppose he used the dummy ends to hide his own mistake and to give the shrouds a uniform appearance. He was instructed to cut all the shrouds to the same length.

397. *To Mr. Mathews.*—The turn-ups of the shrouds are always uniform. The top seizings on the *Braeside* are effective on all shrouds because they grip both wires.

398. *To Mr. Bamford.*—If 5 inches had been cut off the longer shrouds there would still have been room enough for four seizings, and the strength of the rigging would not have been affected.

399. *To Mr. Boyd (through the Chairman).*—Hamer did not inform me of the error he had made in cutting the shrouds, and if he says that I was aware that he was putting in dummy ends he is not speaking the truth. The depth of each seizing is a little over 3 inches. The length of the turn-up is about 5 ft. 6 in. The shortest

turn-up I have known in the shrouds of a ship of the size of the *Braeside* was 4 ft. 6 in. Hamer is certainly not a practical rigger. He made a muddle of the first job he tackled, and it had to be respliced. I do not know that he was discharged from the job. The contractors did not give Hamer any instructions to use dummy ends. I met Mr. Mayoh at the *Braeside* on Saturday afternoon last, and I told him that at the interview with Mr. Snellgrove, Mr. Cook and I refused an offer he made of a twelve months' job. Mr. Snellgrove then said to us, "Well, what about £25 or £30?" That money was offered if we would give him information. I refused it.

400. *To the Chairman.*—Mr. Snellgrove asked me if we could give him any information regarding dummy bolts in the ship. I replied that I knew nothing whatever about dummy bolts, because I had never worked on the ship during the construction. He then offered me a twelve months' job at £6 per week, and when I refused it he said, "What about £25 or £30?" I said, "No." The money might have been offered to me as a present for giving information.

401. *To Mr. Atkinson.*—It was not until last Saturday that I told Mr. Mayoh about the offer of £25 or £30.

402. *To Mr. Mathews.*—I cannot say whether Mr. Snellgrove offered the money for any information I could give, or whether he wanted me to tell a lie; I leave that for the Committee to judge. I suppose his idea was that I knew something that I could tell him. I will not say that he offered me the money as an inducement to perjure myself. He asked me for any information I had about the ship.

403. *To Senator Newland.*—I did not mention this matter when I was previously before the Committee, because at that time I did not wish to be too hard on Mr. Snellgrove, but since he has thrown so much dirt at me I have decided to give the Committee more information. Cook was present when the offer was made, and a similar offer was made to him. No other offer was made to me.

The witness withdrew.

Albert Cook, shipwright, recalled and further examined.

404. *To Mr. Boyd (through the Chairman).*—I corroborate the evidence given by MacDougall regarding the offer by Mr. Snellgrove. In response to a telegram from Mr. Snellgrove, I attended at the office of Burns, Philp, and Company. In the course of conversation Mr. Snellgrove offered me a position as shipwright, and MacDougall a position as rigger. When we refused those offers he said, "What do you want? Will £25 or £35 be any good?" I replied, "No; that is no good." The only persons present in the room were Snellgrove, MacDougall, and myself. I concluded that these inducements were offered because Mr. Snellgrove wanted certain information from us.

405. *To Senator Foll.*—Mr. Snellgrove asked me if I could give him any information regarding dummy fastenings or "crook" work in the ship. I could not give any information about "crook" or defective fastenings. I inferred that on account of information that Mr. Snellgrove had received from representatives of the firm on board the ship, he thought I was conversant with some facts about the fastenings. In order to get that information he made the offer to me.

406. *To Mr. Mathews.*—MacDougall and I had a conversation with Captains Maxwell and Murchison on the hatch of the *Braeside*, but the only mention of faulty construction I heard was from them. They were continually finding fault with the fastenings, and it was they who spoke about dummies. I think Mr. Snellgrove wanted us to give him information which he thought we had, and he offered each of us a position or a sum of money to protect us against the loss of our job with Kidman and Mayoh.

407. *To the Chairman.*—I do not remember MacDougall ever saying to Captains Maxwell and Murchison when sitting on the hatch of the *Braeside* that there were thousands of dummy fastenings on the ships. It was the two captains who discussed the fastenings. Captain Murchison remarked that he could find the dummies on account of the ends not having been marked by the riveters. I do not think they asked me to go down into the hold and see the fastenings. I was employed as a shipwright, and I had nothing to do with the fastening. I do not know of any dummy fastenings having been put into the ships. If an auger broke in a hole the general practice was to put in a wooden treenail or a bolt as far as it would go, and to bore another through hole alongside. A plan of the fastenings was available on the ship, and I am not aware of any departure from it.

The witness withdrew.

Joseph Mayoh, recalled and further examined.

408. *To the Chairman.*—The agreement made between the Commonwealth and my firm provides that the vessels shall be built to plans approved by the Chief Executive Officer. The first plans, which provided for longitudinal construction, were submitted some months before we entered into the agreement. The plans were amended by Mr. Curchin to provide for diagonal ceilings, but longitudinal ceilings were later reverted to. Up to that date, the plans generally has been certified. Plan 706A relates only to fastenings, and not to the general construction of the ship. It does, however, show that longitudinal ceilings have been substituted for the original diagonal ceilings. It was returned to us on the 13th March by the Chief Executive Officer with certain alterations marked in red, with a request that two copies of the amended plan should be sent to the Department. There had been so many complications in regard to the plans that the negotiation of details by letter was impossible, therefore Mr. Barber and I went to Melbourne to discuss the various points with Mr. Curchin. The moment that I saw the alterations that had been made in regard to the floors, I concluded that the man who had used the red ink had not understood the plan. I discussed the matter with Mr. Curchin, and he agreed to allow the one through bolt and the one dump to every plank at every frame to remain. Similarly, we pointed out to him that it was impossible to put in the through bolts at the 'tween deck through the waterway and four clamps. The bolt would have been about 5 ft. long, and there was not enough room under the beam to allow it to be driven after the waterway had been put in. We convinced Mr. Curchin that he had made an error, and that modification was struck out. Then we went into various questions in regard to the knees, and argued as to whether his requirements were practicable. Generally, our contentions were agreed to. The edge fastening of the ceiling was discussed. There was no mention in the specification of edge fastening in the bilge ceiling. The negotiations in regard to the specification commenced with Kay, Macnicol, and Company about January, 1919, and many alterations were made between the letting of the contract and the signing of the specification in November, 1919. Clause 39, as finally amended in black ink and initialed by Mr. Hewison, reads—

> Ceiling to have six strakes of 9 in. by 5½ in. each side from margin girder to upper turn of bilge. From the upper turn of bilge to the gunwale, ceiling to be 5 in. thick between decks and

> 5 in. in hold and to be edge bolted. A 12 in. by 6 in. bilge stringer to be fitted and efficiently fastened. The ceiling to be fastened with 1 in. galvanized iron dumps. The 5½ in. ceiling to be fastened with 12 in. by ¾ in. galvanized iron dumps. Dumps are in addition to the through bolts.

There is no mention of edge fastening in the bilge ceiling. The frames were bent with steam, and when they were fastened to the bottom, it was easy for the top of the ship to come out a bit. We found, therefore, that we had to bolt the frames in with the clamps. Naturally, we expected the draughtsman to draw up his plans to comply with the specifications. It was a practicable impossibility to put in all the edge fastenings, but we put in some of them. Mr. Brown knew of the omission of some of them, and he promised to write to Melbourne about it. As a matter of fact Mr. Heron and Mr. Curchin came over, and after inspecting the work told us to do the best we could. I admit that some of the edge fastenings are left out, but that was because it was not practicable to put them in. We have put 107,000 bolts into the ship, and a few more would not have mattered if we could have got them in. In regard to the fastenings in the knees, it was considered by everybody on the job that the knees were riddled with holes. As a matter of fact, it was proved that six bolts, three at the top and three at the bottom, were sufficient. The *Braeside* knees were fastened in that way, and those in the *Burnside* too, at first, and it was not until September of this year that the Government officials thought we ought to have more bolts in the knees. Mr. Heron went to the yard, and after a consultation with Mr. Arthur Mayoh, Mr. Brown, and Mr. Barre, it was left to the last-named to put a few more bolts in. Here is a little tracing signed by Mr. Brown—"Bolts in hanging knees as decided by Mr. Heron, October 7, 1920." With regard to the outside fastening of the planking, about September of this year, I was travelling from the yard with Mr. Brown, who was very incensed at the charges made by Burns, Philp and Company, and he said, "Do you know that you have put twice as many bolts in the ship as you need have done." I said I did not; but that would explan why the cost was so great. Mr. Heron then indorsed Mr. Brown's statement. He told me that I was entitled to put in a large number of wooden treenails, which would not have cost a tithe of the amount we had spent on iron bolts. Mr. Brown said, "Yes, it has robbed you of thousands of pounds." I have only just learned that there is in existence a plan showing particulars of the outside fastenings. Clause 35 of the specification reads—

> The average length of planks to be about 30 ft., and the shift of butts of the planking in no case to be less than the prescribed rule. The fastening to be of galvanized iron and to have 14 in. x ⅞ in. dumps in the wales and garboard strakes, and 12 in. x ⅞ in. in the other strakes. The planks 8 in. wide and under to have single fastenings in timber, and planks above 8 in. wide and up to 11 in. wide to have alterantely double and single fastenings. The through bolts to be of 1 in. galvanized iron, clenched in galvanized iron washers. All planks to be fitted close to the timbers.

I did not know that, but now I understand why it has taken so long and cost so much money to build the ship. There are no 11 in. planks, except near the bottom of the ship. Mr. Curchin's powers were to see that the ships complied with the general specifications and plans. He made us put in all these bolts, and the money they cost is lost to the Commonwealth, which I think will some day pay us for that work. I direct attention to blue print 672, showing the arrangement of fastenings in the outside planking, and dated 8th December, 1918, two months before I caused Mr. Barber to be located in our drawing office at the shipyard. We relied wholly on Mr. Barber to supply us with drawings with which to carry on the job. He had no right to put in the fastenings that are shown in plan 672, because they are not called for by Lloyd's or by the specification. But once we started the contract we must go on; we could not legally stop work unless we obtained an injunction. No through bolts were specified or asked for. It is true that plan 672 did show through bolts in the planking, but whilst some specifications contain the condition that the specification overrides the plan, in other cases it is provided that the plan is paramount. The latter would be the case in connexion with a dock gate or some work of the kind, the detail of which would be very intricate. We were in a rather peculiar position in connexion with this contract, inasmuch as we were supplying all the plans. I do not suppose any other shipbuilder would have had to submit all these plans to the owners. In all other big jobs we have done the plans were supplied to us. In this case the contract provided that we should make all the plans and submit them to Mr. Curchin for his approval. The purpose of diagonal ceiling was to give longitudinal strength to the ship, but the plan was modified in order to substitute ordinary fore-and-aft ceiling. Later we submitted plan 706A to the Chief Executive Officer who asked that certain things should be done to insure the strength of the vessel. It was not our duty to see that plans were approved by him. It did not follow that because he wanted us to do certain things we must do them. We said, "These things cannot be done, and they are not provided for in the specification." It was not necessary for us to get his approval of 706A, which contained merely fastening details, because we took him to be a man of his word. At the conference with him in Melbourne, it was agreed that our method was the better and that nothing more need be said. In connexion with a big work like this it is necessary to get only the main plans signed. So far as written approval goes, we have built the ships on our own responsibility. We argued out our differences with Mr. Curchin personally, and came away quite satisfied. Between February, 1919, and March, 1920, nobody said that we were not working to the proper plan. It was the duty of Mr. Curchin and his staff to see that they were getting value for the money which the Commonwealth was paying. It was also the contractors' business to give value for the money they were receiving; we have always done that. I have here a plan showing all the fastenings in the keel and floor. It is signed by Mr. Heron, on the 2nd October, 1918, and is marked, "All fastenings to the surveyor's satisfaction." When plan 706A was prepared in our office in Sydney, Mr. Heron saw it and had a good deal to say in regard to the various alterations. He was quite satisfied. I do not suppose we would consult him about the alterations made in red by Mr. Curchin later. I produced longitudinal section 715, signed by Mr. Heron. Copies of this plan were given to Burns, Philp, and Company when they purchased the ship. The following other plans were signed by Mr. Heron:—752, midship section and bow and stern; 716, profile side and upper deck; 662C, rudder; 911A, false keel which was added to Burns, Philp, and Company; 917, alterations for the square rig for Burns, Philp, and Company; and 918, deckhouse forward, galley, and mess (never carried out). The great majority of the plans were not signed by anybody, but the work was done. I do not think one plan was sent to Melbourne that was not returned with red ink marking, but it was not customary to get them signed. Mr. Heron was consulted in regard to plan 706, and he had no objection to offer. The red ink markings were no reflection on the original draughtsmanship;

the officials had the right to approve of the plan, and they altered them in respect of all points upon which their ideas differed from those of Mr. Barber.

409. *To the Chairman.*—Plan 706A was one of the important drawings, and a great deal of thought was given to it. Although the agreement provided that the plans should be approved by the Chief Executive Officer, we did not obtain the approval in writing. None of the plans I have just exhibited to the Committee have Mr. Curchin's signature. If the Committee took the view that the plans ought to have his signature we would be in a very bad position. Often Mr. Curchin said, "If it suits Mr. Heron, it suits me." When a drawing was returned from Mr. Curchin marked in red ink, we revised the tracing and had new prints made, and the plans marked in red ink were put aside for record purposes. The ships have been fastened according to plan 706A, as submitted to the Department, and not according to the plan as altered by Mr. Curchin, because he agreed that our objections to his modifications were right. I submit a few typical letters relating to the submission and the return of plans. When we received Mr. Curchin's alterations in red, if we approved of them we altered our plans accordingly. Mr. Curchin always asked for plans for his inspector, and it was his duty to get them. There was no suggestion that the decisions at our conference in Melbourne should be set down in writing. Mr. Curchin wanted us to carry out a lot of alterations, which I said were not provided for in the specifications. We argued the matter out in a friendly way, and after having gained our point we came back to Sydney with our own plan 706A, and issued it to the yard. The interview would be some time after the 13th March, 1919, when Mr. Curchin returned 706A with the alterations in red. After the interview Mr. Barber had only to issue blue prints to the yard and keep the job going. We have put a few edge fastenings in the ceiling, but it was a practical impossibility to put them all in. There was not enough space under the clamps to allow holes to be bored in the ceiling planks, and even if the hole could have been made the bolt could not have been driven. Yet it was necessary that the clamps should be put in before the ceiling in order to hold the ship fair. On the 26th February, 1919—[*Exhibit* 86]—I wrote to the Department saying that we had difficulty in putting the edge fastenings in. I did not attach much importance to them as strength factors because of the area they would have taken out of the timber. The 8-inch clamp would be reduced by the bolt to 6⅞ inches. None of the clamps in the *Braeside* have opened at the scarphs or torn away on account of undue stress. The timbers are already bolted sufficiently without the edge fastenings, and I reckon that the greater area that is kept intact counterbalances any loss of strength through the absence of bolts. Still, the Department specified edge fastenings, and it was our business to put them in. We did put in as many as we could. It was not our duty to see that every plan was marked with the approval of the Department, but if I were commencing the contract again I would see that every plan was signed.

410. *To Mr. Mathews.*—In plan 706B, the edge fastenings were shown at Mr. Heron's request. He visited the ship, and asked me if I thought I could get the edge fastenings in the bilge ceiling. Mr. Barr said he thought he might be able to get some of them in. We had never previously been asked to put any in; but they were shown in a fresh tracing of 706A, called by Mr. Barber 706B, which was prepared for submission to London, in order to show the fastening of the ship as built, and was sent to Mr. Heron on the 28th September last. On that plan Mr. Barber omitted the edge bolts from the hold ceiling, but he showed them in the bilge ceiling. I think he was mistaken when he said that there is in existence a detailed plan of edge fastenings in the ceiling. It was not until September, when Burns, Philp, & Co. commenced to make charges, that we began to make inquiries regarding the fastenings. Mr. Heron was pressing for many days for a plan of the fastenings to send to London, and eventually 706A was altered, and the edge fastenings put in. Mr. Barber expected to be able to get some of them put in the ship, in order to comply with Mr. Heron's request. That request applied particularly to the *Burnside,* but also to the *Braeside.* Mr. Heron knew that the edge fastenings had not been put in. That work would easily occupy a week; fastenings cannot be put in in a few days, so no question of deception arises. It is no good anybody saying he thought the fastenings were in when they were not; we never intended to put them in. It is not our business to cable to Lloyd's that edge fastenings shown on plan 706B are not in the ships. Mr. Heron has been supplied with a tracing, and he can be informed that we have not put the edge fastenings in. I am emphatic in my statement that we satisfied Mr. Curchin that many of his modifications were unnecessary. If we had not done that, it would not have paid us or Mr. Barber to take the risk of departing from Mr. Curchin's requirements. We returned to Sydney with a true version of what we had to do, and we did it.

411. *To Senator Foll.*—Mr. Hewison was often called in when we had interviews with Mr. Curchin, and he was sometimes consulted. Lloyd's cable provided for edge fastenings in the ceiling, and it was left to the local surveyor to have them put on the plan. Mr. Curchin decided what fastenings should be put in to comply with Lloyd's requirements. Mr. Heron saw the fastenings in the ship, and he had the opportunity of expressing his opinion, which he did. Every Thursday he went to the ship-yard for the day, and all the points that were outstanding were put before him. Lloyd's stipulated that the ceiling and the clamps were to be edge fastened; but it was left to Mr. Curchin and myself to decide what Lloyd's requirements were. I do not consider that peculiar. They advised their local surveyor that if the ceiling was put in as proposed, it must be edge fastened; the matter was left to the practical man in Sydney. Lloyd's must have considered edge fastenings important; but my own opinion is that they are no good, because they destroy the general section of the timber. Every man knew that the edge fastenings could not be put in, and I never led Mr. Barber to believe that they were in the bilge ceiling, because that would not have been in accordance with plan 706A, to which we worked. If they had been shown on the plan, the putting in of a few more bolts would not have added very much to the huge cost of these ships. I do not know who told Mr. Barber that the edge fastenings were in the ceiling, but I do know that they are not in. I had nothing to do with his preparation of plan 706B, at the request of Mr. Heron. I neither gave him the information about the edge fastenings, nor approved of the plan. My firm certainly paid for the print. His object was to bring the plan up to date. I do not think it shows any other fastenings that are not in the ship. Except in regard to the edge fastenings in the bilge ceiling, the plan is correct. The tracing of 7th October, 1920, shows four through bolts above and four below in the upper deck hanging knees, and four above and six below in the lower deck hanging knees. If we can find enough timber in the knees to take all those through bolts, we will put them in. It will be difficult, but we are still endeavouring to do it. We have never previously made vital alterations in a contract without

having them confirmed; we would not take the risk. Neither have we done it in the case of plan 706A. The alterations made by Mr. Curchin were not vital, and, in any case, should not have been made. At the time the plan was approved by Mr. Curchin it was intended to put the edge fastenings in the clamps and upper ceilings, and it was later, during the progress of construction, that we found that we could not get them in. Neither could they have been put in the second ship, as a result of our experience with the first. The only method by which the fastenings could be got in was by the adoption of the American system of fixing the ceiling first and the planking afterwards. Apparently Lloyd's regarded the ceiling as a strength member; but Mr. Barber said that he had not taken it into account in his calculations. If we could not get in the bolts that were specified, we cannot be penalized for their omission. It is the duty of the officials to prescribe fastenings that are practicable. It is incompetence to prescribe things that cannot be done.

412. *To Mr. Parker Moloney.*—Plan 706A was the last fastening plan that Mr. Curchin approved and signed. To that plan he suggested alterations which, after consultation in Melbourne, we agreed to leave out. Therefore the finally approved plan was 706A without the red ink alterations. We did not ask for his approval in writing because we never had had anything in writing so far as approval of plans was concerned. Sometimes alterations were forwarded by letter; at other times I have taken plans to Melbourne, discussed them with Mr. Curchin, and brought them back, and there has been nothing in writing to indicate the decision arrived at. It may not have been sound business to neglect to obtain written conformation for our own protection, but Mr. Curchin was in a sense a friend of mine, having come from the same county in England; he was also a good churchman, and I accepted his word. In the course of this inquiry I have had to tell the Committee that we were hindered from the start, but hitherto we had no reason to doubt him. Mr. Barber's action in showing edge fastenings in the bilge ceiling on Plan 706B does not indicate that he understood that at the conference with Mr. Curchin those fastenings were not struck out. After that interview the edge fastenings in the bilge were a dead letter until Mr. Heron brought up the matter in the middle of September and asked us if we could get them in. I pointed out to Mr. Curchin that under the specifications he could not ask for these fastenings, and that Lloyd's had not asked for them. When Mr. Heron asked for them, Mr. Barber, in advance of their being put in, made plan 706B. Mr. Heron knew up to that time that the edge fastenings were not in the bilge ceiling. Mr. Barber may not have known, because he had been busy making plans, and had accompanied me to Melbourne very frequently. Therefore, he would not be able to follow the construction closely enough to know if the edge fastenings had been put in. Even in railway contracts there is a clause that if the plan and the specification differ the specification must be read as correct. The foreman and the workmen would follow the plan only. The specification is for the guidance of the draftsman in making his drawings.

413. *To Mr. Bamford.*—When the Government first intimated their intention of building wooden ships, Kay, Macnicol and Company approached them on our behalf and submitted a plan. Later we had an interview with the Prime Minister and Sir Robert Garran. The plan submitted by Kay, Macnicol and Company referred to a few of the fastenings. With it was a specification prescribing lighter materials than were stipulated in the final specification. When the timbers were increased in size and other alterations made we did not alter the contract price of £26 per ton. No schedule was given to the Government, although we had one for ourselves. I have already said that I think there is 30 per cent. more timber in the ships as built than in those for which we orginally tendered, and I think we are entitled to be repaid by the Commonwealth for the difference between the original plans on which we tendered and those to which we built the ships. Mr. Curchin had authority to approve of the plans and to alter them as he chose, but the agreement does not say that he need not pay for the alterations. Lloyd's made modifications to the original plans to which we agreed without any increase in price, although they made a great deal of difference to the cost of construction. I think I was more cautious in my dealings with the Government than I would have been if I had been dealing with a private firm. I caused Mr. Barber to make a tremendous number of drawings at great expense to his firm in order to insure that we were building the ship in accordance with Mr. Curchin's ideas. Mr. Curchin's marks in red ink were equivalent to a written order, to which we said, "Very well, pay for it."

414. *To Mr. Atkinson.*—We have supplied the ship construction branch with all the plans, which have been asked for. Mr. Brown told me one day that he had so many plans from Melbourne that he could not store them in the room he occupied. I advised him to write to Mr. Curchin asking for an office. He subsequently told me that Mr. Curchin had agreed to allow him an extra 12s. 6d. per week for a room in which to store his plans. We did not supply him with any plans; the Government forwarded to him copies of plans which we sent to them. I do not know how many prints of plan 706A were made, but to the best of my belief one was sent to the Department for the use of Mr. Brown. All the red ink alterations made by Mr. Curchin were dealt with at the one conference, which occupied a whole forenoon. There is no note on the plan to show that certain alterations have been dispensed with. In respect of some decisions Mr. Hewison put a note on the plan; in respect of others he did not, but the Committee will see that I struck a green pencil through some of the red marks. When we came back from Melbourne we knew exactly what had been decided. But we know nothing of any memoranda which Mr. Hewison may have written on the Departmental copies in our absence.

415. *To Mr. Brown (through the Chairman).*—Our contract with the Government provides for the construction of the vessels according to plans approved by the Chief Executive Officer and Lloyd's. Lloyd's approved midsection 193S provided for edge fastenings, from the lower turn of the bilge to the gunwale. Plan 706A, marked in red, shows a similar note by Mr. Curchin regarding edge fastenings in the bilge ceiling but they have not been put in. They were omitted in consequence of a conversation we had in Melbourne with Mr. Curchin in regard to his revision of plan 706A. There are also the cablegrams between Lloyd's and Mr. Curchin. After Mr. Barber's plan had gone to London, Mr. Curchin, in June, 1918, cabled to London suggesting certain alterations in the ceiling. Lloyd's returned midship section 193S showing their alterations. Afterwards the matter was discussed with Mr. Curchin, and authority was received from him to alter the ceiling as shown in plan 706A. The ship, as built, is nothing like Lloyd's midship section 193S. Plans were drawn in accordance with Lloyd's cablegram, and Mr. Heron signed each of those I put on the table this afternoon. I have no approved plan from the Chief Executve Officer which authorizes the omission of edge fastenings from the

bilge ceiling, but I have the specification which, although not actually saying that they are to be omitted, does not require that they shall be put in. I attach little importance to the edge fastening, but we showed them on plan 706A in accordance with the specifications which the draftsman had to follow. Plan 706A was prepared three months after the specification was first sent to us in August or September. I refused to consent to the specification, because of some alterations in it; negotiations proceeded and I ultimately signed it on the 29th November, 1918. Prior to that I had a conference with Mr. Curchin, at which we arranged certain amendments. Those amendments were made many weeks prior to the preparation of plan 706. The agreement gave the Chief Executive Officer the right to alter any plan as he required. But he was not within his rights in prescribing on plan 706A edge fastenings in the bilge ceiling, because that was contrary to the specification which mentioned only the upper turn of the bilge. It would be useless to make a specification prescribing all the details, if one of the parties could drive a coach and horses through it. Whilst the agreement was binding on both sides and gave the Chief Executive Officer the right to alter the plans, he must only alter them within the specification. I do not think we ever protested in writing to the Chief Executive Officer against the provision of edge fastenings from the lower turn of the bilge to the gunwale, but when he altered the plan to that effect we went back to him and said that it should not be. When Mr. Heron asked for a clean plan showing how the ships had been fastened, Mr. Barber prepared a clean tracing of 706A and called it 706B; it shows edge fastening in the hold ceiling as specified. But, as I have already said, some of them could not be put in. It was specified that the edge fastenings should be spaced 5 feet between beams, but I cannot say whether they have been so spaced; that is a question to be answered by the manager and foreman. I do not know whether the foreman's statement that 70 per cent. of the edge fastenings have been omitted is correct. Before one could answer that question he would have to calculate the number of bolts he intended to put in and then count the number actually put in. The specification does not say how the fastenings should be spaced, but the plan requires that they should be 5 feet apart, and I have no doubt we have endeavoured to put them 5 feet apart. It is my belief that no plan which we submitted to the Chief Executive Officer was returned without some red ink alteration. In saying that the timbers were increased 30 per cent. beyond what we originally intended to put in, I am guided by the bills which we have paid. Both Lloyd's and Mr. Curchin were responsible for the alteration in the size of the timbers. A long cable from Lloyd's specified the sizes of timber to be used, but Mr. Curchin was just as responsible as were Lloyd's; he said that what was good enough for Lloyd's was good enough for him. I admit that he would be acting unreasonably if he attempted to alter the sizes specified by Lloyd's. The Department had no alternative but to accept the increased sizes specified, and approved by Lloyd's. The latter were responsible for nearly the whole of the increases in the sizes of the timbers, but Mr. Curchin was practically in partnership with them. If he had required additional sizes we would have been obliged to supply them, then he would have been in the same position as Lloyd's. Both Mr. Curchin and Lloyd's representative could do what they liked, and the one generally agreed with the other. The increased sizes in timber were specified by Lloyd's Committee of London, and not by Mr. Heron of Sydney. But, in the first place, Mr. Curchin sent a cablegram to Lloyd's on the 26th June, 1918, defining all the sizes of timbers to be put into the ship. Then Lloyd's replied on the 25th July further increasing the sizes.

(Taken at Sydney.)

WEDNESDAY, 8TH DECEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll	Mr. Bamford
Senator Newland	Mr. Mathews
Mr. Atkinson	Mr. Parker Moloney.

Mr. J. A. Boyd, representing Messrs. Kidman & Mayoh; Mr. H. C. Brown, representing the Prime Minister's Department.

Andrew Crawford Heron, ship and engineer surveyor to Lloyd's register, recalled and further examined.

416. *To the Chairman.*—The original plans for the ships which had been built for Kidman & Mayoh were submitted to me, and by me referred to the London office, where they were approved, with certain amendments The original midship section, 193S, showed diagonal bracing from the collision to the engine-room bulkhead. When it was returned to us from London, it bore the instruction in red ink that diagonal iron straps should be fitted outside the frame—an old custom, and a good one—or, in lieu of the straps, edge fastenings should be put in from the lower turn of the bilge to the gunwale. There had been earlier correspondence in which it was proposed that the ship should be built with diagonal ceilings, which probably would have been fitted from the bilge stringer to the upper deck; but the diagonal ceilings were struck out, and fore and aft ceiling, with edge fastenings from the lower turn of the bilge to the gunwale, were substituted. I think the plan showed that the edge fastenings should be about 5 feet apart. I visited the ships frequently during the progress of construction. It was possible for the edge fastenings to have been put into the ceiling from the bilge to the gunwale, and that is frequently done in that method of construction. I have with me a plan of a recently built ship, showing the ceiling edge fastened. When I visited the ship-yard I had some plans of my own, but I frequently went to the office to consult others. Working plan 706A was available. It does not show edge fastenings from the gunwale to the lower turn of the bilge. I was always keen on edge fastenings, because I know the value that Lloyd's attach to them. I know they were intended to be put in the lower turn of the bilge. Not many detailed drawings were submitted to me; they were more particularly the concern of Mr. Mayoh and Mr. Curchin. The details were discussed by them, but I worked only to the approved plans. Lloyd's insisted that the edge fastenings should be put in the ceiling from the lower turn of the bilge to the gunwale, as compensation for the omission of iron straps. No request was made to me for their omission. Had such a request been made, I would certainly have refused it. I frequently made inquiries as to whether the edge fastenings were inserted, and on several occasions I saw a great number being put in both ships. I saw none being put in the bilge ceiling, but when I inquired of Mr. Barre and Mr. Brown, I was told that they had been put in. Mr. Brown had some plans, but how many I do not know. Occasionally he consulted my plans when he was going to the ship-yard. I was never consulted in regard to the omission of the edge fastenings. In regard to the knees both Mr. Brown and I took exception to the fact that all the fastenings were not in place, and we arranged with the builders to bring the fastenings up to our approved plan before the vessel was completed. In fastening the waterway, beams, and clamps, two bolts, one driven downward and the other upwards, in lieu of one through bolt, would comply with Lloyd's conditions. Edge fastenings were stipulated as compensation for doing away with the diagonal ceiling, and are

imperative, and I could not agree to their being left out without the authority of Lloyd's. I would certainly say that the protection afforded against the sliding of the timbers would more than counterbalance any weakening of the planks by the driving of 1¼-in. bolts into them. We would be satisfied with a reasonable compliance with our requirements in regard to the fastenings. In odd places at the ends of the ship, we might allow that the edge bolts could not be spaced as stipulated; but the builders must comply with the main conditions laid down. I would not be inclined to permit the omission of any of the edge fastenings. The few that might be omitted at the end, where difficulties were met with, could be compensated for; but I would not depart in the slightest from the conditions laid down by my superiors. I have a copy of 706A, but it bears no signature to show that it had been approved by the Department. I have written on my copy, "Edge fastenings, Lloyd's plan, and cable 11th March, 1919, bottom or lower turn of bilge to gunwale." I am not sure whether I obtained that plan from the contractors or from the Government. I spoke to Mr. Barber about edge fastenings in the bilge ceiling, and he brought me a sketch showing in pencil the fastenings he proposed to put in. I cannot produce any certified and approved copy of 706A. That plan was evidently arranged between the builders and Mr. Curchin, and was approved by me, subject to edge fastenings being put in. It does not show edge fastenings in the bilge ceiling, and I called the attention of the builders to that fact. Lloyd's amended plan said distinctly that the bilge ceiling was to be edge fastened, and I have brought that to the notice of the builders. I consulted Mr. Brown about these fastenings. I was given to understand that they had been put in. I received from Mr. Barber plan 706B of the fastenings in the ships as built, and it has been sent to London; it shows edge fastenings in the bilge ceiling. Lloyd's could not issue a certificate unless those fastenings were put in or compensated for. No compensation would be as effective as the edge fastenings, had they been put in at the proper time, during construction. We discovered that the two top strakes of the clamps were not edge fastened. We understood that they were the only portion of the clamps from which the edge fastenings had been omitted, and we arranged to put in round dowels as compensation. Mr. Brown and I discovered that other fastenings had been left out. We decided that additional edge fastenings should be put in the ceiling and in the beam knees before a certificate could be granted. As compensation for the omission of edge fastenings from the ceiling, an additional ceiling can be built on top of the present one, through-fastened, and edge-fastened from the bilge stringer. The ceiling could thus be made right, but that strengthening would cost some money. In regard to the through fastenings, the builders have complied with the specifications, except in certain places. Mr. Brown and I called attention to the fact that at certain frames the ceiling did not appear to be through-fastened; but the builders explained that the through fastenings had been driven from the outside planking and clinched on the frames, and, therefore, could not be seen from inside the ship. It is optional to fasten the outside planks on the inside of the frame or to bring the bolts right through the side of the ship and clinch them on the ceiling. It is usual to put edge bolts in the scarps of the clamps. The builder should be guided mostly by the plans; the specification is really for the owner or owner's superintendent. The fact that clause 39 of the specification mentions edge fastening of the ceiling only from the upper turn of the bilge does not affect me in the slightest. I still insist upon the fastenings being from the lower turn of the bilge. I cannot reconcile that clause and plan 706A, as amended in red. I cannot arbitrate between the two; but I know that Lloyd's asked for edge fastenings in the bilge ceiling, and the vessel has to be built to their approval. I have not investigated carefully the fastenings of the scarps in the clamps, but the omission of the fastenings from the scarps would be a detriment to the ship. If there are only three edge fastenings in the scarps instead of four, the ship would be weakened to a certain extent. Ample edge fastening reduces the tendency of the timbers to slide on each other. The bulwark clamp on the *Braeside* stopped suddenly at the break of the forecastle and poop. That is done sometimes, but I think it is better to carry the clamp through. If 70 per cent. of the edge fastenings have been omitted, it might be possible to compensate by filling in with continuous diagonal ceiling, which should be edge-fastened as it was put on; the question is not easily answered without consideration. The original intention was to fit outside diagonal straps checked into the frames. It would certainly be wise to build an extra hatch coaming in the *Burnside* from end to end. The *Forest Pride* also has the inner waterway extending from end to end of the ship. Those heavy longitudinal timbers tend to increase the strength of the vessel.

417. *To Senator Newland.*—When the original plans were returned from London they showed a thicker bilge ceiling, but it was certainly not intended that the increase in the ceiling should be regarded as compensation for the omission of edge fastenings. In regard to the through bolts in the clamps, the waterway was put on first, and there was nothing to prevent the through bolts from being put in. It is a question as to whether all the clamps should have been fixed before the edge fastenings were put in. In order to fix the knees it might not have been necessary to put in all the clamps first. The ship could have been held together with one clamp, and the shelves until such time as the edge fastening was attended to. I admit that it would be difficult to hold the ship to shape in that way. The two bolts in the clamps and waterway—one drive downwards and the other upwards—are all right provided that they overlap and go into the next seam of the planking. The through bolt would not necessarily have interfered with the through fastenings in the knee; the latter could have been bored at a slight inclination, but a good tradesman would have been required to do it. American ships which have visited this port had the edge fastenings in the upper strakes of the ceiling. The American system is to build up the inside ceiling before the outside planking is put on, and the fastenings which they cannot drive from the inside they drive from the outside between the frames. The edge fastenings could have been put in on the *Braeside* by leaving off two of the clamps until the ceiling was fixed.

418. *To Senator Foll.*—With some exceptions, such as the edge fastenings, the ships have been built to the approval of Lloyd's. My principal complaint has been the omission of the edge fastenings, which I regard as very serious. If Mr. Curchin gave the contractors permission to leave out the edge fastenings he would be acting contrary to Lloyd's wishes. I do not think he would do that, but if he did his permission would not relieve me of any responsibility. I never knew that the edge fastenings were to be omitted; Mr. Curchin never said anything to me about them. I think that if he had given permission to the contractors to omit them he would have informed me. But I could not take upon myself the responsibility of approving of that. I know Mr. Curchin very well, and I do not think he would be likely to give such permission. The ceiling is an important factor in the strength of the ship. I cannot produce any correspondence in which Lloyd's gave the contractors definite instructions to put in edge fastening, but I gave them

a copy of the approved plan—the usual procedure—and it states distinctly in red ink that the edge fastenings shall be put in. I thought they were in, with the exception of the two top strakes of the ceiling between the upper deck clamps and the lower deck waterways. Recently Mr. Greenlees and Mr. Watson called attention to the fact that other edge fastenings had been omitted. I was told by Mr. Barre, and probably by Mr. Arthur Mayoh, that the edge fastenings had been put in. Anybody in authority at the shipyard knows that I was keen on the edge fastenings. I asked Mr. Brown about them frequently, and he told me they were in. They could not be regarded as of minor importance. The fact of their being on Lloyd's plan was sufficient for me, but in addition I, as a practical man, know their value. I saw some of them driven in, and I was impressed with the idea that they were all in. I stressed the importance of attending to them, but I was wrongly informed, for I have recently seen sufficient to know that quite a number of the edge fastenings have been omitted. I have not yet given any certificate regarding the *Braeside,* and have not informed Lloyd's about the omission of the edge fastenings. I reported to them about the hog, and sent plan 706B in order that they might see the fastenings in the vessel as she was intended to be built. My letter would explain that the plan indicated what the vessel would be like when completed, but in so far as the plan shows edge fastenings in the bilge ceiling it is incorrect. When I receive a plan from the contractors I do not rely on it without making some investigation as to its accuracy. Plan 706B, because it shows edge fastenings which have not been put in, makes out that the vessel is stronger than she actually is. It really shows the boat built as Lloyd's required, for if the ship were shown to be without the edge fastenings they would require some compensation. I do not think that plan 706B would influence Lloyd's in regard to granting a certificate. I say definitely that the edge fastenings could have been put, and I do not know why they were not. Lloyd's instructions regarding the edge fastenings were given to the contractors before construction was started. As to whether the *Braeside* would get Lloyd's certificate if diagonal ceiling were fitted in now to compensate for the omission of edge fastenings, I cannot say; I should have to consult the Commonwealth experts and our London office. The new ceiling would not in itself be very expensive, but I would not like to say whether the ships would be worth that expense.

419. *To Mr. Parker Moloney.*—The only way to effectively compensate for the omission of the edge fastenings would be to tear out the present ceiling and rebuild it; that would not be an easy job. Some other compensation such as a new diagonal ceiling would have to be provided. Had the two lower clamps in the 'tween decks and hold been left off until the ceiling had been attached the edge bolts could have been put in. It is a common thing to put edge bolts in a ship over a certain size. Lloyd's require that when the length of a ship exceeds 5 breadths or 8 and under 9 depths, diagonal straps shall be fitted. If they are not fitted there must be compensation, and edge fastenings are the compensation. For the scarps of the keel and main keelsons there is a prescribed number of bolts, but I think the bolts in the clamp scarps are usually left to the builder. I cannot say whether it was intended that in these ships a definite number of bolts should be in the clam scarps. The omission of edge fastenings would eventually contribute to the hogging of the ship when she was loaded and in a seaway. I will not say that the *Braeside* is generally weak in construction, but I am not prepared to give a certificate at present.

420. *To Mr. Bamford.*—My refusal to classify the ship is due to her being hogged and strained, but if there had been no hog and the edge fastenings had been omitted I would still have refused to grant a certificate. I attach a great deal of importance to edge fastenings. I am quite satisfied with the two vertical bolts—one driven upwards and the other downwards in the waterway and clamps, in lieu of one through bolt. It is the practice to put edge fastenings in the ceiling of American ships of a certain size. A piece of ½-inch boiler plate riveted tightly to the ceiling from the bilge stringer to the margin girder would strengthen the bilge, but would not compensate wholly for the omission of edge fastenings. It might be better to put in a wooden chock. I do not think that the ship loses strength through the hatch pillars being in the centre of the hatch carlings instead of at the corners, notwithstanding that the carlings and beams are morticed on the halving principle, thus cutting out 216 cubic inches from each timber. I saw a great deal of Mr. Brown, the inspector. He was frequently on the ship. He did not make any complaint about being hindered in his work. He had his growl now and again, and so did I. That is in the nature of our work. He had a free run of the ship.

421. *To Mr. Atkinson.*—In company with Mr. Watson and Mr. Greenlees I visited the *Braeside* last Sunday week, but I did not look at the scarps. Both Mr. Brown and I understood that the edge fastenings were in the ship, and responsible men on the construction told us that they were in. We were together at the time. The ship ought to have been built to plan 706A as amended, which showed that the ceiling should be edge fastened from the gunwale to the lower turn of the bilge. Plan 706A with red ink alterations was never put before me, and Mr. Curchin never consulted me about the alterations. If the ship was built exactly to my copy of plan 706A it would meet with my approval. I do not see any material difference between my plan and the one marked in red ink, except that Lloyd's require four fastenings in each end of the knee, whereas Mr. Curchin's altered plan shows five. So far as I can see at a glance, plan 706A marked in red complies with Lloyd's requirements. The unmarked plan shows no edge fastenings in the lower turn of the bilge. The vital parts of the ship are the top and bottom girders. At the neutral axis the strain is not so great.

422. *To Mr. Mathews.*—The *Braeside* is not yet finished. I would edge spike the ceilings below the decks, in addition to the dowels which have been put in. The dowels used are round; square ones might have been better. I had an idea of trying to get Ewbank spikes in on the edge of the ceiling planks. They would compensate for the omission of the edge bolts. If the ship had not hogged and the spikes had been put in, she might have got a first-class certificate. I have never known Lloyd's to ask for something that it was impossible to carry into effect. As they ask for edge fastenings in the ceiling it must have been possible to insert them.

423. *To Mr. Boyd (through the Chairman).*—I stated in my previous evidence that the fastenings and workmanship were to my satisfaction, but it has since come to my knowledge that the edge fastenings in the bilge and side ceilings are deficient. I understood that they were in for the full length from the margin girder to the upper deck. I knew that the edge fastenings had been omitted from the top strakes because the builders had not been able to get them in under the clamps. I regard the ceiling as giving the ship part of its strength, and if Mr. Barber has only allowed one-fortieth of the ceiling area in his calculations of

strength, that is in his favour. My visits to the shipyard were sufficiently frequent to warrant me in expressing an opinion of the workmanship. I saw thousands of the fastenings driven, and I considered that they were put in satisfactorily. I still say that the fastenings were put in as well by the workmen of Kidman and Mayoh as they would have been if any other workmen had done the job, and that the stability of the *Braeside* was satisfactory, provided that she was properly stevedored and loaded. Lloyd's plan 193S, which showed edge fastenings in the ceiling, was dated London, 22nd July, 1918. I know that on the 29th November, 1918, a specification, prepared by the Chief Executive Office, was signed, but I did not see it. The only separate plan of edge fastening I saw was a small pencil tracing which Mr. Barber brought to my office about 4.30 or 5 p.m. one day. It showed edge fastening in the ceiling in accordance with Lloyd's plan. Mr. Barber must have taken the tracing away with him in order to have the work done. I dated my copy of plan 706A 11th March, 1919. I saw that plan being prepared. From time to time during the preparation Mr. Barber brought sketches to my office, and we discussed them. I usually ascertained whether Mr. Curchin had already approved of what was being submitted. I worked to Lloyd's approved plan, and so far as small modifications were concerned, if Mr. Curchin agreed to them and I found them in order I also agreed. All the plans that were necessary for the building of the ship were those that were sent to and returned from Lloyd's, London, and if the ships are built in accordance with them I want nothing more. When a vessel has been completed a plan is prepared showing all the amendments that have been made since the original plan was approved. I have no plan initialed by me, which shows in red ink through bolts in the waterways and clamps. It is not customary for me to sign all these details. I inquired about the edge fastenings from the beginning of the construction. That was one reason why Mr. Barber came to my office with the small tracing to which I have referred. I cannot say whether or not that was before the specification was finally approved by Mr. Curchin. The details of the edge fastenings were arranged in Melbourne, and had they been put in as shown on the plan of which I received a copy, they would have been in accordance with Lloyd's requirements. Lloyd's said that the fastenings should be put in to my approval. I do not recollect sending to London on the 11th March, 1919, a cable regarding edge fastenings in the bilge ceiling. I did send a cable about the washers of the fastenings. On my copy of 706A, I wrote in addition to the note about edge fastenings, a remark about dowels. Those markings were made on the 11th March, 1919. I never discussed with Mr. Curchin his red marks on plan 706A. I think the small tracing showing the edge fastenings in the ceiling was brought to me about the end of August, 1919. I cannot say why the edge fastenings were omitted from the bilge ceiling. All the fastenings could have been put in, but not after the whole of the deck clamps had been fixed. I never saw a specification of any kind. I was never consulted by Mr. Curchin in regard to plan 706A, or by Mr. Barber or Mr. Mayoh, so far as my knowledge goes. The through fastenings in the flat-way of the clamps and ceilings are sufficient to secure them to the frames, except where a few have been omitted. The clamp scarps would not be as efficient with three edge bolts as with four. The side ceiling requires to be spliced, and had I noticed that that was being omitted I would have called attention to it. There is a strain in that portion of the ship; if the contractors' naval architect says there is not I differ from him. I believe I have seen a little sign of strain in the clamps; also in the side ceiling, but that is not serious. There are also signs of strain in the beam knees. The beams appear to have been forced up by the pillars when the vessel hogged and the ends of the knees have left the beams and clamps, so that there is a space of up to $\frac{7}{8}$ in. behind them. The same defect is slightly noticeable on the *Burnside*, although she has not been subjected to any strain yet, but the space behind the knees is only 1-16th in. or $\frac{1}{8}$ in. I do not think the contraction of the timbers in the clamps was responsible for this. The shrinkage of the knees might have contributed. I would expect a small amount of shrinkage, perhaps $\frac{1}{8}$ in., in the 8 in. clamp timbers, but that would not be sufficient to account for the knees being so far off the beams and clamps as they are now. I do not recollect whether I was consulted by Mr. Curchin when the alterations to the ceiling were agreed upon and iron straps were omitted. The alternative was shown on my plans from London, so Mr. Curchin did not need to consult with me. He cabled to London on the 26th June, 1918, and Lloyd's replied on the 25th July. The date of plan 706A is the 24th February, 1919. The alterations made by Mr. Curchin did not materially conflict with the cable from Lloyd's. There are no edge fastenings shown in the bilge ceiling on that plan, although it was approved as late as March, 1919. The edge fastenings which I saw being put in were in the side ceilings. The putting in of the bilge ceiling would not take very long. The work would be in progress during some of my visits, but I did not see it being bolted or I would have made sure that the edge fastenings were put in. I am not clear as to whether I did or did not hear that Mr. Curchin had agreed to waive the long through bolts in the waterways and clamps. The alternative of two bolts overlapping is not better than the one through bolt, but complies with Lloyd's conditions. I do not think the outside planking is over fastened. Under certain conditions Lloyd's require one fastening in every 8 in. plank at every frame, but on these ships two fastenings were necessary, because of the wide spacing of the frames. I was present in Mr. Mayoh's car when Mr. Brown opened up a conversation about the planking. I heard him say that the contractors had put in a larger number of bolts than were required, but I do not think any calculation was made as to the money the contractors had lost on account of those extra bolts. I do not agree with Mr. Brown's view. According to Lloyd's rules the contractors could have fixed the outside planking with treenails, but the contract and the fastenings plan which they submitted specified steel bolts which were put in throughout the ship with the exception of two or three places where treenails were used. Iron fastenings are more valuable than wooden fastenings. In this case the contractors had undertaken to put in steel fastenings, although Lloyd's rules allowed treenails to be used in conjunction with spikes. It is my duty to see that Lloyd's rules are complied with as far as possible, but I accepted steel fastenings because they were shown on the approved plan, which is my specification. I have heard that a few of the fastenings have been omitted from the keelson, sister keelsons, and margin girders, but how many I cannot say. I noticed that they had been omitted when I examined the *Braeside* recently. There are not sufficient bolts in those members to comply with Lloyd's rules; the fastenings should be in accordance with the plan. I cannot say whether or not the omission of these bolts is due to neglect on the part of the contractors. In a big ship like the *Braeside*, a few bolts might be inadvertently missed. The omission of fastenings from the floor is a detriment to the ship. I did not know they were out when I expressed the opinion that the ship was well and faithfully fastened. Mr. Curchin's alterations in red to plan 706A not having been placed before me, I cannot express an opinion upon them. We did not prevent a builder from adding judiciously, provided he complies with our

requirements. I admit that the long bolt through the waterway and clamps could not easily have been put in. It could have been put in at great expense. I knew about the omission of the upper edge fastenings before Burns, Philp, and Company made their charges. Lloyd's regard the ceiling as a strength factor, and that is why they require it to be edge fastened.

424. *To Mr. Brown (through the Chairman).*—Lloyd's cable of the 25th July, 1918, requires edge fastening of the ceiling from the lower turn of the bilge to the gunwale, in lieu of the iron strapping, which was omitted. That is in accordance with Lloyd's plan 193S. Plan 706A, as marked in red by Mr. Curchin, also corresponds exactly with Lloyd's plan as regards the edge fastenings in the ceiling. The contractors had no right to depart from Lloyd's plan without their approval.

425. *To Mr. Mathews.*—A treenail has not the same value as an iron fastening, and in order to secure the same effectiveness, more treenails than metal bolts would be put in a given area.

426. *To the Chairman.*—My reference to the omission of bolts from the keelsons and margin girders applied to only the *Braeside*. As a result of the experience gained with the first ship, the *Burnside* appears to me to be better built, and the bulwark clamp at the break of the forecastle and poop is carried right through on to the frames.

427. *To Senator Foll.*—I last saw the *Burnside* about a fortnight ago, but I did not investigate to discover whether the edge fastenings are in the bilge ceiling. I intend to go fully into that matter.

The witness withdrew.

William George Rayner Snellgrove, Superintending Engineer for Burns, Philp, & Co., sworn and examined.

428. *To the Chairman.*—I am responsible to Burns, Philp, & Co. for the repairs to the whole of their fleet from the truck to the keel. When my principals entered into negotiations, I was sent by them in October, 1919, to look at the *Braeside* and *Burnside,* and my report has already been submitted in evidence by Mr. Wallin. [*Exhibit* 58.] I do not wish to add anything to it. After my first inspection, and prior to making that report, I advised Mr. Wallin to first charter these ships when they were completed, and then, if the company wanted to purchase them later, they would know what they were buying. Subsequent to my report, Burns, Philp, & Co. completed arrangements to purchase the vessels. I was present at the launching of the *Braeside,* but I am not able to give any evidence as to whether or not that operation was successful. About three weeks prior to the launching, on the day on which I was to visit the ship-yard, I had an accident, as a result of which I did not get out of bed until the day of the launching. I took five photos of the vessel as she went down the ways, and I know that her forefoot struck the bottom. I did not submit any report to my principals at the time, but on the 17th June I submitted the following report:—

[*Exhibit* 89.]

Sydney, 17th June, 1920.

The General Manager, Burns, Philp, & Co. Ltd., Sydney.

DEAR SIR,

Report on Barquentines "Braeside" and "Burnside."

On the 7th inst. I made a visit to the shipyard at Kissing Point, in company with Mr. J. Mayoh, and while discussing other matters he mentioned that the *Braeside* was hogged about 17 inches. He asked me to look at the sheer from some distance off; I did so, and he invited me to make comment on it. This I refrained from doing. At the same time he informed me that he had received a letter from Mr. Curchin complaining about the hog, and later, after we had returned to town, I was shown the letter, and in it, among other matters, Mr. Curchin stated that he had been informed the vessel was hogged 17 inches, and had altered form to the extent of 2 ft. 2 in. That is to say, before launching, there was a sag of 9 inches, and after launching it was discovered she had a hog of 17 inches. He pointed out that she was unsatisfactory and unacceptable.

On the 15th instant I made another visit to the vessels, in company with Lloyd's surveyor and an inspector of Commonwealth Ship Construction Branch. A very careful examination was made of certain parts of the *Braeside*. The scarps of the keelsons were found to have opened five-sixteenths of an inch (5-16 in.) on the upper side amidships. The amount of hog was not measured. The lower edge of the hatch coamings in way of the hold pillars have the appearance of being set up. The beam knees under main deck port and starboard are open at their upper and lower points in some cases, and in others at either top or bottom. A similar fault is to be seen in the 'tween decks beam knees, and in the case of one of the latter a washer has been forced off the fastening as though it had pulled out.

I drew the attention of Lloyd's surveyor to these, and also to some knees on port side 'tween deck, where they were open and away from the ship's side, and had been wedged up. He asked when these latter were put in, and was informed that it was done before launching, and that the state of them was due to shrinkage of the timber.

At the invitation of the yard manager, a visit was made to ship No. 2, the *Burnside,* for the purpose of examining the beam knees of that vessel for a comparison, he remarking that they would be found in a similar condition. This was not so, most of them being a good fit and hard up to the beams and ship's side, although they were not fastened fully.

In conclusion, I have to report that the general condition of the *Braeside* since launching is so bad that I cannot accept the responsibility of your company taking the vessel over, and I have very grave doubts as to the condition of the other, on account of the unsatisfactory state of the fastenings, and the apparent tendency to get the job done without regard to good workmanship.

Yours faithfully,

(Sgd.) W. R. SNELLGROVE.

Later, Burns, Philp, & Co. decided not to complete the purchase. Although I have no personal knowledge of the matter, the letter of Burns, Philp, & Co. to the Prime Minister, dated 28th September, indicates that they have abandoned the contract to purchase. I have not been supplied with complete copies of the plans to which the vessels were to be constructed. The only plans I had were three which accompanied my first report, with the exception of some detailed plans dealing with accommodation and other matters that did not affect the structure. But until the trouble between the contractors and my principals started, I saw all the plans I wished to see, and neither Mr. Barber nor Mr. Mayoh objected to my seeing the plans in the drawing office at any time up to my last visit to the yard.

429. *To Mr. Mathews.*—In consequence of a letter sent to Burns, Philp, & Co., I endeavoured to get from some men who were living not far from the city some information regarding the workmanship on the two vessels. The Committee is in possession of my first report on the vessels when my principals first became interested in them. I have told you that I examined the vessels, and advised Mr. Wallin to charter them. I was not very much in love with them. But before writing my report I again went to the ship-yard, and had a conversation with Mr. Barber, who explained fully the construction of the vessels. As a result of his explanation I wrote the report of the 31st Ocotber, 1919. I thought that we were getting in the *Braeside* a good sound ship, not by any means the ship that is lying at the silo wharf to-day. Having made a report which was favorable to the ship, and the *Braeside* having been found later in a deplorable condition, I thought that I should, in justice to myself and the firm, investigate the matter, and endeavour to find out the cause of the defects in the ship. I therefore listened to everything I could hear about the vessel. One day, when returning from the ship-yard in company with Mr. Heron and Mr. Brown, the latter told me that he had discovered that the fastenings in the lodging knees on the starboard side of the upper deck of the *Burnside* were not good. He described to me what had happened, and on my next visit to the ship I examined those particular knees. Mr. Brown explained to me

that, instead of through fastenings in the lodging knees short bolts had been put in, because the builders said that there was not sufficient space in which to drive the through bolts. He complained, and later was told that the through bolts had been put in. In reply to a further inquiry, they told him that they had drilled the holes with a link. To that he replied, "But how did you get the bolt in?" I examined those knees, and I discovered that in order to get the bolts in they were drilling holes right through the next beam. It was that discovery which first started me on the investigation of the fastenings. I said nothing more to anybody, except that I remarked at the end of my report of the 17th June that I had grave doubts as to the fastenings. Late in the forenoon of Wednesday, 8th September, Captain Maxwell informed me that he had been told by Cook and MacDougall that day that there were a number of dummy fastenings in the *Braeside*. I took him straight to Mr. Wallin's office, where he repeated what he had told me. I arranged with Captain Maxwell that I would visit the *Braeside* and have a look at the fastenings. I arrived at the ship about 3 o'clock, and went into the 'tween deck on the starboard side and forward of No. 1 hatch. After looking around for about ten minutes I discovered what I thought was one of the dummy fastenings. It was near the end of a hanging knee, where there was a little wane on the wood. The washer did not look good, so I picked up a maul and struck the bolt a couple of times. That tightened up the washer. Then I went to the other side of the ship and got a piece of wire. Taking my coat off, I got my hands well into the ship's side, and with the wire searched for the end of the suspected bolt. I am not sure whether or not it is a genuine bolt. It is made to look like a through fastening, because it has a washer on it; but if it is merely a dump, the washer should not be there. I could go to the ship now and pick out that bolt. From the 'tween deck I went into the hold, and after I had been there about a quarter of an hour MacDougall, the rigger, came below and appeared to be looking for something. He said to me as he passed, "Did you find any?" I said, "No; but if they are in the ship I would like to know where they are." He replied, "There are hundreds of them, if you know where to look for them." I went back to the office, and Mr. Wallin showed me the letter he had received that afternoon from Kidman and Mayoh, asking Burns, Philp, & Co. to keep their representatives away from the ships and the works. It was as follows:—

[*Exhibit* 90.]

9th September, 1920.

Messrs. Burns, Philp, & Co., Bridge-street, Sydney.

DEAR SIRS,

We shall be glad if you will give instructions to withdraw your representatives from attending our shipyard or visiting the *Braeside*.

Captain Maxwell visited the *Braeside* yesterday, and made it his business to examine fastenings. This kind of work is not expected of your representatives, and as we have no arrangement with you entitling your representative to visit our works, we shall be glad if you will kindly attend to our request at once.

We may say that arbitration proceedings are about to commence, and we are not allowing any one to visit either the *Braeside* or the shipyard, except by direct order from ourselves.

Yours faithfully,
(Sgd.) KIDMAN & MAYOH.

On the 16th September, Captains Maxwell and Murchison made statutory declarations regarding a conversation that had taken place between them and Cook and MacDougall on the *Braeside* on the 8th September. Under instructions from me, Captain Maxwell visited the *Braeside* on the 16th of September, and asked Cook and MacDougall if they would meet me and repeat what they had told him. Maxwell came back and told me that they would meet me in my office, and they did so, either that day or the following day, after 5 o'clock. Unfortunately, I was in the office by myself; that was a mistake on my part. I said to them, "What about this business of the fastenings in the *Braeside*; will you make a statement?" They answered, "No. Where do we stand with Kidman and Mayoh if we make a statement?" I said, "What do you mean? You made a statement to Captain Maxwell and Captain Murchison." To that Cook replied, "Yes; but if we had known what they were going to do we would not have made it." I asked them, "Would you yourselves go to sea in those ships?" They said, "No." I asked, "Would you like to see anybody else go to sea in them?" They replied, "No." I said, "Why cannot you tell me something about them?" Again they said, "Where do we stand with Kidman and Mayoh?" I replied, "Do you mean what will happen to you if you get the sack?" They said, "Yes." I said, "If you get the sack through anything you tell me, I will find you equally good employment. How long do you think your job will last, and how much do you get per week?" They told me, and I said, "Very well, I think we can pay whatever it costs you in wages through anything you tell me." Finally they agreed that if I wanted them they could come in again to see me. My reason for putting it in that way was that I wanted to consult somebody else about the matter. During the conversation Cook produced a short bolt of the type I would call a dummy. It was about 5 inches long and 1¼ inches in diameter, and had a riveted end. I handed it back to him without comment. I saw Mr. Wallin that evening, and told him what had taken place, and he agreed that if the men gave us the information, and were sacked for doing so, we would find them other positions. On the Saturday I sent them telegrams inviting them to meet me at the office on Monday morning. They arrived at about 9 o'clock, and I said to them, "Are you prepared to make a statement about the fastenings in the *Braeside?*" Cook asked, "What about some guarantee?" I said, "What for? Do you mean if you get the sack for anything you tell me?" He replied, "Yes." I said, "If that is what you mean, you will have to take my word. I have promised that if you get the sack for anything you tell me, I will find you other employment for a year." They said, "We want some guarantee." I said, "I will put nothing on paper; you will have to take my word. I will find you jobs." We argued for some time, and finally I could see what they wanted, and I said to them, "How much do you want?" Cook replied, "Half a year's wages." I said, "There is nothing doing, boys. I do not think you have anything to sell that is worth anything like that amount. In my opinion, what you have to sell is not worth £25, and I am not prepared to pay that; but I am a subordinate. I will consult my superior." I went in to see Mr. Wallin, and he agreed that we could not buy that information, and I returned to my office and told the men so. I asked them how much I owed them for the morning's work they had lost. A clerk made out the vouchers, and they were paid.

430. *To Mr. Bamford.*—I cannot say whether it was upon the report I submitted to the firm that they declined to proceed with the contract of purchase.

431. *To Mr. Boyd (through the Chairman).*—My inquiries were made prior to the abandonment of the contract of purchase by Burns, Philp, & Co. I have interviewed so many of Kidman and Mayoh's staff for the purpose of getting information that I forget the number. I did not find employment for any of them with the Australian United Steam Navigation Company. I am not aware that I ever saw Hamer, and I do not know that he is employed by the Australian United Steam Navigation Company. Burns, Philp, & Co. are agents for that company. I have said that I can point out one knee bolt which I do not think is

a through fastening. I cannot say whether or not Kidman and Mayoh's letter stating that the representatives of Burns, Philp, & Co. would not be allowed on that ship or in the yard was sent after the contractors had issued a writ against my principals. I know of no reason why Kidman and Mayoh should have objected to our men going on the vessel at that date. I know a little about the constructoin of wooden ships. I look after the repairs to the wooden vessels in our fleet and the building of small vessels for Burns, Philp, & Co., and I have read Lloyd's rules. I do not pretend to be an expert on wooden vessels, but I am a mechanic, and I know something about shipbuilding. I have had no experience of wooden ships. I was at sea for many years as an engineer, and I have been ashore as superintending engineer for Burns, Philp, & Co. for four and a half years. All my experience of wooden shipbuilding has been gained in that period.

432. *To Mr. Bamford.*—I am not aware that my principals are interested in any way in the North Coast Steam-ship Company.

The witness withdrew.

Richard Williamson, foreman shipwright, recalled and further examined.

433. *To Mr. Boyd (through the Chairman).*—I have never seen any plan showing edge fastenings in the bilge ceiling. It was practicable to put them in the flat part of the ceiling, but the bilge stringer would prevent much being done. A few more edge fastenings might have been put in the hold and 'tween deck ceilings with some trouble; but I gave up all hope of the job when I saw how the clamps would prevent us from edge fastening the upper strakes.

434. *To Senator Foll.*—The plan showed that the edge fastenings in the ceiling should be about 4 feet or 5 feet apart, and they were put in according to the plan wherever possible. If at any part the fastenings are 7 feet apart, there may have been an obstacle in the way.

435. *To Mr. Mathews.*—It was not practicable to leave out some of the clamps until the ceiling had been fixed, because the ends of the ship particularly required all the strength we could give them. The practicability of the edge fastening would depend on the method of construction. The putting in of only two clamps before the ceiling was fixed would have been a departure from the method of construction of this style of ship. I could not have edge-fastened the upper strakes of the ceiling. The lower part might have been fastened, but it was necessary to put in the bilge stringer, as well as the clamps, before attaching the ceiling, in order to keep the ship in shape. The edge fastening of the upper ceiling might have been done, but not in the way shown on the plan.

436. *To Mr. Bamford.*—I have seen galvanized-iron rivets used on destroyers, but nowhere else. Black iron bolts would not be any detriment to these ships; they are generally put in between the joints.

The witness withdrew.

James Bruce Barr, foreman shipwright, recalled and further examined.

437. *To the Chairman.*—There have been so many alterations during the construction of these vessels that it has been a very trying job to complete them. The engines were cut out and the original Government plan became no good. The whole construction of the ship, as she was first laid down, has been altered. Mr. Curchin and Mr. Heron came to the ship-yard, and they had power to vary the plans in any way. Owing to the cutting out of the engines, they asked us to run margin girders fore and aft, in order to continue the longitudinal strength. All the alterations and extra stiffening asked for by Mr. Heron were put in. Practically speaking, none of the plans before the Committee represent the ship as she is built. No instructions were given for the putting in of dummy bolts to represent through fastenings. Neither Young nor any of the other foremen would give such instructions, which could not be given without my knowledge. I was about the ship the whole time, and I used to go down into the hold when I was not otherwise busy. No bonus was offered the men as an inducement to expedite the construction, nor was any bonus offered to me by Mr. Arthur Mayoh or anybody else to slum the work. Woodward's statement that he was instructed to put a through fastening only at every sixth frame, and to put in dummies elsewhere in the place of through fastenings is entirely incorrect. I had occasion to speak to Woodward two or three times about his work, and eventually he left of his own accord, and found employment on the construction of the silos. Subsequently he rang up for a job two or three times, but I would not have him back. He was never working on the ship by himself. I do not know where he would get dummy bolts 4 inches to 7 inches long, unless he obtained a few cuttings from the blacksmith's shop; but it would not be possible for him to put them in the ship without somebody knowing. The caulking was the only work that was done by piece-work. Edge fastenings in the bilge ceiling have never been called for. The plans supplied to me showed the edge fastenings only from the bilge stringer to the gunwale. The edge fastening of the ceiling below the bilge stringer was an after-thought. I thought out the construction of the ship from the start, and I found great difficulty in supporting the vessels at the bilge. As the vessel developed, all the weight came on the bilge, and we had to shore the ship at every second frame, securely fasten the clamps to the frames, and put on temporary ribbons, which were bolted through the frames on the outside, in order to bind up the vessel and hold her fair. A vessel like this could not be tied up unless the clamps were put on, because the frames are so flexible. I never attached great importance to the edge fastenings in the ceiling; but I cut the treenails out and substituted steel through bolts, because I knew the treenails were not strong enough to hold hardwood. The edge bolts could not have been put in properly. We could have put in short pieces; but that would have been merely throwing dust in the eyes of the inspector, and I thought it would be better to do without them. I called attention to the difficulty of putting in edge fastenings as soon as the plan was issued. Mr. Heron and the Government inspector realized the difficulty, and the only instruction I received from them was to do the best I could. The plan provides that the edge fastenings shall be spaced 5 feet apart; but I do not think there is a draughtsman alive who can draw a fastening plan for a wooden ship that can be adhered to absolutely. You have to work to the plan as closely as possible. The plan does not show the fastenings we have put in the ship to connect the fore and aft timbers. In some places they are 15 inches apart; but where a knee was encountered it might be necessary to spread the fastenings a few inches or bring them closer together. We worked to the plan as nearly as we could. I do not think that 70 per cent. of the specified edge fastenings have been left out of the *Braeside;* but as I have not examined the ship I cannot give a definite estimate. The members of the two ships are just the same, but I think the *Burnside* is the better job—she has a few more edge bolts. The specification states the number of through fastenings to be put in each scarph, but I have not taken special care to see that that work was done. In the building of the first ship I had not the time. I had to look after the assembling

of the members, and I left the fastenings to the foremen. So far as I know, the scarphs in the clamps are fastened as specified. But where the edge fastening in the scarph was likely to foul the through fastening into the frame, the edge fastening had to be shifted.

438. *To Senator Foll.*—Mr. Heron and Mr. Brown knew definitely that the edge fastenings had not been put in. I never told Mr. Heron that they had been put in. By merely bending his back he could see for himself that they were omitted. We could not get the edge fastenings into the bilge ceilings. There are certain sections where the ship wears itself away, and everything has to work in conformity with that. We had to wear these fastenings off, and Mr. Heron's idea was that we should put in as many edge fastenings as we could in the midship section.

439. *To Mr. Parker Moloney.* — From a practical point of view, I doubt Mr. Heron's statement that edge fastenings are commonly put in the ceilings of American ships. Lloyd's requirements of edge fastenings in the ceiling may have been a draughtsman's mistake. No plan can be made exactly what it should be at the first try; alterations have always to be made as the construction proceeds. It would not have been possible to leave off some of the clamps until the ceiling had been fastened; the frames are supple and work, and it is necessary to put the clamps on and fix additional temporary ribbons on the outside in order to pull everything together before you can start the planking at all.

440. *To Mr. Bamford.*—When Mr. Heron and Mr. Brown told me to do the best I could I obeyed that instruction in every detail.

441. *To Mr. Atkinson.*—Mr. Heron and Mr. Brown were together when they told me to do the best I could in regard to the edge fastenings. Mr. Heron quite agreed that certain fastenings in the knees and the edge fastenings should be left out. I was present when Mr. Heron said that he would accept those omissions. That was a long time before the *Braeside* was launched. I never told Mr. Heron, or Mr. Brown, or Mr. Barber that the edge fastenings had been put in. If Mr. Barber has said that I did, he must have made a mistake. The extra edge fastenings in the *Burnside* are only in the clamps. I am not prepared to discuss the design of these vessels. It is experimental. These are the first ships of this kind I have seen. As a vessel grows on the stocks it is always discussed with the surveyor and the architect. In the case of these ships those gentlemen have decided that the design is all right. Any loss of strength through the absence of edge fastenings is compensated for by the extra fastenings through the ship's sides, fore and aft, the knee stanchions, and the frames.

442. *To Mr. Mathews.*—So far as I am aware, there is a through bolt in every plank at every frame, but there might have been a few bolts which developed cauliflower heads, and could not be driven through. I would sooner believe Sinclair than Woodward, and I feel confident that there is not a dummy on the outside of the vessel, and that where there is not a through bolt at every frame, some obstruction has been met. I had access to every plan, but I worked only to the finished plan. I have not previously seen Lloyd's midship section 193S, which provides for edge fastenings from the gunwale to the lower turn of the bilge. I did not know that those fastenings were demanded by Lloyd's, and neither Mr. Heron nor Mr. Brown at any time asked me to put them in. It is customary to consult with Lloyd's surveyor and the inspector when difficulties are encountered in the carrying out of the approved plan. It was absolutely impossible to put in the edge fastenings as required by Lloyd's. The *Braeside* hogged about 2 inches before she left the ways. That was due to the keel going up, not to the bilge dropping. There was no movement in the bilge. I measured the bilge in dry dock, and it showed no alteration worth speaking of—it might have been ⅜ inches. When the keel rose, every other part of the ship rose with it. The measurement from the gunwale to the bilge stringer did not alter, but the sheer in the upper deck changed. I do not care to discuss the design of the ship or the means of strengthening her. So far as I am concerned, the ship was an experiment, and I am not competent to express an opinion.

443. (*To Mr. Brown* (*through the Chairman*).—I was no board the *Braeside* on Sunday, the 28th November last, in company with Messrs. Farquhar, Arthur Mayoh, Barber, Watson, Hewison, and Greenlees. Mr. Hewison said something about the omission of the edge fastenings, but I did not take particular notice. I cannot take for granted what other people tell me. I want to find out for myself. When Mr. Hewison said that the edge fastenings were not in I told him that I knew nothing about them. I shall see for myself what edge fastenings were left out, and then I shall know what I am talking about. The hold ceiling on the double bottom was not properly spiked down before the *Braeside* was launched. That was in accordance with the instructions from the Department through Mr. Brown. So far as I know, they were verbal. Most of the diagonals were not in position when the ship was launched; we could not put them in until the Department decided where the bulkheads were to go; undoubtedly they should have been put in before the ship was launched, but their omission was not altogether a serious matter. I cannot say offhand whether the depth of the *Braeside* is exactly 24 feet moulded or is greater. I do not know on what date the lines on the loft floor were submitted to Mr. Curchin, or whether he verified the dimensions of the vessel from those lines by measurement. I should say that he would do so. He looked at these lines to see that they were generally sweet and fair. The bottom of the 1-foot mark was 12 inches below the lowest part of the keel. I cannot say from memory the depth of water at high tide over the end of the launching ways before they were extended, but on the day of the launch it was about 6 ft. x 6 in. The standing and sliding ways were about 20 inches by 10 inches, and the extension about the same. The depth of packing between the underside of the ways and the ground would vary fore and aft with the rise and fall of the ground under the ship. The declivity of the extended length of the ways was 11-16th inches to the foot. Allowing 12 ft. 6 in. before the forefoot, the damage to the forefoot was at a point at about 16 or 18 feet from the forward perpendicular. I was on board the *Braeside* recently when the following measurements were taken from the sights by Messrs. Greenlees and Barber:—No. 1 sight, 6 ft. 10½ in.; No. 2, 5 ft. 2 in.; No. 3, 5 ft. 2⅜ in.; No. 4, 5 ft. 7¼ in.; No. 5, 6 ft. 11⅞ in. Those figures are only approximate, being taken from the inside of the vessel they do not show the true hog in the keel as it is now. The launching ways were intact when I inspected them fifteen minutes after the launching, but there would be a length of 50 feet or 60 feet which I could not see at that time.

444. *To Mr. Boyd* (*through the Chairman*).—If I had been told that edge fastenings were required in the bilge ceiling I could not have inserted them even in the *Burnside*. I heard Mr. Snellgrove's evidence regarding the boring of the holes for the lodging knees. His statement that we bored the holes with a link is absolutely false; we have never had a link on the job. The bolts to which he refers have been put in; they the through bolts screwed at both ends. Mr. Barber's

tracing showing extra bolts in the beam knees in accordance with Mr. Heron's request is dated 11th October, 1920.

445. *To Senator Foll.*—The only instruction given to me about edge fastenings was the plan which was sent by Mr. Joseph Mayoh to the yard from the city office. When the plan was returned from Lloyd's with a note regarding edge fastenings in the bilge ceiling it was for Mr. Mayoh to have a plan prepared according to Lloyd's modification, and send it to the shipyard to be carried out. But I have never had any plan which showed edge fastenings in the bilge ceiling. I usually received plans and instructions in regard to all alterations that were to be carried out. I often told Mr. Barber about the difficulty we had in regard to edge fastening the ceiling.

446. *To Senator Newland.*—In regard to the through fastening in the lodging knees, the deck beams are spaced 37-inch centres, and there was not enough room between them to allow the bolts to be driven, as shown on the plan, but we put in a screw fastening which passed through the beam and two knees, one at each side of the beam.

Taken at Sydney.)

THURSDAY, 9TH DECEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh. Mr. H. C. Brown, representing the Prime Minister's Department.

Joseph Mayoh, recalled and further examined.

447. *To the Chairman.*—I have several times been pressed to say why I did not get Mr. Curchin to sign the plans. I have given evidence that the specification should, and usually does, override the plan. I will read to the Committee the following letter, which has a bearing on that point:—

[*Exhibit* 91.]

Prime Minister's Department,
Ship Construction Branch, 31 King-street,
Melbourne, 5th October, 1918.

Messrs. Kay, Macnicol, & Co., Consulting Engineers, &c.,
4 Bridge-street, Sydney.

DEAR SIRS,

Auxiliary Schooners.

I have to acknowledge you letters of the 1st and 2nd inst., enclosing drawing No. 608W and 608K of keel and keelsons for the above schooners, for which I am obliged.

I have altered these in red where the fastenings do not appear in accordance with the specification. As previously arranged, I will agree to the bolts in stem and stern being made 1¼ inches diameter in lieu of 1⅛ inches as specified.

The arrangement of scarph in keelsons, &c., could be improved. I have marked in red on the plan the scarphs which are to be re-arranged.

I return one of each of the prints herewith, under separate cover, and will be pleased to have an amended plan at your earliest convenience.

Lloyd's addition to the side keelson scarph frames 48/49 is not readable. Kindly have Lloyd's additions plainly marked on any future plans.

All plans submitted to me should be in accordance with the specification; any deviations from same are to have my approval before being embodied on the plans.

When may I expect the ¼-inch lines?

Yours faithfully,

H. W. CURCHIN,
Chief Executive Officer, Commonwealth Ship Construction.

The Committee will notice that in one clause Mr. Curchin says that he has altered the drawing in red where the fastenings do not appear in accordance with the specification; and in the last clause, that all plans submitted should be in accordance with the specification. I now submit a copy of our letter to Mr. Curchin dated the 29th October, 1918, wherein we accepted the specification:—

[*Exhibit* 92.]

29th October, 1918.

H. W. Curchin, Esq., Chief Executive Officer, Commonwealth Ship Construction, 31 King-street, Melbourne.

DEAR SIR,

Re *Specification.*

Referring to the terms of contract which stipulated that the plans and specifications would be approved by you before the work is commenced, we are agreeable to carry out the work in accordance with the specification you have submitted, but with certain small alterations, on condition that this approval does not nullify our position under clause 21 of agreement, which provided for arbitration in the event of dispute or difference arising between the parties. As you are aware, the specification you have put before us includes a number of articles that were not originally provided for in the specification submitted by Messrs. Kay, Macnicol, & Co., on our behalf. We shall be glad to hear if this arrangement will be satisfactory to you, and remain,

Yours faithfully,

KIDMAN & MAYOH.

That specification is the one signed by us on the 29th November, 1918. To that letter Mr. Curchin replied on the 31st October—

[*Exhibit* 93.]

Prime Minister's Department,
Ship Construction Branch, 31 King-street,
Melbourne, 31st October, 1918.

Messrs. Kidman & Mayoh, 25 O'Connell-street, Sydney.

DEAR SIRS,

I have to acknowledge receipt of your favour of the 29th inst., having reference to the specification for the vessels you have under construction. I note that with certain small alterations you are agreeable to work to the specification submitted to you. I shall be pleased to have particulars of the modifications referred to

I cannot agree to any conditions attaching to the signing of this specification, and under the terms of the contract I cannot see where any question of arbitration comes in.

I note your remarks regarding the specification submitted by Messrs Kay & Macnicol some considerable time before your firm was suggested as probable builders, but I would remind you that the specification was never agreed to by me and was not acceptable.

I shall be pleased if you will complete and sign the specification at your earliest convenience.

Yours faithfully,

(Sgd.) H. W. CURCHIN,
Chief Executive Officer, Commonwealth Ship Construction.

The modifications referred to are those made when Mr. Hewison signed the alterations which I have previously mentioned. Between the date of that letter and the 29th November we argued out the points in dispute between us, and the correspondence goes to prove what I said on Wednesday, viz., that it was Mr. Curchin's opinion, as well as my own, that a specification overrides a drawing. I also submit a telegram sent to me by Mr. Arthur Mayoh on the 22nd January, 1919:—

[*Exhibit* 94.]

(Telegram.)

Joseph Mayoh, Melbourne Mansions, Melbourne.

If drawing seven nought six submitted to you do not agree to it as it is all wrong and adds thirty tons bolts to each ship. You can see drawing at Curchin's office. Certificate will be paid to-day.

ARTHUR.

22nd January, 1919.

On the preceding day he had sent the following letter:—

[*Exhibit* 95.]

21st January, 1919.

Joseph Mayoh, Esq., Melbourne Mansions, Melbourne.

DEAR SIR,

Mr. Barber delivered to me this morning a drawing, No. 706, giving all the details of the fastenings of the planking and clamps, keels and keelsons. From this drawing it will be seen that none of the fastenings can be put in the ship

until the planking is in place, and it will be impossible for us to fasten the ship up as shown in these details.

I am telephoning you this evening, in case this drawing is placed before you by Mr. Curchin, in order to ask you not to agree to same until we have had a discussion on the matter. If the ship is fastened according to drawing 706 it would mean that double the amount of fastenings would have to be used in the ships, which means a cost of about £5,000 per ship.

Caldwell is taking out the quantities this afternoon, and I will be able to tell you the estimated weight of fastenings according to drawing 706.

I also wish to point out that the fastenings as shown by Mr. Barber are not in accordance with the specification for the fastenings of planks, and it seems to be a new idea to clench every fastening right through the whole of the framework. You will notice, if you see the drawing, that the keelsons, sister keelsons, side keelsons, and margin girders cannot be fixed in place until the planking is fixed.

Mr. Barber says he has had a lot of drawings returned from Mr. Curchin, with very many alterations on them, and it is his opinion that Mr. Curchin is trying to make the job so stiff that he will force us to apply for cancellation of the contract also.

If you have a specification with you in Melbourne, I would also like you to look up the paragraph referring to knees, wherein it is specified that a knee is to be placed at every alternate deck beam, whereas we are putting one at every deck beam.

I have not time to write you further on this matter, but hope you will not make any agreement to carry out the work according to drawing No. 706 until we have had a discussion.

Yours faithfully,

ARTHUR MAYOH.

That letter points out and confirms our previous evidence that we anticipated, in January 1919, difficulties in complying with the fastenings shown on drawing 706. We pointed out then that the drawing was not in accordance with the specification, and I remember distinctly discussing this matter with Mr. Curchin, who then said that the specification must be the basis of the contract. What was the good of him signing a specification if he was to deviate from it whenever it suited him? The Committee will see from the correspondence that we were alive to his policy much earlier than our meeting in April, 1919. Mr. Curchin's plan showed more bolts in the planking than were required by Lloyd's. Mr. Heron stated yesterday that because of the frames in this ship being spaced further apart than the frames in ordinary ships more fastenings were required in the planking. If there had been additional frames between the others a single fastening would have been enough, but Mr. Heron implied that, because the frames were wide spaced, there should be additional fastenings. He overlooks the difference between soft oregon and Australian hardwood. Mr. Heron was advised by his principals that the fastenings must be to his approval, and that is why he demanded double fastenings. It was because oregon has only half the strength of hardwood that Lloyd's allowed us to space the frames further apart. Plan 706A, as amended in red by Mr. Curchin, does not show any edge fastenings in the ceiling which were not specified by Lloyd's. The cable from Lloyd's indicated that they wanted edge fastenings in lieu of diagonal ceiling, but we are arguing that they did not ask for edge fastening in the bilge but in the upper ceiling where the diagonal planking was dispensed with. Their cable was sent in June, and we did not sign the contract until the 6th July. I find that the date of my meeting with Mr. Curchin in Melbourne was about the 10th April, 1919. I was in Sydney during the whole of March when the correspondence with Mr. Curchin was taking place and when plan 706A was returned with his modifications. I left Sydney for Melbourne by motor car on the 5th April. We arrived there on the Tuesday, and it would be on the following day that we discussed all these alterations with Mr. Curchin. When Mr. Hewison altered the specification he brought clause 39 up to date in accordance with Lloyd's cabled instructions regarding the ceiling. When we went to Mr. Curchin's office we pointed out to him that his alterations to plan 706A deviated from the specification, and the edge fastenings in the bilge ceiling were waived. We got an admission from Mr. Heron yesterday that a through bolt clinched on the frame would be considered a through bolt. According to the specification the ceiling is not supposed to have a through bolt into the planking. We put up the frames and tacked on the outside frames with one dump only, then we followed on with the bilge ceiling and fastened it with one through holding dump. Afterwards the borers came along and put in the through fastenings in the planks and ceiling. You have asked if there is any compensation for the omission of edge fastenings. I reply that there is a considerable quantity of through bolts in the bilge ceiling beyond what was first contemplated.

448. *To Senator Foll.*—Those through bolts will, in some degree, compensate for the missing edge fastenings. I wish to make it quite clear that we first fastened the outside planking with dumps. We afterwards fastened up the bilge and other ceilingsl with dumps driven into the frames. After this was done, we bored holes right through the outside planking, frames, and ceiling, and inserted through bolts and clenched them. Where we could put in the edge fastenings in the ceilings we were quite willing to do so. The specification shows that if the planking was held by a bolt clenched on the frame that method of fastening would be satisfactory. Instead of doing that we continued the bolts right through the sides of the ship and clenched them on the ceiling. As Mr. Heron says that it is not necessary to put through bolts in the bilge and other ceilings, the fact that we did so provides a fastening through the ceiling that would, in my opinion, more than compensate for the edge fastenings that were omitted. I wish to read a letter from Mr. Barber to Mr. Curchin, dated 22nd January, 1919, and Mr. Curchin's reply—

[*Exhibit* 96.]

22nd January, 1919.

H. W. Curchin, Esq., Chief Executive Officer, Commonwealth Ship Construction, 31 King-street, Melbourne.

DEAR SIR,

I have to acknowledge receipt of your letter of the 17th January, together with plans for amendment.

Regarding the engine-room entrance, if this is moved forward to the pantry the mast beams and partners will foul. If the house is shifted forward, it will block the passage.

Hanging Knees.—As the specification requires hanging knees to be fitted to all through beams, I considered it unnecessary to fit hanging knees to half beams.

Regarding the spacing of upper deck beams at knees, I note that you require two additional beams aft and three forward. On the original plan submitted to yourself and approved by Lloyd's at London, the beam spacing is shown at 42 inches at ends.

I note, on the upper deck plans, red lines which, I take it, indicate the approximate position which you require the beams to occupy. Is it you intention that they should be evenly spaced 37 inches throughout the whole length of the vessel, and the position of hatches and masts shifted accordingly?

Runners at the Heads of Pillars.—These will be 8 inches by 6 inches—11 inches apart. The mast will be at least 28 inches diameter at this place. Do you require separate runners fitted covering two beam spaces each side of mast, with the packing piece between?

Stanchions.—Do you require these to be spaced evenly 36 inches apart until they foul the frames and then shifted clear, in lieu of carrying each stanchion down alongside the frames as shown?

Poop and Forecastle Deck Beams.—As hanging knees are not specified, I propose to fit an additional shelf, 8 inches x 6 inches, at clamps.

Regarding the spacing of the pillars, I take it that they are to be under the centre of deck beams.

'Tween Deck Hatch Covers.—These have not been specified, and, as noted on the original plans, have not to be fitted.

With reference to the engine arrangement, this plan is in hand. The fuel tanks as specified appear to me to be small, and I am enclosing figures which I believe to be authentic.

It is my intention, throughout the design and construction of the vessels, to have everything as complete in detail as possible, and, in order to make some improvement, I may have had to depart from the specification to some minor

extent, and I trust that you will not be too exacting in strictly adhering to a specification that was compiled before most of the details were decided.

I now have amended plans in hand, and will forward same as soon as completed.

Yours faithfully,

A. C. BARBER.

[*Exhibit* 97.]

Prime Minister's Department,
Ship Construction Branch, 31 King-street,
Melbourne, 25th January, 1919.

Messrs. Kay, Macnicol, & Co., 4 Bridge-street, Sydney.

DEAR SIRS,

Auxiliary Schooners.

I have your letter of the 22nd inst., and have to reply thereto as follows:—

Engine-room Entrance.—The entrance as shown to you would have the ladder from poop deck leading aft, which is not a good arrangement. The mast appears to be considerably aft than shown on the sketch sent you, and could probably be moved forward.

Hanging Knees.—These are required to the half beams. The midship section approved and initialed by me on the 8th August, 1918, gives the beams as 37 inches centres and should be fitted accordingly.

The red line on upper deck plans gives approximately the position of the beams, and should be worked to as near as possible. I am not particular as to the position of hatches and masts to a foot.

Runners at Head of Pillars.—These where broken at the masts should have separate runners scarphed past the ends of main runners one beam space.

Bulwark Stanchions.—The first arrangement was agreed with you at these offices in August last. However, if you prefer the later method it can be adopted.

Poop and Forecastle Beams.—Hanging knees should be fitted. The pillars are to come under the centre of the deck beams where practicable in conjunction with the accommodation and directly over the pillars below if possible.

'Tween Deck Hatch Covers.—As a 'tween deck vessel the ship is not complete without 'tween deck hatch covers, and these should be provided

Engine Arrangement.—I note your remarks and await plan.

General.—With reference to your remarks regarding specification, it is not my intention to be too exacting in adhering to the specification. I know from experience that it is a difficult matter to work to a specification without alteration, and I am always willing to consider any alteration which will improve the vessel, without increasing the cost or delaying the work.

Yours faithfully,

(Sgd.) H. W. CURCHIN,
Chief Executive Officer, Commonwealth Ship Construction.

That letter deals with the specification in relation to the plans, and is proof that the Naval Architect and the contractors acted in all cases in conformity with the contract. I direct attention to the following memorandum by Mr. Curchin on plan 697:—

> Received with Kidman and Mayoh's letter, 1st April, 1919. Approved as amended in red, subject to Lloyd's approval and specification requirements.

When that tracing was returned to us we had to make a new plan embodying Mr. Curchin's requirements. They were all agreed to, because they were in accordance with the specification, and there could be no argument. It was not necessary to get Lloyd's approval of those alterations. Mr. Curchin drew attention to the specification, and we had to do what he required. Later we got Mr. Heron to sign the plan as amended. We sent a couple of copies of the revised print to Mr Curchin. As it was one of the drawings that we had to get approved, we got Mr. Curchin to sign it; then we got Mr. Heron's approval before we started to build. The original tracing, 697, is dated 8th January, 1919. The revised copy was signed by Mr. Heron, 28th June, 1919, the number being altered to 716. The Department has had prepared an electrical contrivance for testing the through bolts. In connexion with the first electrical test of the fastenings the departmental officers reported that in the case of a few bolts they were not able to get a circuit. A recent development on the *Burnside* throws some light on this matter, and proves what we have always said about the through fastenings. One of the outside 12 in. by 5 in. planks situated on the starboard side on the quarter underneath the poop deck developed a fault, caused, evidently, by being cut out of a log where a branch had grown from the tree. As it would be impossible to caulk this plank to make it tight, we have had to take the plank out and replace it with a new plank. On taking the plank out it was discovered that on nine frames the plank was through fastened and clinched on the frames, thus proving our assertion in previous evidence that a good many planks were clinched on the frames. It would be advisable for Mr. Heron and Mr. Hewison, and, if possible, a member of the Committee, to inspect these fastenings. This is very important, as the Department intends to make further tests for through bolts. In connexion with the fastenings in this plank, in this case it would be impossible to get a through connexion, and that would apply to many other fastenings. It will be seen that it was impossible to put in the fastenings better than we have done always.

449. *To. Mr. Bamford.*—We never at any time placed any impediment in the way of the Government Inspector; it would be libel to suggest such a thing. A more conscientious man than Mr. Brown I have never met.

450. *To Mr. Parker Moloney.*—In all big contracts the specification overrides the plan. Mr. Curchin throughout insisted that the plan should not only be in compliance with the specification, but should have the approval of Mr. Heron. We have nothing in writing in regard to Mr. Curchin's permission to omit the edge fastenings. The arrangement was not submitted for the approval of Mr. Heron, because we had been threshing it out for six months. No doubt, that was a piece of neglect on my part; I believe he would have signed the plan at the time. Mr. Heron stated yesterday that Mr. Barber brought him a sketch of edge fastenings, and he mentioned the 11th March, 1919. At that time 706A was in Mr. Curchin's hands, because he returned it on the 13th March, and, no doubt, Mr. Barber was at that time consulting Mr. Heron about the suggestions which Mr. Curchin had put on the plan. My diary and petty cash book show that I was in Sydney and could not have met Mr. Curchin before 9th April, so the fact of Mr. Barber consulting Mr. Heron over the edge fastenings was not serious. The general custom was to get Mr. Heron's approval of all alterations, but only verbally. I showed the Committee yesterday the few plans which Mr. Heron had signed. He told the Committee that he was only concerned in the general construction of the ship. During the preparation of the plans, Mr. Heron used to walk into the drawing office and he was consulted about different questions, and when his decision was given Mr. Barber immediately put it on the plan. We have a number of letters in which Mr. Curchin asked us if we had seen Mr. Heron about proposed alterations.

451. *To Senator Foll.*—Mr. Heron would not take the responsibility of signing plans when he approved of alterations to them; that is not his function. I do not think he signed more than four plans. When Burns, Philp, and Company wanted the ships altered to square rig, Mr. Snellgrove was away, and Mr. Corrigan, the engineer under him, had no experience of the work he was handling. I, therefore, took the work in hand and induced Mr. Heron to sign the details of the square rig. That was the first time that I woke up and tried to bind him down to a definite arrangement.

452. *To Mr. Parker Moloney.*—We obtained Mr. Heron's approval of everything as we went along, but I cannot say that we obtained it for the final arrangement in regard to the omission of the edge fastenings.

Mr. Curchin was our employer but subject to Mr. Heron's approval. I do not know what conversations they had. The first thing Mr. Curchin did when he came to Sydney was to go to Mr. Heron's office, and it was there that all our negotiations took place. Whenever I have met Mr. Watson or Mr. Hewison the interview has always been at Mr. Heron's office. The fastening details on plan 706A were not things we could ask Mr. Heron to sign. There are the main plans governing the general construction of the ship, and other details like the fastenings are comparatively trivial. We did not consider them as important, as apparently the members of the Committee do.

453. *To Senator Foll.*—Lloyd's stipulation of edge fastenings in the bilge ceiling was altered by the arrangement made about the 10th April, 1919, at the interview with Mr. Curchin in Melbourne. I do not know what attitude Mr. Heron adopted in regard to that arrangement. I admit that the basis of the contract is that the ship shall be built to Lloyd's approval, but I failed to get Mr. Heron's signature for the omission of the edge fastenings. By so doing we did not imperil ourselves; Mr. Curchin had the final say, and whether or not he consulted Mr. Heron I do not know. The discussion lasted from November to April, but I have no correspondence showing that the question of edge fastenings ever arose between Mr. Curchin and Mr. Heron.

454. *To Mr. Mathews.*—The contract provided for all bolts that come into contact with water to be galvanized; all the other bolts were to be black. But at an early stage Mr. Curchin said that it would be better to have all the bolts galvanized, and the Department would pay the additional cost. I had nothing in writing, and could not get anything to confirm the arrangement, and it was not until arbitration proceedings were mooted that I received a letter from Mr. Curchin and Mr. Shepherd that the Government would pay extra on account of the galvanizing. No doubt we could have recovered the extra £5,000 by arbitration, but we did not want to run our heads into a noose by first putting in the extra galvanized bolts and then claiming additional payment. As to whether or not I should have consulted Mr. Heron before omitting the edge fastenings, I am satisfied that if the *Braeside* had not hogged and the war had not ended the vessels would have been accepted as they are.

The witness withdrew.

Alexander McPhee Greenlees, Naval Architect, sworn and examined.

455. *To the Chairman.*—I am at present stationed at Cockatoo Island in inspecting the ships being built there and at Maryborough. I have had twenty-five years' experience in my profession, having served my apprenticeship with Caird and Company, on the Clyde. I have been in the service of the Commonwealth since November, 1919. Towards the end of March of this year I was appointed to supervise the completion of the accommodation and outfit on the *Braeside*, and to generally assist Mr. Brown in work with which he, as a shipwright, was not familiar. I had no control over him, but gave him my advice whenever he required it. Mr. Curchin arranged that Mr. Brown should continue the supervision of the general construction. I visited the yard weekly to supervise the fitting of the accommodation, the windlasses, and the steam pipes, &c. At that time Burns, Philp, and Company had bought the vessels, and we were carrying out the alterations they desired, so long as they did not interfere with the departmental plans or increase the costs to the Government. When I first visited the yard Mr. Joseph Mayoh refused to recognise me as a departmental inspector; he said that one inspector was quite sufficient, and he practically told me to get out. I reported the incident in writing to Mr. Curchin. I did not produce any written authority when I went to the yard, because Mr. Curchin had told me that during his visit to Sydney he had arranged with Mr. Joseph Mayoh for me to go to the shipyard. I went on board the *Braeside* with Mr. Brown and I met Mr. Arthur Mayoh. I looked at the accommodation and took exception to something, and when I returned to the office, Mr. Joseph Mayoh, who had just arrived, practically ordered me out of the yard. At any rate, he told me that, though I might walk about the yard, he would not recognise me. I wrote to Mr. Curchin on the 15th March, 1920, And in a reply with which he forwarded a copy of a letter he had sent to Kidman and Mayoh on the 17th March, he expressed surprise at Mr. Mayoh's attitude, and added, "I shall be pleased if you will continue your visits to the yard of Messrs Kidman and Mayoh." He gave me no written authority; I acted on verbal instructions. Following the letter of the 17th March I again visited the shipyard, with the same result. As the work which was being done then did not concern me, I thought it better, instead of creating further disturbance, to allow the matter to remain in abeyance until the *Braeside* had been launched. After the launching I went to Kissing Point and saw Mr. Arthur Mayoh, who told me that he could not recognise me, because he had no authority from Mr. Joseph Mayoh, who was in Melbourne. Finally, when Mr. Joseph Mayoh returned to Sydney, everything was put right, and I was recognised as an inspector.

456. *To Mr. Mathews.*—I suppose Mr. Curchin thought it was unnecessary to provide me with written credentials, because he had spoken to Mr. Joseph Mayoh. The latter knew that I was a departmental inspector and was stationed at Cockatoo. A letter would not have made any difference to his knowledge of me. On the occasion of the second refusal to recognise me, Mr. Heron pointed out to Mr. Arthur Mayoh that he was adopting a wrong attitude, and that the Department could have a hundred inspectors on the job if Mr. Curchin liked.

457. *To the Chairman.*—I first became aware of the hog in the *Braeside* on the 29th May, when Mr. Barber's figures were verified and sent to Melbourne. The hog at that time, as indicated by the sights, was 17 in. in addition to the sag of 9 in., representing an actual hog of about 20 in. The ship was moved up and down the Kissing Point jetty for the purpose of fitting out and making alterations. There is a gangway on the end of the L wharf, and the vessel was moored so that the gangway was either amidships or at the after end of the forecastle. After the weights had been put on board the main position of the vessel was with gangway amidships, the bow being abreast of the upper end of the pier. I was present at the docking of the *Braeside*. Before the pumping commenced a diver was sent down to measure the extent of the hog, and I have his original report to the assistant shipyard manager at Cockatoo. The vessel was allowed to settle until the diver reported that the ends were touching the blocks, and then he went along the keel and measured the hog at intervals of 16 ft. When the result was reported to Mr. Curchin he consulted with Mr. Heron, and I think Mr. Snellgrove was brought into the discussion. The question was as to whether the keel should be blocked up with the full hog or whether it should be let down a little. It was decided to let the keel down 3 in. and no objection to that course was offered. Mr. Joseph Mayoh said, "You had better carry on and let her go down 3 in." The keel actually went down $3\frac{3}{4}$ in. and was packed underneath by the diver. I examined the keel, and found growth on it for a distance of about 40 ft., commencing 50 or 60 ft. from the bow. Both ends were remarkably clean, and that seemed curious until we discovered the reason. At the after end soft mud had been sticking to a height of about 9 ft., and at

the forefoot clean mud to a height of about 4 ft. The different colours of the mud showed that at one end the vessel had struck the bank. Just under the forefoot a chip about 6 in. long had been knocked off the full width of the keel as if it had struck something hard. The damage appeared to be purely local. The chip would vary in thickness from nothing to 2 in.; we did not regard the damage as serious. Later the vessel was let down on a flat keel by Kidman and Mayoh. I was present at the conference between Mr. Joseph Kidman and Mr. Curchin. Mr. Brown and Mr. Heron also were present, but I do not think the latter heard the discussion. Mr. Mayoh asked Mr. Curchin for his advice, and Mr. Curchin said, "I cannot give you advice, but I will give you my opinion. Let the vessel down on straight blocks and stiffen her before you let the water into the dock." There was no correspondence in regard to that procedure, and none of the officials of Cockatoo dock were consulted. The vessel was shored inside from the floor head keelson to the decks, but no additional strength was put on the top girder. No effort was made to stiffen the ship. When we found out what Mr. Barber was doing, Mr. Heron and I strongly recommended that he should not let the vessel down on a straight keel if he did not intend to stiffen her, because the hog would come back again. Here is a report I made to Melbourne on the same day:—

[*Exhibit* 98.]

22nd July, 1920.

H. W. Curchin, Esq., Chief Executive Officer, Commonwealth Ship Construction, 31 King-street, Melbourne.

Dear Sir,

Braeside.

On Monday night, 19th instant, the dock was flooded, and when I arrived at Cockatoo early on Tuesday morning the vessel was almost afloat, and the divers were removing the packing from under the keel. I 'phoned Mr. Heron, and when he arrived we inquired of Mr. Barber what Mr. Mayoh proposed doing, and he informed us that the intention was to let the vessel down on the straight blocks and shore up inside on the floor end keelsons.

Confirming my wires—

To C.E.O., 20/7/20.

Braeside down on straight blocks six feet mean draft stop. Understand intention of builders to shore between floor end, keelson and lower deck beams stop. I am not interfering.—Greenlees.

To Greenlees, 20/7/20.

Thanks wire. Would point out importance examine test fastenings.—Curchin.

To C.E.O., 21/7/20.

Braeside undocking three to-day; insufficient time test fastenings; will examine when re-docked. Further connexion wire yesterday; builders intend shoring 'tween decks over floor end keelsons. Writing to-morrow, and hope forward full information with drawings connexion hogging.—Greenlees.

Mr. Heron and myself expressed the opinion to Mr. Barber (Mr. Mayoh did not arrive until after the vessel had been let down) that it might be wiser to take the vessel out of dock with the hog as it was and carefully consider the matter before doing anything; then, if necessary, have the vessel re-docked, but Mr. Barber replied to the effect that they could get no advice from the Department, and as the vessel had been thrown back on the builders' hands they were doing what they considered the best under the circumstances, and took full responsibility.

On Wednesday morning, 21st instant, the water in the dock was lowered to the top of the keel blocks, and from a punt I examined the bottom. The keel was down on the straight blocks all fore and aft, the bottom to the turn of the bilge was fairly good, but the bilge appeared to be just as it was when you inspected the vessel in dock.

The *Braeside* was undocked last evening about 5 p.m., and is at present berthed at Cockatoo Island. The appearance of the vessel this morning indicates that she is again hogged, the extent of which I have not yet been able to ascertain, but I am afraid if there is any improvement it is very slight.

The vessel was still distorted as she was when she first had the hog. I heard the evidence given by Captains Murchison and Maxwell in regard to the slackening of the rigging when the vessel was refloated in dock. The triatic or jumber stays on the foremast appeared to have sagged about 4 ft., and they were tightened at Cockatoo. When the keel was straightened the masts came in. A few days prior to the 19th July Mr. Curchin suggested that a survey should be made of the place where the *Braeside* had been moored at Kissing Point, in order to ascertain if she had been aground, and, if so, the nature of the ground. He left the matter in my hands, and I thought the best course would be to go below and feel the bottom of the river. I procured a diver's suit for myself and a diver from Cockatoo to accompany me, and on the morning of the 16th July we went to Kissing Point. In order to mark the position that had been occupied by the vessel we had two lines, one thick and one thin and of a total length of 240 ft. We joined the two and at intervals of 40 ft. from the joint the lines were knotted. To one end we attached a grapling iron and to the other a heavy weight. We put the grappling iron at the upper end of the pier, where the forefoot of the *Braeside* had rested, and in order to arrive at the line of the keel, we measured half the width of the vessel from the wharf. We then used a launch to drop the line along the length of the ship. The diver and I went below, and starting from the fore foot we probed the ground with a boathook at every knot. At a distance of about 40 ft. we came upon solid ground consisting of shell and gravel covered with a thin layer of mud, and our united strength was required to penetrate it about 4 ft. with the boat hook. We then travelled to the next knot and did the same thing. At a distance of 120 ft. aft of the forward perpendicular we slipped into very soft mud, which retained a decided impression of the keel. We probed the ground in the groove and could only drive the boathook 6 in. or 9 in. into the gravel. At the forefoot the ground was a mixture of cockles, oysters, and shells, and the surface was so hard that we could walk on it easily. On top of it was a layer of 2 ft. of mud. The line of the hard ground rose towards the 80-ft. knot, but amidships it went down very steeply, and towards the after end the mud was so deep that we could not reach hard ground at all. The depth of the water was 12 ft. at the time of our inspection, and at low tide would be a couple of feet less. The groove of the keel on the bottom was very distinct, and in comparing the draught of the ship with the soundings it will be found that she was aground at low tide, from a point 40 ft. aft of the forward perpendicular to 30 ft. aft of amidships. The groove made by the keel was 15 in. deep on one side and 6 in. on the other side. I was able to feel it with my hand; it gradually diminished. By good luck our line had fallen right into the groove. Our inspection was made two and a-half hours before low tide. When the *Braeside* entered the dock, her draught was 12 ft. 6¾ in. aft, and 12 ft. 9¼ in. forward. What I discovered on the bottom was sufficient to convince me that the vessel had been aground. On the 16th July low tide was at 2.30 p.m. at Kissing Point, and I completed my investigations about 1 p.m. On the 14th July last, the measurement of the sights showed a hog of 18 in., and the actual hog when she came into dock was 22⅜ in. On the 19th July, when the ship was let down 3 in. in dock the sights showed 15⅞ in., and the actual measurement when the dock was dry was 19 in. The hog shows two kinks, but otherwise it is a fair curve from stem to stern. The plan produced shows a maximum hog of 18⅞ in. when the ship was let down in dock, whilst the plan of the observations taken at the moorings shows a curve in the river bed corresponding with the hog in the ship. Portion of the keel had never left the mud and there the marine growth continued, but at both ends there was a heavy run of the river which washed the mud away and kept the keel clean. There was one portion of the keel amidships where for a length of 10 ft. to 12 ft. there was no marine

growth. We probed the river bed with an iron spiked boathook, which would probably be of the same weight as the water, and the end thrust into the ground had only the pressure which our weight gave it. The river bed appeared as if at some time a vessel had dumped a load of ballast there, because suddenly the nature of the bottom changed. At the stern the mud was so soft that we could not keep ourselves above its surface, and when we reached that spot I was so impressed with what had actually happened that I walked back over the ground again. The boathook we used had a sharp point about 5 in. long, and all our effort was required to sink it into the hard ground. We made the examination within an area having a diameter of about 10 ft. At one point the mud was so thick against the wharf that we did not attempt to walk through it. I acquainted the Chief Executive Officer with the result of my examination in a report dated the 19th July [*Exhibit* 20], in the course of which I said—

> I am of the opinion that during the greater portion of the period the vessel was lying at the berth and for some time during each tide the keel has been resting on the ground at the fore end and about 80 ft. aft of the forward perpendicular, and about midships, but more heavily at midships, and that the aft end has always been afloat, and, further, I feel convinced that the hogging, to a great extent, is due to the vessel having rested on the bed of the river during the rise and fall of tide. I adhere to that opinion. I am convinced that the hogging has been aggravated by the vessel lying on the bottom.

458. *To Mr. Bamford.*—There was about 2 feet of soft mud, then a crust of mud, and below that was the gravel ballast. I do not think that the weight of the ship would push through the ballast or force it down into the mud. The bottom felt as if there was a thick layer of mud on top of the ballast that might have been pressed down by the keel. Probably the current put a coating of mud over the ballast.

459. *To the Chairman.*—Before we went below we located exactly the place where the *Braeside* had been moored. Mr. Scott's evidence indicated that he had never located the line of the keel. He said he got his soundings as nearly correct as he could, but he would not swear that he located the actual bed of the keel. His guiding marks on the surface would be moved by the current, but our line, which was weighted at one end and held tight at the other, would not move. That is proved by the fact that it fell into the groove made by the keel. I made no test other than with the boathook to discover whether there was any possibility of a heavy weight penetrating the gravel. I was satisfied that there was a hard surface that would not be penetrated by the keel. No survey of the mooring was made by the Department before the launching of the *Braeside*. On the 14th July, the hog was 18 inches on the sights, and the actual hog when the ship was measured in dock was 22¾ inches. After she was let down 3 inches in dock, on the 19th July, the sights showed a hog of 15⅞ inches, whilst the actual measurement outside when the dock was dry was 19 inches. On the 16th November further measurements were taken in company with Mr. Barr, and they showed 26 inches actual outside, and 20⅝ inches on the sights. On the 29th November the measurements showed 21 5-16 inches on the sights, which would probably represent 26¾ inches outside, or 4 inches more than when the vessel went into dock. The letting down of the ship on an even keel would tend to increase the hog by loosening the fastenings, but in the light of recent investigations I think the hog would have advanced whether or not the ship had been let down. After the letting down in dry dock, pillars were put into the hold from the floor-head keelsons to the deck and a reading which I took on the 27th July showed the hog to be 16½ inches inside. The ship started with a hog of 15⅞ inches on the sights when the pillars were put in on the 19th July; on the 27th July it had increased to 16½ inches; and on the 29th November to 21 5-16 inches. I was advising the Department in regard to the fitting up of the *Braeside,* but the rigging blocks had been ordered before I went on the job. The winches were ordered by Burns, Philp, and Company. The number of winches required depends upon the trade to be handled, and the owners' ideas. I think the winches ordered were fairly good. They seemed to be a little smaller than those we put in the steel vessels which carry equal cargo weights. I have heard that the Department originally specified six winches, which were later reduced to four. When Burns, Philp, and Company bought the ships they arranged for only three winches, and that number has been put in. I have heard the reports which have been circulated during the last few weeks that dummy bolts have been put into the vessels, and I have been conducting investigations for the Department. In company with Messrs. Miller, Patience, Brown, and Arthur Mayoh, we made effective electrical tests of the fastenings above the water line. The plan produced shows the bolts actually tested. Those with which we could not get a contact were on the throat of the knees, and we had every reason to believe that they were clenched on the frames. As a result of those investigations we were quite satisfied that all the fastenings above the water line were through. We did not regard as serious the ones with which we could not get an electrical contact. We tested the bolts at random. The statement in our report—(*Exhibit* 76)—that "as a result of the examination of the fastenings we are satisfied that this work has been faithfully carried out," applies only to the through fastenings. I am still of that opinion. The contractors assisted us in every way in making our investigations, as they did in connexion with a more recent investigation of the general fastenings throughout the ship. We were working with plan 706A, which is marked in red and bears this note by the Chief Executive Officer—"Approved as amended in red subject to Lloyd's approval and specificational requirements 13th March, 1919. H. W. C." It also had a note calling for edge fastenings in the bilge ceiling. Mr. Curchin's approval of the plan was sufficient. It is not usual for Lloyd's to sign any plans except those which have been submitted to the committee in London. The local surveyor will not sign anything that is embodied in plans already signed by the committee; he will only sign something that he himself has actually ordered. Mr. Curchin's note on plan 706A means that it is approved by him subject to Lloyd's approval when the vessel is completed; the plan itself is not subject to Lloyd's approval. They do not care if they never see a working plan, so long as those plans which were approved by the London committee are carried out. Any alteration in regard to edge fastenings, if such were specified by Lloyd's, would have to be approved by the committee in London, not by the local surveyor; that is the usual practice. A plan having been amended it is the duty of the builder, if he agrees to the amendments, to prepare a fresh tracing embodying them for the guidance of his staff. If he does not agree to them, he communicates his objections to the Department, and the matter is further discussed. Plan 706A as submitted to the Department shows edge fastenings only to the upper turn of the bilge, and Mr. Curchin added a note in red "Edge fastenings to be from lower turn of bilge to gunwale." The plan shows the fastenings spaced at intervals of 5 feet from the ceiling, and I should say that that would apply also to the lower turn of the bilge, in accordance with Mr. Curchin's requirements. The specification does not mention the number of vertical fastenings to be put in the

scarphs of the clamps, but the plan shows four. The specification mentions edge fastenings only for the upper turn of the bilge, but the plan as amended is clear and emphatic as to what the Chief Executive Officer required. Although clause 39 says that the edge fastenings in the ceiling shall be from the bilge stringer to the gunwale, it is governed by clause 2, which reads, "The vessel to be built so as to obtain the highest class at Lloyd's, namely, Character A1, and under special survey." That clause overrides anything else in the specification that does not agree with Lloyd's plan. Therefore, there is no difference between the specification and the plan 706A as amended by Mr. Curchin. I have not seen any general basic plan that bears the approval of both Lloyd's and Mr. Curchin. In the first place, the plans were approved by Lloyd's Committee. In some respects plan 706A differs from Lloyd's plan, but in the main it is in accordance with their requirements. It is entirely the duty of the contractors to get plans approved by Lloyd's; only in exceptional circumstances do the owners submit plans to Lloyd's. It would be the duty of the contractors to obtain the consent of Lloyd's to any alteration of the original approved plan. In this matter no responsibility devolves upon the Department. The specification protects the Department by saying that all plans are to be approved by the Chief Executive Officer. Before the work is proceeded with he examines the plans to see that the contractor is not proceeding contrary to the approval of Lloyd's. After amendments have been made to a plan by the Chief Executive Officer a new tracing is prepared by the builders, and, if necessary, Lloyd's approval is obtained and communicated to the Department. In British shipbuilding yards, each contractor has his own architect and pays him; an outside architect is seldom engaged, except in an advisory capacity. The architect to the builder should obtain Lloyd's approval to every alteration in the plan. As I understand the position, Mr. Curchin, as representative of the Government, was in the position of owner, and he had every right to exercise the powers set out in the specification I saw Mr. Brown at the shipyard, and so far as I know he was supplied with the plans necessary to enable him to see that the construction was efficiently carried out. On one occasion I saw two of his plans, but those I required were not those to which he worked. I was supervising the alterations that were being made by Burns, Philp, and Company, and in consequence of those alterations the plans in existence at the time were not correct. I was aware, prior to the last fortnight, that plan 706A, as amended in red, was in existence, because I had seen it in the Melbourne office of the Ship Construction Branch. When we commenced our examination of the fastenings on the *Braeside* on the 28th November, we were told by the foreman that the edge fastenings had been put in the bilge ceiling. Mr. Brown, the inspector, told me more than once that he understood that the edge fastenings were in the bilge ceiling. On one occasion he was on board one of the vessels with Mr. Heron and they were talking about the ceiling. They were told by Mr. Arthur Mayoh that the top two planks below the clamps were not edge-fastened. Mr. Brown remarked when he was going on leave, "I would like to get back before they edge-fasten the ceiling in order to see that all the bolts are there." I cannot say whether he ever had in his possession 706A marked in red; he kept the plans in his own home. Our investigation on the 28th November disclosed that in the *Braeside*, from the lower turn of the bilge to the gunwale, including the clamps, lower ceiling, and side ceiling, 70 per cent. of the edge fastenings are omitted. In the first seam above the bilge stringer we found fastenings at intervals of 10 to 12 ft., so there may be a little more than 50 per cent. of the prescribed edge bolts there. In the seam above that we found edge bolts at very wide intervals, but it seemed to me that they had been put in merely to hold the clamps down at the ends, for they were not spaced uniformly. On the starboard side there were about four edge fastenings at each seam. There were not any in the other seams or through the deck. We could find no clenched edge fastening in any of the scarphs of the clamps. The only fastenings holding the scarphs were the ordinary vertical clamp bolts. Those bolts were all right amidships, but towards the end the lower bolts driven upwards practically disappeared. It would be a conservative estimate to say that 70 per cent. of the edge fastenings specified to be in the ship from the gunwale to the bilge stringer are missing. The bolts which have been put in the bilge stringer were inserted after the boat was let down, and I am not calculating them at all. The first plank above the bilge stringer is about the only one that is edge fastened, and even there the bolts are 10 and 12 ft. apart, whilst in the second plank the fastenings are spaced 25 or 30 ft. instead of 5 ft. apart. I do not think I can say that less than 60 per cent. of the fastenings are missing. The *Burnside* is fastened a little better. The first plank above the lower deck is fastened, and the two planks above the bilge stringer are much better bolted. I think it was practicable to insert the edge fastenings 5 ft. apart. I would start from the floor head keelson and edge-fasten plank by plank as the ceiling was put on, using an iron dowel holding two planks. The bilge stringer should be treated the same as the ceiling and through fastened into the frames. It would not have been possible to fasten the upper plank of the ceiling with all the clamps in position, but I would have fixed only one clamp at first, and that would have left extra space in which to drive the edge fastenings in the ceiling. Then when the ceiling was in position the other clamps could have been put on. It was not necessary, in order to keep the ship in shape, to fix all the clamps before tacking on the ceiling. Lloyd's did not state the number of fastenings required in the scarphs of the clamps, but clause 36 of the specification provides for four clenched vertical bolts to hold the scarphs together. Plan 708A shows the four edge fastenings in the scarphs and three through bolts and three dumps into the frames. So far as I can see, the edge bolts have not been put in at all. The only vertical bolts that have been put in are the bolts through the clamps and waterways. The plan also shows that the scarphs should be spaced over three frames. In some cases they are on two frames, so that you get only four bolts on each instead of six. In addition, the clamps are not properly shifted. In some cases, one scarph will overlap the other, thus making a continuous straight break in the timbers. In a number of instances two scarphs end on the same frame, and in few cases are the scarphs further apart than one beam space. That means that the clamps have lost a great deal of their strength and the ship is weakened longitudinally. I examined every scarph and could not find any edge bolts, but the seams of three or four of the scarphs were so close that I could not put in a knife to test them. The only bolts I could feel were the through vertical clamp bolts. All the scarphs were defective, either in bolting, shifting, or spacing on the frames. I should say that the shifting was defective in 70 per cent. of the scarphs. I understand that Mr Brown submitted reports to the Department during the construction. The proper edge fastening of the scarphs would be difficult, but not impossible. It was quite possible to put four vertical bolts in each scarph, but I did not find any in. The long bolts coming down through the deck and clamps were used for a double purpose. I cannot see that there was any difficulty in so spacing the scarphs as to make them occupy three frames. The following is the report made by Messrs.

Watson and Hewison and myself to Mr. Farquhar, as a result of our examination of the principal fore and aft members of the *Braeside*:—

[*Exhibit* 99.]

Braeside.

Clamp Scarphs.—The shift ofthe scarphs is not good, the ends of the scarphs in many cases falling in one beam space, and others overlapping, but in very few cases are the scarf ends more than one beam space apart. In some cases in the depth of clamps there are five breaks in six beam spaces, and six breaks in eight and nine beam spaces. The number of through bolts in the scarphs is not as required, owing to the fact that the scarphs do not cover three frames. As shown in plan prepared by Mr. Barber (No. 708A), in many cases the scarphs take only two frames, thus reducing the number of through fastenings. The vertical clinched bolts in the scarphs as provided in plan 708A do not appear to have been fitted, the vertical fastening being provided by the clamp vertical bolts, but in some cases even these are few in number. In accordance with plan 708A prepared by Mr. Barber, there should be four separate vertical clinched bolts in each scarph, in addition to any vertical clamp fastenings. The foregoing applies to both 'tween deck and hold clamps. The through bolts and dumps in each frame space are governed by the disposition of the scarphs, which, in the majority of cases, are fewer than shown on the plan 708A, owing to the fact that the scarphs do not take the three frames as required. Generally, it is considered that the disposition and fastening of the scarphs in the 'tween deck and hold clamps are not satisfactory, and have not been carried out in accordance with the specification, clauses 11 and 36.

Ceiling.—The shift of butts in the ceiling is not as shown in plan No. 708A, inasmuch as the butts of various planks are on the same frame in alternate strakes. The through fastenings midships appear to be in order, but at the ends of the vessel there appears to be a number omitted. Edge fastenings are omitted as shown to you.

Bilge Stringer.—Plan No. 708A provides for five clinched vertical bolts in each scarph, but the arrangement reading from forward as fitted in the vessel is as follows:—

Starboard Side—

No. 1.—Not marked.
No. 2.—Five vertical clinched bolts and one through bolt in frame.
No. 3.—Three vertical clinched bolts badly spaced and one through bolt in frame and two dumps.
No. 4.—Four vertical clinched bolts and one through bolt in frame and two dumps.
No. 5.—Five vertical clinched bolts and two through bolts and one dump, all in one frame.
No. 6.—Three vertical clinched bolts and three through bolts in frames, and one dump.
No. 7.—Five vertical clinched bolts and no through bolts, and the scarph does not take two frames.

Port Side similar.

Owing to the presence of the officers being required at the inquiry, it has not been possible to have a complete examination made. A continuance of the examination will be made as soon as opportunity permits, if you or the Committee so desire it. The centre keelsons, sister keelsons, side keelsons, and floor head and locking keelsons are still to be examined.

If any of the through fastenings from outside have been clenched on the frame we could not see them. But as the ceiling must have a through fastening another bolt should be driven from the inside and clenched on the back of the frame. I heard the evidence of Hamer in regard to the dummy ends fitted on the shrouds. No trouble would result from what was done unless the whole of the upper seizing is on the dummy piece, and does not lash the end of the turn into the shroud. In regard to Woodward's evidence that there are at least 250 dummy bolts in the *Braeside*, my investigation leads me to believe that they have not been put in down to the waterline, but I have not tested the through fastenings below that level. If the bolts below the waterline are the same as those above there is no foundation for Woodward's statement. We made an examination of the fastenings in the *Burnside*, but it was only casual. From a general examination the *Burnside* appears to be very much better built than the *Braeside*, and if the edge fastenings have been put in there may be less chance of her hogging.

460. *To Mr. Bamford.*—I agree with your contention that the jointing of the half-beams to carlings at the hatchway by morticing them on the halving principle renders them weak in the absence of corner pillars.

461. *To Mr. Atkinson.*—Plan 706A marked in red, which I have seen in the Department, appears to be a *fac-simile* of the plan now before the Committee. The omission of the edge fastenings from the scarfs considerably reduces the longitudinal strength of the vessel, and constitutes a decided menace. Both Mr. Barber's plans and the specification provided for proper bolting of the scarphs. If the butts of the ceiling are not properly shifted, the same number of bolts cannot be put in each plank, and, in a lesser degree, the same weakness will result as from the omission of the edge bolts from the scarphs of the clamps. Messrs. Watson, Hewison, and I commenced our examination of the fastenings of the *Braeside* on Sunday, 29th November, and continued it on the Monday when Mr. Brown was present. He was more than surprised at what we discovered. He was shocked. He thought that all the edge fastenings were in with the exception of those specified for the two strakes of the ceiling under the clamps, and he said that he was broken-hearted to find that they were not in.

462. *To Mr. Mathews.*—The plans for the construction of these ships have been approved by the highest authority in the world on shipbuilding, and I would not care to express an opinion as to whether if the plans had been carried out faithfully the hogging could have been avoided. Profiting by the experience gained with the *Braeside*, the *Burnside* could be made a very much better vessel and fit to go to sea, although I do not say that the hog can be prevented altogether. So far as I can see, the anchor stocks have not been distorted by the hogging; the bottom of the ship did not bend. The whole ship went up, but the centre of the deck slightly more than the sides. The distortion showing in the bilges was to a great extent local; it remained as it was after the vessel was strained. There was a slight reduction of the bilge, and a little greater reduction of the upper deck. The hog is more apparent in the keel because the ends of the ship came down. The greatest movement disclosed by the transverse sights in the hold amidships was $\frac{5}{8}$ inch, and in the 'tween decks and upper decks $\frac{3}{4}$ inch. That is the only distortion that is apparent across the deck. The measurements show that the deck at side has gone up 4 inches less than the keel. I was told that the men on board the *Braeside* when she was launched distinctly felt the hogging. Greater longitudinal strength on the top girder, in conjunction with edge fastenings of the ceiling and clamps, would have prevented the hog. Longitudinal stiffening alone would not have increased the strength as required. Through the edge fastenings not being in the planks can work backwards and forwards, and a little movement of that kind in each plan will cause a hog.

463. *To Senator Newland.*—On the date of my inspection of the moorings at Kissing Point there was 10 ft. 2 in. of water amidships two and a half hours before low water. The rise and fall of tide that day was 6 ft. $2\frac{1}{2}$ in. The mean draught of the vessel was 12 ft. $4\frac{3}{4}$ in.; deduct from that 1 ft. $10\frac{3}{4}$ in. for the hog, and you get a draught of 10 ft. 6 in. from the line of the keel at midship. From the sounding of 10 ft. 2 in. deduct 2 feet for the fall of the tide in the last two and a half hours, and you get a depth of 8 ft. 2 in. of water

at low tide as against the vessel's draught of 10 ft. 6 in., showing that she was aground 2 ft. 4 in. If a licensed surveyor had surveyed the moorings under the same conditions as those under which I conducted my examination I would defer to his opinion. Mr. Scott said that the ship was drawing 7 feet or 8 feet, but her draught to-day is 12 ft. 6 in. He took his soundings about four months after the launching; I took mine in July, a few days after the vessel entered dock. The weight of the vessel at those two dates was practically the same. I cannot say whether or not the vessel, moving with the continual rise and fall of the tide, had packed a hard bed of mud on top of the solid ledge I discovered, but I picked up gravel from the groove made by the keel. The river bed consisted of a couple of feet of soft mud, then a crust of harder mud, and then hard ground. Mr. Scott's estimate that the mud was about 7 feet deep was approximately correct. In regard to the probing of the bottom, his evidence meant that a pressure of 500 lbs. to the square inch was required to push an iron rod through the crust of the mud. The weight of the vessel on the mud was only 70 lbs. to the square inch. I could see and feel the mark made by the keel, and that was sufficient for me without probing any further. I think Mr. Scott's measurements generally are correct, but his figures regarding the draught of the ship are wrong. The draught of the *Braeside* when launched was for'ard 10 ft. 5 in.; aft, 13 feet; mean, 11 ft. 9½ in. Those are the figures which Mr. Barr gave to Mr. Farquhar on the 28th November. My first association with these ships came about in this way: Mr. Curchin on one of his visits to Cockatoo Island asked me to visit the *Braeside* and assist Mr. Brown who, being a shipwright, probably had not the experience required for the completion of the vessel and the fitting up of the sanitation, water service, accommodation, windlasses, &c. He made it clear that Mr. Brown would continue to be the inspector of construction. At that time the *Braeside* had just reached the fitting-out stage. There was no hint of inferior workmanship. If there had been, I would have been able to check it only as regards the portion of the work which I was supervising. I was expected to supervise everything outside the construction. At that time the construction was practically complete, but certain alterations were being carried out for Burns, Philp, and Company, and I made my visits to the shipyard synchronize with those of Burns, Philp, and Company's representative in order to save time and get their requirements finalized. The alterations were arranged on the spot with the representatives of the purchasers and were to be embodied by Kidman and Mayoh in the general arrangement plan. That has never been done. Had my instructions been carried out, plans would have been prepared for every alteration that was arranged. It was the builders' responsibility to see that those plans were prepared for the guidance of the staff. Mr. Arthur Mayoh and Mr. Joseph Mayoh were present, either singly or together, when these arrangements were made. On occasions I asked for the plan, but it has never been produced. The work was proceeding and it was absolutely necessary that the plan should be there, so long as the builder knew what had been arranged between Burns, Philp, and Company and myself. It was desirable to have the plan, but the staff could proceed in a haphazard way without it. I did not feel I had sufficient authority on board to enforce the production of the plan. The ship in dock did not show a distortion of the bilge on each side. The paramountcy of the plan over the specification, or *vice versâ*, would depend on whether the question in dispute related to the structure or the fittings. If the strength calculations are correct and the bilge ceiling is not taken into account for strength and the specification does not provide for edge fastening, I certainly would not put them in. The provision in clause 2 that the ship shall be built to Lloyd's plans is customary in ship-building contracts. Lloyd's take no responsibility for the specification. The contractor is usually a practical man and knows the specification when he signs the contract. He is bound to construct the ships in accordance with Lloyd's rules in order to get a certificate. As to the specification, it is for the builder to decide, from his own experience, whether he is binding himself to a requirement that is impossible. In any case, clause 2 of the agreement overrides everything else. I understand that clause 39 of the specification originally dealt with diagonal ceiling, for which edge bolting was not required from the upper turn of the bilge to the gunwale. When the clause was altered by Mr. Hewison edge fastenings were specified only for that portion of the ceiling; the ceiling from the lower turn of the bilge was not referred to. It would appear that there is no edge fastenings in the ceiling below the bilge stringer, but the clause requires edge fastenings above the stringer. It originally dealt with the portion above the stringer, and it still does the same. Nevertheless, the contractors are not justified in saying that they are not expected to fasten the lower turn of the bilge, because clause 2 governs the whole specification, and clause 39 could be wiped out altogether. Lloyd's have said that in order to get a certificate for the ship the ceiling must be edge-fastened from the lower turn of the bilge to the gunwale. Even though Mr. Curchin did not insert in the specification that edge fastenings must be provided, the contractors must still put them in, because they are asked for by Lloyd's, to whose approval the ship must be built. Therefore, it does not matter what the specification says. Through fastenings do not compensate for the omission of edge fastenings. It was practicable to put all the edge bolts in the scarfs of the clamps by fitting them in echelon. One clamp and outside ribbons would have held the frames in position while the ceiling was being fastened. Then in putting on the clamps I would have tacked one end of a 30-ft. beam in place, sprung the opposite end away from the frames or suspended it by some means in order to join on the next vertical length, edge-fasten the scarphs, let the whole spring back into position, and bolt it to the frames. Then I would have joined and bolted the next length in similar fashion; dealing with each clamp in that way the whole of the scarphs could have been properly bolted.

464. *To Senator Foll.*—I consider the bilge ceiling a strength member. Edge fastening could make it stronger by keeping the planks rigid and preventing them from sliding. I do not think it is possible for Lloyd's to put forward a requirement that cannot be carried out. Their naval architects and surveyors are amongst the best qualified shipbuilding men in the world. Lloyd's must have regarded the ceiling as a strength member or they would not have asked for edge fastening. They have allowed the old-established system of stiffening the ceiling with diagonal straps to be dispensed with, provided that the edge fastenings were put in. That was a big concession, and they must have attached great importance to the edge fastenings. When the *Braeside* was let down on an even keel in dock Mr. Snellgrove was present, but Mr. Mayoh would not recognise him at that time. On the previous night Mr. Snellgrove agreed, in conference with Mr. Curchin and Mr. Heron, to the ship being let down 3 in. I never heard him suggest or agree that she should be let down on an even keel. I cannot say that I heard him making a protest against the procedure, but I knew that he did not approve of it.

When Mr. Brown came on board the *Braeside* on Monday week, during our examination of the fastenings he asked what the trouble was. I told him, and he seemed greatly shocked at learning that the edge fastenings were not in. He remarked that Mr. Arthur Mayoh had deceived him, and if he could get hold of him he would shoot him. Those were his last words to me. None of the officers present condemned him in any way for the omission of the fastenings. We told him not to worry about them. He has not been blamed at any time for anything that has happened. It is the usual practice for the builder to supply plans to the owner's inspector. If an Australian owner is getting ships built in Britain, the inspector has to depend entirely on the builder for plans. The practice of the firm by which I was employed was to give the inspector the last plan approved. In addition, the inspector had full access to the plans in the drawing office, so far as they related to his particular job. In a ship-building yard in Great Britain the inspector would know more about the plans than anybody else. The contractors have the approved plans in their office and the inspector can easily verify the plan supplied to him by asking for a sight of the original plan. I do not know that Kidman and Mayoh were given permission to omit any of the edge fastenings. If they were given permission to omit the edge bolts from the two planks of the ceiling, it would cover about 10 per cent. of the total fastenings. In that event, 60 per cent. of the fastenings that should be in the ship have been left out. I could see no difficulty at all in putting edge fastenings at intervals of 5 ft. It appeared that the few that have been put in the second seam were used only to hold the timbers down while the ceiling was being bolted in position. I will not say that the contractors have wilfully scamped the work, but they have omitted fastenings which are one of the most important features of the structure. The only explanation that I can suggest is that they did not know the value of them. If they had not the experience to appreciate the value of those fastenings they should have been impressed by the fact that Lloyd's required them. The wooden dowels which have been put in are not adequate compensation for the omission of the edge bolts, although they will be of some good if the timber does not shrink. I have no knowledge as to whether or not Mr. Curchin gave permission to dispense with the edge bolting, but if he had done so his decision would be shown by the plan or something else. He is not the man to make a concession of that kind without stating it in writing. No man who had any care for his reputation as a shipbuilder would suggest that Lloyd's instructions should be flouted in respect of an important matter like this. This shift of the scarphs has not been carried out in the method prescribed on plan 708A. The specification and Lloyd's rules say that the scarphs are to be well shifted, and the architect drew his plan accordingly.

465. *To Mr. Parker Moloney.*—In some of the scarphs where four vertical clenched bolts should have been put, I found none at all, although I could see no practical difficulty in getting them in. Neither was there any difficulty in spacing the scarphs over the three frames. In saying that there is a deficiency of 60 per cent. of edge fastenings I am speaking of those required by Lloyd's and plan 706A. Mr. Brown was under the impression that the edge fastenings were in the ceiling as required, but what he understood to be required I do not know. The diver might have put his hand under the keel of the *Braeside* at certain parts when she was moored at Kissing Point; it would be hardly possible amidships, because I do not think he could go between the mud and the bottom of the ship, except at high tide.

(Taken at Sydney.)

FRIDAY, 10TH DECEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

(Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh; Mr. H. C. Brown, representing the Prime Minister's Department).

Alexander McPhee Greenlees, recalled and further examined.

466. *To the Chairman.*—The omission of the fastenings from the scarphs of the clamps would contribute very much to that creeping of the joint to which Mr. Barber attributed the hogging. I am of opinion that the hog is partly due to the omission of the edge fastenings from the scarphs of the clamps. In regard to the ceiling, I think the builders had not quite thought out the method of construction in order to permit of that edge fastening, and, in addition, it seems to me that they used the clamps as ribbons to hold the ship together instead of fitting temporary ribbons on the outside. They did not realize the importance of the ceiling from the lower turn of the bilge to the gunwale. I should say that that was due to lack of experience.

467. *To Senator Foll.*—The use of the clamps to hold the ship together during construction instead of fitting temporary ribbons would mean a considerable saving to the contractors.

468. *To Mr. Boyd (through the Chairman).*—I first visited Kidman and Mayoh's shipyard in the capacity of inspector on the 12th March, 1920. Mr. Arthur Mayoh was not in the office when I arrived, but on the way down to the vessel with Mr. Brown we met Mr. Mayoh, and I was introduced to him. He did not accompany me to the ship, but he followed later. I do not remember whether Mr. Brown explained to him why he was introducing me. I had visited the shipyard on the 12th January for the purpose of lifting the lines from the moulding loft floor, at the request of the Ship Construction Department. On that occasion I do not think either Mr. A. Mayoh or Mr. J. Mayoh were present, but I met Mr. Barr, who knew me personally, and, I think, also, Mr. Barber. When I arrived on the *Braeside* on the 12th March, I did not immediately give orders for alterations to be carried out, or instruct that the main staircase should be taken out and a new one of a different shape fitted. Neither Mr. Arthur Mayoh nor Mr. Barr objected to my presence. Mr. Mayoh knew from the beginning that I was an inspector for the Commonwealth and was stationed at Cockatoo Island, and he knew also why I went to the yard. I do not remember if he asked me if I had a letter of introduction. It is not customary for a man who is known to the contractor to have to present himself at the office and explain the nature of his business. Inspectors do not walk into ship-yards without an introduction unless arrangements for their visits have been made beforehand. In this case Mr. Curchin informed me that he had made arrangements with Mr. J. Mayoh for my inspection and that written authority was not necessary. In those circumstances I did not consider it necessary to take written credentials with me. Mr. Joseph Mayoh arrived at the yard about one o'clock, and, as he got out of the motor-car, I heard Mr. Barr say to him, "Greenlees has arrived and is making a lot of alterations." Mr. Mayoh seemed to get incensed at that, and before I could introduce myself he told me I had no right to be there, that one inspector was quite sufficient, and I was not to remain. I tried more than once to explain why I was there,

but he would not listen to me. Somebody on the ship told me before Mr. Joseph Mayoh arrived that the staircase was in accordance with Mr. Curchin's approval, but, when Mr. Mayoh came on the scene, I was given no opportunity to discuss it with him. I do not recollect him telling me to get an authority from Mr. Curchin. I left the yard quick and lively. I returned on the 19th March, again without written authority, and Mr. Arthur Mayoh still refused to recognise me. That visit immediately followed the receipt of the following letter from Mr. Curchin, with which he enclosed a letter he had written to Kidman and Mayoh:—

[*Exhibit* 100.]

17th March, 1920.

Mr. A. M. Greenlees,
Naval Dockyard,
Cockatoo Island, Sydney.

DEAR SIR,

I have your favour of 15th inst., having reference to your visit to the yard of Messrs. Kidman and Mayoh, and regret the attitude adopted by Mr. Mayoh. I enclose for your information copy of a letter I have addressed to him on the subject, which is self-explanatory.

I shall be pleased if you will continue your visits to the yard of Messrs. Kidman and Mayoh.

Yours faithfully,
(Sgd.) H. W. CURCHIN.

[*Enclosure.*]

17th March, 1920.

Meessrs. Kidman and Mayoh,
25 O'Connell-street, Sydney.

DEAR SIR,

I am in receipt of a communication from my inspector (Mr. A. M. Greenlees), informing me that you have treated him in anything but a courteous manner, and that you are not prepared to recognise him.

I am somewhat surprised at this attitude, as you took no exception to Mr. Greenlees visiting your works when I mentioned the matter to you last week. Please note that Mr. Greenlees is a recognised inspector of this Department, and all his reasonable requests must be carried out in accordance with the terms of the contract. I wish to impress upon you the fact that I am not prepared to accept either material or workmanship that is not of reasonably good quality and suitable for the purpose intended.

Yours faithfully,
(Sgd.) H. W. CURCHIN.

On arrival at the yard I asked Mr. Arthur Mayoh to produce the letter from Mr. Curchin. Mr. Snellgrove and Mr. Heron also were present. Mr. Mayoh told me that I had no right to go on the ship, and if I was a man I would leave at once. He told me that he had received a letter from the Department; but he would not produce it. I decided to wait till Mr. Curchin came to Sydney. When he did so he immediately called on Mr. Joseph Mayoh, I accompanying him, and the trouble was then put right. In the conversation at the ship-yard, Mr. Arthur Mayoh said that the builders did not know where they were in regard to instructions from Government officials. I gathered that he had a confused idea as to whether he should take instructions for the alterations from Burns, Philp, and Company or from the representatives of the Department. I reported the matter to Melbourne, and it was put right. I believe Mr. Arthur Mayoh did say something about Mr. Curchin, Mr. Heron, and Mr. Brown all giving instructions, and my coming along later and giving conflicting orders. The instructions to me were to confine myself to the accommodation and equipment except when I was asked specially to look at things for the Department. At the time of my first visit the accommodation in the cabins was not nearing completion; the partitions were in place but the fittings were not. Even prior to the machinery and fittings being put on board there was enough work being done to require my attendance at the ship-yard once a week or once a fortnight. I showed to Mr. Arthur Mayoh Mr. Curchin's letter of the 17th March. We were in one of the cabins of the *Braeside* at the time, and I said to Mr. Barber that the contractors were taking up a peculiar attitude. In a letter to Mr. Curchin on the 22nd March I said,—

> But as Mr. Arthur Mayoh would not move until his brother returned from Melbourne I could make no progress, although I noticed that some details I had taken exception to on the previous visit have been approved. Mr. Mayoh appears to have a very confused idea of the position, and is very much exercised in mind as to whether he is to carry out the requirements of the Department or Burns, Philp, and Company.

I was not to supersede Mr. Brown or to interfere in regard to the construction unless specially requested from Melbourne to do so. I had no written instruction from Mr. Curchin as to what I was to do. I do not remember giving orders over Mr. Brown's head in regard to some of his work. Mr. Brown was not incapable of giving orders regarding the staircase, but as fitted it was spiral and unsafe, and as approved it was ship-shape. A plan was produced while I was on the ship, but I could not find any signature or stamp of the Department on it. I have seen many companionways, but never one like that which had been built in the *Braeside*. I think it had been put in through inexperience by a house carpenter. Mr. Arthur Mayoh produced a drawing of the staircase on the 12th March, but there was no proof that it had been approved by the Department, although he said that it had been. Mr. Curchin was not responsible for that staircase. I reported as follows to Mr. Curchin on the 15th March:—

[*Exhibit* 101.]

15th March, 1920.

H. W. Curchin, Esq.,
Chief Executive Officer.

Report—Wood Ships at Kidman and Mayoh's.

DEAR SIR,

I visited Messrs. Kidman and Mayoh on Friday, 12th March, 1920, and went over the officers' accommodation with Mr. Brown and Mr. A. Mayoh, who came on board while we were inspecting.

I pointed out to Mr. Mayoh that the panels in the saloon were not in accordance with the specification, and objected to the three-ply veneer in the panels and covering of the beams with this material, because of the inferior quality, and it being tacked on with tin tacks.

The veneer is less than 3-16 inch thick, the outside layers being little more than paper thickness very poorly glued together, which will blister and crack when the damp reaches it.

The coverings of the beams, I thought, was not necessary. The beams should be left uncovered, smoothed, and the bottom edges might be chamfered.

While I was speaking with Mr. Brown, Mr. J. Mayoh, sen., appeared, and before I could get a word in he informed me that as I was not authorized he would not alter anything, and in connexion with the vessels he would not recognise me at all, and gave instructions to this effect to his staff. Mr. Barber was present.

Will you please let me know if you wish me to carry out your instructions under these conditions?

Yours faithfully,
(Sgd.) A. M. GREENLEES.

I say definitely that I was refused admission to the shipyard after the 17th March. I was denied recognition until after the launching of the ship on the 23rd April. Between those two dates I visited the yard once, and I had no trouble, because neither of the Mayoh's was present. I suggested that the staircase should be altered, but I did not mention the matter to Mr. Curchin. I have never intentionally reported to Mr. Curchin that Mr. Brown was incapable of performing his duties. I knew of the hog when I verified Mr. Barber's measurements on the 29th May. I do not remember how many times I had visited the *Braeside* prior to becoming aware of the hog; it may have been four or five times. My visits at that time were erratic, because I was busy at Cockatoo Island. I did not

know that the ship was hogged before Mr. Curchin notified me of the fact. On my visits between the launching and the 24th May I saw the sights on the ship, but I did not look through them. I was not in charge, and do not care to give any further answer on that subject. I submitted my report to Mr. Barber about the hog on the 19th July.—[*Exhibit* 20]. In conversation I said that I was afraid that the ship had broken her keel. I do not remember saying to Mr. Barr that it was unusual for wooden ships to hog more than a few inches; we have evidence to the contrary. New steel ships do not hog; they spring. It is incorrect to say that all steel ships hog more or less when they are leaving the launchings ways. When I surveyed the moorings I took soundings, but they were a secondary consideration. I wanted the evidence which I obtained by actually inspecting the bed of the river. The plan which I drew of the river bed at the moorings is scaled longitudinally ¼ inch = 1 foot, and vertically 1 inch = 1 foot. The purpose of that is to show a true view of the curve; otherwise the plan would be four times as long. I do not think that the plan would give a wrong impression of the depth. If it were not drawn this way the curve would be too flat to give an exact view of the river bed. All the depths are mentioned in figures, and the view is not distorted to anybody who can read a plan. I kept a mental record of the particulars I gained while working in the diving dress, and plotted them on the plan when I went ashore. I had previous experience of diving when I inspected the launching berth at Williamstown. I have made other soundings of ship's bottoms, launching ways, &c., but I did not employ the services of a diver on those occasions; I was assisted by a draughtsman from Cockatoo and other men in a steam launch. Where soundings last throughout a tide it is necessary to work from a datum line because of the rise and fall of the water, but if the soundings occupy only a few minutes there is no need to go to that trouble and to employ instruments. The plan of the keel shows a kink in conformity with the diagram of the contour of the river bed; in actual measurement that kink may be only 1 inch or 1½ inches. I did not measure the contour of the river bed, except by the soundings taken from the surface. The keel had marine growth a little for'ard of 'midship. The presence of that growth was no proof that the keel had not touched the mud. At the bow the keel was clean except for some dry mud. The weight of the ship would be about 70 lbs. to the square inch, and the total launching weight was 1,700 tons. Even at low tide the ship would have some bouyancy, but I have not calculated to what extent that would relieve the pressure of the keel on the mud. No borings have been taken at the mooring. The bow of the ship was resting on more solid ground than was the stern, which I concluded from the evidence, and the mud on the stern was always afloat. With the stem on hard ground and the after-part afloat the tendency would be for the ship to sag rather than hog, but that did not happen in this case. The ship did not rest on hard ground for'ard, but she did amidship. Although I said that the ground was harder for'ard than aft, I did not say that it was hard enough to support the vessel. The ship would not always remain in the same position while she was alongside the wharf, for she would move gently backwards and forwards with the tides, but as the mooring ropes were fairly taut there would be no surging. The bottom mud showed a decided impression of the keel which impressed me at the time as being about the width of the keel and to a depth of 15 inches on the inside. There would be no movement athwartships; the vessel would move fore and aft. She would be anchored by the fact of her keel being in the mud, but she would move to a slight degree under the influence of wind and tide. I cannot state to what extent the ropes were slackened with the rise and fall of tide. At high tide the ship would have a certain amount of play, but she would not then be touching the bottom. The 2 feet of mud amidships was really a layer of ooze, and the *Braeside* went right through that. The mud was moved by the run of the river, but the harder crust below was protected by the ooze on top. The soundings were taken to the top of the mud crust, which was 2 feet to 4 feet above the hard gravel. The ship was really lying on a cushion of mud, and had not penetrated to the gravel. It is not the practice on the Clyde for ships newly launched to lie in the clay at low water. According to data I have obtained from the Harbor Trust there was a difference of 2 ft. 11½ in. between high and low tide on the 23rd April, the date on which the *Braeside* was launched. Prior to the vessel being docked, I verified Mr. Barber's measurements of the hog by the sights on 29th May. I did not take charge of the letting down of the ship in the dock on behalf of the Department, but Mr. Mayoh arranged with me that as I knew what was required, and was stationed at Cockatoo Island, I should make the arrangements for him with the Cockatoo authorities. I gave the instructions to the dockmaster as to the lowering of the water. The diver took measurements and passed them up to me as the ship was lowered, so that she could be packed up when she had been let down 3 inches as agreed. The only piece of metal which the contractors took off the keel did not reveal the scarphs. Mr. Heron may have seen portion of the keel uncovered, but he did not see a scarph. The workmen could not locate the scarphs, and eventually the search for them was discontinued. Mr. Heron asked to be allowed to see the scarphs—I think he made the request in writing—but so far as my knowledge goes, he never saw them. I know nothing of the correspondence between the contractors and Mr. Curchin in regard to letting down the vessel on an even keel, but I remember the conversation between Mr. Curchin and Mr. Joseph Mayoh. On the 1st July, the contractors wrote as follows to Mr. Curchin:—

[*Exhibit* 102.]

1st July, 1920.

H. W. Curchin, Esq.,
Commonwealth Ship Construction,
Melbourne.

Braeside.

DEAR SIR,

As referred to in our letter of 30th ult., we have made arrangements to dock the *Braeside* at Cockatoo Dockyard on Tuesday afternoon, and she will be ready for inspection on Wednesday morning.

With regard to the hog in the ship, we shall be glad to hear if this vessel is to be docked on an even keel, or must she be blocked up to take care of the hog space. Our idea is that she should be allowed to rest on an even keel, as there is sufficient flexibility in the timbers to allow this to be done.

It is our opinion that it is impossible to have a continuity of timbers in a long girder of this construction, and it is further our opinion that when the vessel is loaded, and the buoyancy of the forward and aft ends comes into play, the ship will straighten out.

We hope you will not fail to be present to see the ship in dock, as we are confident you will be satisfied with the vessel.

We await, however, instructions from you in the matter.

Yours faithfully,

KIDMAN AND MAYOH.

I had not seen that letter until to-day. The bilge did not return to its natural shape when the ship was let down. In saying that the deck rose 4 in. less than the keel, I was stating an approximate measurement. That would not be prevented by the pillars from the floor head keelsons to the deck. What actually happened was that the centre of the deck went up with

the keel more than did the sides of the deck. It is not possible for the centre of the deck to rise less than the keel, but it is possible for the sides of the deck to do so These vessels have not been built to the plans and specifications approved by Lloyd's. In a letter to the contractors on the 23rd of June, 1920, Mr. Curchin said that "I am not likely to forget that the ships have been built to plans and specifications approved by Lloyd's." The explanation of that is simple. Mr. Curchin was tired of being repeatedly told that the vessels were built to Lloyd's rules and specification. In a letter dated 21st June, the contractors had written to Mr. Curchin, "You have probably forgotten that the ships have been built to plans and scantlings approved by Lloyd's, and under special survey by their surveyor in Sydney." Mr. Curchin's statement in his letter of 21st June was merely a sarcastic reply to that paragraph, and must not be taken as an admission that the ships were built to Lloyd's requirements. My estimate that 70 per cent. of the edge fastenings have been omitted from the *Braeside* is based upon personal observation and detailed testing in order to find out what bolts were in and what had been left out. In every case the bolts that have been omitted could have been put in. Mr. Young, the foreman, told me that there were no fastenings in the bilge ceiling. The fact that the scarphs of the clamps were not spaced on three frames as required was due to bad arrangement or shifting of the timbers, and not to their being longer than usual. The specification required that the scarphs should be properly shifted, and also that the timbers should be in as great lengths as possible, but that did not permit of the scarphs to overlap. It should be possible always to space the scarph on three frames, and it is most important that that should be done. There should have been no difficulty in putting four edge bolts in the scarphs if that requirement had been kept in view during construction. I do not know whether the inspector was partly responsible for the deficient fastening and shifting of the scarphs, but if he saw that one scarph was coming directly under another, with only one clamp in between, he should have objected. I noticed that the scarph seams are open to the extent of ⅛ in, but I cannot say whether that is due to the use of unseasoned timber. I believe that the four bolts in the scarphs could have been put in by bolting all the sections of a clamp together before putting it in position on the frames, but I do not say that that was the the best way to do it. I have earlier described how, in my opinion, the scarphs could have been bolted before the clamps were through bolted to the frames. I examined the butts of the ceiling in the 'tween decks, and saw no particular evidence of them opening. It is impossible to say whether the bolts have been strained or bent. It is not necessary for the ceiling planks to be spliced like the clamps if they are edge bolted. The ceiling of the ship is subject to strain. The experience gained in building the *Braeside* has helped the contractors and their staff to make a better job of the *Burnside*. A reasonable allowance should be made for the lack of experience of wooden shipbuilding on the part of both the contractors and the officials. The fact that the naval architect and Mr. Curchin did not provide that the ceiling joints should be scarphed is not an indication that, in their opinion, there is no strain on the ceiling. There is no sign of over-stress in the ship except at the knees. I could make the necessary calculations to verify Mr. Barber's figures of strength, but I would not care to do so. Clause 2 of the specification overrides every other provision in it. It is not usual to include in the specification for a ship the scantlings or other particulars that are shown in Lloyd's approved plan. The specification, as a rule, only provides for those things for which Lloyd's plan does not provide. Many of the clauses in the specification should not be there. The vessels were to be built here, and clause 2 of the specification said that they were to be built strictly in accordance with Lloyd's plan and requirements. I do not know what Mr. Curchin had in mind when he said that the contractors should not start building the ship until the specification had been signed and approved; he may not have trusted the builders. But it is usual not to start construction until the plans and specification are approved. The Chief Executive Officer, in drawing up a specification, would not worry about anything that was contained in Lloyd's plan; probably that is why the clause relating to the ceiling is not complete. It would have made no difference if that clause had been left out of the specification entirely. The things that appear in the specification as a rule are the accommodation and details not specified by Lloyd's; but in regard to them the local surveyor would be consulted.

469. *To Mr. Brown (through the Chairman).*—The whole of the through fastenings from the outside planking has not been placed in the ship in accordance with the plan. They have been omitted from the fore end of the No. 1 hatch forward, and from the after end of the No. 4 hatch aft. In the midship portion the fastenings appear to have been put in. The plan shows that the through fastening shall be from the outside planking right through the ship's side and clenched on the inside ceiling. The ceiling must have a through fastening and so must the outside planking. If the latter is fastened on the inside of the frame, the ceiling must be through fastened with bolts clenched on the outside of the frame. I do not think that has been done, and to that extent the plan has been departed from. I cannot accept as correct any evidence that through fastenings have been put from the ceiling in the lower turn of the bilge to the outside planking as compensation for the omission of edge fastenings. The through fastenings are not all in at the ends of the vessel. Even if they were all in I would not accept them as sufficient compensation for the missing edge fastenings. It was the duty of the contractors to cut the clamp timbers to such lengths as would enable them to comply with the specification requirement that the scarphs should be spaced over three frames.

470. *To Mr. Mathews.*—I actually saw by the water mark on the ship's side that when the tide fell the ship was resting on the bottom. In other words, she had ceased to fall with the fall of the tide, and the water mark showed that she had been deeper in the water. Repeatedly, I called Mr. A. Mayoh's attention to the fact of the vessel being aground, and the reply I received was that the bottom was soft mud and would do no harm. I even suggested the use of punts in order to keep the vessel out in deeper water. On going aboard one day I took the draught of the ship, and, on taking it again as I left the vessel, I noticed that it had changed. That was the first time I noticed that the vessel was aground. In regard to the letting down of the *Braeside* on an even keel, after Mr. Curchin had inspected the ship in dock Mr. Mayoh asked him, in my presence, for his advice. Mr. Curchin replied, "I do not feel inclined to give you my advice, but I will give you my opinion that you should let her down on an even keel and stiffen her longitudinally before she leaves the dock." There were no plans available at the time, and Mr. Curchin did not indicate what form the stiffening should take.

471. *To Mr. Bamford.*—I approve of your suggestion to put in bulkheads against the ceiling down to the margin girder, but it would be preferable to make them of timber. Iron does not act well with wood, especially Australian hardwood.

The witness withdrew.

Arthur Mayoh, partner in the firm of Kidman and Mayoh, sworn and examined.

472. *To the Chairman.*—I am a partner in the firm of Kidman and Mayoh, and I have had charge of the ship-yard throughout the contract with the Commonwealth. The work was carried on under my direction. My instructions were given to Mr. Barr, the yard manager, who was directly responsible to me. Neither he nor any of the foremen would have any right to issue instructions contrary to the plans and specification. I have no previous experience in the building of wooden ships, but I worked according to plans supplied to me by our Sydney office, and, presumably, approved by the Chief Executive Officer. The agreement provided that we should build the vessels according to Lloyd's rules, and I did all I possibly could to follow those rules. The specification did not provide that the scarphs of the clamps should be spaced over three frames; we were quite within our rights in spacing them over only two frames. The plan provided for four edge bolts in each scarph, and I expect that requirement has been obeyed as far as was practicable, but the details of the actual carrying out of the work were left to Mr. Barr. I was on the ship frequently, and saw the scarph bolts being put in. In many cases it would be impossible to put in four bolts, because of the method of construction. I have here a model to scale of the clamps. In the course of construction we found it necessary in several cases, in order to shift the joints properly, to put the bottom clamp on before the second piece was put in. We had to slip the second piece in between the others endways, and Sellars stated in his evidence that he used short dumps in order to pull the clamp timbers into position. There are some bolts in the scarphs, but I cannot say how many. Where it was possible to put them in they have been put in. I cannot express an opinion about the effect of the non-bolting of the scarphs upon the longitudinal strength of the ship. I have constructed the ship to the best of my ability, and have endeavoured to get the fastenings in. When I found it was impossible to comply with Lloyd's requirements, I consulted Mr. Brown, the Government inspector, who was on the ship every day, and saw every one of the clamps being put in. He never complained to me, and if he had complained to Melbourne we would have received a letter on the subject; no such letter has been sent to us. It was not necessary for us to write asking for the Department's advice as to how to overcome difficulties in construction, because Mr. Brown was an old shipwright, and was supposed to have had great experience. I relied on him a good deal, and many times when I was in difficulties he helped me out of them. I heard Mr. Greenlees say that it was reasonably possible to edge-fasten the scarphs in the clamps, but I do not think he has had much experience in wooden shipbuilding or he would not talk such nonsense; his proposal was a practical impossibility. I have not had time since this investigation started to look carefully into the fastenings of the *Braeside,* but I know that some bolts are missing. I think very few are missing from the *Burnside,* because on that ship we edge-fastened the scarphs from the bottom. I repeat that I relied a good deal on old Mr. Brown, because I freely acknowledge that I know nothing about ship-building, although I can put timbers together. The plan provided for edge-fastenings in the ceiling at intervals of 5 feet; they were not inserted in the *Braeside;* they are in the *Burnside,* but it was only in August or September of this year that I was asked to put them in, and I gave permission for them to be put in on the angle of the thickness. I have seen a copy of plan 706A marked in red. But on the work I never received a mutilated plan; I worked to a clean plan. I was aware that the plan marked in red was in Mr. Barber's office. So far as I know edge-fastenings have not been put in the bilge ceiling of either ship. I have not any intention of putting them in, and never advised Mr. Barber that they had been inserted. The specification did not call for them, and they are not shown on the plan. There was no instruction about edge-fastenings in the bilge ceiling on the clean plan to which I worked. I was present at the launching of the *Braeside,* and I thought it was excellent. The only previous launching I had seen was at Cockatoo Island, and on that occasion the ship stopped near the bottom of the ways, which caught fire. Our launching appeared to be as good as that at Cockatoo. I personally did not notice the hog until I was told about it by Mr. Barber, probably an hour after launching. I did not regard it as a serious defect, but I am not competent to judge. Prior to constructing the jetty at Kissing Point, soundings were taken to ascertain if there was sufficient water in which to float the ship, and they showed that there was. That was the only examination made of the moorings. My attention was never called to the possibility of there being a hard bank on the river bed alongside the pier, and I never had the impression that the ship was resting on a bank. The draught of the *Braeside* when she was first launched was 10 feet forward and 12 feet aft. The hog would make no difference to the draught of the ship. In the construction of the *Burnside* the clamps were put on in the same way as on the *Braeside.* Mr. Barr was in charge of the work, but whether he altered the method of construction in order to more effectively drive the scarphs and through bolts I cannot say. He had full responsibility, and, being a practical man, he would do the best he could. I am sure that Woodward's statement that he put 250 dummy bolts in the *Braeside* is a lie. No instructions were given for the making of clenched bolts 4 inches to 9 inches long, and it would not be possible for them to be made in hundreds at the blacksmith's shop without my knowledge. If I had seen men making these short bolts I would have sacked them. Some small lengths of iron were used for the purpose of drawing the clamps together. I could show you thousands of ends which have been chopped off the longer bolts originally intended for the six ships. We had a number of 36-inch bolts which were of no use, and we obtained permission from Mr. Brown to cut them in two and put a head on them for use as dumps. So far as I know, no dummy bolts were used. Where an auger broke in a hole, the hole would be plugged with a short bolt, not a dummy. In some cases the manager might instruct that the hole be plugged with a wooden treenail, and another bolt inserted alongside. The statement that instructions were given to put fastenings in the planking at every fifth or sixth frame is a falsehood. No such instructions were issued with my knowledge and consent, and no foreman would have gained a penny by resorting to such practices. No monetary inducement was ever offered to any of the foreman to do fraudulent work. They received ordinary foreman's wages, and the only advantage they had over other men was that they were paid in wet weather and fine. There was no desire to stint the materials; our policy was rather the reverse. We have done our level best. My brother and I understand construction; we have been on some of the biggest engineering jobs in the world. Shipbuilding I do not understand, but I relied on Mr. Barr, who is an experienced man. Great difficulty was caused by our inability to get skilled shipwrights. We had to use diluted labour—axemen and bushmen—and to employ more leading hands than are necessary on an ordinary job in order to instruct the diluted labour. I have read the evidence of Hamer in regard to the dummy ends on the shrouds. I knew nothing about those dummy ends, and I thought his statement was

ridiculous. Mr. Barr was in charge of the work on the *Braeside* at the time referred to.

473. *To Mr. Mathews.*—About an hour after the launching of the *Braeside* I overheard Mr. Barber telling my brother that the ship had hogged. My brother may have discussed the matter, but I did not. In fact, if I had been asked on that day what a hog was I probably could not have answered. I have never yet learned, except from the evidence given before this Committee, that the hog is any great detriment to the ship. I do not think there was any desire on the part of the management to keep the hogging secret. I was not concerned in the matter; I was never told that the hog was anything serious, and we had no desire to hide it from the public. There have never been any secrets in our yard. I think the employees generally knew that the ship had hogged. The hogging was noticed before the vessel was taken to her moorings, and Mr. Barber told my brother that the hog measured 15 inches or 1 foot 5 inches; I am not sure which. I never heard of any suggestion that the hog would disappear after the ship was trimmed; it could not disappear. You ask whether it would not have been better to have announced publicly that the ship had hogged at the launching; but there was no intention on the part of anybody to keep the matter secret. I understand that Mr. Barber went to Melbourne and told Mr. Curchin about the hog. If Mr. Greenlees did not know of it until May I could not help that; he visited the ship as often as he desired, and could have found out for himself. It was impossible for us to instruct anybody in the yard not to tell the Government officials that the ship had hogged. At that time we did not know that the ship had injured her keel, and I thought she was all right in spite of the hog. I have no opinion as to the cause of the hog. I do not think the omission of edge bolts made any difference. Having so much centre buoyancy, the ship would have hogged if she had had twice as many bolts. Put the *Burnside* in the water, and she too will hog. I do not know that the keel rose 2 inches before the launching, but I heard Mr. Barr say that he knew the keel had lifted. During the construction he and I had many consultations as to the method to be adopted, but I never interfered with him; I left the construction entirely to him as an experienced man. At the same time, I accept all the responsibility for what was done. If a man is managing a big machine shop he does not go to every machine to see that each operative is doing right; he has to rely on his manager or foreman, although he is still responsible. If, in building a motor car, a mechanic leaves out some screws, and, as a result, the car breaks down, the proprietor or manager is responsible although he did not know that the man had left the screws out. I have done more timber construction than any man in this country, but, in shipbuilding, I relied on Mr. Barr and Mr. Brown. If we did not agree upon some point we argued the matter out before deciding as to the best course to follow. I know nothing of the deadweight capacity of the ships. Mr. Barber says that the dead weight is more than the 2,600 tons contracted for, but I am not able to say that the ship would carry even 10 tons. Edge fastenings should not have been put in the bilge ceiling, for neither the plan nor the specification called for them. Until to-day I have never seen Lloyd's midship section 193S; the only plan I have worked to, so far as the fastenings are concerned, is 706A. I knew the ship had to be constructed according to Lloyd's requirements, but I was stationed at the yard, and I built according to the plans supplied to me. My copy of 706 A did not have a note in red about edge fastenings in the bilge ceiling. If it had, I would have called attention to it, because I had been told that I must follow the specification rather than the plan. Mr. Greenlees point out that if ever a law suit arose the specification would override the plan. I know nothing about any plans other than those given to me at the yard. Everything preliminary to them was arranged between my brother, Mr. Barber, and Mr. Heron. I never had occasion to discuss Lloyd's plan with Mr. Barr. Plan 706A was supposed to represent the final agreement in regard to the fastenings, and I followed it. I knew that correspondence was passing between our city office, Mr. Barber, and Mr. Curchin, and plan 706A was supplied to me by my brother as representing the final results of these negotiations. The edge fastenings were not insisted upon, because they were not in the specification. I am responsible only for what is required by the specification and plans submitted to me; I know nothing about other plans. I followed the specification as closely as I possibly could.

474. *To Senator Newland.*—In the top clamp the specified number of bolts has been inserted. I think we endeavoured to put some edge fastenings in the second clamp, but it was impossible to clench them. Mr. Greenlees' suggestion regarding the bolting of the scarphs before the clamps were lifted into position was impracticable. It would mean that the full length of clamp would have to be riveted before it was attached to the frames; there must be a joint somewhere, and wherever it occurred you could not put the bolts in the clamp. We could not edge bolt the clamps very far ahead of the actual construction Even if the clamp scarphs were edge fastened it would still be impossible to get the edge bolts in the two top planks of the ceiling. The inspector recognised that it was practically an impossibility to fasten the ceiling as shown on the plan. In the lower ceiling the plan requires an edge bolt through three planks; that would mean a bolt 36 in. long. There was only 27 in. of space in which to drive the 36 in. bolts; how could it possibly be done? I cannot say why we did not revert to diagonal ceilings or iron straps on the outside when we found that we could not get the edge fastenings in the horizontal ceilings. No men were employed in making bolts from 4 in. to 6 in. long. It is an absolute lie to say that men were employed for weeks in the blacksmith's shop in cutting dummy bolts; they were cutting long bolts into dumps 12 in. and 14 in. long, and the inspector knew about that work. It is possible that a few bolts have been omitted from the floor head keelsons, but not wilfully. I understand that the holes have been bored, and the boring is a bigger job than the driving of the bolts; therefore, this omission could not have been with the idea of scamping. It is possible that, owing to the lumber on the floor, these empty holes were not seen. I can only attribute to shrinkage the fact that some of the hanging knees have come away from the beams. The knees have been shrinking ever since they have been cut. The throat of the knee has a very big area of timber, and it does not dry as quickly as do the ends, consequently, as it dries and shrinks it tends to pull the two ends in. In am satisfied the through fastenings required by the plan have been put into the knees with one or two exceptions. We have endeavoured to follow the plan. On one occasion Mr. Curchin came to the yard and said that there were too many fastenings in the knees. It was only in October of this year that Mr. Heron said that he would like a few more bolts put in; it took him all that time to come to that decision, although he had been on the job constantly. A lot of trouble was experienced in fastening the knees because of the vertical bolts in the clamps. At times we had to bore as many as five holes in a knee before we could get through; by the time we had succeeded in getting a bolt through we had practically destroyed

the knee. Yet the bolt had to be put in to comply with Lloyd's rule. I think it would have been better to omit the bolt rather than bore the knee so much. When Mr. Heron asked for extra bolts to be put in Mr. Barr pointed out that the beams would be cut in two. Mr. Heron said, "I will leave it to your discretion, get in what you can."

475. *To Senator Foll.*—I signed the original agreement after having read it. I believe it contains a clause requiring the ships to be built to Lloyd's requirements, but two years have elapsed since I saw the document. I had the specification before me continually, very often in my pocket, and the work has proceeded according to its provisions. Clause 2 requires that the ship shall be built to Lloyd's requirements. Plan 708A, which was drawn by our naval architect, contains a typical illustration of how the scarphs shall be made. It shows a scarph spaced over three frames. But the specification did not require that to be done. That drawing does not show how the work is to be carried out; it is merely a typical sketch to show how to make the scarph, and we could not work to that. I defy anybody to put in the bolts according to that drawing. It shows four fastenings in the scarph, but it is impossible to insert them in the positions shown. That is one of the practical difficulties which the man on the job has to overcome. It is only a coincidence that the model of clamps which is now before the Committee shows the scarphs spaced over three frames. The edge fastenings in the ceiling have been put in at intervals of 5 ft. in the *Burnside* according to the specification, but they could not be put in the *Braeside*. Although they have been put in 10 ft. apart, obstacles might have prevented them being put in at intervals of 5 ft. I and Mr. Brown knew that the full number of edge fastenings had not been put in the *Braeside*. In saying that he had been deceived in this matter, Mr. Brown was, I suppose, making an excuse for his negligence. He knew all along that the fastenings could not be put in, and it was not until October of this year that any notice was taken of the edge fastenings. Lloyd's midship section 1938 is only a general plan, and not a working plan. I could not build a ship to it, and it would not be given to me in any circumstances. It was the duty of my brother to give me the drawings to which I had to work. If the instructions from Lloyd's were not conveyed to me by the plans the responsibility was not mine. Lloyd's plans is the concern of the architect and my brother. I am certain I never told Mr. Barber that there were edge fastenings in the bilge ceiling; if he says I did he is mistaken. He may have spoken to somebody else. I did not know that he had sent to Lloyd's plan 706B showing edge fastenings in the bilge ceiling. If, during construction, I encountered any practical difficulty in following out Lloyd's instructions, I generally referred the matter to Mr. Brown, who said he would see Mr. Heron and let me know the result. Mr. Brown was constantly at the yard, especially during the earlier part of the job. It was quite possible for things to have been done which would escape his notice; but a man who was on the job every day would know practically every piece of timber that was used, and if a beam had been put in the ship two or three hours before he arrived he would have looked at it to see that it was right. He could watch the progress of the job without being there every five minutes. I did not keep a diary showing the times Mr. Brown arrived on the job and when he left, but at one time he was attending to other jobs as well as the *Braeside*, and was not regularly at the yard; therefore, I used to keep a record of his visits. He might be at the yard for one hour or two hours and then leave to attend to correspondence or to take out the figures for the extra wages, or to consult with Mr. Greenlees. He was not on the job so much from March onwards. The keels of the *Burnside* and the *Braeside* were laid together, but that of the former was finished by Christmas, 1918. We could not proceed with the *Burnside* as quickly as with the *Braeside*, because we could not get the natural floors. The same method was adopted on both ships for putting in the clamps and keelsons. It was impossible to construct the ships other than as we did. We were delayed by the Department at times, especially in connexion with the fitting out, the position of the bulkheads, and the boiler-room and the taking out of beams where they should not be taken out. I cannot say that the instructions we received were conflicting, but they delayed the job. We were arguing for six weeks as to whether we should cut out certain beams for the engine-room. We had a full staff of men on the job, and when part of the construction was held up we had to find them other work to do. It was mostly in the fitting out of the ship that we were hampered.

476. *To Mr. Parker Moloney.*—Lloyd's instructions in regard to fastenings were supposed to be embodied in working plan 706A. It was Mr. Barber's business to look after that. I suppose that Mr. Curchin also was consulted. Plan 708A has no significance in regard to the spacing of the scarphs over three frames. It is a detailed plan only so far as the making of a scarph is concerned, but plan 706A, which is the working plan, shows the scarphs spaced on only two frames. In regard to Mr. Greenlees' first visit to the yard, I was just leaving the office one morning when I saw Mr. Greenlees and Mr. Brown passing. I called out "Good-morning" to Mr. Brown, who said, "This is Greenlees." I said, "How do you do? I have met you before." The two of them then walked off to the ship. I did not know that Mr. Greenlees was a representative of the Department. About half-an-hour later, young Day came back to the office and said to me—"Do you know that there is a young fellow with Brown, and he has the plans, and is pulling the ship to pieces?" I went back to the ship and asked him what his authority was. He said, "This accommodation is wrong and the staircase must come out." I said, "Who the devil are you?" and he replied, "I was sent here by Mr. Curchin," and I said, "I don't care who sent you here. I have enough inspectors on the job. Get off the ship." He was going about as if he owned the ship. I did not know that Mr. Curchin had made a verbal arrangement for him to come on board. He was there on false pretences. Why did he not say he had come to look over the ship? He simply walked on board without saying a word. I have previously said that the edge-fastenings are not in the ceiling, and cannot be put in as provided for in plan 706A. I spoke to Mr. Brown about the matter, and Mr. Heron never raised this question until August of this year. It follows that if the edge-fastenings are not put in according to the plan, we have not complied with Lloyd's rules. I never considered the effect of this omission on the obtaining of a first-class certificate. Why did not Lloyd's surveyor speak about the fastenings? I do not think that I ought to have considered a reversion to diagonal ceilings. I was there to work to my drawings, and I must take responsibility for the ship whether she is constructed rightly or wrongly. It was my responsibility to see that the ship was constructed in accordance with Lloyd's requirements, but I knew that I could not do that so far as the edge-fastenings were concerned. Mr. Brown knew very well that they were not in. On the *Burnside* he arranged that we could get the fastenings in the third plank above the waterways in the 'tween deck. That was the only one we could fasten.

477. *To Mr. Brown (through the Chairman).*—We were justified in omitting fastenings specified by Lloyd's if we could not get them in. Although we agreed to construct the vessel to Lloyd's approval, I presume

that we would be justified in omitting things that were specified by them if we acted with the approval of their local surveyor. The Department was advised of departures from the rules, although I cannot produce written evidence of that. The Government inspector was informed verbally of what we were doing, and he was the representative of the Department. I was not aware that in January last Mr. Greenlees visited our ship-yard to lift the lines from the moulding loft floor. The fact that he was accompanying Mr. Brown when I first saw him on the job did not suggest to me that he was a Government official. Mr. Brown ought to have introduced Mr. Greenlees in his official capacity; I thought he came merely as a friend of Mr. Brown to see the ships in course of construction.

478. *To Mr. Boyd (through the Chairman).*—Two or three of the bottom lengths of the ways were removed immediately after the launching, and were examined by Mr. Ellery and myself; we found not the slightest evidence of any damage. At no time during the construction did Mr. Heron or Mr. Brown complain of the number of fastenings that we had put in.

479. *To the Chairman.*—The scarfs of the clamps would be stronger if they had four edge bolts, but I understand that the missing bolts have been compensated for in another way. Whether they are fully compensated for I cannot say. It would be absolutely impossible to bolt two or three sections of the clamps together with edge-fastenings and then push them into position on the frames as suggested by Mr. Greenlees. If one section of the scarph was bored and bolted and the other section was bored and then pushed on to the projecting bolt, the holes would have to be so large that the efficiency of the bolts would be lost. Furthermore, the ship would be changing shape all the time, and it would be found that if the holes were bored beforehand they would be 2 or 3 inches out of line when the plank was shifted into position. The specification requires that every bolt must be a tight fit; and, therefore, the holes are bored with a smaller diameter than that of the bolt.

480. *To Mr. Mathews.*—All holes were bored smaller than the bolts. If a hole was bored too big we put in a bigger bolt in order to get a tight fit. I think it is incorrect to say that some of the holes were bored a neat fit at the start, and 1-16 of an inch tight at the finish; the same auger bored the hole right through.

481. *To Senator Foll.*—I think our naval architect did discover that the edge bolting required by Lloyd's was impossible, but I do not know whether Mr. Barber pointed it out to Mr. Heron. If there had been any objection to the omission of the edge bolts I would have heard of it. I was on the job from morning to night; the details of the plans were settled in the office, and instructions were sent to me accordingly.

The witness withdrew.

Arthur Carlile Barber, recalled and further examined.

482. *To Senator Foll.*—The alterations contained in Lloyd's cable were conveyed to a midship section which was drawn in Melbourne and submitted to Mr. Curchin. He made certain modifications, and I drew another midship section embodying all the alterations with the exception of the iron strapping, and submitted it. Mr. Curchin approved of that plan, and signed it. It showed no edge fastenings in the bilge ceiling. I have never instructed either Mr. A. Mayoh or Mr. J. Mayoh that edge fastenings were to be put in the bilge ceiling, except that I submitted to Mr. Heron a sketch which was approved by him and issued to the yard. It showed edge fastenings in the bilge ceiling, but I am told that they have not been put in. Lloyd's gave me alternative ceilings; firstly, horizontal ceiling with diagonal iron straps on the outside of the frames or edge fastenings from the gunwale to the lower turn of the bilge; and, secondly, diagonal ceiling from the gunwale to the upper turn of the bilge. When I issued the first plan approved by Mr. Curchin, with diagonal ceilings, neither he nor Lloyd's required edge fastenings below the bilge stringer. On receipt of a cable from Lloyd's I went to Melbourne and made midship section 632 in accordance with Lloyd's instruction—"Diagonal ceiling proposed compensate for diagonal plates and ordinary ceiling." The plan showed diagonal ceiling, from the upper turn of the bilge to the gunwale, and there was no necessity for edge fastenings. If we had adopted that we would have wiped out Lloyd's note on midsection 193S about the diagonal straps or edge fastenings. After Mr. Curchin had gone through the plan, checked it with Lloyd's cable, and made certain alterations, he handed it back to me, and I prepared plan 611B, which still showed diagonal ceiling and no edge fastenings in the lower turn of the bilge. Mr. Curchin and I were of the opinion that, by putting in diagonal ceiling, the note on 193S about diagonal straps or edge fastenings was wiped out. Finding a difficulty in fitting the diagonal ceiling I wrote on 20th November asking Mr. Curchin to approve of the substitution of longitudinal ceiling. Lloyd's had asked for 3½-inch ceiling in the 'tween decks, and 4½-inch ceiling in the hold. Mr. Curchin evidently thought that 5-inch ceiling was sufficient without the edge fastenings, because, on the 27th November, when he finally revised the specification with this plan before him, he did not mention that the bilge ceiling should be edge bolted. I was of the same opinion that, when we reverted to ordinary ceiling and increased it to 5 inches in thickness, we fulfilled all the requirements for diagonal ceiling; that is why edge fastenings in the bilge ceiling were omitted. The omission was pointed out to Mr. Heron, and I think he wanted edge fastenings put in. When we received back from Mr. Curchin our plan 706A marked in red, and with a note about edge fastenings in the bilge ceiling, I did not know what the Department wanted, but I made a small sketch showing edge fastenings—I do not think I stated how far apart they were to be spaced—and submitted it to Mr. Heron, and I believe later issued it to the yard. However, it was optional for the contractors to put in those edge fastenings to please Mr. Heron or to leave them out, because they were not required by Lloyd's. If we had come back to 3½-inch and 4½-inch ceilings I would have concluded that edge fastenings were required.

483. *To Mr. Parker Moloney.*—The increase of the ceilings to 5 inches was not in accordance with Lloyd's requirements, but was approved by Mr. Curchin. At the time the contract was let there was a great scarcity of iron, and we schemed to get away from diagonal strapping because it would have delayed the construction considerably. On midship section 193S Lloyd's said that the diagonal ceiling compensated for the ordinary ceiling and diagonal straps. That was a permission to adopt diagonal ceiling as an alternative, and it was never intended to edge fasten the bilge ceiling if diagonal ceiling was fixed. The bilge ceiling in all the plans was horizontal, and we were altering only the diagonal ceiling from the stringer to the gunwale. I knew that edge fastenings were not required in the bilge ceiling, but, at Mr. Heron's request, I made a little sketch of edge fastenings in the bilge ceiling, and sent it to the yard. When I prepared plan 706B for submission to London I was firmly of the opinion that the edge fastenings were in. I have been told that they are not in, and next time I go to the ship I shall look for myself.

484. *To Mr. Mathews.*—The departure from Lloyd's requirements was made with Mr. Curchin's approval,

as is proved by the specification which was drawn up after we had made a proposal for substituting longitudinal ceilings. Mr. Curchin took full responsibility for the omission of edge fastenings from the bilge ceiling.

485. *To Mr. Brown (through the Chairman).*—Plan 706A as prepared by me is correct, and I made it with the idea that the details shown on it could be carried out. I believe that the fastenings as shown there are practicable. The plan is a typical one, and it may be that at the ends of the vessel the contractors have to make some departure from the plan. I specified the best condition as a guide to the builders. For instance, I will show a scarf providing for four bolts and showing only three, so that one through bolt may be counted as a scarf fastening. When I made the plan I had one method in view; the yard may have had another method. If the builders have adopted a method different from mine they could not get the edge fastenings in. I had in mind that it would have been reasonably possible to put them in. I will not say that, by another method of construction, the fastenings could have been put in.

(Taken at Sydney.)

SATURDAY 11TH DECEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

(Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh. Mr. H. C. Brown, representing the Prime Minister's Department.)

Herbert Hewison, Chief Draughtsman, Commonwealth Ship Construction Branch, recalled and further examined.

486. *To the Chairman.*—My duties in connexion with this contract was to examine the plans submitted by the contractors, in order to insure that they were generally in accordance with Lloyd's requirements and the specification. I was frequently in conference with the Chief Executive Officer in regard to these matters. I was informed that four of the six vessels referred to in the original contract had been cancelled, and that Kidman and Mayoh were to complete two of the boats upon conditions similar to those in the original contract. In the first place the plans were submitted by Kay, Macnicol, and Company, and later by Kidman and Mayoh. The plans were not referred by us to Lloyd's, except that we put a note on them to the effect that they were subject to Lloyd's approval. The original plans were sent direct to Lloyd's by Kay, Macnicol, and Company through the local surveyor (Mr. Heron), and copies were sent to the Department. Mr. Curchin sent a letter to Kay, Macnicol, and Company in which he offered his services to draft a cable to Lloyd's, London, setting out the proposed dimensions of the principal scantlings. The offer was accepted and Mr. Barber and Mr. Carr of the Wallace Power Boat Company came to Melbourne to see Mr. Curchin. From a list of particulars supplied by Mr. Barber a cable to London was drafted, embodying the whole of the scantlings already submitted, with the exception that Mr. Curchin deepened the wales or topside planking. Mr. Barber's plan showed 3 ft. depth of wales, which Mr. Curchin said would never be passed, so he increased them to 6 feet. Mr. Curchin did not like the 2 inches longitudinal ceiling suggested by Mr. Barber, and he proposed a double diagonal ceiling from the upper turn of the bilge to the gunwale. The cable was despatched on the 27th June, and a reply was received from Lloyd's through the High Commissioner's Office accepting Kay, Macnicol, and Company's plan, which by then had been received, with certain modifications. Prior to that Lloyd's had sent a cable to Mr. Curchin saying that his cabled particulars did not entirely agree with the plan received from Kay, Macnicol, and Company, and asking for instructions as how to deal with the cable and plan. Mr. Curchin cabled a reply asking them to deal with his cabled particulars as an alternative to the builders' plan. Therefore, at the end of Lloyd's cable in which they approved of Kay, Macnicol and Company's plan were the words, "Curchin's alternative proposal same as above, except wales should be 8 ft. by 6 in., side and bottom planking 5 in. Diagonal ceiling proposed compensate diagonal plates and ordinary ceiling," in other words, Mr. Curchin's proposed diagonal ceiling, if adopted, dispensed with the diagonal straps shown on the approved plan. After the receipt of that cable Mr. Barber came to Melbourne and prepared a midship section on which diagonal ceiling was embodied; that was submitted to Mr. Curchin who made some slight modifications and asked for a working tracing to be submitted to a ½-in. scale. Mr. Barber made that tracing (611B) and sent it to Mr. Curchin, and it was signed by him on the 8th August. It was prepared before the receipt of the plan from Lloyd's, and was based upon the cable sent by Lloyd's in answer to Mr. Curchin. It complied with Lloyd's requirements, except in regard to any minor details which might be shown on Lloyd's plan. There was a note on it, "This plan is subject to further modifications that may be required by Lloyd's." It was signed by Mr. Curchin and returned to Mr. Barber, who, I suppose, then proceeded with the preparation of his principal plans. Later Kay, Macnicol and Company wrote suggesting an alteration to the diagonal ceiling in order to facilitate the construction. They asked that instead of extending the diagonal ceiling to the gunwale they should be permitted to fit two longitudinal members on the top side in order to allow them to get one or two clamps into position and the beams up in order to keep the ship in shape. Mr. Curchin approved of that, but the diagonal ceiling to the bilge stringer still remained. That would be about October. Subsequently, about the middle of November we received another proposal from the builders to dispense with diagonal ceiling altogether, and substitute longitudinal ceilings in accordance with Lloyd's midship section 193S. I think the plans altered by Lloyd's were sent to us about the middle of October. In their letter Kay, Macnicol and Company stated that their proposal for longitudinal ceilings had the approval of Lloyd's surveyor—[*Exhibit* 81.] A tracing accompanied the letter and showed that the idea of the architect was merely to edge fasten the ceiling from the bilge stringer to the gunwale. On that plan I made an amendment in red, "Ceiling edge bolted from lower turn of bilge to gunwale," and the plan as amended and approved was returned to Kay, Macnicol and Company. Mr. J. Mayoh and Mr. Barber came to Melbourne, and suggested to Mr. Curchin that the 6½-inch wales and 5½-inch outside planking should be reduced to 6 inches and 5 inches, respectively, and that the inside ceiling from the bilge stringer to the gunwale should be increased to 5 inches. That was accepted by Mr. Curchin, subject to Lloyd's approval, and was added to the specification by the following note above clause 39:—"5-inch ceiling specified below in conjunction with the 5-inch planking and 6-inch wales is allowed only subject to Lloyd's approval." In regard to the fastenings,

clause 39 says—"From the upper turn of bilge to the gunwale the ceiling to be 5 inches thick 'tween decks and 5 inches in hold, and to be edge-bolted." It does not mention the bilge ceiling. I do not admit that the specification differs from the approved plan 706A; the edge-fastening should be in the bilge ceiling, because the specification provides that the ship shall be built to obtain Lloyd's highest qualification, and Lloyd's required edge-fastening of the bilge ceiling. In the event of a difference between the plan and the specification. I would consider that Lloyd's plan was paramount. Lloyd's approved of midship section 193S, in which edge-bolting from the gunwale to the lower turn of the bilge was indicated, and without their approval we could not depart from that. All the principal plans approved by Mr. Curchin were always subject to Lloyd's approval; indeed, that has never been questioned. In regard to minor details which did not affect Lloyd's requirements, Mr. Curchin would take it upon himself to make alterations. Mr. Barber's tracing of the 20th November, 1918, showed the proposed alternative arrangement of longitudinal ceiling was marked in red by Mr. Curchin, "Ceiling edge bolted from lower turn of bilge to gunwale." The plan approved by Lloyd's contained a note to the same effect. Some time later plan 706 was sent to Melbourne by Kay, Macnicol, and Company, but was subsequently withdrawn on account of some difficulty the builders experienced with the fastenings in the clamps and ceilings. Plan 706A, which showed certain modifications in the fastenings of the clamps, was substituted. It was amended in red by Mr. Curchin and returned to Kay, Macnicol, and Company. The plan as submitted did not show edge-fastenings in the bilge ceiling, and I wrote a note on it—"Edge-fastenings to lower turn of bilge." From that instruction we have never departed. We returned 706A to the builders with our letter of 13th March, 1919, and asked for a copy to be forwarded to Melbourne, in order that we might send it to our inspector. Some time later, I think about the middle of April, Mr. J. Mayoh and Mr. Barber came to Melbourne to discuss the amendments. They did not discuss all of them. The interview with Mr. Curchin took place in my office, and I was present practically all the time. The question of edge-fastenings in the bilge ceiling was not mentioned. Certain alterations were made at the suggestion of Mr. Mayoh. By our amendment to plan 706A we had shown the edge-fastening of the 'tween deck clamps going right down through the waterways, deck beam, and four clamps. Mr. Mayoh explained the difficulty of putting in such a long bolt, and Mr. Curchin agreed that in lieu of the one through bolt two shorter bolts could be put in, one driven down from the top and another upwards from the bottom, so that the two would overlap. That alteration was made on our copy, and was initialed by me with these words, "K. M.'s proposal accepted, 14/4/19." No other portion of Kay, Macnicol, and Company's proposals were accepted. Mr. Mayoh made no protest against the Department's requirement that the scarf of the clamps should be edge-fastened. We intended that the plan should be adhered to in regard to the bolting of the scarfs, and I never heard that that requirement was questioned. The omission of the 6-inch by ⅞-inch outside straps was suggested by the builders, probably owing to the difficulty of getting steel, and also because of problems of workmanship. When diagonal ceiling was dispensed with we reverted to Lloyd's approved alternative, viz., horizontal ceiling, edge-fastened from the gunwale to the lower turn of the bilge. I consider that those fastenings were essential. The responsibility of obtaining Lloyd's approval after the plans had been amended rested with the contractors. Only in rare cases do the owners communicate with Lloyd's in regard to matters of construction. There was no responsibility on the Department to get Lloyd's approval, notwithstanding that the Government were making large advances to the contractors by way of progress payments. I had nothing to do with those advances. I suppose that if it were found later that the vessels had not been constructed according to Lloyd's requirements the Commonwealth would try to recover the money from the contractors. Mr. Brown, the inspector, was appointed to watch the Government interests on the boat, and we kept him fully supplied with information as to the requirements of the Department so far as we were able to do so. We sent him the specification and copies of plans received from the contractors. So far as I know he never received a copy of plan 706A as amended in red, but he probably had access to it at the builders' yard. I have never heard that it was available at the yard, but it should have been. I heard Mr. Arthur Mayoh say that he had not seen it. I do not think there was any negligence on the part of the Department in this matter. We were fairly busy with the steel ships, but we kept pressing the contractors for triplicate plans. I do not think that more than one application was made for an extra copy of 706A for the use of the inspector. In connexion with most shipbuilding contracts the inspector does not receive copies of all the working plans. It was not essential that Mr. Brown should be in possession of 706A as amended, because he could see it in the ship-yard office, although, no doubt, it would have been better for him to have had a copy of his own. If the inspector were to move about the job with all the working plans he would require somebody to carry them for him. I do not know of any information in the possession of Mr. Brown which would inform him that edge fastening should be put in the bilge ceiling. It was never reported to the Department that the edge fastening of the ceiling was impossible. In fact, I did not know about the fastenings being omitted from the two top strakes until about the 30th August last. Had we known that the contractors were unable to secure the ceiling with edge fastenings we would have gone into the question and insisted upon the adoption of some other means of giving longitudinal strength to the ship. Longitudinal ceiling fore and aft without edge fastenings or other stiffening weakens the ship. The insertion of wooden dowels in the ceilings does not compensate for the omission of edge fastenings; they will have a certain amount of value, but they are round and very small. It is not possible now to add compensating strength to the *Braeside,* except to the extent of retaining the vessel in her present condition by preventing the distortion from extending. But to the *Burnside* something might be done. The original proposal by Kay, Macnicol and Company was to put in a 2-inch ceiling, and Mr. Curchin's alternative was diagonal ceiling 2 inches double. The diagonal ceiling could not now be put over the other continuously from the bilge stringer to the gunwale. I am not prepared at the present time to suggest a means of strengthening the ship in order to compensate for the omission of edge fastenings until I have seen her in dock. If we attempted to put diagonal straps on the inside we might foul a lot of the bolts. The typical plan of the scarphs shows that some scarphs would be spaced over only two frames, but it is marked "Not to scale." The scarph is not drawn as specified, and it was intended to be a diagram only. Detailed plan 708, which should be the working plan, shows the scarphs spaced over three frames. That is not an approved plan; the Department has never had a copy of it. It was handed to Mr. Farquhar by Kidman and Mayoh to enable him to carry out his investigations. I do not think I can swear that we demanded that every scarf should be spaced over three frames. The specification merely mentions that the scarph has to be bolted "to each

frame," but does not mention the number of frames that it should cover. The inspector never reported that the scarphs were not being properly spaced over three frames. I dare say Mr. Curchin and Lloyd's surveyor had various opportunities of seeing how the clamps were being scarphed and fixed. Mr. Curchin was not on the ship every day, but, so far as we know, his inspector was there all the time. It would not be part of my duty when examining the plans submitted by the contractors to point out that they were unworkable in many respects. The contractors have never pointed out the impossibility of fastening the scarphs as shown by them on their plans. The specification shows that the scarphs are to be 6 feet long with a lock, and fastened with four 1-inch through bolts clenched. As I am not a practical shipwright, and have not studied the question, I do not care to express an opinion as to whether it was possible to through fasten the scarphs in that way. It was essential, according to the specification, that four bolts should be put in each of the scarphs. The absence of the vertical bolts in the scarphs might be compensated for by through bolts if there were enough of them. One clenched bolt is a better fastening than two dumps driven from opposite sides, as if the timber shrinks the scarphs comes apart on the bolt. The Department received no report condemnatory of the way in which the clamp scarphs were being put in.

487. *To Mr. Atkinson.*—I am quite certain that I am aware of all alterations to plan 706A that were made at the conference in Melbourne between Mr. Curchin, Mr. Mayoh, and Mr. Barber. The only alteration that Mr. Curchin agreed to make was in respect of the clamp through bolts, with the exception that a red mark on the builder's plan called for bolts which were not required was scored off with green pencil. Mr. Mayoh's statement that the alterations made at the conference meant a reversion to the original plan 706A is not correct. A ship built according to plan 706A marked in red would not be materially the same as a ship built to that plan without the alterations. No doubt the two clamp bolts make a good and efficient job, but they are not so good as the long through bolts originally called for in the altered plan, whilst, so far as I know, the unamended plan does not show the edge fastenings in the bilge ceiling. If the contractors have built to the original 706A instead of carrying out the alterations made by Mr. Curchin the ship is not as good a job at it should have been. Neither the *Braeside* nor the *Burnside* has been built in accordance with even the unaltered plan, because the edge fastenings have been omitted from both the bilge and side ceilings. I consider these omissions serious.

488. *To Mr. Mathews.*—Diagonal ceiling could have been fitted before the clamps were put on by holding the ship in shape with ribbons fitted outside and temporary ties across the ship. That, I think, is the only way in which the ship could have been properly built. The builders probably considered the matter when they made their proposal that the two top strakes of the ceiling should be horizontal, so that they could put the beams in place before proceeding with the ceiling. When they asked that diagonal ceiling should be dispensed with they wished to avoid the use of temporary ribbons and ties. Lloyd's first proposal was to fit diagonal metal straps outside the ship, but, because of the builders' inability to obtain the metal, we, at their request, dispensed with the straps and altered the ceiling to double diagonal. A certain plan was submitted to Lloyd's; when it came back it required complete edge fastening from the lower turn of the bilge to the gunwale. The original plan sent to Lloyd's provided for 4 inch ceiling at the bilge, and Lloyd's altered that to 5½ inches. The builders have provided no compensation for the omission of diagonal straps outside, diagonal ceiling inside, or edge fastenings, except that they have put some edge fastenings in the *Burnside*. That was the only endeavour made to put in what Lloyd's considered essential strength at that part.

489. *To Senator Newland.*—I cannot say without making calculations what would be the difference in strength between the original diagonal ceiling and the present longitudinal ceiling, but I think the diagonal ceiling would be stronger than the longitudinal even with its increased thickness of planking. I think Lloyd's idea was that if the diagonal ceiling proposed were adopted edge fastening would not be required. The diagonal ceiling would not have as great a tendency to move as would the longitudinal ceiling. The original bilge ceiling was longitudinal, and without edge fastening it would be liable to movement. I regard the red ink marks regarding edge fastenings as an important alteration. It is customary to indicate in that way alterations to plans submitted for approval. It is not necessary for the Department to have a clean copy of every plan. The plan marked in red would be sufficient for our office use. Although it might be preferable to have clean copies we did not ask for them in all cases. There is no doubt that if a working plan had been prepared in accordance with 706A as amended, Mr. Barber would have submitted it to the Department. No such plan was sent. It was not the duty of the departmental officer to see that a clean working copy was prepared; the making of the plans is the contractors' duty. It is not the inspector's duty to tell the contractors what plans they should prepare and submit. If I were a ship-builder I would resent any interference of the kind on the part of the inspector. It was the contractors' duty to supply the inspector with plans, but the Department might have insisted on the plans being sent. We asked again and again for some of the plans. The inspector had some of the main constructional plans, namely, sketch of bolt heads and washers, keel plan, arrangement of limber holes; sketch received from Kay, Macnicol and Company in regard to the substitution of ordinary ceiling for longitudinal sketch showing the position of hatches, &c.; sketch of limber holes, print of galvanized malleable iron washers, detail at upper deck side, solid bevel frames, 681A showing fastenings in anchor stock, 682 showing fastenings in scarf of floors, 672 showing arrangement of fastenings in outside planking, plan of standard ship washers, 715 showing longitudinal section, 716 showing profile at side and upper deck, rigging and sail plan, latest approved midship section, arrangement of forecastle, drawing 755 showing stern construction, sail plan, blue print of masts, and sketches showing alterations made in consequence of the machinery having been dispensed with. On the inspector's plan of 20th November, 1918, showing the substitution of ordinary ceiling for diagonal ceiling the note about edge fastenings in the bilge ceiling would appear. The edge fastenings were not previously provided for in the diagonal ceiling, but they were provided for in the longitudinal ceiling by the contractors' own note, "Proposed alternative arrangement of ceiling at side of vessels as approved by Lloyd's, London. See cable 25th July, 1918, and midship section drawing No. 193S, as amended by Lloyd's." That sketch shows edge fastenings in the 'tween deck and hold ceiling, and there is a note in red, "Ceiling edge bolted from lower turn of bilge to gunwale." It might have been better to have insisted upon the production of an additional plan showing the alterations in the bilge ceiling, but that was not absolutely necessary. The instructions about edge fastenings are shown very plainly both in print and in writing. Any conflict between the specifica-

tion and the plans would not justify the contractors in leaving out the edge fastenings, because Lloyd's approved plan should override the specification if the latter be read to mean that edge fastenings are omitted. I made no calculation of strength. Kay, Macnicol and Company prepared the design, and they were responsible for the strength.

490. *To Senator Foll.*—I was generally present at conferences between the contractors and the Chief Executive Officer, and the main portion of the discussion was with me. Probably the discussion would start in Mr. Curchin's office and then we would adjourn to my office and consider the plans. I think that was the procedure at the conference in April, or the parties may have come straight to my office from Mr. Curchin's office. Mr. Curchin usually told me of any alterations he made to plans, and as a rule he consulted me about them beforehand. I do not think he would make any alterations to the builder's plan without consulting the departmental plan. The alteration made with the green pencil was in respect of the modifications of the 'tween deck clamp bolts and the through fastenings in the anchor stocks, which had been marked in error and which I had not transferred to the departmental plan. Mr. Curchin was not in the habit of scoring things off a plan, and it was not the usual practice to mark out with green pencil alterations that had been called for, and to do nothing further. I have on no occasion given permission to any contractor to leave out anything which Lloyd's insisted upon. I would not do so, because Lloyd's have approved of the plan and it would not be businesslike to depart from an approved plan on which the classification of the ship depends. A shipbuilder would injure his reputation if he knowingly flouted Lloyd's, but he might discuss a question with them and induce them to accept his will. That is often done at the central office in London. Before the original plans were sent to London, I was shown sketches of a proposed barquentine, but I was not told at that time that it was to be built. When contractors make and submit plans to owners it is their duty to see that those plans are practicable. There is no responsibility of that kind on the owners; the builders would resent their interference. The builder deals directly with Lloyd's. If Lloyd's make alterations which are difficult to carry out, that builder must either refer the matter back to London or discuss it with the local surveyor.

(Taken at Sydney.)

MONDAY, 13TH DECEMBER, 1920.

Present:

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mathews.
Mr. Atkinson,	

(Mr. J. A. Boyd, representing Messers. Kidman and Mayoh. Mr. H. C. Brown, representing the Prime Minister's Department.)

Herbert Hewison, further examined.

491. *To the Chairman.*—In the presence of the Committee two previous witnesses (Clout and Woodward) to-day marked on the *Braeside* some of the dummy bolts which they declared they drove into the ceiling. I undertake that either I or Mr. Greenlees will conduct investigations in order to discover whether or not the evidence of those two witnesses is correct. While we were visiting the *Burnside* this morning I saw on the starboard side at the after end, at a height of about 15 ft. from the keel, a space where one defective plank has been removed, thus exposing the frames. I saw on about six frames that the through fastenings had been clenched on the inside of the frames. I think that is quite in order, but the plan we have shows fastenings right through the planking, frames, and ceiling. It would be impossible to test electrically fastenings which are clenched on the frames. The first structural alteration made on these vessels after the completion of the hulls was the addition of No. 4 hatch. On account of the vessels having been altered from barquentines to five-masted schooners there was a rearrangement of the hatchways. A plan was sent from Kay, Macnicol, and Company showing three hatchways of a certain length. A further hatchway was added by Mr. Curchin, but the other three were shortened so that the total length of the four hatchways was less than that of the original three. [*Plan 650 produced.*] The lengths of hatchways, as submitted to Lloyd's, were 24 ft., 24 ft., and 21 ft., making a total of 69 ft. Mr. Curchin shortened those three to 21 ft., 18 ft., and 18 ft. respectively, and added a further hatch of 9 ft. by 12 ft., making a total length of 66 ft. In view of the experience gained in these two ships, I, if designing a further vessel of the same type, would carry the hatch coaming as far fore and aft as practicable—if possible, from one end of the ship to the other. It would appear as if the shortness of the coamings on the vessels as built, tends to create a weakness. If the *Burnside* were handed over to me for completion, I would first of all communicate with Lloyd's, London, and ask them to get in touch with Mr. Curchin. One of the alterations I would suggest would be a fore and aft girder on the top deck and another on the underside of the deck. That would possibly mean cutting the diagonals at the masts, but I think we could compensate for that by putting in other pieces alongside. At the time when the second agreement was entered into, the *Braeside* was due for delivery within two months, but so far as I know, no request for an extension of time was made by the contractors, and no arrangement of that kind was made. I cannot say whether the Department expected that the *Braeside* would be completed within the contract time; the agreement is a matter of Ministerial policy. It would have been impossible to complete the ships within the stipulated time, but I cannot say that any undertaking was given that the Government would not enforce the penalty clause. The matter was not discussed between Mr. Curchin and myself. I believe Mr. Curchin did write later advising the contractors that the penalty clause was in operation. The hull specification, when first prepared, provided for Bollinder engines which would develop 240 b.h.p. when running at 240 revolutions per minute. I understand that later Mr. Watson required the installation of engines developing 320 b.h.p., in order to get a reduced number of revolutions. The 320 b.h.p. engines would be more expensive than the one first specified. On the face of it, it would seem that the substitution of a more expensive engine would give the contractors a claim for extra payment, but I do not know what governed the change. The engines and machinery came under the control of Mr. Watson, and were discussed between him and Mr. Curchin. In regard to the rigging blocks, from the date of sending in the specification as requested there was no delay as far as we were concerned. There certainly was delay before Mr. Curchin asked me to send a specification to the contractors, but I do not think the completion of the ship was retarded on account of the delay over the blocks, because the blocks have not been put in position yet. Kidman and Mayoh wrote to us on the 23rd January last, asking for a copy of the specification issued to Inglis, Smith and Company in connexion with the supply of blocks. On the 27th January Mr. Curchin forwarded a description of the

blocks. Detailed drawings were provided by the contractors. Mr. Mayoh brought blue prints of the blocks to Melbourne, and on the 12th February they were returned to his firm. We had had blocks made for our steel ships, and we thought it advisable to have the blocks for all ships being constructed for the Commonwealth standardized as far as possible. With that object in view we sent these specifications of typical blocks to Kidman and Mayoh. The specifications required that the blocks should be tested. I am not sure that there is a testing machine in Sydney, but I think there is one at the University, and probably at Cockatoo and Garden Islands. The Department never thought of insisting on them being tested by a particular firm in Melbourne, and there is no justification for Mr. Barber's statement to that effect. I have no personal knowledge that the blocks have been tested. I showed them to Captain Murchison on board the *Braeside* at the end of August, and he said they were fairly good blocks, although heavy. I do not think we had any correspondence with Burns, Philp about the Cochran boilers. If there was any complaint from that firm it would be dealt with by Mr. Watson. The boiler was to have been placed on the upper deck at the after end of the forecastle. The contractors pointed out that the boiler would stand a certain height above the deck and would interfere with the handling of the sails. It was then proposed to lower it into the 'tween deck, to cut one or two beams, and to put in a donkey house starting from the lower deck, and thus avoiding building a casing on the forecastle. That was done away with, however, when Burns, Philp and Company put in smaller boilers. The original specification provided for four winches, with cylinders of 7 inches diameter by 10 inches stroke. Later the number of winches was increased to six. The officials of the Commonwealth Shipping Line said that if the ships were to be taken over by them, they would require six winches, and Mr. Curchin, when dealing with the general arrangements submitted by the contractors said it would be better to make provision on the plan for two extra winches; that was done. Those two additional winches would have been paid for as an extra. I know the Ship Construction Department received from Burns, Philp and Company copies of the statements they had obtained in regard to dummy fastenings, but I do not know whether it was sent direct to the Prime Minister's Department or through Mr. Greenlees. At any rate, instructions were issued to Mr. Greenlees to test the through fastenings as far as possible. About 250 bolts were electrically tested, and the officers reported that, as a result of the investigations, they were satisfied that the work had been properly carried out. It was impossible for us to test the fastenings below the water line. It is quite possible that some of the fastenings on which they could not get an electrical contact were clenched on the inside of the frame instead of on the ceiling. I should say that a fastening clenched on the inside of a frame would not be as effective as one that passed right through the ship's side and was clenched on the ceiling. The plan does not show any bolts clenched on the frames.

492. *To Mr. Bamford.* — The laminations of the frames were supposed to be bolted together, in addition to the through bolts in the ceiling and planking.

493. *To the Chairman.*—A fastening through the planking and clenched on the inside of the frame would be effective provided that another through fastening were put from the ceiling. We did not discover until about a week ago that the edge-fastenings in the clamps and ceiling had not been put in, although I knew about the 30th August, when I visited the ship with Mr. Heron and Mr. Watson, that the two top strakes of the ceiling in the *Braeside* and the *Burnside* were not edge-fastened. At no time did Mr. Brown draw attention to the fact that the edge-fastenings had not been put in. Nor did the contractors report that, owing to the method of construction, they were unable to edge-fasten the ceiling. Mr. Brown had a tracing showing edge-fastening in the bilge ceiling. He had the approved plan which I produced on Saturday, on which was a note in red ink about the edge-fastening. On the 22nd November, 1918, we wrote to him, "We enclose copy of letter and sketch received from Kay, Macnicol, and Company, having reference to the substitution of ordinary ceiling for the diagonal ceiling specified." The most effective way of ascertaining the extent of the gravel discovered by Mr. Greenlees at the Kissing Point moorings would be to send an independent diver there to report.

494. *To Mr. Bamford.*—The ability of one inspector to supervise two ships under construction at the same time would depend upon the ability of the man. In the British ship-yard in which I was employed we had three steel ships being built for one company, and one inspector looking after the lot. They were to burn oil, and necessitated a great deal of attention. I should think that the *Braeside* could be qualified to obtain Lloyd's certificate, but only at considerable cost, and even then I would not guarantee that she would obtain a certificate. I would favour putting in two braced bulkheads, rather than solid ones.

495. *To Mr. Atkinson.*—I think the *Burnside* could be strengthened so as to get Lloyd's certificate, but I would recommend that Lloyd's be communicated with as to any alterations proposed. I have in mind a scheme for strengthening the *Burnside,* and I could make an estimate of the cost within a few days. She could be qualified for Lloyd's classification at much less cost than the *Braeside,* because she is better fastened and has better workmanship. The best we can do for the *Braeside* is to stiffen her at a cost estimated by Mr. Clark to amount to about £25,000, including docking fees and recaulking. So far as I can see, that stiffening represents all the additional work that would be necessary. Nothing like the same amount would be required to put the *Burnside* right.

496. *To Mr. Mathews.*—I accept Mr. Greenlees' evidence that it was not impossible to bolt the scarphs as required. I am informed that the blocks could be tested at Garden Island. The blocks for the whole of the twelve steel ships being built for the Commonwealth now were made and tested in Melbourne by Inglis, Smith and Company. The blocks on all the ships belonging to the Commonwealth Shipping Line are not necessarily of the same standard as those on the *Burnside* and *Braeside.* The idea was to standardize the blocks on all the ships that we are building now. I am not taking into account the other vessels operated by the Commonwealth Shipping Line.

497. *To Mr. Boyd* (*through the Chairman*).—I am sure that Inglis, Smith and Company test the blocks, because they bought a testing machine from Williams, of Brunswick; they do not send their work to Ruwolt Proprietary Limited. I suppose it would be the duty of Mr. Heron, as Lloyd's surveyor in Sydney, to examine all the material and workmanship during construction in order to comply with Lloyd's rules, section 35, relating to the submission of plans. That section reads:—

> The surveyors are to examine during the progress of the vessel the materials and workmanship from the laying of the keel to her completion, and point out as early as possible anything that may be objectionable or that is not in accordance with the rules or with the plans approved by the committee for the particular vessel.

I suppose Mr. Heron generally does point out anything that is objectionable and not in accordance with

Lloyd's rules. He did not draw attention to anything objectionable in the ceiling fastenings, but I understood him to say he had been told that the fastenings had been put in. I consider that the architect for the contractors has fulfilled the conditions as to the submission of plans set out in paragraph 2, page 9 of Lloyd's Rules and Regulations, 1917-18, in regard to the classification of steel vessels; I understand that he sent the plans to Lloyd's committee. I have no idea when Mr. Curchin decided to have the ships built in accordance with Lloyd's rules. The first I heard of it was when Mr. Carr, of the Wallace Power Boat Company, and Mr. Barber came to Melbourne and submitted the plan on the 22nd June, 1918. I believe it was originally proposed to build the ships to the classification of the British Corporation. I do not know whether the chief executive officer was aware of the delay that would be caused by building to Lloyd's classification. No strength calculations were made by the Department in connexion with these vessels. Such calculations would occupy considerable time. I could check Mr. Barber's calculations, but I would not like to do so, because I have been a month away from the office, and there is other work awaiting me. Before the contract was signed, Mr. Curchin was in possession of certain plans which I think were the same as those submitted to Lloyd's. The original contract was signed on the 6th July, and I think it was at the end of that month that Mr. Curchin decided to have a standard specification for all the wooden vessels. The specification for the Hughes, Martin, and Washington's contract had been already drawn, and it was thought advisable to keep the two specifications as much alike as possible compatible with the designs of the vessels. I personally prepared the modified specification. I cannot say whether the original specification which accompanied the offer to build six barquentines stipulated that the stewards' stores and other stores were to be supplied by the owners; I think it did. The inclusion of those items in the amended specification increased the cost to the contractors, but not considerably. I do not think it is the Department's fault that the contractors omitted from their original specification essential requirements which are enumerated in clauses 41 to 47 of the amended specification. Mr. Curchin would not have accepted the original specification. When a builder is estimating to produce a ship, his estimate includes the cost of those things which are necessary to make her seaworthy. Apart from the cargo gear, compasses, and opticians' stores, £200 would go a long way towards providing all the things enumerated in clauses 41 to 47. Expansion joints are fitted in long continuous deck-houses in order to prevent the vessel breaking when she is moving in a sea-way. I cannot say without making calculations whether a depth of 6 feet 6 inches of water on the way ends would be sufficient for the launching of a vessel which had a launching weight of 1,500 tons. In January, 1919, Mr. Mayoh brought to Melbourne a set of sketches and diagrams for the launching. I looked over them and found that the launching conditions as laid down appeared to be in order, and Mr. Mayoh was advised to that effect. I think the diagram showed a launching weight of 1,250 tons, and we estimated water over the end ways at 6 ft., together with a camber of 6 in. on the ways. I understand that the camber of the launching way was 3 in. I was present at launching of the *Mauretania*, but I cannot say whether the launching weight was 7,000 tons or that the depth of water on the end of the ways was only 7 ft. 6 in. I had other duties to perform at the time. The impetus of a boat as she went into the water would cause her to drop 4 ft. or 5 ft. after the cradle left the sliding ways; it is usual for the bow to drop. After the *Braeside* was launched I received particulars of the launching from either the contractors or Mr. Greenlees, but I did not prepare any diagram from those particulars in order to establish whether or not the ship could have been damaged during the operation. I have not taken the responsibility of passing and approving of designs and plans. I went through all plans submitted and made suggestions to Mr. Curchin. He saw all alterations that were made except, possibly, in minor details. The alterations I made to the plans were sometimes the outcome of discussions between us. He would express his view as to what should be done, and I would look into the plans and specification for other details and submit my suggestions for his approval. So far as I know, Mr. Heron did not send to the Department a copy of his report to London regarding the hogging of the *Braeside*. I cannot say whether Mr. Curchin and Mr. Heron jointly prepared the statement sent to the contractors when suggestions were made to stiffen the *Braeside*. Mr. Heron passed through Melbourne at about that time, when returning from a trip to Adelaide. Mr. Curchin's first cable to Lloyd's was sent on the 27th June, and the first specification, so far as I was concerned, was made in the following July. Mr. Barber saw me putting the finishing touches to it in a Sydney hotel. At that time I was aware that Mr. Curchin had sent a cable to London suggesting the fitting of diagonal ceiling, and clause 39 of the specification was drafted accordingly. Lloyd's reply dealt with edge fastening in the bilge ceiling of Kay, Macnicol and Company's original design, but at the end of the cablegram was the statement that Mr. Curchin's alternative proposal was approved and that the diagonal ceiling he proposed compensated for diagonal plates and ordinary ceiling The specification does not provide that the bilge ceiling shall be edge fastened. That provision was never intended to be put in, because the alteration to the specification deals with the diagonal ceiling only, and the other part is then referred back to Lloyd's original midship section, which states that the ceiling is to be edge fastened from the gunwale to the lower turn of the bilge. When the diagonal ceiling was dispensed with and a horizontal ceiling was substituted it was natural to revert to Lloyd's original plan. It is not usual or necessary for Lloyd's scantlings to be embodied in the specification. It is quite sufficient to have a clause at the beginning of the specification stating that the vessel is to be built in accordance with Lloyd's plan and requirements. The specification covers a lot of things besides the structure. This vessel was designed outside Lloyd's rules, in so far as it has laminated frames widely spaced and double bottoms, and there are necessarily a lot of things to be stated in the specification. I have made hundreds of specifications, and I know what they should contain. I heard the evidence of Mr. Joseph Mayoh as to the arrangement arrived at with Mr. Curchin to waive the alterations made in red ink on plan 706A. I say that arrangement was never made; the only alteration that we agreed to waive on that day was that in respect of the bolting of the 'tween deck clamps. I do not think the agreement mentioned by Mr. Mayoh could have been made in my absence. The *Burnside* has not yet been refused a certificate, and it would be only right to submit any proposed alterations to Lloyd's before coming to any decision. The *Burnside* has not been constructed to the approved plan and specification, and without edge fastenings she should not be launched. I would prefer outside diagonal straps rather than the addition of diagonal ceiling on top of the existing one. I cannot say whether she will hog when she is launched in her present condition.

498. *To Mr. Bamford.*—You ask me whether, instead of having a solid timber keel, $16\frac{3}{4}$ inches by $16\frac{3}{4}$ inches, a composite keel, consisting of two pieces of

timber each 18 inches by 9 inches with a 2-inch iron plate acetylene-welded at the joints sandwiched in between the timbers, would give greater longitudinal strength. Such an arrangement would certainly help to prevent hogging.

499. *To Senator Newland.*—The ceiling cannot be effectively edge-fastened now. All that can be done is to put in dumps on the skew. They would compensate to a certain extent for the omission of the edge bolts.

500. *To the Chairman.*—In addition to putting diagonal straps on the outside, I would also put some inside, if possible, from the gunwhale to the turn of the bilge, in order to have steel drawing on steel.

501. *To Mr. Mathews.*—I visited Kissing Point about three times between the letting of the contract and the launching. Mr. Curchin visited the ship-yard more frequently, but I do not think he would be there once a month. Sometimes he would be there twice in the same month; at other times an interval of two months would elapse between his visits. He generally took the opportunity of going to the yard whenever he was in Sydney. I do not know what Mr. Watson has done in regard to the appointment of a successor to the late Mr. Brown as inspector. He will probably give greater power to Mr. Greenlees. There is no inspector on the ship now.

(*Taken at Sydney.*)

TUESDAY, 14TH DECEMBER, 1920.

Present:

Mr. GREGORY (Chairman);

Senator Foll,	Mr. Bamford,
Senator Newland,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

(Mr. J. A. Boyd, representing Messrs. Kidman and Mayoh; Mr. H. C. Brown, representing the Prime Minister's Department).

(Copies of reports by consulting engineers to Burns, Philp and Company handed in by Mr. H. C. Brown).

502. *Mr. Boyd.*—In summing up the evidence for the contractors, I shall commence by quoting from a letter sent by Kidman and Mayoh to the Prime Minister's Department on the 13th October, 1920 (*Exhibit 7*), in which they asked to be relieved of the contract and to be paid some compensation for the work they had done:—

With reference to our contract with the Government for the building of wooden sailing vessels, as you are aware, a number of difficulties have arisen during the past few months which have placed us in a very difficult position.

. . . . . .

We have made a very genuine and whole-hearted effort to complete the work intrusted to us, but, unfortunately, we have met with unforeseen difficulties which have resulted in delays and large increased costs. From the beginning, considerable difficulty was experienced in obtaining the large timbers requisite for the building of these vessels. The forests throughout New South Wales were scoured, and even then sufficient could not be obtained to meet requirements. In addition to this, wages in all trades connected with the building of ships have advanced, and also the prices of all material required for ships have similarly increased.

. . . . . .

Another difficulty that has arisen is that, since the launching of the first vessel, a hog has developed, which, in all probability, would prevent us from obtaining Lloyd's certificate, and we, therefore, are forced into the position that we cannot comply with the requirements of the contract with the Government.

We had no previous experience in building or designing ships, but the best available assistance was engaged, and plans were prepared by us and approved by Lloyd's, London, and your Mr. Curchin, and to these plans we have built the vessels. Lloyd's committee of experts and your own expert having passed the plans, we always thought the vessels would be suitable for a Lloyd's certificate or registration.

We have made a list from *Lloyd's Registry of Shipping*, and we find that there are not 10 per cent. of sailing vessels which have Lloyd's certificate, and the 90 per cent. are carrying cargoes safely to-day, and are insured in other companies other than Lloyd's.

. . . . . .

In view of all the circumstances, it is desired that the Government would consider some means of relieving us of our contract and considering the question of allowing us some compensation for the work and the time which has been expended in a genuine and conscientious effort to meet the country's needs in a time of great distress.

If the Commonwealth Government took over the work it might reasonably be assumed that they could complete the vessels to their own satisfaction and obviate the necessity for protracted delays which must occur to secure a settlement of the many points at present in dispute. Some of these would mean submission to arbitration, and, possibly, litigation.

Further than this, the fact of the Government having sold the vessels to Burns, Philp and Company has brought about a complication for which we are in no way responsible, but are, as a result, greatly inconvenienced and put to a heavy expense.

Finally, it is suggested for consideration that, if the Government can see its way clear to relieve us of our contract, we would urge that the matter be referred to the Parliamentary Public Works Committee, with a view to their making a report on the whole position and considering the question of the amount of compensation which might be allowed us.

If the Government can see its way clear to meet our request, we hereby undertake to abide by the decision of the Public Works Committee, whatever it may be.

Other reasons why we ask that the vessels be taken over are as follows:—

(1) We feel it is impossible to satisfy the Ship Construction Branch.

(2) Owing to the complications with Burns, Philp, and Company and the necessity for making them pay for work done on ships they do not own involving us in a law suit.

(3) Owing to loss of confidence by the Shipbuilding Department in our ability to launch the second ship.

(4) The Government could make alterations to suit themselves. The Executive Officer would, no doubt, be satisfied with less alterations if the Commonwealth were the paymasters instead of ourselves.

(5) The Government having a dry dock at their command can make any alterations they decide upon at a cheaper rate than we could.

(6) When the Committee come to determine the question as to whether they should relieve us of our contract, if they have any doubt as to the completion of the work, we are prepared to place either the whole of our staff or any portion of it that they desire, at their disposal, for the completion of the work. Mr. Joseph Mayoh is personally prepared to give his services without cost to the Government to assist them to bring the work to fruition.

(7) We suggest that the second ship should be launched, and afterwards taken to Cockatoo Dock, and there completed by the Government staff. The masts and other materials which are all ready for the ship could be sent to Cockatoo. The shipbuilding works would then be dismantled and sold up, and the money received by the Government.

(8) Because the Government have a Shipbuilding Department which can run these ships.

(9) The Government has its own Insurance Department, and, we believe, carries its own insurances.

(10) They can fully employ the ships to carry wheat or wool to England, or copra from German New Guinea and Rabaul.

(11) They can make them pay and earn a good profit for the next three years, and afterwards, if they have no use for them, they can sell them.

(12) They can carry about 3,000 tons of wool or 2,730 tons of wheat to England.

Negotiations for the construction of wooden ships in Australia began early in 1918, as the result of the enormous losses of shipping the Allies had sustained through the submarine warfare in the North Sea and surrounding waters. At this time, so serious was the shipping position, that it looked as if, had the destruction gone on, the British Empire would have gone down in the gulf. At this time also, the situation in France was at its worst, for the Germans were driving our armies back and threatened to cut the Allied line at Amiens. At this period the British Government asked the Dominion Governments what aid they could give towards the relief of the situation by the construction of ships of steel, iron, wood, or concrete. The Prime Minister of Australia laid down a policy for the construction of wooden or steel ships, and asked the people to help the Empire by building as many as possible in the shortest possible time. Specifications were drawn up, and tenders were invited from firms willing to help. The Government set the pace by starting the extensive building of steel ships. Every State came to the aid of the Government, and tenders were let in each State. In Sydney, Messrs. Kidman and Mayoh agreed to construct six ships for the Government; they were not shipbuilders, they never professed to be, but they felt it a duty to their country to do what lay in their power to help it in its hour of need. Designs were drawn and plans prepared by competent naval architects who had full knowledge of Lloyd's rules for the construction of wooden ships. These were handed to the Prime Minister, who held them until the arrival of the Chief Executive Officer. Subsequently, the Chief Executive Officer decided that the vessels should be built to Lloyd's rules. The builders signed the contract, subject to the approval in all details of the Chief Executive Officer. Later, the Chief Executive Officer modified the specifications and plans, calling for considerable alterations. The contracts entered into by the different firms contained a clause that the ships were to be built to Lloyd's highest class, and to the satisfaction of the Chief Executive Officer, which clause, obviously, was to protect the Government against any shoddy work or sharp practice on the part of the contractors. It was never meant to be other than a protective measure for insuring efficiency in construction. It was not intended as an engine of destruction for the builders. At this stage I desire to quote from one of the latest publications on wooden ship construction in America, *How Wooden Ships are Built,* by H. Cole Estep, published in 1918:—

> With America's entry into the War the tonnage requirements of the Entente Allies were tremendously increased. It soon became evident that the United States would be called upon to construct an enormous Armada of steel cargo carriers, and, in addition, as many wooden vessels as could possibly be turned out. Subsequent events, up to the spring of 1918, have served only to emphasize the problem. The universal cry is ships, ships, and yet more ships. The necessity under these conditions for a large fleet of wooden vessels is no longer disputed, and wooden shipbuilding flourishes all round our far-flung coast line from Maine to Washington. This revival of the trade of wooden shipbuilding has brought with it an insistent demand for information on how wooden ships are built.
>
> Compared with the needs of to-day, the number of expert wooden ship builders in the United States at the outbreak of our war with Germany constituted scarcely more than a corporal's guard. Thousands of new men have been induced into the business. These men must be trained. They must be taught to "know how."

In the first chapter, Mr. Estep says, "Wooden shipbuilding was a lost art which the gods of war decreed must be revived." Those remarks apply with greater and stronger force to conditions in Australia. It must be borne in mind that the art of wooden ship building had been lost in British communities. Neither the contractors, the Government shipbuilding officials, nor Lloyd's surveyor had every had anything to do with the construction of wooden craft of any size. The work was carried out by Australian workmen, as shown in the evidence, to the best of their ability, and, I think the Committee will agree, they made a faithful effort to make a good job of the work upon which they were engaged. Mr. Brown, the Government inspector, in the course of his evidence said—

> I think the contractors have done a very good job. Occasionally I have had to call attention to minor defects and they have always been put right. There was nothing wrong with the big things . . . I believe that in every instance an effort was made to make fastenings perfect. . . . I do not think there was any attempt on the part of the contractors to deceive me or to slum the work in regard to fastenings which were of vital importance. On one occasion I drew the attention of Mr. Heron to some bolts in the lodging knees of the *Burnside* that were not to my satisfaction, but Mr. Heron agreed that the defect was unavoidable.

And at page 375—

> The workmanship was all right. Local shipbuilders have told me that the workmanship was good, and that many times they had seen worse in their own yards."

The foreman for Kidman and Mayoh, Mr. Barr said—

> I was never told at any time to try to save money for the contractors. It was not beneficial to me in any way to do so. None of the employees on the job had any interest in scamping the work, and, so far as I know, none of the work has been scamped.

Mr. Heron said, in answer to Senator Foll—

> Q. Generally speaking, have the vessels been built to your approval?—A. Generally speaking, with some exceptions, such as the edge fastenings.

I think that the evidence shows that an honest attempt was made by the contractors to put all their knowledge and competent workmanship into the job they had undertaken to do for the Government. Barr, Sellars, Williamson, Young, Brown, May, Sinclair, Cook, and MacDougall said in evidence that they had instructions from the firm to do good and honest work. All of them say that they received no instructions or inducements to do slumming or shoddy work. Every witness called on behalf of Burns, Philp and Company said that the contractors were not aware of their defective workmanship, and had never instructed them to do any improper work; anything of the kind they did was done on their own responsibility. Here was a new problem in which everybody connected with the

enterprise was experimenting. There was little or no efficient labour to carry on the work, and that necessitated the institution of a scheme of diluted labour. Bridge carpenters had to do the work of shipwrights, and other untrained labour had to be employed under more or less skilled supervisors to produce the vessels which were so badly wanted. With the conditions operating it is simply marvellous that such a good job as the *Braeside* and *Burnside* has been turned out, and it would be incredible to think that perfection could have been expected taking all the factors into consideration. That the *Burnside* is a better ship than the *Braeside* is only the natural result of lessons learned during the building of the first ship. It has amply been shown in evidence that unavoidable delays have resulted from many causes. Amongst them were the difficulties in getting the large sections of timber required, including the very special natural grown bent timbers, the procuring of the masts from America, the alterations in connexion with the change in rig, procuring machinery, winches, boilers, &c. Further, the introduction of Burns, Philp and Company on the scene as purchasers, and the alterations required by them to so many things all contributed to the prolongation of the completion of the vessel. In regard to edge fastenings, we claim that they were never specified to be put in the bilge ceiling, and we say further that if we had known that Mr. Curchin required these fastenings in the bilge ceiling, and insisted on them being put in, we would not have taken the responsibility of evading his wishes in this matter. No complaint in regard to the failure on our part to put in these fastenings was made during the construction of the vessels, and Mr. Heron's statement that he thought they were in, shows a very superficial inspection on his part, considering the fact that it took several weeks to build in the bilge ceiling. Our practical shipwrights assure us, however, that it would have been impossible to have put them in, even had Mr. Curchin or Mr. Heron insisted. We claim that, as far as the peculiar construction of the ship permitted, we put the fastenings in where possible in the hold and 'tween deck ceiling. In launching we took all the precaution possible for the protection of all interests concerned to effect a safe launch, and for this purpose we asked the Cockatoo Dockyard to supply an expert. Mr. Ellery came, and his evidence given before the Committee was that he considered the launching successful. The damage to the forefoot was admitted by all witnesses to be of no consequence. The value of the sensational evidence submitted by Burns, Philp and Company's witnesses regarding the rigging was seen by the Committee yesterday on their visit to the *Braeside,* and I think nothing further need be said on that score. I venture to suggest here that had the *Braeside* not developed a hog after launching she would have been pointed to by all those interested in her construction as a triumph of Australian workmanship. No one can say positively exactly what caused the hog, and no one will undertake the responsibility of saying what should be done to the *Burnside* to insure that she will not hog when launched. The furthest they will go is to say that this longitudinal beam, or this extra keelson, or that stiffening might help to prevent or minimize it, but no one will guarantee that if all these things are done before she is launched she will not hog. No one is positive about the flexibility of Australian hardwood timber or what effect the weight of the unsupported ends in the water has in helping the hog, or what buoyancy is given to the midship section by the flat bottom. Evidence has been given to show that, had the dead rise of the bottom from the keel to the bilge stringer been greater, and the bottom less flat, the tendency to hog would not have been so great, but the design of the bottom had been accepted by the Government and by Lloyd's, and no responsibility can be placed upon the shoulders of the contractors on that score. Mr. Shepherd, secretary to the Prime Minister's Department, said in his evidence—

> There is a good deal of difference of opinion as to where the responsibility lies if the plans are defective. . . . The plans were submitted to experts who were supposed to be capable of dealing with them. They varied, amended, and approved of them, and I have always contended that we cannot entirely absolve ourselves of the responsibility. . . . I cannot see how we can escape all the responsibility. His (Mr. Curchin's) action in connexion with the plan connotes some responsibility. The contract gave the chief executive officer unlimited power. I have remarked once or twice that, if Mr. Curchin had told Kidman and Mayoh that they must put gold knobs on the doors, they would have had to do it.
>
> *To Senator Foll.*—. . . . Personally, I do not see how we can absolve ourselves of all responsibility; we are under a certain moral obligation, although, by a strict interpretation of the contract, we have no responsibility.

Mr. Ellery said in answer to Mr. Mathews—

> I have seen some wooden ships in dock which were 250 feet long; many of them were hogged. It is usual to find more or less hogging in every wooden ship whether made of softwood or hardwood. . . . Some provision is made in all wooden ships to prevent hogging, but, in spite of experience they still hog. . . . I have never heard of hogging affecting the insurance rate or causing men to refuse to go to sea in a ship.

Captain John Pertz, master of the barquentine *Forest Pride,* said in evidence—

> I have seen a good many wooden ships launched, and I have never known one that would not hog more or less. I would not consider a ship unseaworthy because she had a hog. There is no danger to life in sailing in a hogged ship. . . . I have seen ships with 2 feet of hog, and that did not affect their seaworthiness in any way.

Captain W. J. Macleod said—

> I have heard the evidence given by Captain Pertz, and I agree with it.

Much of the trouble that has arisen has been caused by the signing of the armistice, and the consequent alteration of the outlook upon affairs developing under peace conditions, as opposed to the war conditions prevailing when the contract was let. When Messrs. Burns, Philp and Company bought the ships, no doubt they thought they had a good bargain, and had the war continued they would never have raised a finger against taking over the vessels; in fact, they would would have been only too anxious to get possession of them, but, with the fall in the value of ships and the consequent decline in freight rates, this firm began to look upon the purchase as not quite so good as it was before the fall began, and they looked around for means of getting rid of what was appearing to them to be a bad bargain. The means they adopted to this end are hardly what would be expected from any firm that had a sense of decency. Most of the sensational matter in this inquiry has been produced by irresponsible witnesses whose statements have not borne the

flood of light let in upon them. There was the statement by Captain Murchison that he left the job because he refused to work for a gang of crooks. Fraud was alleged in connexion with the job. Every one of Burns, Philp and Company's sensation mongers, when giving evidence on oath, wished to alter the statements they had made in writing, but the damage done to the reputation of an honest firm had been done through the scare headlines in the press, and for that Kidman and Mayoh can get no redress. Captain Murchison, speaking purely on the basis of statements by men who changed their opinion when under cross-examination, went so far as to say that, if what he had heard was true, he was working for a gang of crooks. I leave it for the Committee to say, after sifting the evidence, who, and where, are the gang of crooks. We had certain rights of arbitration under our contract, and sought to put them into effect, but we were asked by the Government to submit our case to this Committee. We did so, believing that we would get a fair deal from unbiased and impartial men. In asking the Committee to take the contract for these two ships off our hands, we also ask that the Government shall recoup us for all the expenditure incurred from its inception. In other words, we ask the Government to stand in our shoes as if we had been a Government Department, and to give us some compensation for the time and capital we have employed. We will undertake, if the Committee should decide to relieve us of the contract, to finish the work under the supervision of the Department, if the Government so desire, or to step out and leave the Government officers to take over our staff, or Mr. Joseph Mayoh will help with his personal services free of cost until the vessels are completed. In conclusion, I call the attention of the Committee to an answer given by the then Acting Minister for the Navy (Mr. Poynton) to a question by Mr. Mahony in the House of Representatives in the 11th July, 1919—

CONSTRUCTION OF WOODEN SHIPS.

Mr. MAHONY asked the Acting Minister for the Navy, *upon notice*—

1. Have any of the contracts for the building of wooden ships in Australia been cancelled?
2. If so, who are the firms whose contracts have been cancelled?
3. What is the full amount of money paid to each of such firms for—(*a*) Compensation; (*b*) Material, or any other reason?

Mr. POYNTON.—The answers to the honorable member's questions are as follows:—

1. Yes.
2. Wallace Power Boat Company's contract for six ships; Hughes, Martin, and Washington's contract for six ships; Kidman and Mayoh's contract for six ships has been varied by the cancellation of four ships.
3. Wallace Power Boat Company were paid one sum of £55,000; Hughes, Martin, and Washington were paid one sum of £72,500; Kidman and Mayoh will be paid at the rate of £5 per ton deadweight capacity of the four ships, which will amount to, approximately, £52,000. The reasons for cancellation and payments were that the Government considered it sound policy, after the conclusion of the war, not to complete the contracts for wooden ships; and the payments made included progress payments and covered contractors' liabilities. as well as some measure of compensation. Advice has been received from the Commissioner for Australia in the United States, indicating that contracts for building 385 wooden vessels were cancelled by the American Government, at an average cost of £13 5s. 4d. per ton, or a total cost of £14,942,877; and that they further cancelled the building of fifty-two ships, at a cost rather more than that involved in the cancellation of the 385 ships. This included 342 vessels, the construction of which had not commenced, and 94 vessels in various stages of construction—mostly under 50 per cent. completed.

It will be seen that the Government have made a very successful deal in cancelling the whole of these contracts for a payment not exceeding £5 per ton. Mr. Shepherd said in his evidence, in reference to the cancellation of the Hughes, Martin and Washington contract—

> It was also arranged that the company's profits on the clean up were to be limited to £10,000, and of all profits in excess of that amount the Commonwealth was to receive 50 per cent., provided that in no circumstances should the total profits of the Company exceed £15,000. The Department allowed that profit, notwithstanding the unsatisfactory state of the contract.

We ask that the Committee will not regard this contract merely as one entered into in cold blood in normal times of peace, but will give consideration to the fact that the Commonwealth has paid large sums in connexion with the cancellation of other contracts for which the State has obtained nothing, and that whilst doing justice between the Commonwealth and the contractors, the Committee will allow a little give and take, and extend sympathy to the honest endeavour that was made with the knowledge in the possession of the contractors and the Government officials to come to the aid of the country in a time of dire distress.

503. *Mr. Brown.*—Mr. Boyd has stated that the contractors have made a genuine effort to complete their contract. That, I think, may safely be left to the Committee to decide. In his statement that if the war had continued, Burns, Philp, and Company would not have been anxious to be relieved of their contract, Mr. Boyd was somewhat misleading. Messrs. Burns, Philp, and Company did not come into the matter at all until after the war was over. They specifically stipulated that the ships must have Lloyd's certificate, and, in the circumstances, they possibly have some ground for asking to be relieved of their contract to purchase. I make that statement in justice to them and to the Department. Messrs. Kidman and Mayoh had the same opportunity of being relieved of their contract as had the other contractors who were building wooden vessels for the Commonwealth. They would not agree to the cancellation of the whole of their contract, but insisted upon being allowed to complete two of the vessels, with the construction of which they had already made a certain amount of progress. In adopting that attitude they were, I believe, animated by the desire to show the Government and the people of Australia what they could do in shipbuilding, for I think they hoped to satisfactorily complete the work. We know, however, that they failed to carry out their contract and that they were unable to get Lloyd's certificate. That is unfortunate for them and the Commonwealth, but I think I am right in saying that the responsibility rests upon them and not upon the Department. Had they accepted the opportunity of cancelling the whole of the contract for the six vessels, the Government would probably have been saved the considerable expenditure which has since been incurred, and the contractors themselves would have been spared the worry and anxiety they have experienced during the last twelve months. Unfortunately, in their desire to prove that they could build ships, they insisted upon completing two of the vessels, and it is only reasonable that they should now accept responsibility for their action.

504. *Mr. Boyd.*—Mr. Shepherd takes a different view.

505. *Mr. Brown.*—I am stating the facts as I know them. The agreement provides that the vessels shall be built to Lloyd's requirements. Lloyd's approved of certain plans which have been departed from. The contractors state that important fastenings specified by

Lloyd's cannot be put into the vessels. As to the practicability of those fastenings, I leave the Committee to form their own conclusions, but I say that if the contractors were unable to put in the fastenings they had no right to proceed with the construction of the ships without informing Lloyd's and the Ship Construction Branch of their difficulties, and giving those authorities an opportunity of either showing how they could be put in or providing compensating strength. Another point I would like to stress has regard to the contractors' statement that Mr. Curchin verbally approved of the elimination from plan 706A of some very important requirements specified by Lloyd's. I contend that Mr. Curchin made no such arrangement; it is inconceivable that he would agree to the omission of fastenings which were specified in order to compensate for the variation from diagonal to longitudinal ceiling. Furthermore, a man occupying Mr. Curchin's position would not be likely to risk his reputation by altering conditions specified by Lloyd's. With regard to the allegation that the supervision of the vessels was somewhat lax, I wish the Committee to clearly understand that at the inception of the contract two inspectors were appointed. Both these men were constantly on the job until the whole of the material, principally timber, had been supplied; all that timber was examined in order to insure that it was suitable for the purpose for which it was required. After that portion of the materials had been supplied, one of the inspectors was dispensed with, and for a period the Department had only one man at the shipyard. Later, however, when the caulking of the vessels was commenced assistance was provided for Mr. Brown by the appointment of a temporary inspector to help in supervising the caulking. When the caulking was finished the assistance of the inspector was withdrawn, and for another short period Mr. Brown was alone on the job. Subsequently, Mr. Greenlees was appointed to do certain inspectional work. I would like to impress upon the Committee that the Department are under no obligation to the contractors to provide one or more inspectors; we have every right to assume that the contractors will carry out the job in accordance with the plan approved by Lloyd's and the Department. They have no right to claim any consideration on account of anything that may not have been noticed by our inspectors during construction. It was the contractors' duty to see that the ships were faithfully built. I leave the Committee to judge as to the accuracy of the statement that if the contractors had known that Mr. Curchin desired the edge fastenings to be put in they would have supplied them. You have seen plan 706A as amended by Mr. Curchin in red ink, and it agrees with Lloyd's plan and cable. Finally, I claim that the Government and the Ship Construction Branch have afforded the contractors every reasonable assistance. In the early stages of the contract we sent innumerable cables to London in order to get information for the contractors, which ordinarily would have been their own responsibility or that of their naval architect. Later, when they experienced considerable difficulty in obtaining the engines specified, the Government again came to their assistance by ordering the machinery through the British Admiralty. When it was decided to omit the engines the Government took the whole of the responsibility and relieved the contractors of any risk. The Department also lent to the contractors launching ways for a nominal charge of £100. If the contractors had had to buy those ways the cost to them would have been about £1,000. I mention these facts in order to show that the Government have given the contractors every reasonable assistance and have endeavoured to save them unnecessary expense. The position as it exists to-day is unfortunate, but the contractors must, under the agreement, accept their responsibility.

(Taken at Melbourne).

MONDAY, 20TH DECEMBER, 1920.

Present:.

Mr. GREGORY, Chairman;

Senator Foll,	Mr. Bamford,
Senator Plain,	Mr. Mathews,
Mr. Atkinson,	Mr. Parker Moloney.

Kenneth Watson, Acting Chief Executive Officer, Commonwealth Construction Branch, recalled and further examined.

506. *To the Chairman.*—In order to illustrate the efficacy of edge fastenings I produce two 4-feet models of the hold ceiling and frames made on a scale of ½ inch to the foot. One is edge fastened as required by the plans, and the other is without edge fastenings. By supporting the two models at the ends and applying pressure in the centre it is found that the one without the edge fastening bends considerably, whilst the other is almost rigid. That is demonstrated more precisely by suspending from the centre of the model a 6 lb. weight. We find that the unfastened ceiling is depressed ⅝ inch, and the ceiling which has been edged bolted only ⅛ inch. The unfastened ceiling also gives visible evidence of the planks sliding on each other. I take this opportunity of amending a portion of my earlier evidence. I said that, to the best of my belief, the work on the ships had been faithfully carried out. In view of what we discovered on the ships, between 28th November and 30th November in regard to the omission of edge fastenings from the ceiling and clamps, I wish to withdraw that statement.

507. *To Mr. Mathews.*—When I said that the omission of the edge fastenings would have a slight contributory effect on the hogging, I was referring only to the two top strakes of the ceiling under the clamps. I think that Mr. Curchin knew that those fastenings had been left out; I knew very early in the chapter. Now that we find that 70 per cent. to 80 per cent. of the edge fastenings have been omitted, the influence towards hogging is proportionately increased.

508. *To Senator Foll.*—I suggested to Mr. Heron the insertion of square dowels in the seams of the ceiling in order to prevent the planks working on each other, but the most effective check is the edge fastening. The dowel is the best we can do now. If the timber shrank, the value of the dowel would be reduced, because it would then have a tendency to roll over with the movement of the plank.

509. *To Mr. Atkinson.*—It is impossible to make the *Braeside* seaworthy at a reasonable cost. The scheme of stiffening which the Department put forward would cost about £25,000, and I think would be effective, but I do not consider that cost reasonable. On account of the discoveries we have made recently it might be desirable to put in additional diagonal iron straps outside, but I would like to defer any recommendation until I have seen the *Braeside* in dock. Additional stiffening will be required in both ships. It is not practicable to make the *Braeside* seaworthy, although I do not say it is impossible to do so. The condition of the *Burnside* is different; any additional work on her can be done on the stocks, and that will be more convenient. Furthermore, she has not been strained. But the cost of putting her right would be much greater than I anticipated previously when I said that a little extra stiffening might be desirable. I should like to discuss with Mr. Farquhar the possibility of stripping off the inner ceiling and putting it in again with edge fastenings, and also, perhaps, an additional longitudinal member

on the upper deck. If we do not strip the inner ceiling and edge fasten it we shall have to put in considerable diagonal stiffening. Whether it should be in the form of struts inside, between the clamps and the bilge stringer, or straps outside I do not care to say. That stiffening and the additional member on the top deck will involve a good deal of expense.

510. *To Mr. Mathews.*—If the outside planks were forcibly bent into position they would have a tendency to spring back to their original form, but if the ship was properly stiffened it should be able to withstand that tendency.

511. *To Mr. Bamford.*—My experience has been principally with iron ships. I have never seen an iron vessel of the same length as the *Braeside* built without bulkheads. The insertion of bulkheads would have a beneficial effect, but they would not keep the *Braeside* in position if she were let down on an even keel. With the engines amidships there should be four bulkheads in an iron ship 250 feet long, but there are some boats on the Great Lakes of Canada which have the engines aft and only three bulkheads.

512. *To Mr. Parker Moloney.*—I still think that the *Burnside* will require additional stiffening, but, in addition, we will have to compensate for the omission of edge fastenings. Timber diagonals might be put inside, but if on the outside they would have to be of iron. My opinion in regard to both ships has been altered on account of the absence of edge fastenings, although the omissions from the *Burnside* are not so numerous as those from the *Braeside*. As the *Burnside* has not been launched, she might be stiffened in such a way as to prevent straining, but the *Braeside* is strained through having been launched and floated in a weak condition.

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