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PARLIAMENTARY JOINT COMMITTEE OF PUBLIC ACCOUNTS.

P A P E R

For Presentation to the

S E N A T E.

R E P O R T

O N

COMMONWEALTH SHIPBUILDING.

1920.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.

REPORT

FROM THE

JOINT COMMITTEE OF PUBLIC ACCOUNTS

UPON

COMMONWEALTH SHIPBUILDING.

MEMBERS OF THE COMMONWEALTH PARLIAMENTARY JOINT COMMITTEE OF PUBLIC ACCOUNTS.

(Third Committee.)

Honorable JAMES MACKINNON FOWLER, M.P., Chairman.
JAMES EDWARD FRITON, Esquire, M.P., Vice-Chairman.

Senate.

*Senator Thomas William Crawford,
*Senator the Honorable John Earle,
†Senator Allan McDougall,
†Senator Lt.-Col. William Kinney Bolton, C.B.E.,
V.D.,
†Senator Richard Buzacott,
†Senator John Dunlop Millen.

House of Representatives.

James Garfield Bayley, Esquire, M.P.,
William Montgomerie Fleming, Esquire, M.P.,
John Henry Frowse, Esquire, M.P.,
John Edward West, Esquire, M.P.,
Matthew Charlton, Esquire, M.P.

* Resigned 28th July, 1920. † Retired 26th June, 1920. ‡ Appointed 23rd July, 1920. § Appointed 1st July, 1920.

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PROCEEDINGS OF THE COMMITTEE.

The Inquiry into Commonwealth Shipbuilding was commenced on 24th May and terminated on 6th October, 1920.

In the course of the inquiry the Committee visited the Commonwealth Dockyards at Williamstown and Cockatoo Island; the New South Wales Government Engineering and Shipbuilding Establishments at Walsh Island; Walkers Limited, Maryborough; Poole and Steele, Osborne, South Australia; Kidman and Mayoh, Parramatta; and the Engineering Works of Thompson & Co. Pty. Ltd., Castlemaine.

Altogether 32 meetings have been held, and the following witnesses examined:—

Abell, Alexander	Costing Accountant, Walkers Ltd., Maryborough, Qld.
Baillie, Archibald Mitchell	Late Director of Shipbuilding, Walsh Island, Newcastle.
Brodie, Malcolm McCaw	Partner, John Sanderson and Co., Shipping Agents, Melbourne.
Brown, Herbert Charles	Chief Clerk and Accountant, Prime Minister's Department.
Clark, James William	Acting General Manager, Commonwealth Naval Dockyard, Sydney.
Connington, Hon. Michael Joseph, M.L.C.	Chairman, Federal Shipbuilding Tribunal, Sydney.
Curchin, Henry Wallace	Chief Executive Officer, Commonwealth Ship Construction Branch, Melbourne.
Cutler, Arthur Edward	General Manager, N.S.W. Government Dockyard, Walsh Island.
Dam, William Faldmar	General Manager, Thompson and Co. Pty. Ltd., Castlemaine.
Delprat, Guillaume Daniel	General Manager, Broken Hill Pty. Co. Ltd.
Duddy, William Charles	Ironworker's Assistant, Williamstown Dockyard.
Duggan, William Joseph	Representative of Employees on Shipbuilding Tribunal.
Eva, Ernest Arthur	Manager for Commonwealth Government Line of Steamers.
Farguhar, Robert, M.I.N.A.	General Manager, Walkers Ltd., Maryborough, Qld.
Flahman, Horace West	Secretary, Government Dockyard, Newcastle.
Fullarton, Claude	Storekeeper, Williamstown Dockyard.
Geddes, John	Member Sydney Branch Federated Society of Boilermakers and Iron Ship Builders of Australia.
Hardman, Frank Edward	Accountant and Paymaster, Kidman and Mayoh, 250 O'Connell-street, Sydney.
Harrap, George Arthur Miller	Secretary, Walkers Ltd., Maryborough, Qld.
Jack, Harry Parry	Commonwealth Shipbuilding Inspector at Poole and Steele, Adelaide.
James, Charles Edward	Secretary to Shipbuilding Tribunal, Prime Minister's Department.
Laves, George Frederick Wickham	Store Officer, Commonwealth Naval Dockyard, Sydney.
Mitchell, George William	Accountant, Commonwealth Naval Dockyard, Sydney.
Moxon, William Ernest	Representative, Australian Steamship Owners Federation.
Mundie, Thomas McDougall	Electrical Engineer, Commonwealth Naval Dockyard, Sydney.
McGibbon, Alexander	Accountant, Thompson and Co. Pty. Ltd., Castlemaine.
Neville, Hubert Marshall	Accountant, Williamstown Dockyard.
Nicholas, Francis Robert	Assistant General Manager, Williamstown Dockyard.
Pattinson, Samuel Gilbert	Commonwealth Inspector of Ship Construction, Walsh Island.
Pickering, David	General Manager, Williamstown Dockyard.
Poole, Arthur Hugh, jun.	Deputy General Manager, Poole and Steele, Adelaide.
Read, Walter Dyke	Cost Accountant, Commonwealth Ship Construction Branch, Prime Minister's Department.
Roberts, George Ernest	Ironworker's Assistant, Williamstown Dockyard.
Sinclair, Gilbert Jennison	Secretary, Sydney Branch Federated Society of Boilermakers and Iron Ship Builders, Sydney.
Stokes, Eric Gray	Commonwealth Government Representative on Shipbuilding Tribunal.
Watson, Kenneth	Acting Chief Executive Officer and Chief Engineer, Commonwealth Ship Construction Branch.
Warne, Henry William	Assistant Accountant, Government Dockyard, Walsh Island.
Young, James Cairns	Ship's Plater, Williamstown Dockyard.

REPORT

OF THE

JOINT COMMITTEE OF PUBLIC ACCOUNTS

UNDER THE "COMMITTEE OF PUBLIC ACCOUNTS ACT 1913-1920" UPON

COMMONWEALTH SHIPBUILDING.

EXPLANATORY.

In consequence of the many questions which have been asked from time to time in both Houses of Parliament regarding this new industry, and recognising the necessity of securing that the large amount of public money involved in carrying out the Government's proposals should be spent to the best advantage, the Public Accounts Committee undertook an investigation into the methods employed by the officers entrusted with the scheme.

Shipbuilding on the scale and on the lines adopted by the Government had not previously been attempted in Australia, and the experiment is being watched with much interest, particularly in its financial aspects.

The policy of the Government in this connexion does not come within the purview of the Committee, though they necessarily have acquainted themselves with the reasons which determined the launching of the scheme. But the methods adopted in carrying it out it was the duty of the Committee to investigate. The outlook and the prospects of the industry have also, as an ordinary business consideration, been investigated as far as possible.

The results are summarized in these pages, and it is hoped that the information now made available, and the recommendations put forward, will be of interest and advantage.

On the 12th of July, 1917, during the course of a statement in the House of Representatives, the Prime Minister pointed out the advantage to Australia of promoting shipbuilding, and said that his Government "would take all the steps necessary for the immediate launching of the enterprise." The exigencies of the war had placed Australia in grave difficulties regarding her sea-borne trade, and the transport overseas of Commonwealth produce was almost at a standstill. How long it would take for this disability to be remedied no one was able to foresee, but, in order to relieve the situation to some extent, the building of ships by and for the Commonwealth Government was taken in hand with the sanction of Parliament.

A certain amount of shipbuilding had been done in Australia before the Hughes Ministry launched their scheme. Wooden ships, though not of great tonnage, had been built in the various States from quite an early period in their history. After Cockatoo Island Dockyard was taken over from the New South Wales Government by the Commonwealth in 1913, several vessels for Naval service were constructed there, but nowhere in Australia had fair sized steel ships for the mercantile marine been attempted.

PRELIMINARY STEPS.

The first step taken was a Shipbuilding Conference, held during June and July, 1917, between the Prime Minister (the Rt. Hon. W. M. Hughes), the Minister for the Navy (The Right Hon. Sir Joseph Cook), and representatives of the New South Wales, Victorian, and South Australian Labour Organizations interested in the Shipbuilding proposal. This Conference was for the purpose of drawing up conditions upon which the Government were prepared to at once establish the industry. The Government asked for guarantees regarding—

1. Continuity of operations.
2. Dilution of labour.
3. Adoption of piece-work under certain conditions.

The Prime Minister made it perfectly clear that unless all the Unions accepted these conditions the Government would not proceed with their scheme.

After exhaustive discussion, the Conference decided that the delegates should recommend their respective unions to accept all three of the conditions put forward by the Government. The agreement was to last till the end of the war and for a period of twelve months afterwards, the Government guaranteeing the complete restitution of all union rights when the arrangement terminated.

The next step was to find a capable head for the scheme, and on the 27th September, 1917, Mr. H. W. Curchin, Manager of the firm of J. W. Isherwood and Co., of London, was appointed Chief Executive Officer of Commonwealth Shipbuilding. At the outset, Mr. Curchin had to determine what would be the most suitable type of vessel for Australian conditions and requirements. It was decided to commence with vessels of five thousand tons dead weight capacity, built on the Isherwood system of longitudinal framing. The plans and specifications were prepared in London. On arriving in Australia, Mr. Curchin, besides exercising a general control over the shipbuilding scheme, undertook, at the request of the Government, the supervision of the Williamstown Dockyard.

PARTICULARS OF CONTRACTS.

Particulars of the ships undertaken to be built in Australia are given in the following table:—

CONTRACTS.

Name of Contractor.	Date of Contract.	Yard Locality.	No. of ships.	Description of ships.	Terms or Price.	Contracts Varied.	Vessels ordered.	Vessels launched.	Ships on slip.	Estimated cost.	Remarks.
Commonwealth Dockyard.	..	Williamstown	4	Steamers, steel, each 5,500 tons	Cost ..	..	2	..	2	..	Vessels on stocks are to be shelter deck type
Navy Department	..	Cockatoo Island	2	Steel steamers, each 5,500 tons	Same as Walsh Island	..	1	1	..	..	Vessel completing is of shelter deck type
State of N.S.W.	27.3.18	Walsh Island	6	Steel steamers, each 5,500 tons	£28 per ton, subject clause 9 of Contract	Varied to extent that 3 ships are to be shelter deck type	3	1	2	..	Cost of converting vessels to shelter deck type is approximately £11,000 per vessel
Walkers Ltd.	12.12.18	Maryborough, Q'land	4	Steel steamers, each 5,500 tons	Not less than £28 or more than £33 per ton, clause 9 of Contract	..	..	..	2	2	Vessels are to be shelter deck type, and cost £11,000 each additional
Poole and Steele Ltd.	3.10.18	Osborne, Port Adelaide	4	Steel steamers, each 5,500 tons	Not less than £28 or more than £33 per ton, Clause 10 of Contract	..	..	..	1	3	Vessels are to be shelter deck type, and cost £11,000 each additional
Kidman and Mayoh	6.7.18	Sydney	6	Auxiliary wooden barguinentines, cargo, each 2,600 tons	£26 per ton ..	By cancellation of 4 vessels, leaving 2 to be completed	..	1	1	..	Amount paid for compensation cancellation vessels £62,000

This represents a total of operative contracts in Australia for twenty steel vessels and two wooden barguinentines. The terms of price require more explanation than the table affords. Excluding Williamstown, contracts were entered into in each case with a minimum rate of £28 per ton. Then if the cost at Williamstown, which was under the direct control of Mr. Curchin and was to be regarded as establishing a standard, exceeded £28, the other builders were to be paid accordingly up to a maximum of £33.

The following four contracts were also signed, but subsequently cancelled, viz.:

Wallace Power Boat Co., Sydney, six auxiliary wooden barguinentines	2,600 tons each.
Hughes, Martin and Washington, Sydney, six auxiliary wooden schooners	" 2,300 " "
Western Australia Shipbuilding Co., Perth, six five-masted wooden schooners	" 2,300 " "
Mersey Shipbuilding Co., Devonport, two steel steamers	" 5,500 " "

The two barguinentines being built by Messrs. Kidman and Mayoh at Parramatta, represent the only portion of the scheme to build wooden vessels in Australia which materialized. It has demonstrated that large wooden vessels can be built of Australian timber by Australian workmen. But neither the contractors nor the employees seemed to have much interest in their undertaking. The Committee had no hesitation in concluding that there was nothing in the experiment to justify any attempt to develop it.

In addition to the contracts for ships there were also contracts signed with Messrs. Thompson and Co. Pty. Ltd., of Castlemaine, Victoria, for six sets of marine engines, totalling £250,000, plus extras for any increase of wages after the signing of the contract. Four of these engines were for ships to be built at Williamstown, and two for the Cockatoo contract.

The Prime Minister also entered into certain contracts with American and British shipbuilders. These are outside the scope of this inquiry, and can only be enumerated. Two contracts were made in America—

1. Sloan Shipyards Corporation of Olympia, Washington, dated 5th June, 1917, for four first-class wooden motor ships of 3,200 tons dead weight capacity, at a price of 2,000,000 dollars. These vessels have been commissioned and the contract is complete.
2. Patterson MacDonald Shipbuilding Company of Seattle, Washington, dated 22nd June, 1917, for ten first-class wooden steamers, each 4,300 tons dead weight capacity, price 5,300,000 dollars. This contract was later varied to read five steamers and five motor ships, and the price raised to 8,000,000 dollars, "plus cost of Macey Award, approximately 225,000 dollars." Of these vessels nine have been commissioned and one is under construction.

BRITISH CONTRACTS.

These were two contracts, entered into in Great Britain—

1. Vickers Ltd., dated 2nd July, 1919, for three steel steamers of 12,500 tons each; and
2. Beardmore Limited, dated 30th July, 1919, for two steel steamers of 12,500 tons each.

The terms of both these contracts are cost price, plus 25½ per cent. to cover profit and certain overhead charges.

The keels of the above five vessels have been laid, and building is at present being proceeded with.

AUSTRALIAN CONTRACTS.

Before the actual building of the ships could be commenced a good deal of preparatory work had to be done. The layout of existing yards had to be improved as far as practicable, "ways" had to be lengthened and strengthened, and new machinery and equipment added to the existing plant. At Maryborough, Queensland, an entirely new slip had to be constructed on the river at a short distance from the existing works, while Messrs. Poole and Steele commenced operations at Osborne, South Australia, on a bare sandbank.

AT WORK.

The up-to-date steel works started at Newcastle by the Broken Hill Proprietary Co. Ltd. have played an important part in providing certain of the materials required in the Australian shipbuilding scheme. All the sectional parts, or in other words, the framing of the vessels was supplied from the Newcastle works, and the evidence was all to the effect that the quality was excellent.

The plates are not at present manufactured in Australia, and at the outset were unprocureable in Great Britain. For the first six ships, these materials were obtained in America. Now, however, plates are supplied by British manufacturers, but they arrive in comparatively small quantities and at uncertain and irregular intervals. Some of the contractors complained that the progress of the work was seriously hindered by this state of affairs.

Men skilled in shipbuilding were very scarce in Australia at the commencement of this undertaking, and a considerable proportion of dockyard hands had to learn the work as they went along. But witnesses were unanimous as to the aptitude shown by the workmen employed, and the quick way in which they became expert. Inspectors and supervisors, with experience in British yards, *unhesitatingly affirmed the quality of the work turned out by the Australians*, although as regards quantity it was stated more than once during the inquiry that there was room for improvement in this direction.

As an outcome of the Shipbuilding Conference already referred to, the Government gave an undertaking that a Tribunal would be associated with the shipbuilding scheme to deal promptly with disputes, and settle them without hindering the progress of the work. The Tribunal was brought into existence in March, 1918. It consists of three members, one representing the employers, another the employees, while the third member, mutually agreed upon by the other two, acts as Chairman. The evidence regarding the work of the Tribunal was conflicting, though a majority of the witnesses considered it had justified its creation. It has given approximately 300 decisions, not to mention some 50 other cases which, as the Chairman of the Tribunal puts it, "fizzled out" upon investigation. Some witnesses suggested that industrial peace had been maintained by the Tribunal conceding, in the majority of instances, the claims of the workmen. The official analysis of the awards shows 69 in favour of the employers and 231 in favour of the workmen.

One decision by the Tribunal has been very strongly objected to by the representatives of the employing interests. It is known as the four-fifths award. Theoretically, it may appear reasonable, but in practice it produces results which cannot be justified.

The labour on the hull of the ship, as carried out by the plating and riveting gangs, was from the outset arranged to be paid for on a piece-work basis. The rates as agreed upon worked out at from 33 to 100 per cent. above British pre-war rates, but they do not at present differ materially from those ruling in Great Britain.

So far as the rivetters are concerned the piece work rates are not complained of either by the employees or the employers, but the arrangement by which the plating gangs are paid, while welcomed by the men, has brought about a condition of things which does not appear to have been foreseen by the Tribunal, placing as it does, something of a handicap on Australian shipbuilding.

The award is explained by the Chairman of the Tribunal as follows:—

"The Tribunal in deciding this case took cognisance of the day work rates existing at the time the application was made. These rates showed that a boilermaker's assistant was entitled to a wage equal to four-fifths of the wage paid to boilermakers. Seeing this, the Tribunal decided that where both worked together as piece-workers, the same marginal difference should be observed in the sharing of earnings. In the piece-work prices agreed to between Mr. Curchin and the Boilermakers' Union and Blacksmiths' Union, the mechanics and their assistants share the earnings on the above lines. But such is not the case in regard to platers. After the day work rates of the helpers have been deducted from the gross earnings of the squad, the plater takes what is left. In other words where the amount earned is more than sufficient to cover the amount necessary to provide day work rates, he takes the full profit resulting from his own and his helpers' efforts. The helper is then paid any excess due to him out of a separate fund, and the amount coming to him is based upon the profit made by the plater."

This, as the chairman admits, is a "rather unique system" of payment though at a careless glance it might be taken to be only a *pro rata* division of the surplus earnings of the plating gang amongst its members. But such is not the case. The whole of the excess earnings go to the leader of the gang. There is, therefore, nothing further to divide. But by the decision of the Tribunal, this manifest injustice to the platers' assistants has to be made good by the employer paying to each assistant, in addition to his regular wage, a premium equal to four-fifths of the excess which the plater pockets. Needless to say, this amounts to much more than the assistant would get by a division of the excess earnings of the party. The Tribunal decided that because the basic wage paid to each assistant was at the rate of four-fifths of the platers' remuneration, the premium should also bear that ratio to the total excess earnings. But assuming there are three assistants in each gang, then obviously, each of them could not have got four-fifths if they had had to divide the excess.

Evidence was given that the four-fifths decision of the Tribunal had much increased the cost of this class of work. One manager stated that even apprentices had made up to £10 weekly under this system. But the main concern of those in authority was its unfortunate effect on the shipbuilding industry generally. It had caused ill feeling and friction in some yards because it had enabled unskilled workers to earn more than trained artisans, such as the engineers. Under it, the cost of the work was so increased by "speeding up" that it was more profitable to proceed slowly. It discouraged the introduction of labour-saving machinery. It was impossible also to estimate with any degree of certainty in connexion with work affected by the four-fifths excess payments. Taking one item as an illustration, one witness stated that the labour cost of it should normally have come out at £4 13s. But the men "speeded up" and it cost £12 7s. 6d. Another witness said, "I have here the working sheet in relation to our . . . yard. It shows that on the complete job, the platers on the floors received 7s. 1d. per hour and the labourers 6s. 6d. per hour, although the award rates were 1s. 10½d. and 1s. 3¾d. respectively." Asked to say what the "four-fifths excess" ran into in the case of a ship of 6,000 tons, another witness said that it meant £1,300, and went on to explain as follows: "This may not be thought to be a large sum of money, but it involves more serious consideration than that," and he then illustrated in detail the demoralizing effect on the morale of the men, and the progress of the work.

One workman said that the men in the yard did not think the four-fifths allocation quite fair, and members of the Tribunal themselves when giving evidence admitted that it might require some amendment.

FINANCIAL ASPECTS.

During the course of their investigation the Committee gave special attention to the costing systems in use, and the methods of keeping accounts, recognising that these were matters of vital importance to the success of the industry.

Mr. Curchin informed the Committee that the system of costing adopted was similar in all respects to that used in private shipyards in Great Britain. Taking Williamstown Dockyard, as an instance, the Committee is of opinion that as at present conducted, the costing is correctly done by the inclusion and analysis of all proper and legitimate charges. These are based on the labour costs, and are divided in the ratio of three-fifths chargeable to the ship or ships under construction and the other two-fifths are spread over all the other work in the yards.

At Cockatoo Dockyard, the system is less effective and less complete. In the Committee's report on Cockatoo Island, presented to Parliament on 28th October, 1915, recommendations were made that interest on capital and depreciation should be charged so that the Dockyard could be carried on under a proper business system. We regret to find that this has not been done. The Acting Manager and Accountant both admitted that interest and depreciation should be debited to construction, but it was claimed, as counterbalancing the omission, that there were other items included in the expenditure which should not be charged, such as the cost of ferry transport and holiday allowances, which ran into a considerable sum and had been conceded to the workmen by a former Minister. The cost of shipbuilding done here remains, however, at a higher figure than in other Australian shipbuilding yards, an indication that the island is handicapped in several respects in carrying on this industry.

The yard at Williamstown is very cramped and the layout defective. At present the limit of construction is up to about 8,000 ton vessels. It is proposed to spend from £100,000 to £250,000 on enlargements and improvements. There is one permanent disadvantage, the slight rise and fall of the tide which militates against the successful launching of large vessels. At Cockatoo a caisson has been added at the lower end of the principal slip to ensure the success of launching, and Mr. Curchin had under his consideration a similar proposal for Williamstown, though so far nothing has been done in that direction.

Walsh Island was considered by Mr. Curchin to have advantages over Williamstown. There is plenty of room and the equipment is good. Obviously the proximity of this yard to its coal and steel supplies gives it a considerable advantage at the present time over all the other shipbuilding yards in the Commonwealth. There is "plenty of water" and a good tide, and practically no limit to the size of vessels that could be turned out here. Yet with these advantages, the cost at Walsh Island is higher than at Williamstown.

The Committee found at the private yards of Walkers Limited, Maryborough, and of Poole and Steele, Osborne, South Australia, great care taken in keeping accounts of all costs, and in debiting these in true proportion to the work. Both these firms deserve credit for the zeal and ability with which they have applied themselves to their new undertaking.

At the engineering establishment of Thompson and Co. Pty. Ltd., of Castlemaine, where contracts for six sets of marine engines for the Commonwealth ships are nearing completion, the Committee found a very efficient costing system in operation, which though exhaustive to the minutest detail is so well constructed that it is not by any means costly to work. The management regarded this system as conducing in no small degree to the success of the establishment.

The cost of shipbuilding had jumped up as a result of the war to three times the pre-war rates. For ships that were once built at under £10 per ton, builders in Great Britain have been asking and getting as much as £35 per ton, while in America the prices were still higher. Under these circumstances, the opportunity of entering into the production of ships in Australia was a favorable one. The Broken Hill Proprietary Company Ltd. were prepared to supply sections and angles, and the price of these has been from £17 10s. to £19 per ton. Adding the freights to the overseas prices for similar materials, we find that buying from the local producers certainly gave an advantage of several pounds per ton. One manager expressed the opinion that if he had been obliged to go abroad for these materials they would have cost, including price and freight, something like £35 a ton, not to speak of the inevitable delay, which of course meant added expense. Plates were quoted from abroad at the outset at from £15 to £16 10s. per ton. The lower price was for delivery at Chicago or Pittsburg. They had, however, to be transferred to the western seaports by rail at a high figure and thence shipped to Australia. At the finish, the cost was considerably more than for the plates obtained from Great Britain. At the time of giving evidence, a witness stated that his firm was paying at the rate of £30 landed cost on its plates from England.

As regards engines, the cost in Australia at the present time is about 8½ per cent. higher than in Great Britain. The latest price for marine engines in Australia has been increased by 20 per cent. over the first contract signed two years ago. This is due to the rise in materials and wages, but even at this rate when freight is added to the imported engines, the advantage in total cost is in favour of the Australian article.

The Government gave an undertaking to the contracting private firms to make good all award increases in wages incurred subsequent to the signing of the contracts. The contractors for the engines were, after investigation, allowed an amount equal to about 2½ per cent., which has been included in the cost of the ships completed. Only one of the firms building ships for the Government has so far claimed on this basis. The claim has been made only on a portion of the work and has not yet been scrutinized, but if it be sustained it will add, on an estimate which can only be approximate, about £2 per ton to the contract price of the ships. As against this, however, a reduction of a nearly corresponding amount will result from the obtaining of some of the materials at a lower cost than that upon which the contract was based.

The ships which have been commissioned to date are the *Dromana* and *Dumosa*, launched at Williamstown; the *Dundula*, at Cockatoo; and the *Delunga*, *Denoga*, and *Dilga*, at Walsh Island.

The cost of the *Dromana* was £29 7s. 7d. per ton; the *Dumosa* cost £30 2s. 1d. per ton; and the *Dundula*, £31 16s. 9d. per ton. The figures for the three ships built at Walsh Island are not yet available, but it is anticipated that their cost will not exceed that of the *Dundula*.

ISHERWOOD SYSTEM OF SHIPBUILDING.

The Committee found the Isherwood system of shipbuilding approved in some quarters and disapproved in others. It is admittedly a simpler construction, costing somewhat less and giving rather more space for cargo. It was generally considered to be better than the transverse system for oil tanks and for large passenger vessels subject to severe longitudinal strains. It was held by some witnesses, however, to be less advantageous for moderately sized ships intended to carry miscellaneous freight, and did not lend itself so readily to structural repairs when these were necessary.

Under the rate of 3s. 6d. per gross register ton
The Government paid in the nature of a royalty to Mr. J. W. Isherwood under an agreement between the Commonwealth Government and that gentleman. This sum includes the supplying of plans and detailed drawings of the ships built on this principle. The agreement is for a period of five years from the inception of the Commonwealth Shipbuilding scheme in 1917.

DIESEL ENGINES FOR SHIPS.

Some very interesting evidence was tendered by Mr. W. V. Dam, General Manager of Thompson and Co. Pty. Ltd., regarding the application of the Diesel internal combustion engine to ship propulsion. The difficulties in the way of utilizing this economical power for ships have apparently been overcome, and Mr. Dam strongly urged equipping some of our vessels with the improved Sulzer-Diesel engine. While admitting that British firms were not showing much inclination to adopt this type, he said that other European countries were hastening to utilize it. He reminded the Committee that recently a ship fitted with Diesel engines had visited Australia, and that she was able to make a circuit of the world on £7,000 worth of oil fuel, which is only a fraction of the cost of fuel for a ship of the same size equipped with the ordinary type of marine engine.

SYSTEM OF CONTROL.

The vexed question of Government *versus* private enterprise in shipbuilding cropped up several times in the course of the inquiry, though the Committee refrained from pursuing the matter as being beyond its province. Mr. Curchin stated that in some respects the effectiveness of his work was hampered both by departmental control and political considerations. Other witnesses expressed similar views.

THE OUTLOOK.

The prospects of shipbuilding in Australia cannot be ignored by the Committee, more particularly as throughout the evidence tendered to them the possible developments of the immediate future were referred to by witnesses with some anxiety. To establish this industry on a permanent and successful basis considerable effort and expenditure are justifiable at the outset. But if the industry were only able to maintain an existence by means of heavy protective duties or bonuses, either direct or indirect, on production, it is doubtful whether the game would be worth the candle. In such circumstances there would be little hope of building ships for any other than local requirements, and it seems to the Committee that if Australia cannot reasonably aspire to something more than that the efforts so far made will result in comparative failure. An odd ship built at an odd time is a totally uneconomic proposition. It was repeatedly given in evidence that at least two ships should always be under construction in one yard to keep down the working expenses to a profitable and competitive level. To maintain a substantial and remunerative output of ships it will be necessary in the future to look abroad for orders.

On the most careful consideration the Committee suggests that after the Commonwealth has overcome the initial difficulties inseparable from all large undertakings, there is good reason to believe that our shipbuilders should obtain a share of the world's shipbuilding trade. It is all a question of prices, and Australia is not now hopelessly handicapped in that regard.

In the leading shipbuilding countries of the world the wages in the iron and steel industry in engineering, and in shipbuilding are quite as high as in Australia. It is stated, however, that at present, so far as the building of ships is concerned, our production per man is not for various reasons as high as in Britain or America. Both managers and men must set themselves to remedy this if the industry is to be developed to its fullest extent.

With regard to the materials for this industry Australia should be able shortly to hold her own against the world. We have an abundance of coal and also iron ore of the very highest quality easily accessible and readily converted into high-class iron and steel. Already these products are being exported. Doubtless before very long the prices of iron and steel will commence to decline. But no one thinks it possible for them to come down to anything like the pre-war basis. It is worthy of note that steel was being produced here before the war. If the low prices then ruling were not regarded as preventing the production of steel in Australia on a commercial basis, then, if the world prices remained substantially appreciated, the Australian outlook for the production of iron and steel is very encouraging.

The Broken Hill Pty. Co. Ltd. have decided upon a considerable extension of their works and plant, including a mill for rolling the large plates for shipbuilding, which hitherto have had to be obtained abroad.

The General Manager of this company was confident that all the materials for shipbuilding could be produced in Australia as cheaply as anywhere else, if protection by a Tariff were afforded against the powerful corporations in other countries, who might otherwise wipe the Commonwealth industry out by dumping. Regarding the construction of ships in Australia, this witness is so certain of the favorable conditions, that he advised his Board to make an offer to purchase Walsh Island, and had actually planned to build twelve steamers there. The adoption of a shipbuilding scheme by the Commonwealth Government put an end to the project.

There is, of course, the possibility of a big slump in the demand for ships, and evidence has been adduced that the shortage of ships due to war losses has been overtaken. But in any case Australia's shipping requirements for her local and overseas trade are some distance from being met, and, while it will only be prudent for the Commonwealth shipbuilding industry to feel its way carefully for the next few years, there is no justification in our opinion for a degree of caution which would bring it to a stand-still, or even keep it at its present stage of development.

RECOMMENDATIONS.

1. If it is the policy of the Government to remain in this industry it is absolutely necessary that it shall be run on ordinary business lines, free from political interference, and from such official control as is merely officious. Mr. Curchin, while admitting that he had a comparatively free hand, gave the Committee to understand that as a Government servant he found himself hampered and delayed in carrying on his work, and placed at a disadvantage generally compared with his experience in private employment.

Williamstown dockyard is "under the control of the Prime Minister's Department." The control is in many respects only nominal, still it is absurd that an order for £101 worth of shipbuilding materials should have to be submitted to, and indorsed by, presumably, the Prime Minister, but probably by a clerk in the Department.

2. At all the dockyards included in the Government programme there should be a uniform system of accountancy in operation. Annual balance-sheets of the shipbuilding scheme should be submitted to Parliament.* Overhead charges should include all shop charges, establishment charges, administrative and like services, distributed not by average but by precise computation on the ascertained labour cost.

3. Williamstown Dockyard should be enlarged, and the lay-out rearranged, in order to give the best results.

4. Cockatoo Island Dockyard should, in our opinion, be reserved for naval shipbuilding.

Naval and mercantile shipbuilding are two distinct branches, for which staffs have to be trained and maintained separately in those large dockyards of Great Britain where both kinds of shipbuilding are carried on. In Australia we think it better to separate the two classes of work into different yards, thus enabling the staff to concentrate on the particular branch allotted to it. As Cockatoo was intended primarily as a Naval establishment, and has been equipped with that object in view, it seems unwise to add commercial shipbuilding to its activities. The dock might, however, continue to be utilized when available for docking merchant vessels.

Cockatoo Dockyard requires reorganisation. There are too many supervisors and too little supervision. There is much friction among the staff, and discipline is very lax.

5. The construction of a variety of ships should be avoided. Standardization will reduce cost and facilitate construction. If variation be unavoidable, then each yard should be kept as much as possible to a particular type.

6. Walsh Island seems best adapted for the construction of the larger ships.

7. There should be a more equitable method substituted for the present system of paying plating gangs. We suggest a flat rate of so much per foot on a scale which would enable each man, with a fair amount of exertion, to earn a wage corresponding to the average wages obtained under the four-fifths excess decision.

J. M. Fowler

Chairman

Melbourne, 10th November, 1920.