THE STATE DOCKYARD NEWCASTLE N.S.W.

To Dick
with love
Lola 2/4/46

THE STATE DOCKYARD NEWCASTLE N.S.W.

THE

STATE DOCKYARD

ITS WARTIME ESTABLISHMENT AND PRODUCTION

JANUARY, 1942 — DECEMBER, 1945

FOREWORD

BY THE

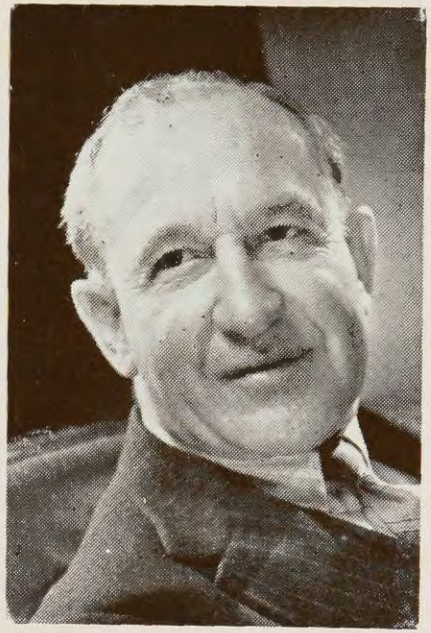
HON. W. J. McKELL, K.C., M.L.A., PREMIER OF NEW SOUTH WALES.

IT IS with a sense of gratification and pride that I write the foreword to this record of distinctive wartime achievement. Gratification, that the pledge which I gave before the election of my Government in May, 1941, to re-establish shipbuilding as a State enterprise, has been fulfilled, and pride, that my Government, in the course of effectively responding to Churchill's clarion call for " ships, more ships, and still more ships," has successfully established the impressive combination of shipbuilding, ship repairing and engineering facilities, now known as the State Dockyard.

This Dockyard has made a contribution of inestimable value to the maritime needs of the Allied Nations at the most critical stage of the gigantic struggle recently concluded. It remains a magnificent asset towards Australia's postwar industrial rehabilitation and development. To all who appreciate the attributes of determination, resource and unremitting effort in face of abnormal difficulties, I commend this glowing story of Australian enterprise.

I desire to acknowledge directly on behalf of my Government the encouragement and co-operation extended to us by the Commonwealth Government and the Australian Shipbuilding Board.

I am particularly grateful to the Honorable J. J. Cahill, M.L.A., who, in his capacity of Minister for Public Works, has so convincingly justified the confidence placed in him by his colleagues in entrusting him with the responsibility of re-establishing shipbuilding as a State enterprise.



Hon. W. J. McKell, K.C., M.L.A.

To Mr. D. L. McLarty, Director of the Dockyard since its inception, I express the Government's deepest appreciation for the ability and judgment which he has displayed in all matters pertaining to its establishment and control and for the unremitting energy which he has applied to his great task. Arrangements are now being made for Mr. McLarty to visit overseas countries in order to study at first hand the most modern developments in shipbuilding and engineering production with a view to their application, wherever advisable, to the New South Wales State Dockyard.

Mr. M. Weir and, later, Mr. D. Ford, successive Under Secretaries of the Department of Public Works, also played a significant part in the various foundation aspects of the Undertaking, the rapid development of which could not have been achieved without the marked contributions made by the various branches under their control.

The expeditious development of the Dockyard, together with its extensive production, reflects great credit on its staff and works personnel. It ensures that the Dockyard will play a substantial part in the permanent establishment of the shipbuilding industry as a valuable and essential element in the postwar economic structure of Australia.

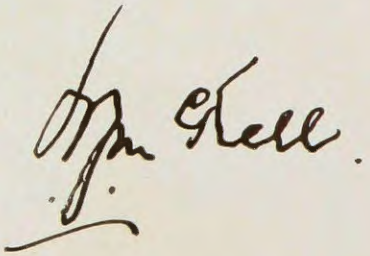
In the course of its brief years of wartime development the industry has necessarily concentrated on achieving maximum possible production by utilising whatever materials and facilities were available.

In successfully achieving this primary objective, it has established convincingly its capacity to build both naval and merchant vessels of the highest quality and performance.

Only now is it becoming possible to devote adequate attention to the comprehensive task of co-ordinating the efforts of the numerous activities concerned in the timely and orderly supply of materials, auxiliaries and equipment required by the industry and the consequent planning and economical production of that complicated floating world—the modern vessel. I confidently appeal to all concerned to continue to co-operate in this final stage. The penalty of failure and the rewards of success alike demand its accomplishment.

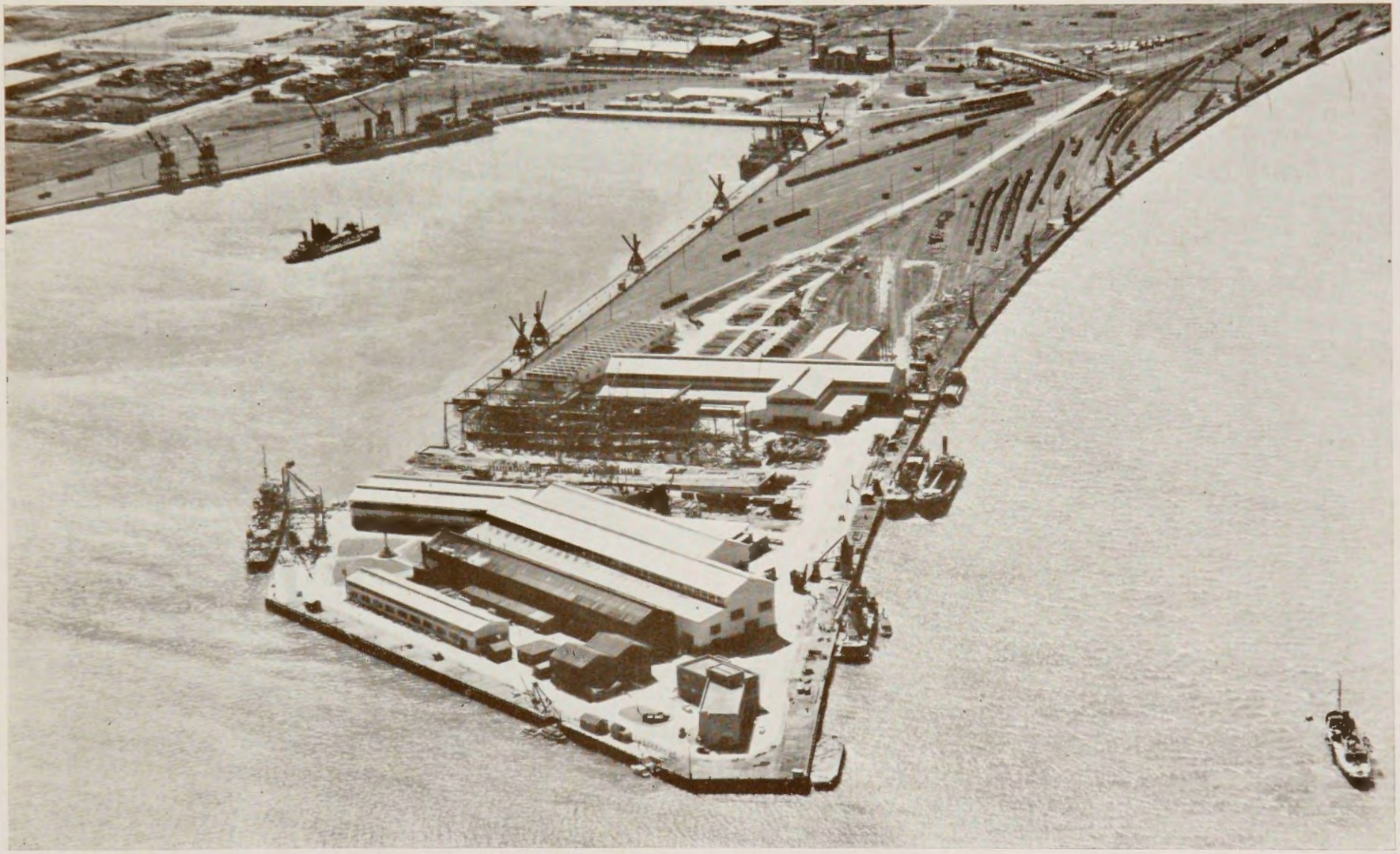
Throughout Australia millions of pounds of public money have been expended in bringing this far-reaching industry to its present gratifying state of progress whilst rendering a vital service to the Empire. Already it affords employment for thousands of men and, by reason of the great variety and quantity of materials and equipment for which it calls, its permanent establishment on an efficient basis will benefit every section of the community.

Let us develop this splendid opportunity for major industrial expansion with all the vigour and determination of which we are capable.



AERIAL VIEW OF DOCKYARD—LOOKING NORTH.
Showing Walsh Island in the background. [September, 1945.]

AERIAL VIEW OF DOCKYARD—LOOKING SOUTH.
[September, 1945.]



AERIAL VIEW OF DOCKYARD—LOOKING NORTH-WEST.
Showing Approach by new Overhead Bridge and Roadway
[September, 1945.]

STATE DOCKYARD, NEWCASTLE

Comment by the Honorable J. J. Cahill, M.L.A., Minister for Public Works and Local Government :—

" The establishment of the State Dockyard, the launching of 23 naval and merchant vessels and the considerable propelling machinery production, together with the enormous volume of ship repair work effected during the War, all within less than four years, form an achivement with which I am proud to have been associated as Minister for Public Works.

I congratulate all concerned in this gratifying fulfilment of the Government's undertaking to re-establish shipbuilding as a State enterprise.

I confidently prophesy that the Dockyard will continue to play a significant part in the permanent establishment of Australian shipbuilding which is essential both to the security of the Empire and the industrial development of our great Commonwealth."

HON. J. J. CAHILL, M.L.A.,

Minister for Public Works and Local Government, under whose administration the Dockyard was established.

D. LYON McLARTY, M.I.E. (Aust.,) M.I.E.S. (Scot.)

Director, State Dockyard.

HISTORY OF THE ESTABLISHMENT OF THE DOCKYARD

FOLLOWING its election in May, 1941, the N.S.W. State Government, in recognition of the Empire's dire need for the maximum possible shipbuilding and ship-repairing facilities, decided to re-establish shipbuilding in New South Wales as a State enterprise.

At that time the prevailing combination of adverse circumstances left no room to doubt the formidable nature and extent of the difficulties which lay in the path of accomplishment of this ambitious task. The time factor was all-important. Unless worthwhile production was to be forthcoming promptly, wartime establishment could not be justified.

In the course of meeting war demands, Australian manufacturers of structural steel, cranes, machine tools and all the other comprehensive equipment essential to the complicated processes involved in the construction and repairing of vessels, together with their propelling machinery, were already fully committed, while similar services from overseas were out of the question.

Suitably experienced technical staff and skilled labour were also at a premium.

The Australian Shipbuilding Board, which had been constituted by the Commonwealth Government early in the War for the purpose of not only co-ordinating and expanding existing facilities, but also creating entirely new Works on a large scale in various parts of the Commonwealth, had already authorised the provision of additional facilities within its conception of the Commonwealth's maximum manpower capacity.

Accordingly, when the State Government put forward its proposals for the establishment of a complete Dockyard, the Board was hesitant in recommending the Commonwealth Government's approval, but continued representations by the State Government resulted in approval being given to proceed with the provision of Engineering facilities, to be followed, if events so justified, by Shipbuilding facilities.

Subsequent events speedily justified the optimism and determination which the State Government applied to its self-imposed task of re-establishing shipbuilding as a State enterprise.

VIEWS OF SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.
[January, 1942.]

It was readily recognised by the Government that the one hope of success lay in the extent to which the remaining facilities at Walsh Island could be utilised. This, one time, extensive Dockyard, which had made a notable contribution to the shipbuilding requirements of the first World War. had ceased activity in 1933, following which much of its plant and several of its buildings were sold.

When, about eight years later, the exigencies of World War hostilities caused the State Government of that time to give consideration to again utilising the remaining facilities, Walsh Island presented a most unattractive and depressing spectacle. Nature's relentless elements had taken a heavy toll of the neglected materials. The coverings of the buildings had long since ceased to protect their sadly-diminished contents. The Building Berths, which had been denuded of their lifting facilities, were covered with a shroud of scrub extending to wharves so dilapidated as to form a fitting frame to a dreary picture of industrial desolation.

In view of these circumstances it is not surprising that offers which had been made by the preceding State Government to provide private enterprise with financial assistance towards re-habilitating the Works, and, later to the Federal Government of the free use of the Island's remaining facilities for so long as desired, had failed to meet with any effective response.

This, however, serves to emphasise the enterprise and courage of the present Government in backing its conviction that hidden in this moribund scene lay the nucleus of the extensive engineering and shipbuilding establishment now known as the State Dockyard, which, coincident with construction, has made a notable contribution to the maritime war requirements of the Allied Nations.

Investigation of Walsh Island's remaining facilities revealed some encouraging possibilities. The structural steel components of the workshops were still satisfactory, and a number of cranes and engineering machine tools were found to be in a reconditionable state. Practically all the original ship construction machinery only required overhauling to be made thoroughly satisfactory. Of particular importance was the fact that a considerable volume of Electric Motors and associated equipment was available.

Due consideration was given to the disabilities inevitably associated with the carrying out of extensive manufacturing operations on an island. The Walsh Island Dockyard had been heavily handicapped by the considerable cost and delays involved in transporting men and materials and in damage to submarine electric power cables laid across a busy waterway. In addition, frequent dredging had been necessary to remove deposits of Hunter River silt in the vicinity of the Dockyard, involving heavy annual expenditure. Deliberation of these factors resulted in a decision to utilise as much as possible of Walsh Island's buildings and plant in establishing a Dockyard on the mainland.

COMMENCEMENT OF CONSTRUCTION. [March, 1942.]
Grading of Building Berths in foreground—Heavy Machine Shop Structure on right.

ONE YEAR LATER. [March, 1943.]
Engineering Shops on right—Corvette in advanced stage of construction, and Shipbuilding Shops, at left.

Following preliminary investigations and negotiations with the Commonwealth Government, the State Government appointed Mr. D. Lyon McLarty, M.I.E., (Aust.), as State Director of Engineering and Shipbuilding, on 25th August, 1941.

At that stage consideration was being given to the immediate establishment of an Engineering Works on the Dyke End peninsula, where a small Dredge Repair Shop already existed, and, at a later date, of a Shipbuilding Yard at Carrington.

After full investigation of the two sites concerned and the facilities remaining available at Walsh Island, the advantages of establishing a combined Engineering and Shipbuilding Works on the Dyke End peninsula, and the utilisation of the Carrington site for accommodating the Government's 15,000-ton capacity Floating Dock and its associated repair facilities became so apparent that the Director's recommendation to proceed on this basis received prompt Cabinet approval.

On 15th September, 1941, a proposal generally covering the establishment of a complete Dockyard was submitted, through the Australian Shipbuilding Board, for approval of provision of the necessary finance by the Commonwealth Government, which was made available, progressively, as follows :—

8-12-41	.. .. ..	£155,500 for the establishment of engineering facilities.
28-1-42	.. .. ..	£94,000 for the establishment of ship repair facilities.
14-12-42	.. .. ..	£23,134 for miscellaneous services.
4-1-43	.. .. ..	£125,000 for the establishing of shipbuilding facilities.

These advances carried interest at the rate of 3½ per cent. per annum, and were subject to repayment in 20 years. The necessary Working Capital was made available by the State Treasury.

Following the initial approval of the proposals, additional land was acquired from the Department of Railways. Construction was commenced in January, 1942, and continued at increasing tempo as additional labour became available.

Coincident with the foregoing procedure, the joining of the Government's 15,000-ton Floating Dock, which had been previously operated in two sections at Walsh Island, was proceeded with, resulting in the docking and repairing of vessels to the full capacity of the Dock being commenced in January, 1942. In April, 1943, the Floating Dock was moved to a mainland site at Carrington, following extensive dredging operations, and the construction of the necessary heavy anchorages.

DOCKYARD'S FIRST OFFICIAL LAUNCHING
H.M.A.S. "STRAHAN"
12th July, 1943.

It is of interest to note that although formal approval by the Commonwealth Government of the establishment of complete ship construction facilities was not given until January, 1943, ship construction actually had been commenced at least six months earlier. How this was made possible is a typical instance of the enterprise which has characterised the spectacular growth of the Dockyard.

While the necessary ship construction machine tools and buildings remained available at Walsh Island, crane facilities of the Building Berths had long since been disposed of. The securing of normal shipbuilding crane facilities within a reasonable period was obviously quite out of the question.

This apparent impasse was overcome by utilising the columns of one of the Engineering Shops at Walsh Island. Crane girders were placed on the top of these columns where the roof trusses had originally rested. The columns were braced to give lateral stability, and were spaced on each side of the Building Berth to suit the span of one of the existing Ship Construction Shop Overhead Travelling Cranes.

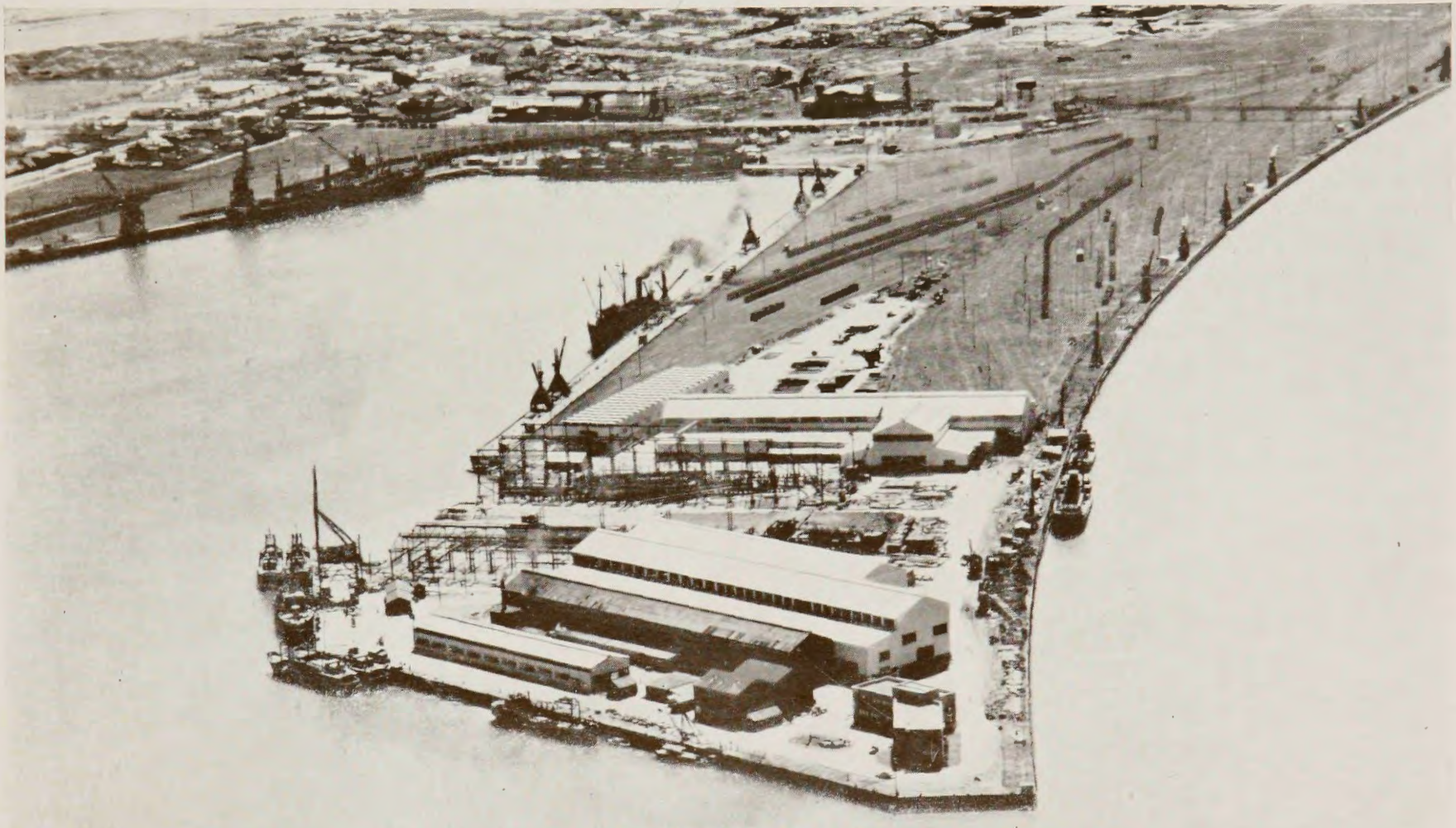
In June, 1942, the Department of the Navy rewarded the Dockyard's enterprise in thus providing a means of utilising the valuable construction plant which would otherwise have been left idle, by placing an order for an 180-foot Twin Screw Corvette.

Following satisfactory progress with the Corvette, the Department placed a further order, six months later, for both hulls and engines of two (2) 307-foot Frigates.

Meantime, in October, 1942, following approval of the Commonwealth Government to the establishment of engineering facilities, the Australian Shipbuilding Board had placed orders for twenty (20) 120-foot twin screw auxiliary cargo vessels with a view to utilising the Dockyard's Boiler Shop facilities, together with those of other Contractors in the Newcastle district. These vessels were of welded construction and were built on a line production basis.

In March, 1944, the Board placed orders for the hulls and propelling machinery of two (2) Single Screw Cargo Vessels having a cargo-carrying capacity of 2,500 tons for construction as soon as the berths on which the Frigates were being built became vacant. Another vessel of this class was ordered in October, 1944.

As manufacturing facilities became increasingly available, they and all procurable personnel were mainly employed on war requirements production with consequent slowing down on the fuller development of the Dockyard.



AERIAL VIEW OF DOCKYARD — MARCH, 1944
Looking North-West.

The expedition with which construction and production were simultaneously proceeded with is illustrated by the following :—

By the end of March, 1943, only fifteen months after commencement of construction, the Engineering Shops were practically completed. Shipyard Shops were in an advanced stage of erection. The construction of a twin-screw 180-foot Corvette for the Royal Australian Navy was well under way on the first completed Berth, and the line production of 20 all-welded twin-screw 120-foot ocean-going cargo vessels for the U.S.A. Army Transportation Service had reached the stage that the first vessel was nearly ready for launching.

Repair activities, up to that stage representing the major activity of the Dockyard, covered slightly over 100 vessels, the largest of which was over 14,000 tons. Production of war requirements in this initial period exceeded £350,000 in value, while employees at the close thereof totalled 801.

Activities during the second trading period ended March, 1944, embraced the launching, fitting-out and commissioning of the Corvette " Strahan " ; the launching of ten of the 120-foot Cargo Vessels ; the commencement of construction of two (2) 307-foot, Twin Screw Frigates ; and the commencement of construction of four (4) sets of 4-cylinder Triple Expansion Marine Engines each of 2,750 horse-power.

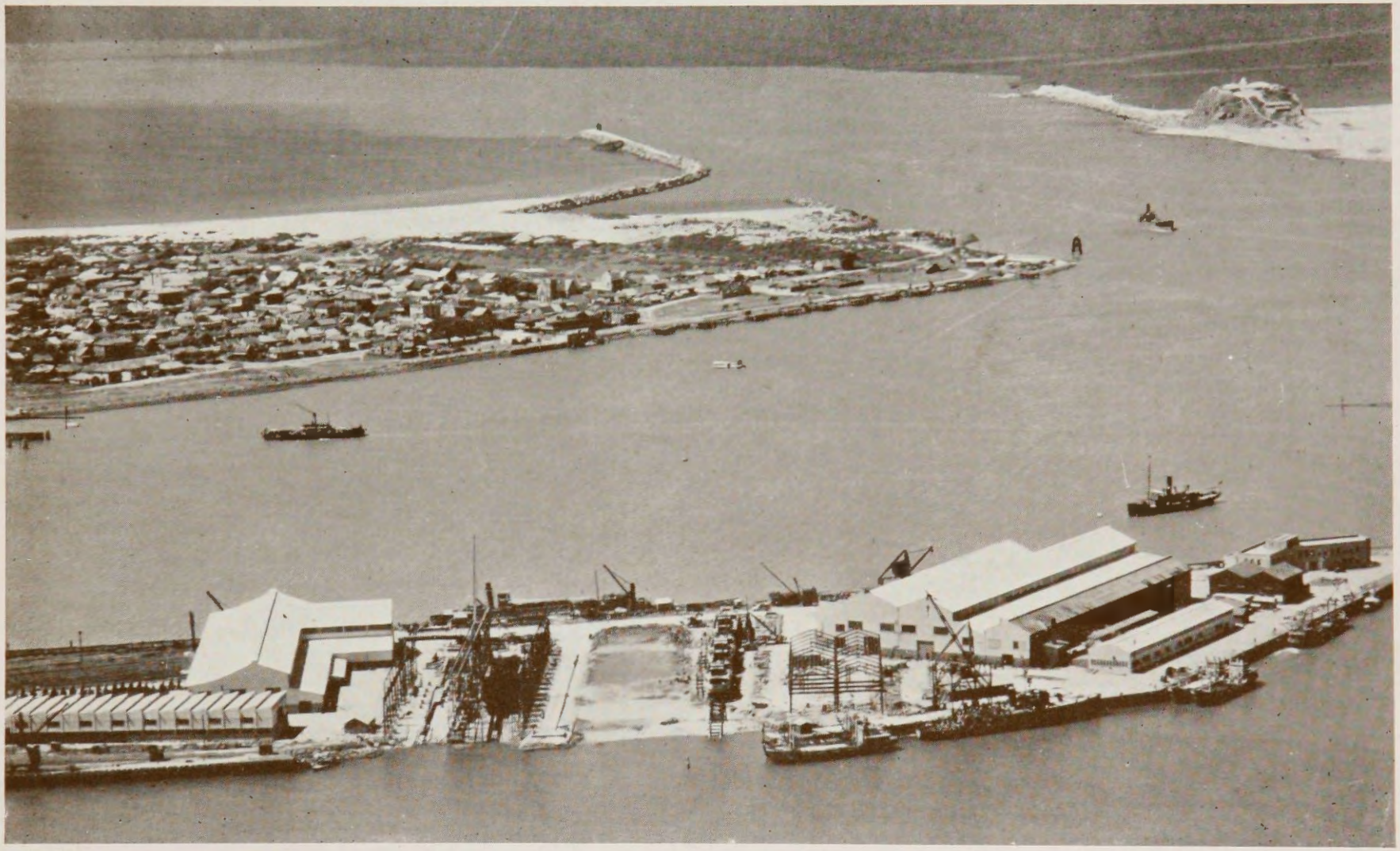
The volume of Ship Repair Work for this period was increased to 198 vessels, totalling approximately 700,000 tons. The turnover for the period was £834,000 and the number of employees at the close had reached 1,165.

In the course of the third trading period ended March, 1945, a twin-screw Frigate was launched, together with six (6) 120-foot twin-screw Cargo Vessels, while vessels repaired numbered 209, totalling approximately 800,000 tons. The turnover for the period totalled £906,000, and the number of employees at the close was 1,329.

Since its inception, the Dockyard has been handicapped by acute difficulties in securing materials, additional machine tools and equipment and the unavailability of sufficient suitably trained technical staff and skilled works personnel. At no time has it been possible to fully man the facilities as they became available. The single-shift employing capacity of the completed Dockyard is in the vicinity of 2,500 and the maximum so far registered has been 1,415.

Despite this formidable combination of untoward circumstances, the Dockyard within four years, has been established to the degree that 21 vessels have been completed, two (2) more have been launched and are in course of fitting-out ; six (6) sets of Triple Expansion Engines have been completed or are in the course of construction, while fully 600 vessels of varying types up to 14,000 tons, have been docked and/or repaired, many heavily damaged by enemy action or collision.

The foregoing production has resulted in a turnover of approximately £2,750,000 and a total net profit of about £165,000.



AERIAL VIEW OF DOCKYARD — MARCH, 1944
Looking North-East.

A significant feature of the foregoing record of progress is the relatively small capital outlay incurred, due mainly to the utilisation of the buildings, machinery and equipment which remained available at Walsh Island. Fully 90 per cent. of the structural steel in the buildings and the major proportion of the machine tools, cranes and equipment have been dismantled at Walsh Island overhauled and, in some cases, modernised, prior to erection on the new mainland site.

Land, Buildings, Building Berths, Wharves, Plant, Machinery and Installation stand in the Accounts at approximately £500,000 Had it been possible to establish equivalent facilities with entirely new materials and plant under existing war-time conditions and costs, it is estimated that an expenditure in the vicinity of £1,500,000 would have been involved.

Accordingly, with due regard to its origin, its period of operation and capital expended, the expeditious establishment of the State Dockyard, together with its gratifying volume of production while in course of construction, combine to present a unique wartime achievement.

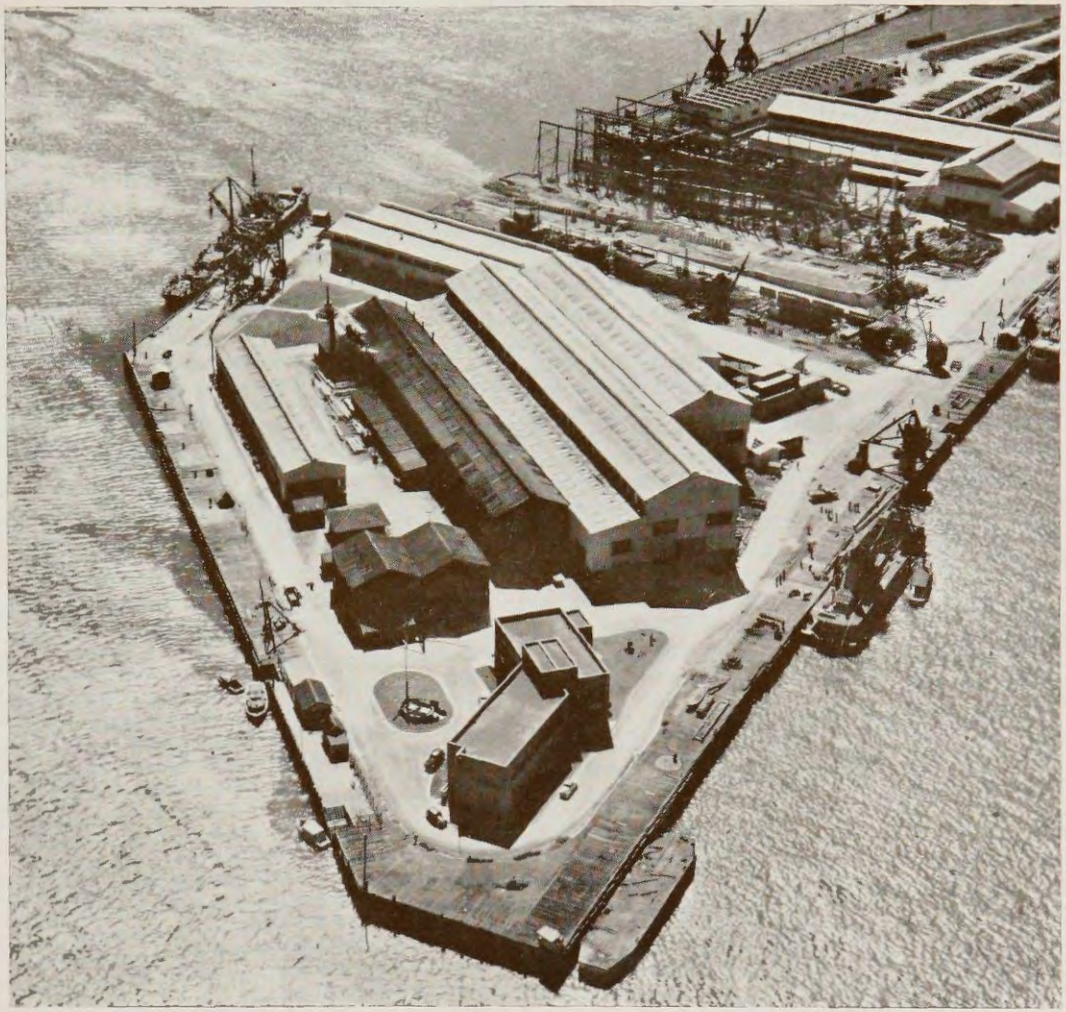
Unlike the majority of munition production facilities created during the War, the State Dockyard has not been established at the expense of the Commonwealth Government.

So far as the State finances are concerned, the Dockyard represents a splendid investment. It has enabled a wasting State asset to be utilised in urgently required war production, resulting—in slightly less than four years' trading—in a profit of approximately £165,000 after meeting interest on Capital and Sinking Fund Charges. In addition, the 15,000-ton Floating Dock, which, prior to the establishment of the new Dockyard, was earning less than its costs of maintenance and operation, has been enabled to produce satisfactory revenue, whilst at the same time meeting a vital War need.

The Act constituting the Dockyard provides *inter alia* that " the functions of the Undertaking shall include all types of engineering (including general engineering and marine engineering), shipbuilding and ship repairing and docking, and such work of a like or incidental character as the Minister may from time to time approve, and shall also include any work or activity which is incidental or supplementary to the performance of any of such functions."

Thus, the Dockyard has not been established solely to meet a war-created demand. Although it has been specifically laid out and equipped for the efficient production of vessels and their machinery, its manufacturing facilities are so disposed as to enable economical manufacture of any type of steel structure or engineering plant.

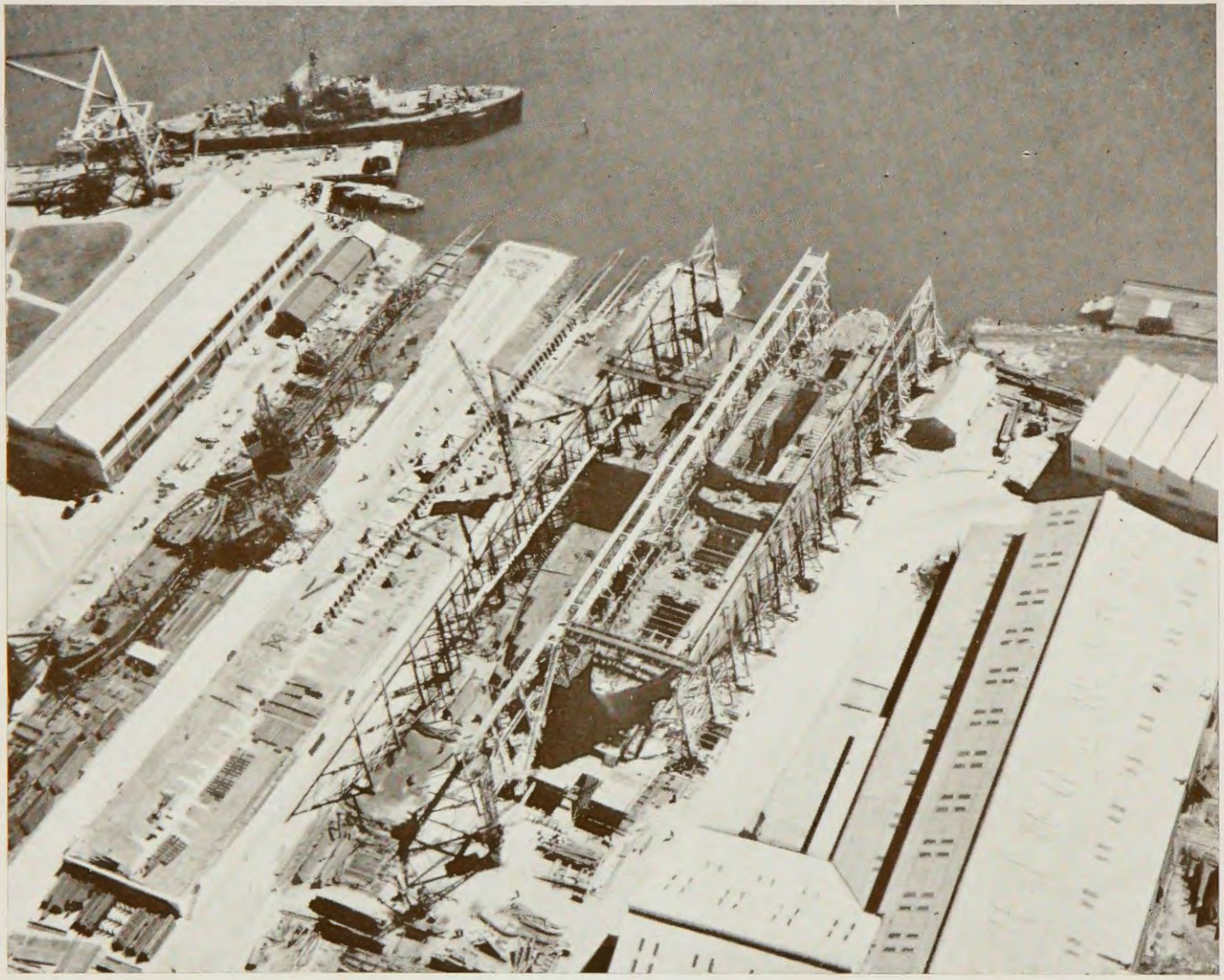
Having made a worthwhile contribution to the demands of War, the State Dockyard remains a magnificent asset for the purposes of Peace.



AERIAL VIEW OF COMPLETED DOCKYARD

[September, 1945.]

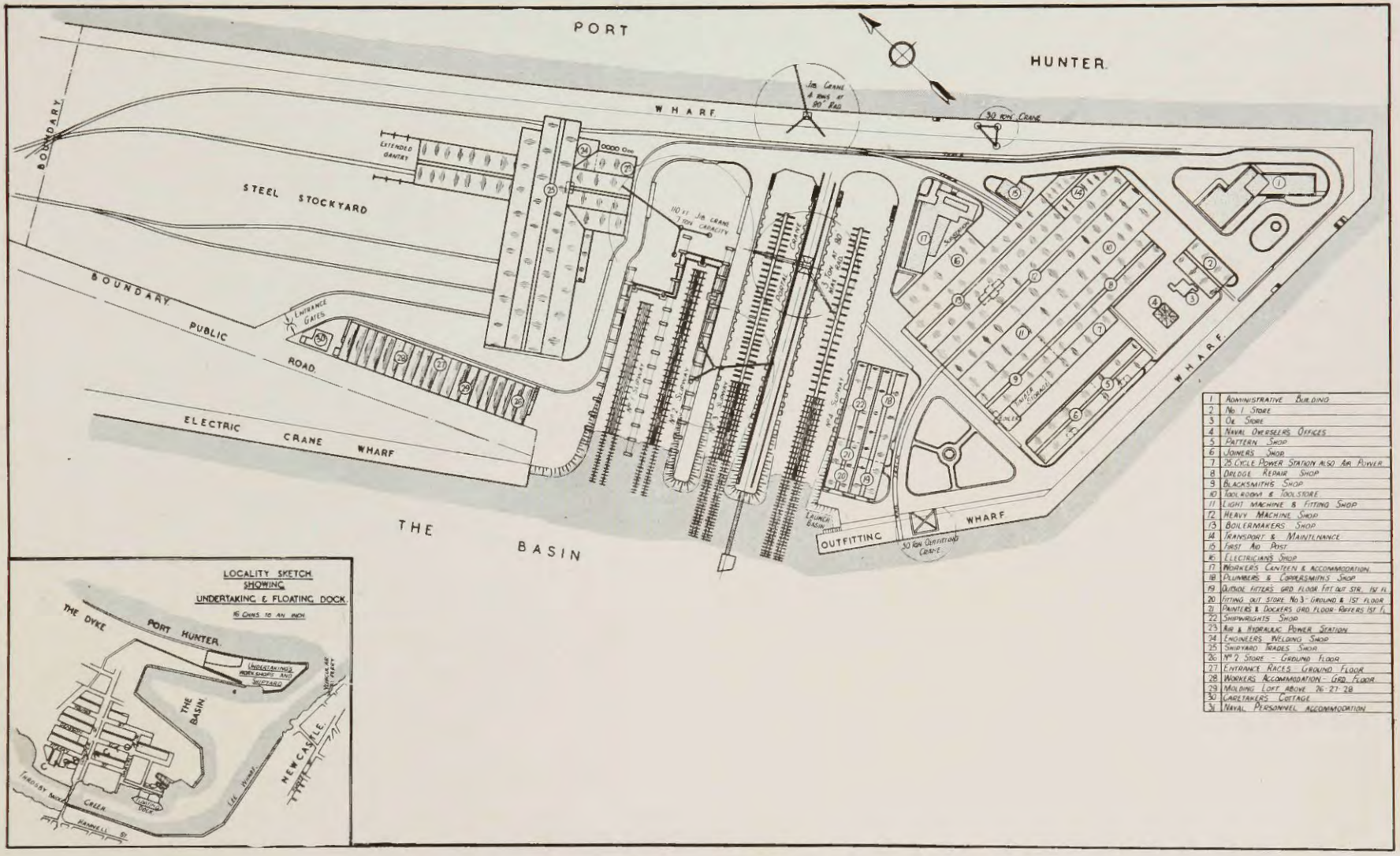
Showing 307-Ft., Twin Screw Frigate at Fitting-out Wharf; 290-Ft., Single Screw "D" Class Freighter and 120-Ft., Twin Screw Auxiliary Cargo Vessel, ready for launching

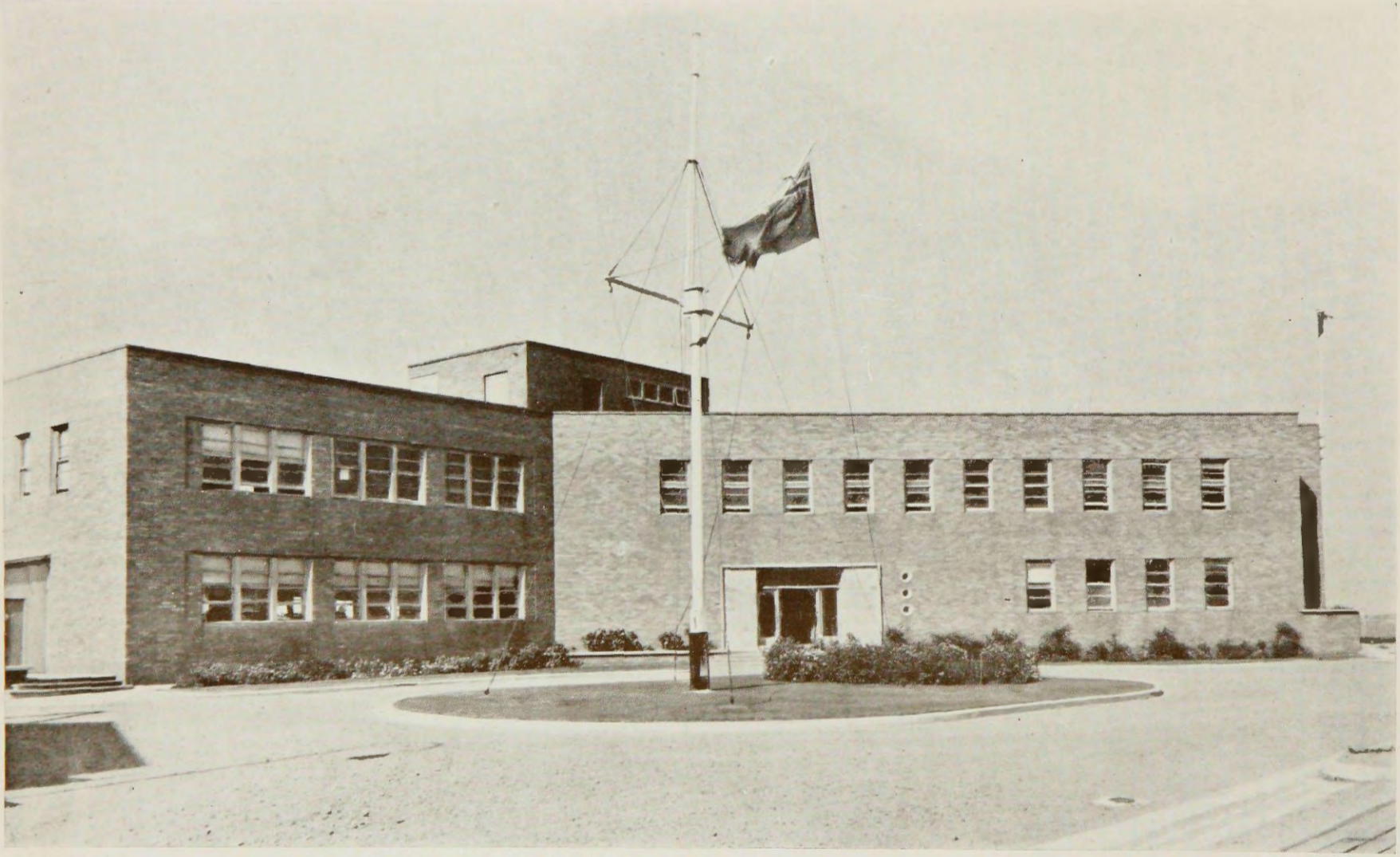


AERIAL VIEW OF SHIPBUILDING BERTHS — SEPTEMBER, 1945.
Showing vessels under construction and Frigate at Fitting-out Wharf.

LINE PLAN SHOWING GENERAL LAY-OUT.

(Scale : 1-inch = 260-feet.)





ADMINISTRATIVE OFFICES.

SENIOR OFFICERS IN CONFERENCE ROOM.

From left to right : Messrs. K. R. Bridger, Production Engineer; D. McDade, Chief Engineering Draughtsman; L. U. Fox, Estimating Engineer; R. C. Ellis, Shipyard Superintendent; R. Park, Repair Superintendent; H. D. Harding, Technical and Business Manager; J. H. Mitchell, Works Manager; Miss. M. B. Brisley, Director's Secretary; Messrs. D. Lyon McLarty, Director; B. C. Hughes, Secretary; A. L. Cashman, Accountant; H. A. Sheridan, Purchasing Officer; H. J. Doyle, Assistant Accountant; W. Craig, Electrical Superintendent; H. M. Rouse, Progress Engineer; F. Spitzkowsky, Plant Superintendent.

DESCRIPTION OF THE DOCKYARD

THE now completed Dockyard, which is ideally situated on the mainland peninsula known as Dyke End, occupies approximately twenty-five acres and has wharfage accommodation totalling 3,000 feet, including a Fitting-out Wharf equipped with a derrick-type crane mounted on a steel tower 40 feet above wharf level, having a capacity of 50 tons at 50 feet radius and 20 tons at 60 feet radius.

Particular attention has been paid in the lay-out to the flow and economical handling of materials and products. Well-formed and spacious roads are conveniently disposed between the various shops and alongside each building berth. The main railway line into the Dockyard passes under the cranes in both the Shipyard and Engineering Shops and a number of branch lines pass through the large storage areas. In addition, a rail track has been laid between the conveniently related Engineering Shops and the Fitting-out Wharf, within reach of their 50-ton cranes.

The comfort and convenience of employees has been given particular consideration. The staff is accommodated in a modern two-storied building of simple but effective design, which includes canteen accommodation and is surrounded by lawns and garden plots. A most attractive building, including bathroom and canteen accommodation with modern kitchen, has been provided for the employees in the shops. The canteen is run by an employees' committee and has proved most successful. Additional bathroom and dressing accommodation has been provided in the shipyard area.

Centrally placed between the Shipyard, Engineering Shops and Fitting-out Wharf, is an attractive triangular-shaped park in the middle of which is a bronze pillar mounted on an hexagonal brick base and surrounded by a rockery. One of the hexagonal faces bears a bronze tablet as a tribute to the Minister for Public Works, the Hon. J. J. Cahill, M.L.A., and also records the Dockyard's war establishment and production. The other faces are intended to bear, in bronze relief, miniature replicas of vessels built at the Dockyard, twenty-three of which are already in place.

ENTRANCE HALL.

SECTION OF ACCOUNTS OFFICE.

SECTION OF DRAWING OFFICE.

WORKMEN'S ACCOMMODATION BUILDING.

ENGINEERING SHOPS.

No. 1 Bay.—Forty-five feet in width, which was previously established as a Dredge Repair Shop, has been extended to 350 feet in length, 250 feet of which forms a Machine and Assembly Shop equipped with forty medium and light machine tools embracing all types, served by an 8-ton overhead electric travelling crane. The remaining 100 feet forms the Blacksmiths' Shop, the equipment in which includes two 10-cwt. and two 5-cwt. steam hammers, a large upsetting machine, profile burner, hotsaw, etc.

No. 2 Bay is 35 ft. x 400 ft. long, 100 feet of which has been allocated to the Tool Room and Tool Store, the remaining 300 feet forming a Light Machine and Assembly Shop equipped with a range of thirty new modern machine tools. This Bay is served by two 10-ton electric overhead travelling cranes.

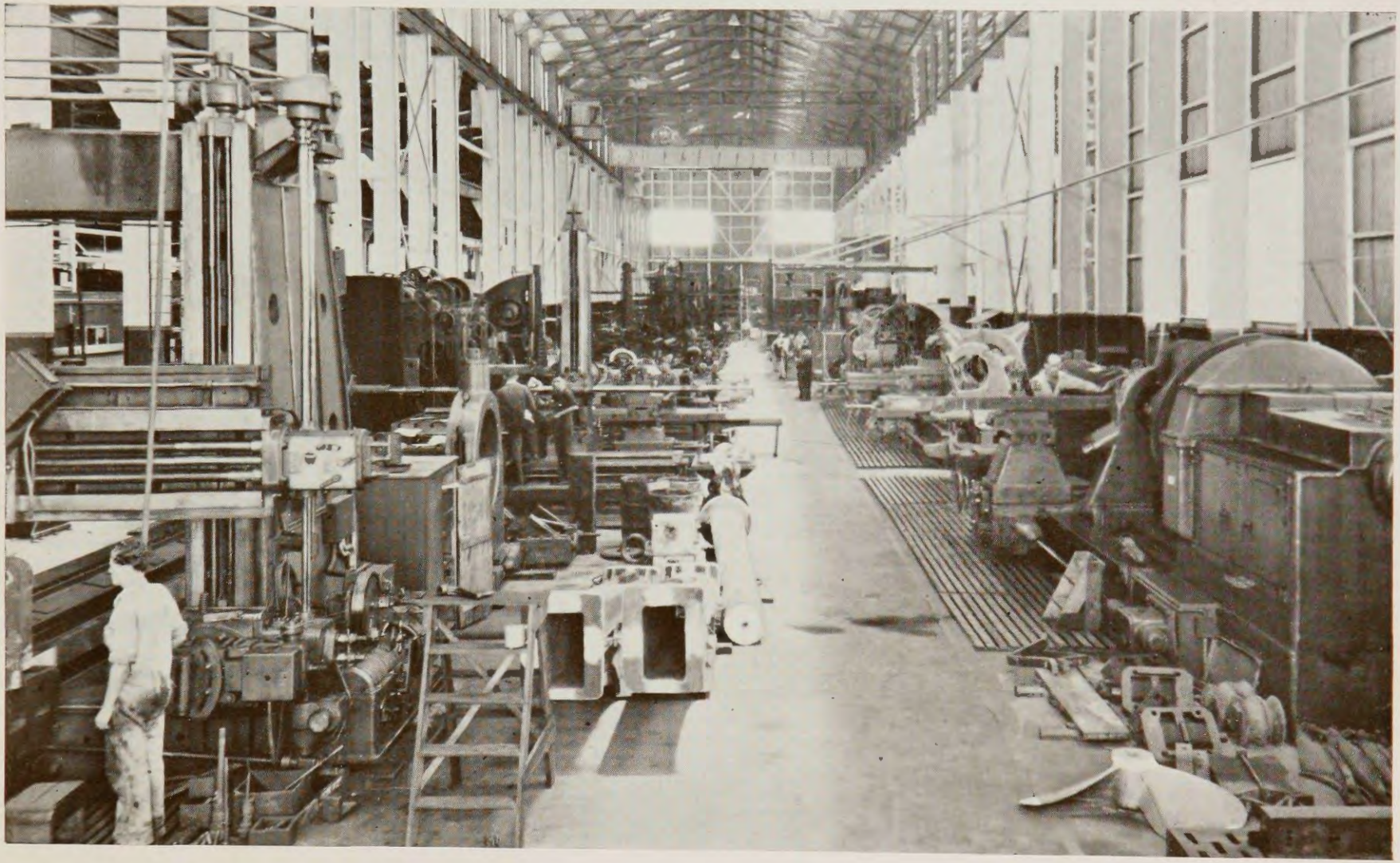
No. 3 Bay is the Heavy Machine and Erecting Shop, 60 ft. x 400 ft., and is served by one 50-ton and one 20-ton Electric Overhead Travelling Cranes. The machine tools with which this shop is equipped include Horizontal Planer, 12 ft. x 8 ft. x 22 ft. stroke capacity ; large Turbine Borer ; 7½ in. spindle Horizontal Boring and Facing Machine ; 72-in. capacity Vertical Boring and Facing Machine ; 60-in. Lathe, 40 ft. between centres ; 48-in Lathe, 22 ft. between centres ; 21-in. Lathe, 22 ft. between centres; 28-in. Slotting Machine ; two (2) large Horizontal Drilling Machines ; a medium Planer and Vertical Borer.

No. 4 Bay has been laid out and equipped for general Boilermaking requirements and emergency ship repair work. This Bay is 60 ft. x 300 ft., and is served by a 25-ton Electric Overhead Travelling Crane.

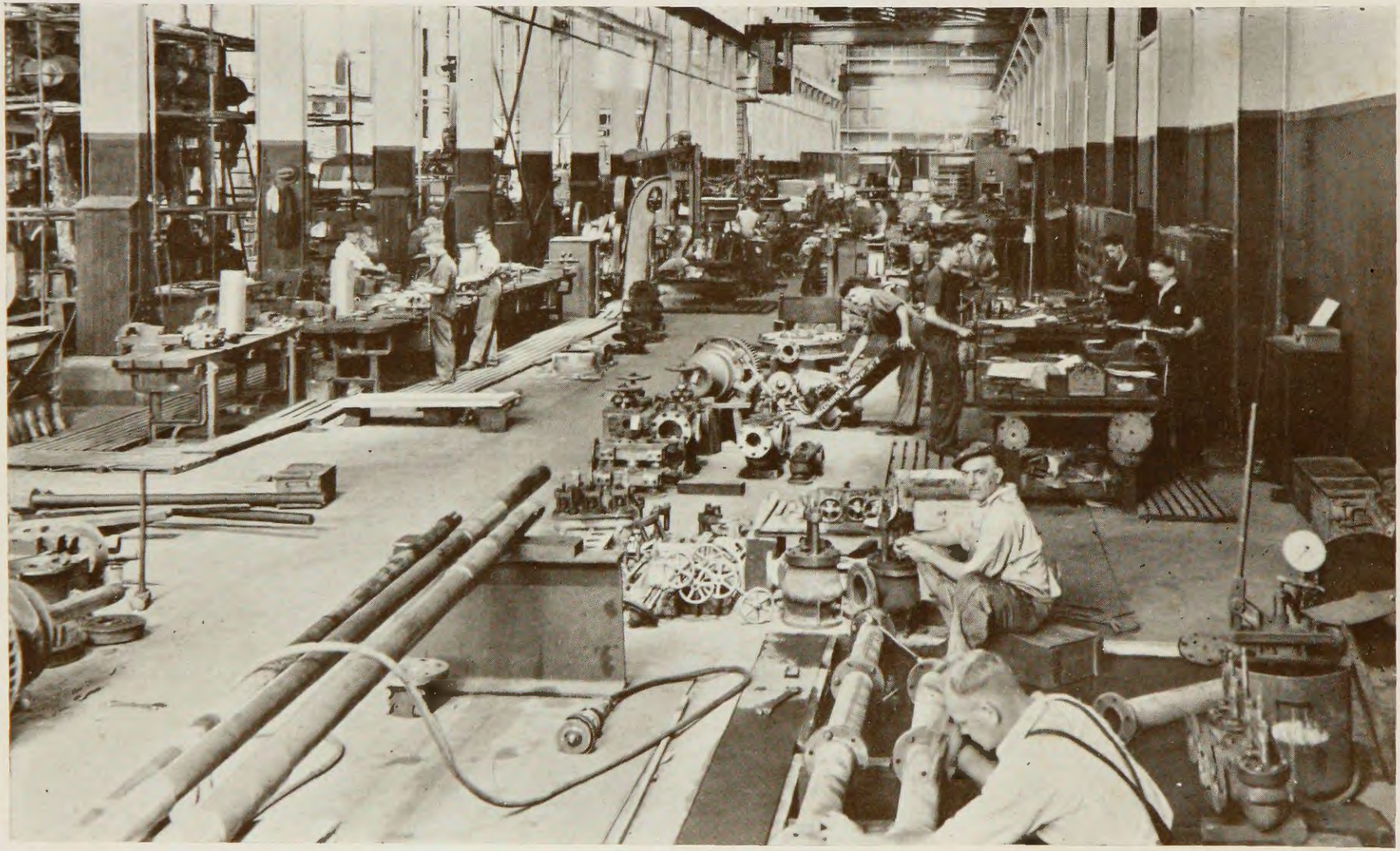
No. 5 Bay which has been allocated to the Electricians, is 35 ft. x 150 ft., and is suitably equipped with machine tools and lifting facilities.

50-Cycle Sub-station. — Adjacent to the Electricians' Shop is the main 50-cycle Sub-station, which includes two 300 K.V. oil-immersed transformers of the outdoor type, which transform the incoming supply from 11,000-volt, 3-phase, to 415 volts. The Low Tension Switchboard is situated inside the Electricians' Shop, and consists of Ironclad Switchboard of the High Rupturing Capacity Switch Fuse Type. From this board the power is transmitted by means of underground cables to the various sub-boards throughout the Works.

25-Cycle Sub-station. — The Overhead Travelling Cranes and most of the Machine Tools transferred from Walsh Island Dockyard are driven by 25-cycle A.C. motors. This sub-station comprises 3 only 6,600/440 volt, 25-cycle, single phase, delta connected transformers each 300 K.V.A., with main switchboard distributing to sub-boards throughout the Works.



HEAVY MACHINE AND ERECTING SHOP.



ONE OF TWO LIGHT MACHINE AND ASSEMBLY SHOPS.
Looking from assembly end.

LIGHT MACHINE SHOP No. 2.

BLACKSMITHS' SHOP.

LIGHT MACHINE SHOP No. 1.

SECTION OF BOILER SHOP.

ELECTRICIANS' SHOP.

The Electricians are housed in a building 35 ft. x 150 ft., which is suitably equipped for the carrying out of all classes of ship's electrical work, including rewinding of ships' motors under repair.

PATTERN AND JOINERS' SHOP.

Pattern-making and joinery facilities are housed in a two-storied building 230 ft. long x 41 ft. wide. A full range of modern woodworking machinery is installed on the ground floors, while the top floors are utilised for the storage of current patterns, special timbers and finished ships' furniture.

A covered timber storage yard is adjacent to the Pattern and Joiners' Shops.

PLUMBERS AND COPPERSMITHS' SHOP.

These trades are housed in a building 140 ft. long x 41 ft. wide, including a lining off loft 41 ft. x 20 ft., and is conveniently placed between the main Engineering Shops, Fitting-out Wharf and Shipyard. Equipment includes hydraulic and mechanical Pipe Bending Machines ; one 8 in. and one 4 in. Pipe Screwing Machines ; 7 small and one large Open Fires placed adjacent to substantial cast-iron tables, and is served by one 2-ton capacity Electric Overhead Travelling Crane, and several wall Cranes.

FITTING-OUT SHOP.

While the main Engineering Shops are close to the Fitting-out Wharf, a Fitting-out Shop immediately adjacent to the Fitting-out Wharf has been provided to conveniently cater for the activities of the trades actually engaged on fitting out.

SHIPYARD AND SHIP CONSTRUCTION FACILITIES

MOULDING LOFT.

The Moulding Loft occupies the top storey of a well-lighted building 300 ft. long x 60 ft. wide, the lower portion of which includes the Shipyard Store, Timekeepers' Offices, Workmen's Entrances, and Bath and Dressing Room Accommodation.

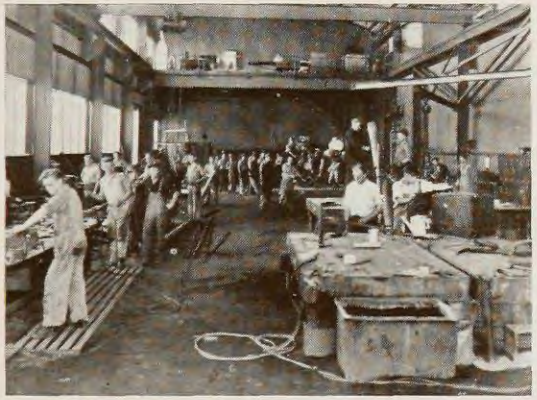
SHIPWRIGHTS' SHOP.

The Shipwrights are accommodated in a building 120 ft. long x 41 ft. wide immediately adjacent to No. 4 Building Berth. The machine tool equipment of this shop includes a petrol driven Portable Saw capable of cutting logs up to 28 in. diameter.

SECTION OF ELECTRICIANS' SHOP.

SECTION OF PATTERN SHOP.

SECTION OF JOINERS' SHOP.



SECTION OF PLUMBERS' AND COPPERSMITHS' SHOP.

MOULDING LOFT.

SECTION OF SHIPWRIGHTS' SHOP.

SHIP CONSTRUCTION SHOPS.

The main ship construction buildings take the form of a " T," the stem of which consists of three bays, each 350 ft. in length having a total width of 130 ft.

The centre Bay, which is 60 ft. in width, is equipped with two 5-ton capacity electric Overhead Travelling Cranes and a comprehensive range of ship construction plant, including Hydraulic Keel Bending Machine having a plate capacity up to 24 ft. long x $\frac{3}{4}$ in. thick ; 200-ton capacity Vertical Hydraulic Press ; 2 heavy capacity Punching and Shearing Machines ; large Plate Edge Planer, and a battery of 6 Radial Drilling Machines with movable tables on each side.

One of the wing bays is allocated to frame bending facilities which consist of one 30-ft. double-ended oil-fired Furnace with Cast Iron Bending Tables at each end; 2 Frame Bevelling Machines, together with portable Hydraulic Squeezers. Electric Winches are fitted at each end of the Furnace to facilitate movement of sections into and out of the furnace. A light electric overhead crane is also available. A portion of this same wing bay is specially equipped for automatic welding.

The other wing bay, which is connected by rail to the steel storage Yard is mainly utilised for marking-off purposes, and is equipped with a large Plate Guillotine capable of a 10-ft. cut in plates up to $1\frac{1}{4}$ in. thick in one stroke. The machine is so placed that the length of plate which can be handled is unlimited. Plate Straightening Rolls, one vertical and one horizontal 100-ton Presses, together with 5-ton Electric Overhead Travelling Crane complete the equipment of this Bay.

One side of the head of the " T " branches out into the steel storage area and consists of a shop 210 ft. long x 70 ft. wide, equipped with one 10-ton and one 15-ton Overhead Electric Travelling Cranes. This shop is mainly utilised for fabrication of hull components.

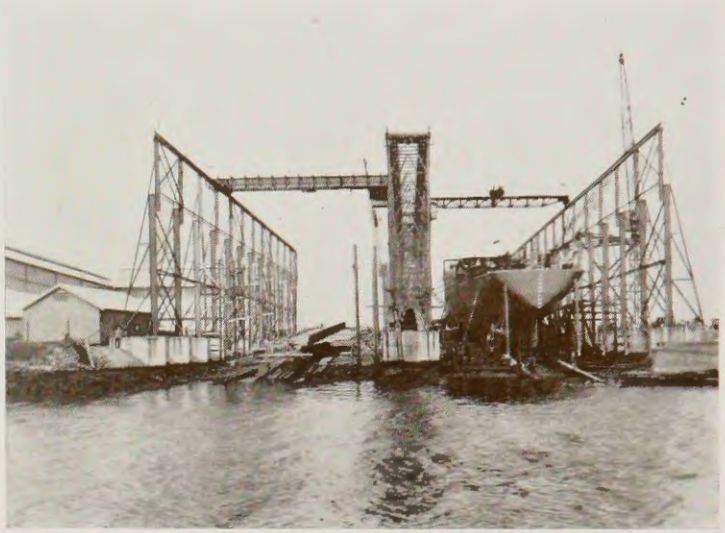
The other side of the " T," which is 90 ft. x 90 ft., and is immediately adjacent to No. 1 Building Berth, is utilised for the prefabrication of bulkheads, etc.

SHIPBUILDING BERTHS.

The Shipbuilding Berths are conveniently placed between the ship construction and engineering shops.

Two (2) of these Berths, which are of the gantry type, are equipped with 5-ton Electric Overhead Travelling Cranes having a span of 60 ft., and can accommodate vessels up to 350 ft. long.

SECTION OF SHIP CONSTRUCTION SHOPS.



Nos. 1 and 2 BERTHS SHOWING FRIGATE READY FOR LAUNCHING.

VIEW SHOWING Nos. 2, 3 and 4 BUILDING BERTHS AND VESSELS AT FITTING-OUT WHARF.

No. 3 Berth is 520 ft. long x 72 ft. wide, and is served by two Cranes, one of which is a stationary 5-ton Electric Derrick Crane on towers, having a radius of 100-ft. On the opposite side between Nos. 3 and 4 Berths is a tower type all-round Electric Derrick Crane, having a capacity of 5 tons at 50 ft., and 3 tons at 80 ft., capable of traversing the full length of the Berths.

The space allocated to No. 4 Berth will permit of a berth 600 ft. long x 90 ft. in width. In the meantime this area is being utilised for the construction of a number of 120 ft. Twin Screw Auxiliary Cargo Vessels on a line production basis. On completion of this work the Berth will be developed for the construction of large vessels.

ELECTRIC ARC WELDING FACILITIES.

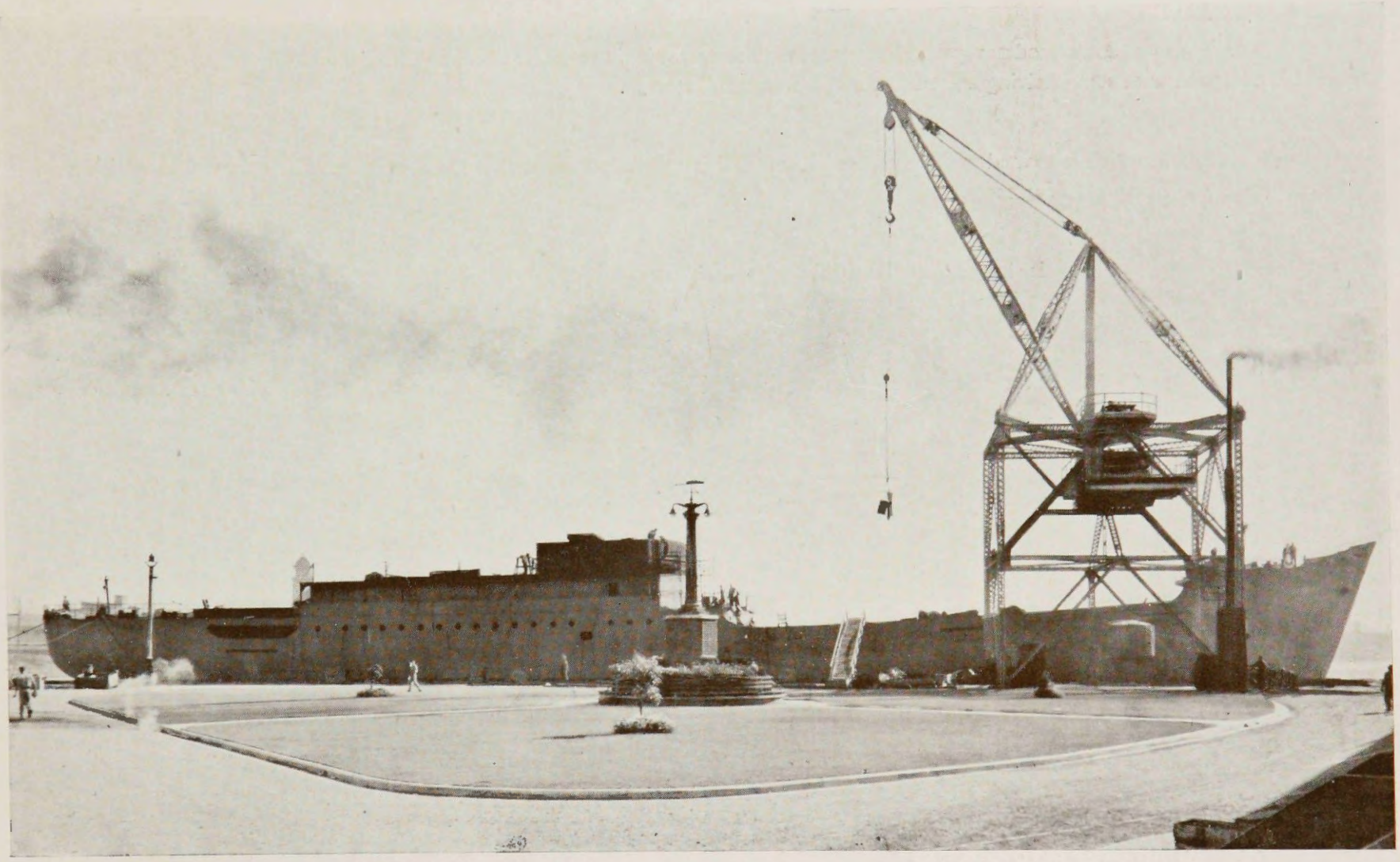
Shipyard Trades Building. — A 4,000 amp. 50 volt, constant voltage direct current generator feeds an underground bus-bar system, which runs through the building ; enclosed type floor mounting rheostats by which the current may be regulated from 10 to 360 amps. in 10-amp. steps, are placed in convenient positions throughout the building and tapped on to the underground bus-bar. These rheostats are designed for automatic or hand welding.

Nos. 1 and 2 Building Berths.—Portable units of the transformer type are used to supply welding current on these Berths 415 volt, 50 cycle supply for these units is obtained from interlocking switch plugs 10 in number, installed between the Berths.

Fitting-out Wharf. — Portable units of the transformer type are used to supply welding current. 415 volt, 50 cycle supply for these units is obtained from interlocking switch fuse plugs, 30 in number, installed in underground concrete boxes, spaced 29 ft. apart at the back of the wharf.

Engineering Workshops.— A 1,000 amp. 50-volt constant voltage direct current generator supplies current to six (6) Welding Rheostats distributed throughout the shops. 415-volt, 50-cycle interlocking switch plugs are also installed in various positions throughout the shops for A.C. welding.

A 1,000 amp. " Unionmelt " Automatic A.C. Welding Machine is installed in the Boiler Shop for seam welding.



EMPLOYEES RESERVE CENTRALLY SITUATED BETWEEN ENGINEERING SHOPS, SHIPYARD AND FITTING-OUT-WHARF
Showing vessel fitting-out.

STORAGE FACILITIES.

No. 1 Store accommodates general shipyard requirements, is a two-storied building with a total floor area of 8,000 sq. ft., and is equipped with steel shelving and racks for " bin system " storage.

No. 2 Store which is located under the Mould Loft and is 120 ft. long x 60 ft. wide, stocks direct issue materials which have been purchased for specific contracts.

No. 3 Store which is located in the Fitting-out Building adjacent to the Fitting-out Wharf, has a total floor area of 7,380 sq. ft. and is equipped with all the necessary facilities, including cranes, etc., to accommodate direct issue materials for ships in course of being fitted out.

Traffic to and from the foregoing Stores is served by the Dockyard's own fleet of motor vehicles, which includes mobile cranes and a " Lister " one-ton truck.

The main storage areas for steel plates and sections covers a total area of five (5) acres. This area, with its associate rack facilities, is capable of accommodating up to 12,000 tons of steel, and is served by 10-ton capacity loco. type steam cranes operating on rail tracks which are conveniently disposed throughout the area.

A 5-ton capacity " Ransome and Rapier " Mobile Crane is also operated in conjuction with the storage of material in this area.

" Ready use " steel storage areas are conveniently spaced adjacent to each of the Building Berths, also at other vantage points throughout the Works. Storage of forgings, billets, castings and other raw products is provided for within an area adjacent to the main Engineering Shops. This area, 60 ft. wide x 400 ft. long, is served by a 5-ton capacity Electric Overhead Travelling Gantry Type Crane.

Adequate storage has been provided for timber, masonite and plywoods, which are suitably racked under cover in a location accessible to timber working trade shops.

GENERAL VIEW OF DOCKYARD LOOKING NORTH-EAST.
Showing entrance to Harbour.

PRODUCTION

The following pages illustrate the production of the Dockyard during the course of its actual construction.

Construction was commenced in January, 1942, the first official launchings taking place on 12th July, 1943, as follows :—

H.M.A.S. "Strahan" — 180 ft. Twin Screw Corvette for the Royal Australian Navy; launched by Mrs. J. J. Cahill, wife of the Minister for Public Works under whose administration the Dockyard was established;

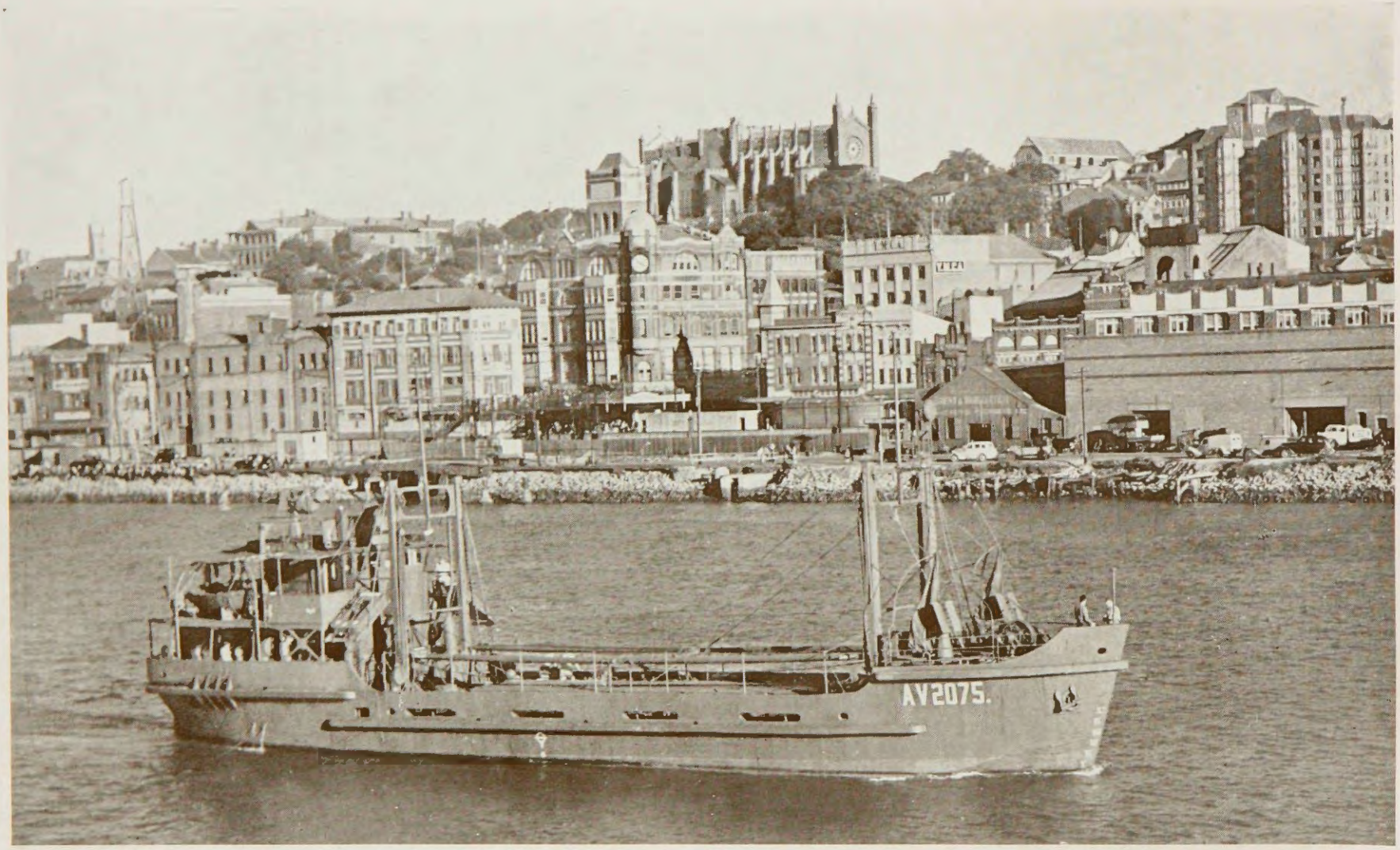
T.S.M.V. "Babilla" — 120 ft. Twin Screw Auxiliary Cargo Vessel for the U.S.A. Army Transportation Service, launched by Mrs. Nelson T. Johnson, wife of the United States Minister to Australia.

Following launchings included H.M.A.S. "Condamine," 307 ft. Twin Screw River Class Frigate for the Royal Australian Navy, and nineteen (19) additional 120 ft. Twin Screw Auxiliary Cargo Vessels for the U.S.A. Army, Royal Australian Navy and Australian Army Transport Services. The first peace-time programme merchant vessel, the "Dorrigo," single screw Cargo Vessel 290 ft. 9 in overall length by 46 ft. 0 in. beam, having a cargo carrying capacity of 2,500 tons, was launched on 27th October, 1945, thus making a total of 23 vessels launched within four years of commencement of construction of the Dockyard.

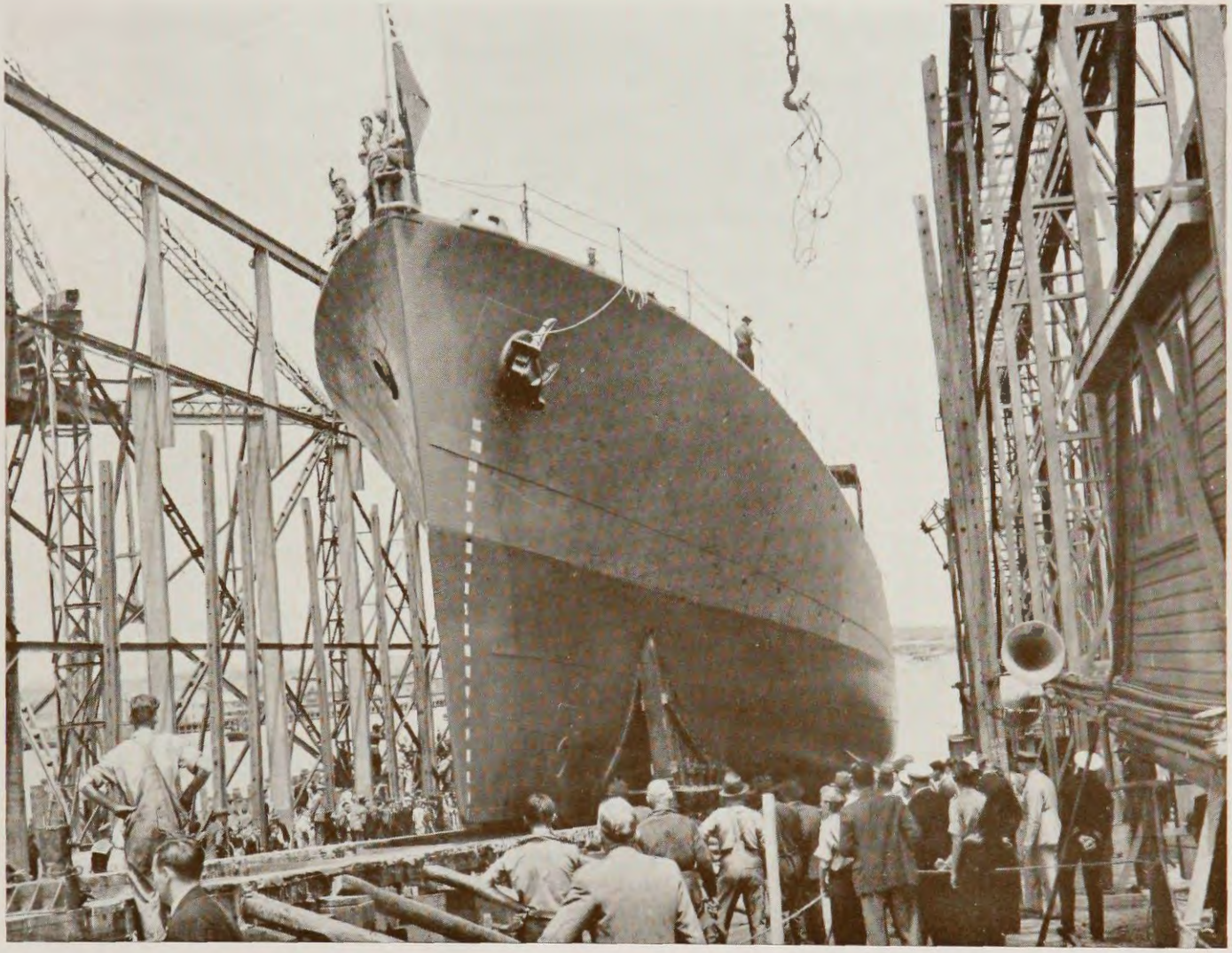
In the course of this period 4 sets of 2,750 I.H.P., 4 cylinder Triple Expansion Engines and 2 sets of 1,850 I.H.P., 4 cylinder Double Compound Reciprocating Engines have been completed or are in an advanced stage of construction.

The very considerable volume of ship repair work concurrently carried out in conjunction with the Government's 15,000 ton Floating Dock, is the subject of later reference.

THE DOCKYARD'S FIRST NAVAL VESSEL H.M.A.S. "STRAHAN."
180 Ft. Twin-Screw Corvette.



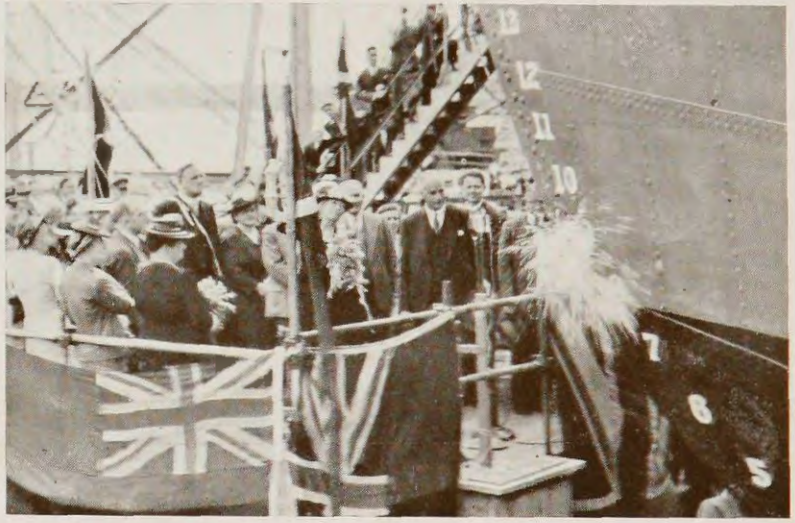
ONE OF TWENTY — 120 Ft. TWIN SCREW CARGO VESSELS COMPLETED DURING WAR PERIOD.



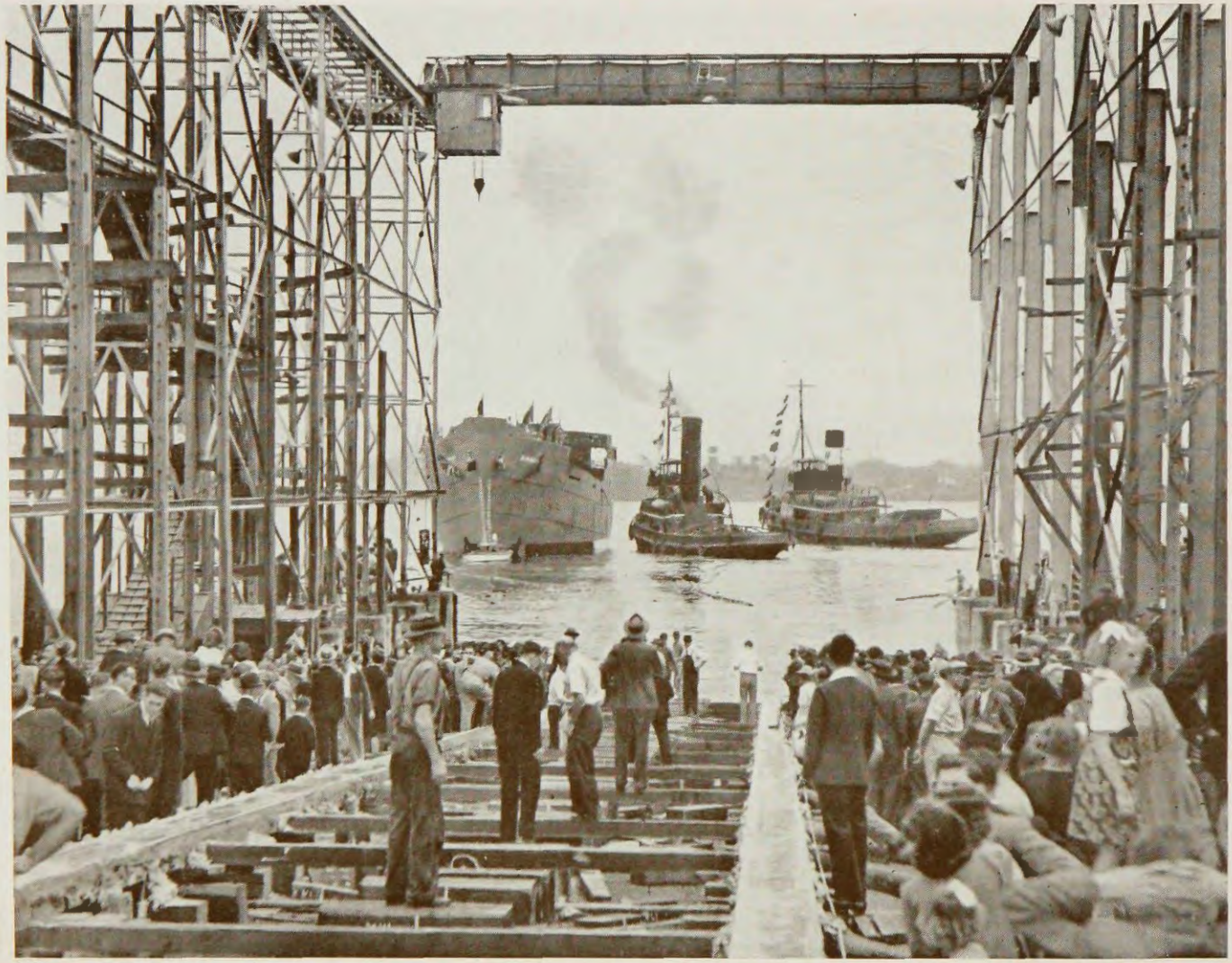
LAUNCHING OF TWIN SCREW FRIGATE — H.M.A.S. "CONDAMINE."

H.M.A.S. " CONDAMINE " — TWIN SCREW RIVER CLASS FRIGATE.
307 Ft. long; 5,500 I.H.P.; Speed 20 knots; — undergoing Trials.

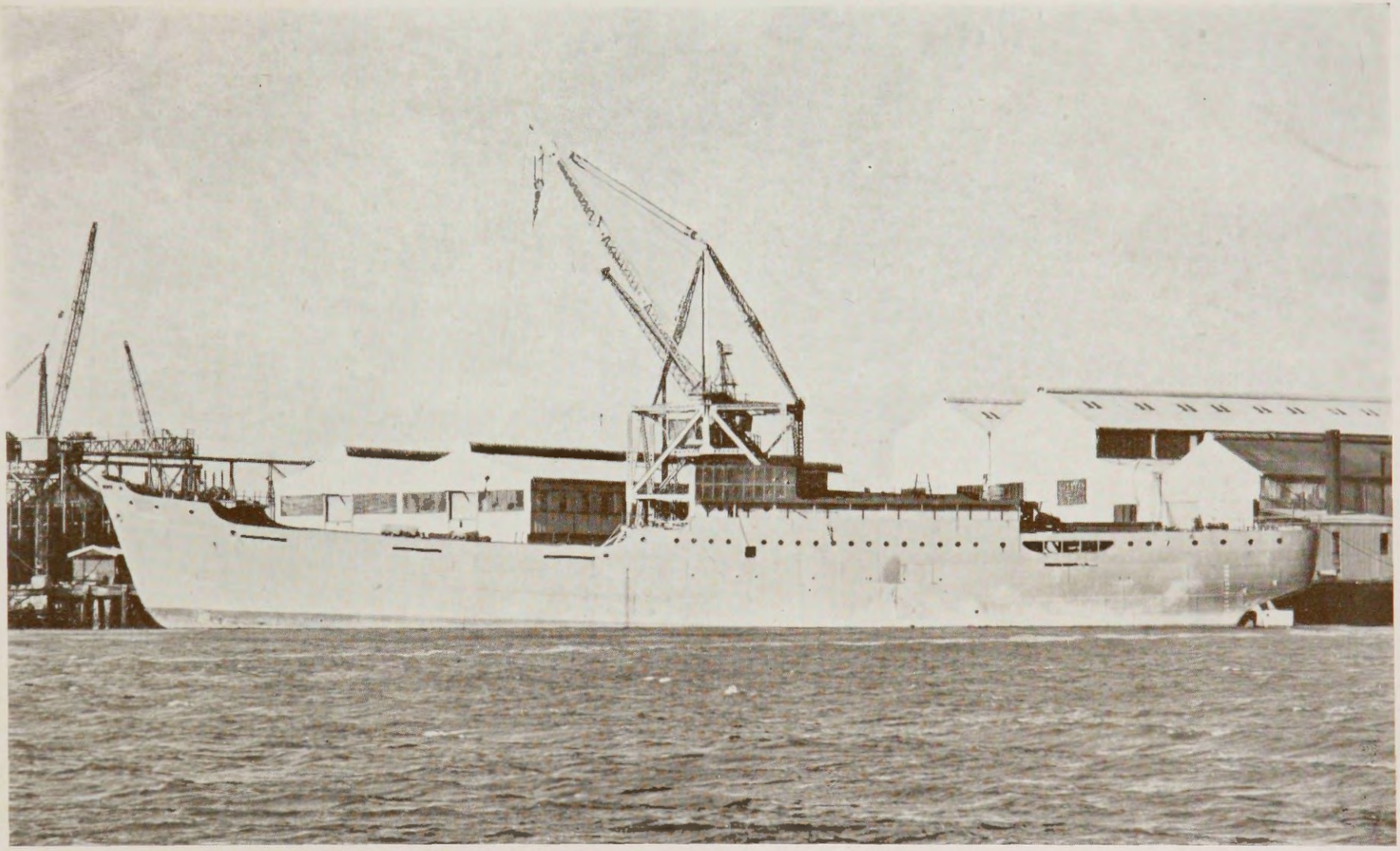
H.M.A.S. "CONDAMINE" ON TRIALS.



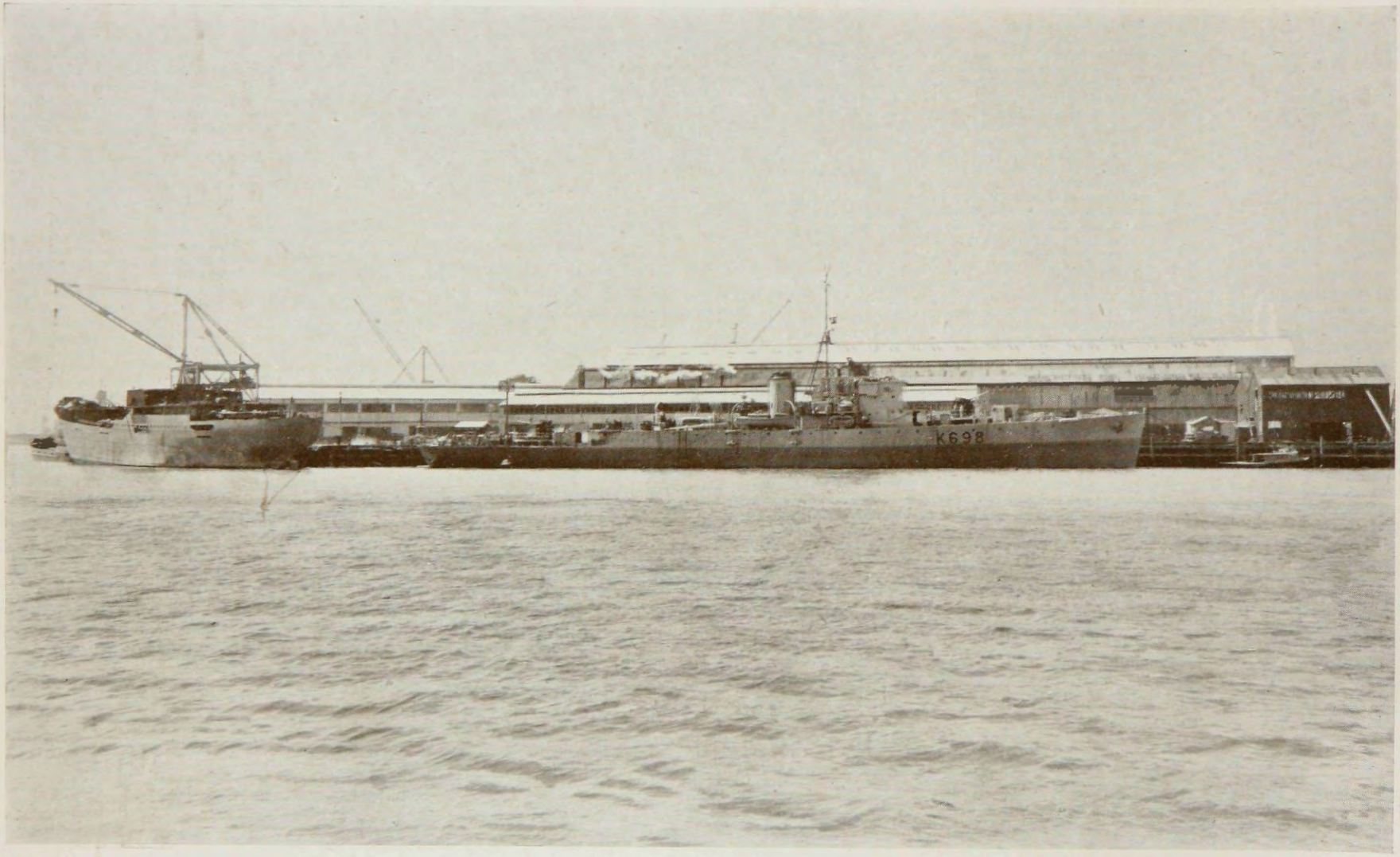
SCENES AT LAUNCHING OF DOCKYARD'S FIRST MERCHANT VESSEL — S.S. "DORRIGO,"
27th October, 1945.



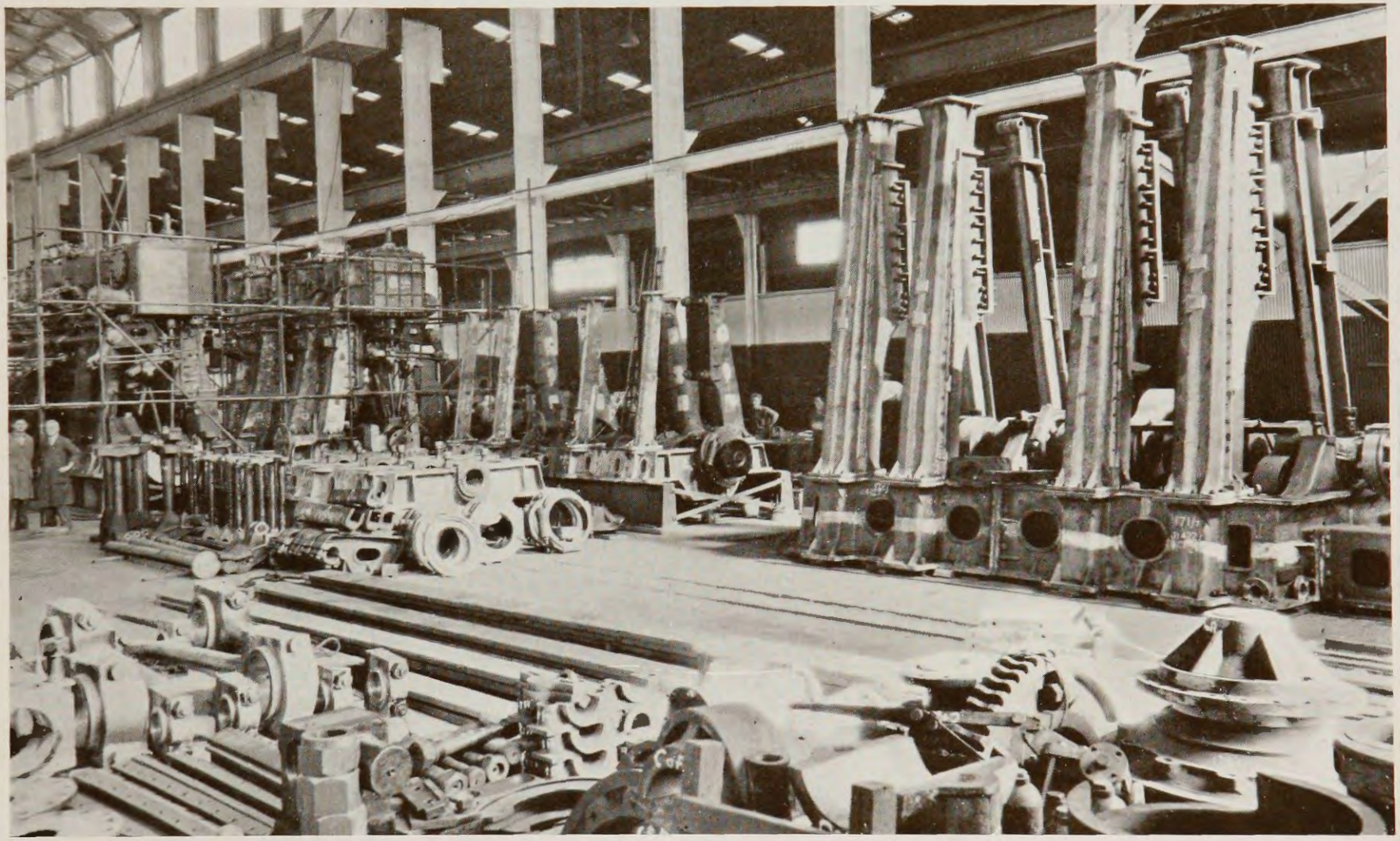
S.S. " DORRIGO " SAFELY AFLOAT.



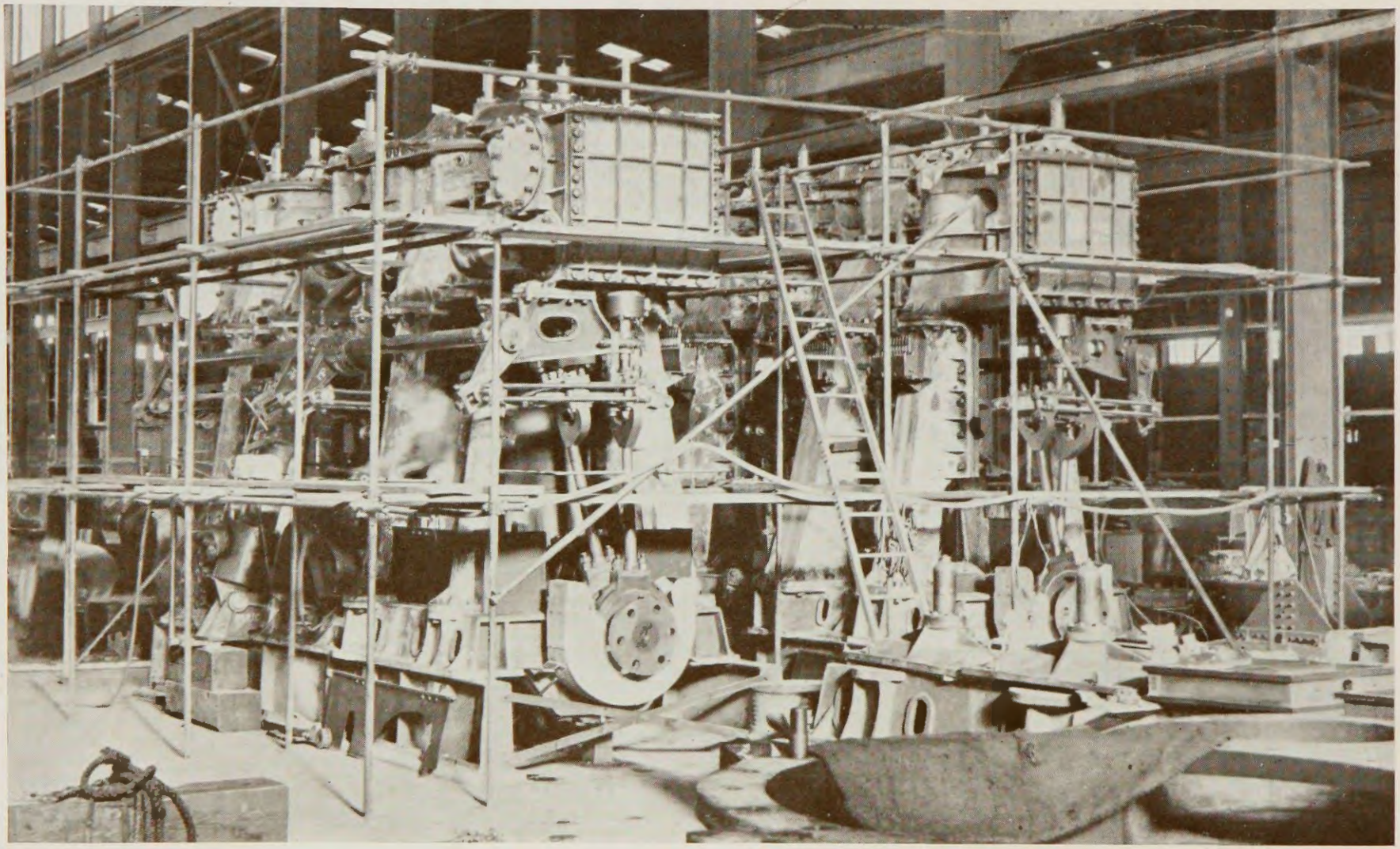
S.S. " DORRIGO " ALONGSIDE FITTING-OUT WHARF.



VIEW SHOWING H.M.A.S. " CONDAMINE " READY FOR TRIALS AND S.S. " DORRIGO " FITTING-OUT.



VIEW SHOWING FOUR SETS OF NAVAL AND ONE SET OF MERCHANT 4-CYLINDER RECIPROCATING ENGINES IN COURSE OF CONSTRUCTION.



TWIN SET OF 5,500 I.H.P., 4-CYLINDER FRIGATE CLASS RECIPROCATING ENGINES, NEARING COMPLETION.

DESCRIPTION OF DOCKYARD'S WARTIME SHIP REPAIR ACTIVITIES.

AERIAL VIEW OF 15,000-TON CAPACITY FLOATING DOCK AT PRESENT SITE, CARRINGTON.
[September, 1945.]

SHIP REPAIR ACTIVITIES

While the Dockyard has made a noteworthy contribution to the war effort by way of new ship construction, its ship repair record is even more impressive.

Prior to the establishment of the Dockyard, the Government's 15,000-ton Floating Dock had been operated in two (2) sections one having a lifting capacity of 11,000 tons and the other of 4,000 tons.

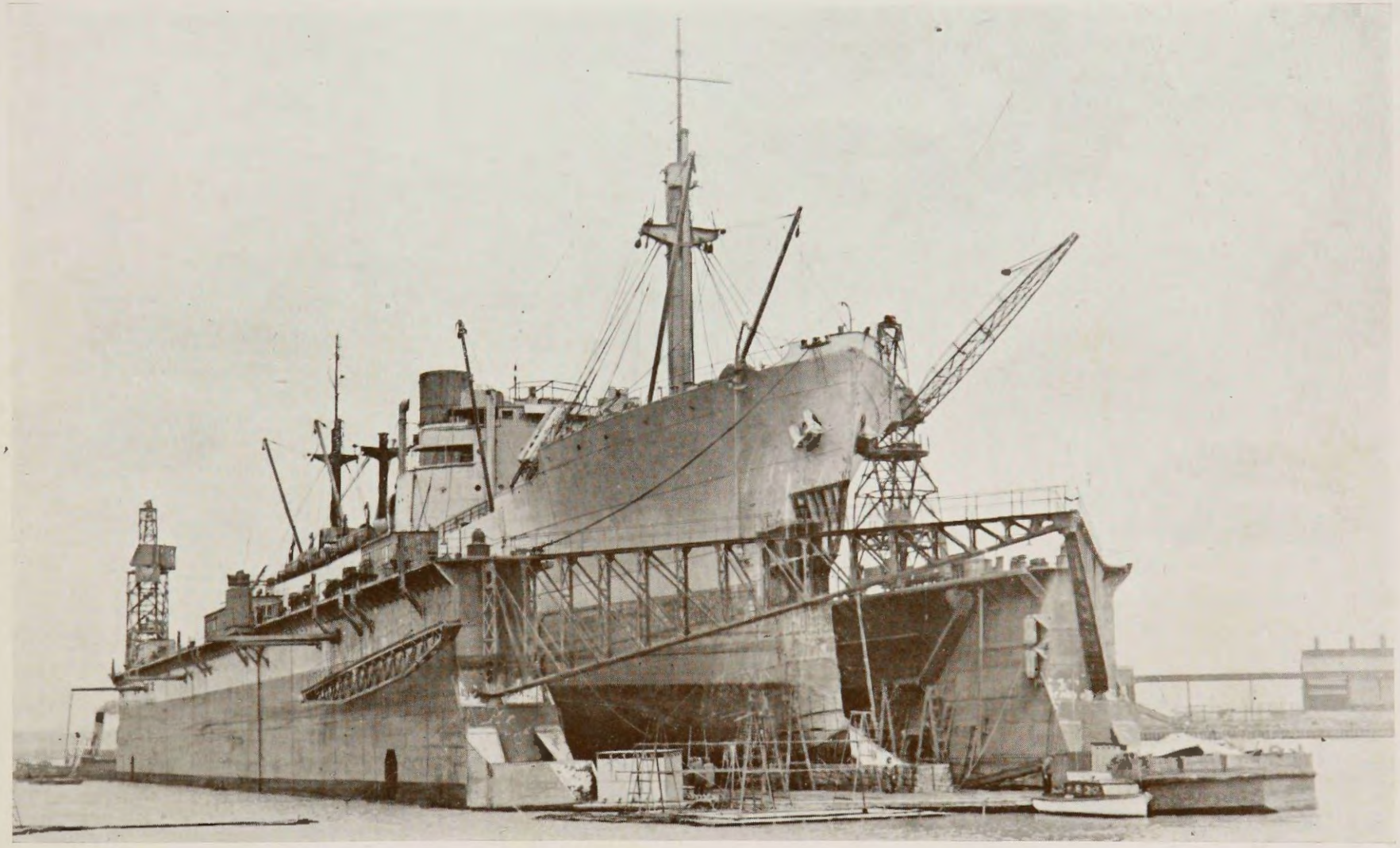
Coincident with the decision to re-establish shipbuilding facilities on the mainland, it was decided to join the Dock into one complete unit. Following the completion of this operation in January, 1942, the docking and repairing of all types of Australian and overseas vessels has been carried out continuously.

In April, 1943, the Floating Dock was moved to its present mainland site at Carrington, following extensive dredging operations and the construction of the necessary heavy anchorages.

In the four years which have elapsed since January, 1942, over 600 vessels totalling 2,800,000 tons have been docked and/or repaired. Many of these vessels required major repairs due to damage caused by enemy action or in collision, the largest vessel docked being over 14,000 tons.

HULL REPAIRS.

The first major hull repair work undertaken was in November, 1942, to the T.S.S. " Perthshire," 10,496 gross registered tons, which had been severely damaged in collision and temporarily repaired at another port. The damage necessitated the renewal of the vessel's bow from the stem to the collision bulkhead, and before commencing repairs, thirty tons of reinforced concrete had to be removed by blasting. The work was carried out continuously until completion in December, the vessel returning to service early in January.



15,000-TON FLOATING DOCK AT ORIGINAL WALSH ISLAND SITE.
Showing T.S.S. "Perthshire" [10,500 tons] in Dock for Bow Repairs.

Following the increased volume of American shipping in the South Pacific Area, many Liberty ships and Standard Oil tankers sustained damage through collision, stranding and enemy action. These vessels which were of entirely welded construction, presented difficulty in the carrying out of repairs due to a lack of experience of welded ship construction in this country at that time.

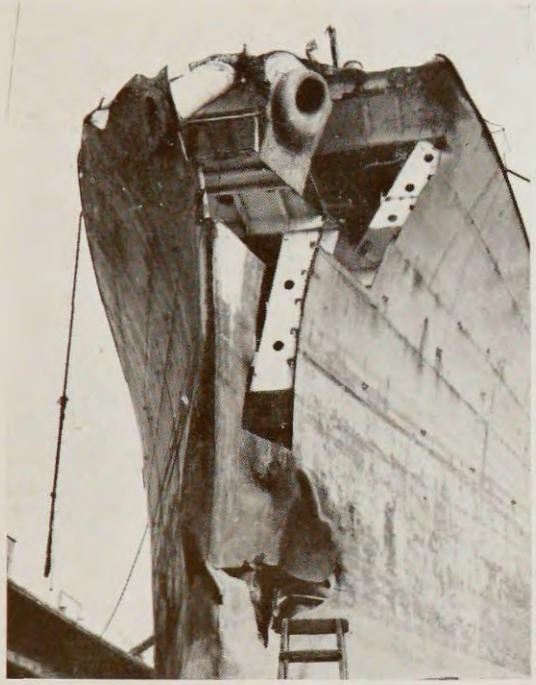
The first damaged ships were sent to the State Dockyard for repairs. These were carried out to the entire satisfaction of Classification Society Surveyors and the Inspectors of the American War Shipping Administration.

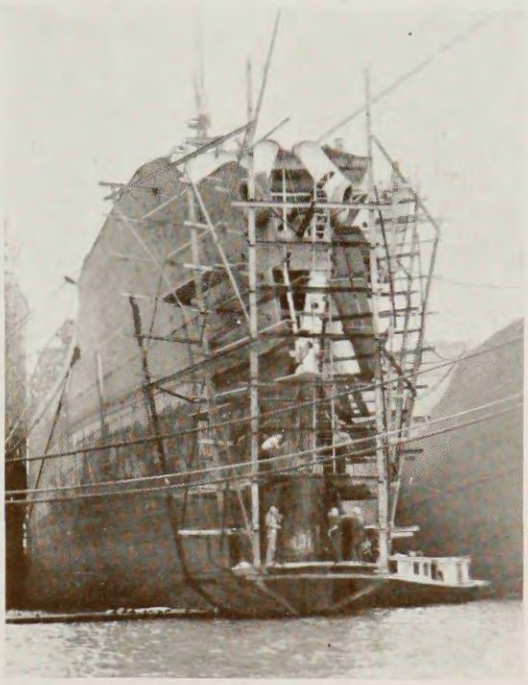
One of these vessels worthy of mention was the Standard Oil Tanker " Pendleton," 10,448 gross registered tons, which had sustained major bottom damage through stranding. Permanent repairs would have delayed the vessel for many months. The State Dockyard was requested to carry out temporary repairs to enable the vessel to remain in service. These repairs included the fitting of a false bilge on the vessel's starboard side for a length of 140 feet amidships, all transverse bulkheads and stiffeners in way of this damage being also treated. The vessel was returned to service in nineteen days and was able to function as a useful Oil Tanker until the cessation of hostilities.

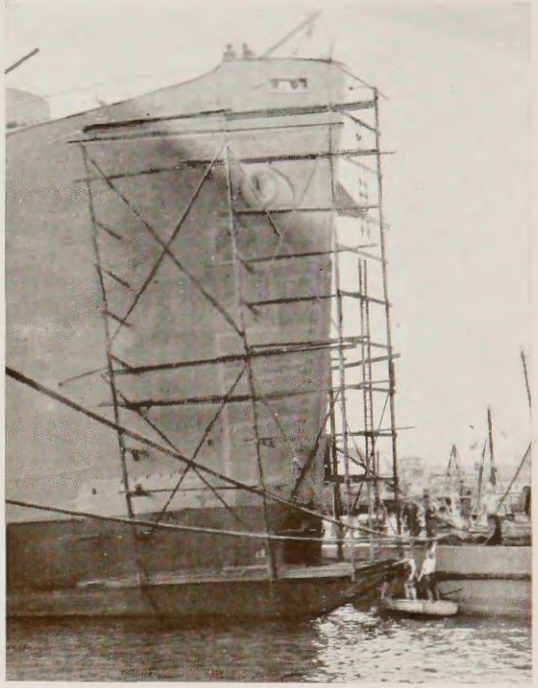
Another undertaking worthy of record was the collision damage repairs to the Standard Oil Tanker " Missionary Ridge," 10,195 gross registered tons. Collision damage extended from forefoot to forecastle deck and back to the collision bulkhead. Owing to the extreme pressure on docking facilities at that time, the State Dockyard was requested to attempt to carry out repairs afloat, as far as possible. The vessel docked for five (5) days during which time all damaged steel work was cut away and a large steel scaffolding welded to the vessel's hull. She was then refloated and repairs were carried out afloat. These necessitated the fabrication and fitting of more than 80 tons of steelwork. On completion of repairs, the staging was removed and the vessel proceeded into service without further docking.

Another unusual repair was that carried out to the Liberty Ship " Jonathon P. Dolliver," 7,176 gross registered tons, which sustained very severe damage through striking a reef. This damage extended 50 feet back from the stem, the whole forward part of the vessel being set down 11 inches. The vessel was docked, damaged steelwork cut away, the shell plating split by oxy-acetylene torch and the forward part of the vessel lifted back to its original position with four 100-ton hydraulic jacks. The vessel was then undocked to await the fabrication of the new steel. Owing to pressure on the docking facilities, it was some months before she could be re-docked, when repairs were completed in five (5) weeks.

REPAIRS EFFECTED TO S.S. "MISSIONARY RIDGE" WHILE AFLOAT







VIEWS ILLUSTRATING DAMAGE AND HOW REPAIRS WERE EFFECTED UTILISING STEEL SCAFFOLDING WELDED TO HULL.

PROPELLING MACHINERY REPAIRS.

The main engine overhauls successfully carried out include propelling machinery of both diesel and steam-engined vessels. Diesel-engined vessels included in this category are :—

" Duntroon."
" Ora."
" British Unity,"
" Limousin."
" Aase Maersk."
" Diloma."

all of which were subject to major overhaul.

ELECTRICAL REPAIRS.

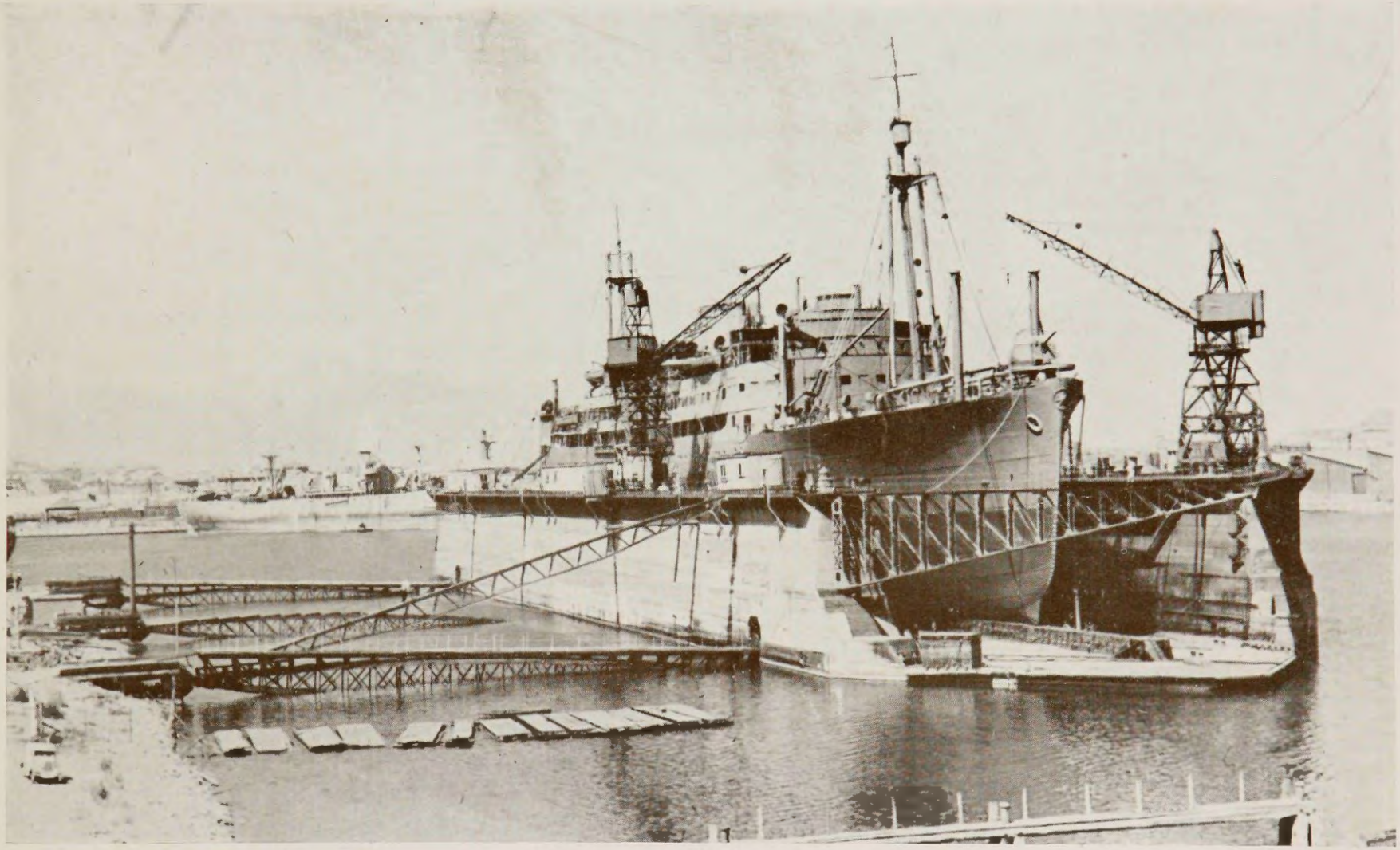
The Electrical Department of the Dockyard has also carried out many major repairs on vessels' electrical machinery and equipment. An outstanding example of this was the Liberty ship " Augustus Thomas," which had been sunk by Japanese bombers and remained submerged for many months. After salvage she was towed to the Dockyard for complete re-conditioning.

Apart from extensive hull, main engine and auxiliary machinery repairs, the electrical work was unusually comprehensive in volume and nature. Two (2) main generators and a number of motors had to be completely dismantled and re-wound. It was also necessary to entirely rebuild the commutators. The wiring throughout the submerged portions of the vessel had to be renewed ; main switchboards and distribution boards had to be rebuilt, in regard to which many special fittings not available on short notice had to be manufactured at the Dockyard.

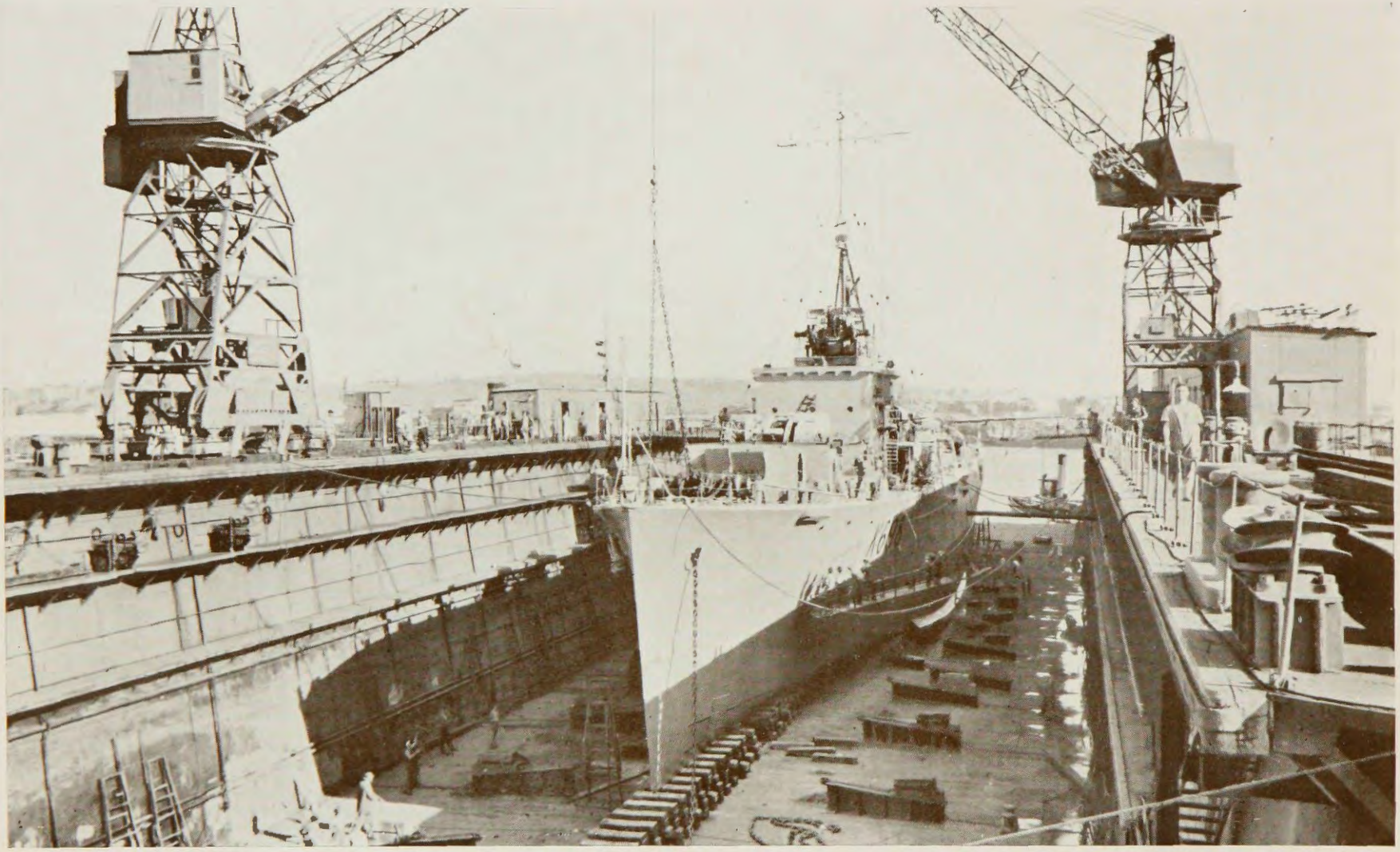
EXPEDITIOUS CLEANING AND PAINTING.

One of the several advantages of a Floating Dock as compared with a land Graving Dock is that the current of air passing through the open ends of the Floating Dock effects much quicker drying of paints than is possible with the damp still air of an excavated Dock.

There are many instances where the cleaning and painting of large vessels have been completed within eight (8) hours of the vessel entering the Dock.



15,000-TON FLOATING DOCK AT PRESENT CARRINGTON SITE.
Showing T.S.M.V. "Duntroon" [10,346 tons] in Dock for Annual Overhaul.



DOCKYARD-BUILT H.M.A.S. " CONDAMINE " IN FLOATING DOCK.

STATE DOCKYARD, NEWCASTLE, N.S.W.

N.S.W. GOVERNMENT ENGINEERING AND SHIPBUILDING UNDERTAKING

Telegraphic Address :
STATEDOCK, NEWCASTLE

Postal Address :
Box 431-D., P.O. Newcastle

Telephones :
M 2201-6

Offices, Engineering Works and Shipyard,
DYKE END

Floating Dock and Patent Slips,
CARRINGTON

The Dockyard has been established by the Government of New South Wales primarily to cater for the Shipbuilding, Ship Repairing and associated Engineering requirements of Australia, New Zealand, and the adjacent countries of the Pacific. Any free capacity of the Dockyard's comprehensive facilities is available to assist in meeting the requirements of industry generally.

SHIP REPAIRING

The Dockyard operates a modern Floating Dock particulars of which are as follows :—

Lifting Capacity	15,000 tons.
Length Overall	630 feet.
Clear Width of Entrance	82 feet.
Depth of water over Keel Blocks	26 feet.

Any class of repairs to all types of steam or diesel driven vessels, their machinery and equipment, including electrical installations, expeditiously effected.

GENERAL VIEW NEWCASTLE HARBOUR.
Showing Floating Dock in Foreground; Dockyard in middle distance.

A MEMORABLE SPEECH

The following extracts are from the speech of the Hon. W. J. McKell, K.C., M.L.A., Premier, at the launching of H.M.A.S. Strahan and an auxiliary cargo vessel for the U.S. Army Transportation Services, at State Dockyard, Newcastle, 12th July, 1943.

" To-day in this celebration we follow in the footsteps of the Motherland and the United States of America, and of our own Federal Government.

" The clarion call of Churchill was for ships, more ships, and still more ships. Our first job as a Government was to answer Churchill's call, and so we established this yard.

" You have seen two gallant ships take their place in the ocean that laps the shores of our two great democracies.

" The Strahan will join the Australian fleet, the pups of the old sea-dog of Great Britain, and wherever the old dog goes the pups will be by her side.

" The American ship is one of twenty that we are building . . . It is a tremendous honour to be doing this work for our great ally . . .

" We will never forget the magnificent gesture of the President of the United States in sending to help us in our darkest hour, the hero of Bataan.

" It is a long step from Dunkirk to Sicily. My mind goes back to those dark days following the fall of France when all seemed lost.

" I am reminded of Churchill's clarion call for the defence of freedom, after the retreat from Dunkirk, when he said:—

> ' We shall go on to the end. We shall fight on the beaches, on the landing grounds; we shall fight in the fields and in the streets . . . until in God's good time the new world, with all its power and might, steps forth to the rescue and liberation of the old.'

" God's good time has come. The new world, with all its power and might, has stepped forth to the rescue and liberation of the old."

"AU REVOIR."

SYDNEY: 1946

T. H. TENNANT, GOVERNMENT PRINTER

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