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MONEY MARKET Inadequate Credit Supplies In Lombard Street yesterday credit supplies proved insufficient to meet requirements, due to calling in by one of the larger banks, and assistance proved necessary. Subsequently the position became rather easier, but there was no plethora of funds. The turnover in the discount market was small, buying of January Treasury bills being limited. Among the foreign exchanges a slight reduction to 8.08-8.13 occurred in the Philippines rate. Silver prices were steady.

STOCK EXCHANGE Shipping Shares Irregular A dull tone characterised most sections of the Stock Exchange yesterday, although there was a revival of buying of South African gold-mining shares. British Government stocks suffered from the absence of support, and closed 1-16 to 3-16 down where changed, the 3 per cent. Funding showing the larger change at 108 3/4. Movements among home railway Ordinary stocks were confined to losses of 1/4 in North Eastern Preferred to 6 3/4 and Southern Deferred to 23 3/4.

Decidedly quieter conditions prevailed in the shipping share market, and the tone was uncertain. British India 5 1/2 per cent. Preference were quoted 4 higher at 144 1/4 and Orient 6 per cent. Preference 1 3/4 to 16 3/4, while Indo-China Deferred advanced 1/4 to 14 1/4. P. & O. Preferred rose 2 to 142 1/2, but the Deferred reacted another 1s. to 43s. King gained another 6d. to 60s., but Reardon Smith lost 6d. to 38s., and falls of 3d. were shown in Coast to 20s. 9d. and Cunard to 39s. 9d.

WESTLAND AIRCRAFT, LTD.—After providing for depreciation and taxation, the profit for the year ended June 30 amounted to £44,960 (£41,468), and £30,310 (£25,046) was brought forward, making £75,270 (£66,514). The directors have added £10,000 (same) to general reserve, and £10,000 (same) to general contingency provisions. A dividend of 5 per cent. per annum, free of tax (4 per cent.), is recommended, leaving to be carried forward £35,270. The balance sheet totals at £1,130,416 (£2,282,922).

CROSSLEY BROTHERS, LTD.—Interim dividend of 4 per cent. actual, less tax, on the Deferred Ordinary shares. No interim dividend was paid for the previous year, but 1 1/2 per cent. was paid for the year.

COMMODITIES GRAIN LONDON (Baltic Exchange), Tuesday WHEAT.—Only small offers were made to the Ministry 10-day of Canadian Manitobas at the scheduled rates. Quotations: No. 1 Northern Manitoba Nov. shipment from St. Lawrence 17 1/4c. No. 2 grade 16 1/4c., and No. 3 grade 16 1/4c. per bushel, f.o.b. Australian Nov.-Dec. shipment in bulk 7 1/2s. 6d. quoted, per 480 lb. f.o.b.

OILS AND OILSEEDS LONDON (Baltic Exchange), Tuesday OILS.—LINSEED—Raw £135, RAPE.—Crude £91, COTTON.—Crude £52 2s. 6d. CASTOR.—First £110, second £108. GROUNDNUT and SUNFLOWER.—Crude £56 10s. per ton. ROSIN.—American grades F to M 47s., WG 48s. 6d., WW 52s. 6d. per cwt.

FOREIGN PRODUCE LONDON (Mincing Lane), Tuesday SPICES.—(LOVES.—Zanzibar spot 10 1/4d. per lb. sellers; Dec.-Jan. 9d. per lb. sellers c.i.f. MACE.—West Indian pale spot 7s. 9d. per lb. quoted. PIMENTO.—Spot 1s. 1d. per lb. sellers. CHILLIES.—Mombasa spot 16 1/2s. sellers per cwt. c.i.f. Nov.-Dec. 14 1/2s. quoted.

METALS LONDON (Metal Exchange), Tuesday TIN.—The Directorate of Non-Ferrous Metals supplies tin of 99 per cent. to under 99.75 per cent. at £380 10s. per ton, delivered works; export £380 10s. per ton f.o.b. United Kingdom.

Company Meeting PRINCE LINE Benefits of Modernisation SIR ERNEST MURRANT ON FUTURE PLANS The annual general meeting of Prince Line, Ltd., was held yesterday in London. Sir ERNEST H. MURRANT, K.C.M.G., M.B.E., the chairman, in the course of his speech, said: The report and accounts for the year ended June 30 last reveal the achievements during a period in which for rather more than nine months the fleet operated under requisition by his Majesty's Government.

At varying dates subsequent to March the ships were redelivered to us as they completed current voyages or current employment, but in fact the last ships to be released only came back into our service in August this year, i.e. after the close of the financial year. It will be recalled that the basis of requisition, broadly, was a monthly payment of hire which was intended to yield 5 per cent. interest and 5 per cent. depreciation, and it is of interest to find that, in the case of your company, the rates of hire were so finely calculated that over the six-year period the actual average return has been within a decimal point of those figures.

NEED FOR MORE SHIPS We shall undoubtedly require more ships for our various services, and we shall endeavour to acquire them, or build them, with prudent care. For that purpose we have immediately available approximately £2,000,000 of investments, and if, after acquiring the new ships which we must have, there should be any fall in values, we have the fleet replacement account of £800,000 wherefrom we can make provision for exceptional depreciation.

ADMIRALTY DIVISION (IN PRIZE) Monday, Nov. 25, 1946 APPLICATIONS FOR CONDEMNATION OF SHIPS Before the PRESIDENT (Lord Merriman) His Lordship continued the hearing of applications for condemnation of a series of 61 German ships. The previous proceedings were reported in LLOYD'S LIST of Nov. 26.

RESUMPTION OF SERVICES As regards our various services, we are doing our best gradually to resume our activities. We have been able to resume sailings from the United States to South America, to South Africa and to the Far East. In addition, we have, in association with the Houlder Line, established a service between Canada and South America, for which purpose ships have been acquired and chartered from the Canadian Government.

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LAW REPORTS COURT OF APPEAL Monday, Nov. 25, 1946 ACCIDENT ON BOARD SHIP VAUGHAN v. SIR R. ROPNER & CO., LTD. Before Lord Justice SCOTT, Lord Justice ASQUITH and Mr. Justice VAISEY

This was an appeal by William Vaughan, Ashfield Street, Liverpool, from the dismissal by Mr. Justice Sellers, at Liverpool Assizes, of his claim against Sir R. Ropner & Co., Ltd., Stockton-on-Tees, for damages for being injured on board the Empire Sunbeam on June 26, 1945. The judgment appealed against was reported in LLOYD'S LIST of Apr. 8, 1946. Mr. E. Woolf, K.C., and Mr. E. P. Wallis-Jones (instructed by Messrs. Isadore Goldman & Son, agents for Messrs. Silverman & Livermore, Liverpool) appeared for the appellant; Mr. W. Clothier, K.C. and Mr. J. S. B. Lloyd (instructed by Messrs. Botterell & Roche, agents for Messrs. Weightman, Pedder & Co., Liverpool) represented the respondents.

Mr. CLOTHIER said no doubt the expedient of letting down the water in a glass jar by means of a knotted rope was foolhardy in the extreme, but it was, he argued, a casual act of negligence on the part of the man who did it. There was, he contended, no negligence or breach of duty by the shipowners, who, he suggested, had done all that was required of them by properly providing a tap from which cool drinking water could be obtained at the top of the stokehold ladder to which all those in the stokehold had access.

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Shipbuilding and Engineering Section

MARINE PROPULSION

Application of the Reheat Steam Cycle

THE C.P.R. "BEAVER" CLASS SHIPS

Mr. A. W. Davis, chief engine designer to the Fairfield Shipbuilding & Engineering Company, Ltd., has read a paper before the North-East Coast Institution of Engineers and Shipbuilders entitled "The Application of the Reheat Steam Cycle to Marine Propulsion With Special Reference to the C.P.R. 'Beaver' Class Turbo-Electric Cargo Liners." The author discussed the features which led to the development of the unorthodox machinery installed in the new Canadian Pacific cargo vessels Beaverdell, Beaverlegen, Beaverlake and Beaverrove, and comparisons were made with other and more usual types of machinery which were considered but not adopted. Particulars of service performance taken from the second vessel, the Beaverlegen, during a voyage to and from Canada made by the author in August-September last were given in detail and in conclusion new developments were referred to which might permit of higher efficiencies being achieved in future on the basis of the success obtained with the vessels under review. An abstract of the paper is given below.

In the never ceasing quest for increased efficiency, unorthodox designs periodically make their appearance in all branches of engineering, but in the marine field, where so much depends upon reliability, the departure of any new design from established practice is not usually radical. When a pronounced breakaway is made, the performance of the new machinery in service becomes a matter of wide interest and it is proposed, in the presentation of this paper, to satisfy, so far as possible, the interest aroused in these circumstances by the high-pressure turbo-electric machinery of the new "Beaver" class cargo liners built to the order of the Canadian Pacific Railway Company, Montreal, for North Atlantic Service.

It can be stated without further preamble that the machinery, as finally conceived, designed and installed, has fully justified in technical performance the aspirations of the designers and while it is perhaps early to be dogmatic regarding the reliability and durability of the plant in service, the evidence accumulated from the first two vessels is wholly favourable. The author recently had the opportunity of making a voyage in the second vessel, the *Beaverlegen*, and the performance "down below" gave no indication that the design, however new in its conception, was in any way immature.

In the adoption of the reheat steam cycle, advantage was taken of experience gained in land power-plant practice, and it is of particular interest to members of this Institution that a most instructive paper, presented to their nearly 13 years ago by Messrs. Bottomley, Corlett and Piercy ("The possibilities of applying improvements effected in modern land power plant to ship propelling machinery," vol. 50, p. 137) advocated this line of development and stressed the economies that might be achieved by following such a course. In regard to the design of boiler plant there was, however, no such guiding star, and the unconventional manner in which this problem was solved adds, in no small degree, to the interest attaching to the post-war "Beaver" fleet. In the matter of the transmission there is scope for further economy and an indication will be given of the lines upon which development is progressing, so that the advantages of the steam installation adopted for these vessels may, in future, be realised to greater effect.

Choice of Design

In its fundamental aspect the design of the vessel as a whole was affected by the fact that, owing to the circumstances prevailing at the time, it was necessary that the hull should be of the standard 15-knot design approved by the Admiralty, having dimensions 465 ft. b.p. by 64 ft. by 29 ft. 9½ in. draught, 17,180 tons displacement, and having a C_W value of .987. This determined the adoption of a single screw and thereby eliminated a variety of further projects which were under consideration in association with twin screws. The power of 9000 s.h.p. necessary to give the speed under which the vessels were to operate was about 10 per cent. less for a single screw than for twin screws and, with the adoption of turbine machinery, a gain in thermal efficiency of 4-6 per cent. was to be expected due to size effect but, despite these facts, the advantages of twin screws, both in relation to manoeuvrability and the relative simplicity with which the requirements for propulsion in the event of mechanical failure are naturally satisfied, could not be sacrificed without careful consideration of the circumstances under which a vessel of such size was to operate.

In the detailed selection of the type of turbine machinery to be adopted,

more than formal attention was paid to four common requisites, namely, durability, economy, reliability and simplicity. Dealing with these points in order, it should be noted that a prominent factor affecting the owners' choice was that a number of their previous vessels had suffered from severe cylinder erosion in all stages taking wet steam and, as a result, it was considered desirable that wetness of the exhaust steam should be kept to a minimum. The limitations of a direct cycle are obvious in this connection and, therefore, attention was concentrated on the employment of reheating of the steam at an intermediate stage.

It was seen that the major difficulties would be associated with the control of reheat when manoeuvring and the multiplicity of pipe connections that would be involved by any standard arrangement of boilers, and it became clear that, with such a system, the claims of reliability and simplicity could only be met by a fairly drastic abandonment of established practice in a number of directions. Substantial simplification was attainable if a single boiler was to be acceptable, but this was only contemplated if it became possible to provide an alternative means of propulsion in the event of derangement of the main boiler-turbine unit. Also, with such an arrangement, the boiler would require to have a degree of reliability comparable with that of the turbine.

The conception was novel, but it has to be conceded that the continued seaworthiness of any single-screw diesel vessel is hardly less dependent upon the mechanical reliability of individual component parts, regardless of the fact that no special provision is made in such cases for emergency alternative propulsion. At all events, the scheme was sufficiently attractive to pursue and moreover it was decided that a multi-boiler arrangement was going to prove too ponderous in the matter of connections for gas reheat to be justifiable.

The question of astern propulsion became the prominent difficulty. Could the reheater be satisfactorily thermally isolated so that it would not suffer damage without steam circulation when the machinery was put astern? Obviously it would be impracticable to employ the unit for astern steam using conventional geared turbines. The reheater might be of the separately fired type or be arranged with isolating damper control, but, whichever scheme was employed, rapid operation of burners or dampers would be necessary on receipt of an astern order and, even if this drawback could be tolerated, the heat emitted from refractory material in the region of the reheater might well be sufficient to cause damage after shutting off steam.

Another difficulty lay in the great increase in the output of main-boiler steam which would be required to enable a normal astern power of, say, 65 per cent. of the ahead power to be developed on account of the fact that the astern steam would not be reheated and the heat from the total supply of fuel would require to be absorbed by the economiser, generating and superheating elements alone.

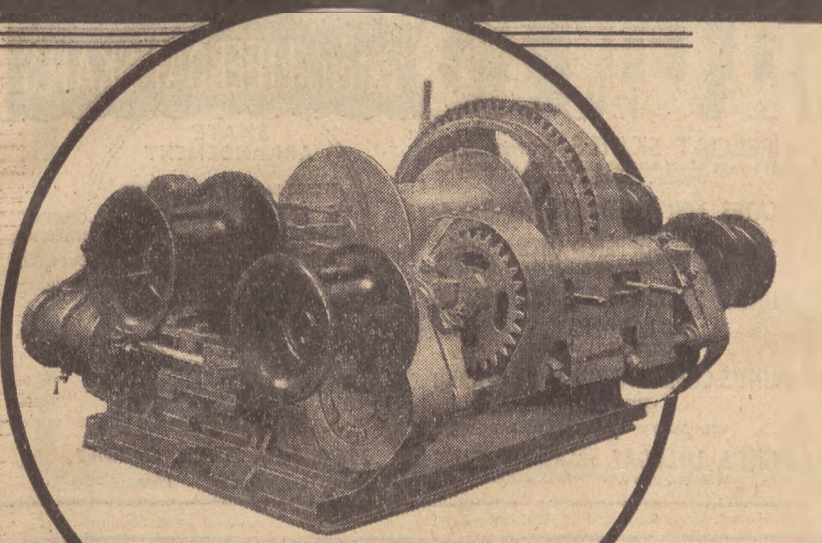
Moreover, another factor associated with astern running that caused some uneasiness was the effect of temperature variation on the l.p. turbine which would be considerably greater in degree than with direct cycle operation. The problem was examined from every angle and the conclusions arrived at merely varied in their degree of pessimism. Since that time, information has been published of

(Continued on page 6, col. 3)

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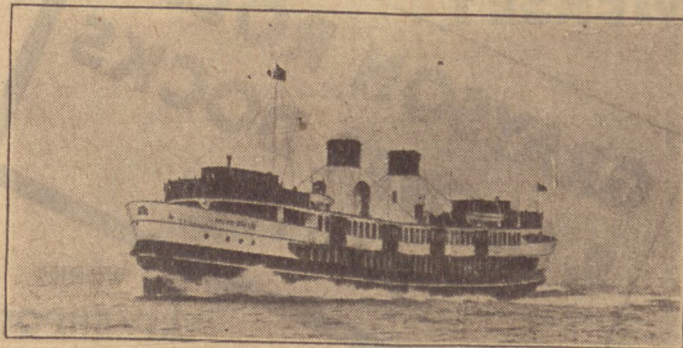
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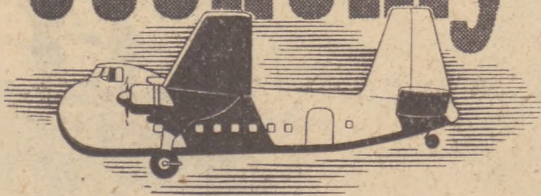


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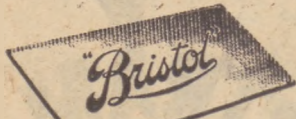
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SHIPBUILDING FOR EXPORT

Sir Wilfrid Ayre's Broadcast to South America

Sir Wilfrid Ayre, chairman of the Burntisland Shipbuilding Company, Ltd., recently made a broadcast to the shipowning countries of South America under the title "The World Comes to Britain for New Ships." An abstract of the broadcast is given below.

The building of ships is one of the oldest industries in the world. From the earliest moment when man was able to think for himself he saw the necessity of having to cross the seas which separated him from his fellow creatures. British shipbuilding, as might be expected in a country which is seagirt, and which lives by its sea trading, has roots which go far back into the country's history. From those far off days of Elizabethan galleons and China tea clippers, onward through the years of progress to the present giant ocean liners *Queen Mary* and *Queen Elizabeth*, the development of British shipbuilding can be traced.

I do not exaggerate when I say that British shipbuilding is one of the most highly developed industries. Centuries of building have provided it with a vast storehouse of experience and an attraction for a career which few of our ship-minded youngsters succeed in resisting. It had to be. For, in normal times, the British shipbuilding industry carries the responsibility for maintaining, at a high level of efficiency, the world's largest merchant marine. In addition to that it builds ships of every description for many of the other merchant marines in the world. British shipbuilding is a sort of universal provider in this respect. Nothing is too big or too small; nothing too difficult or too novel. History shows that it has, in fact, in the past taught most other nations how to design and build their ships. It may interest you to know that there are now over 34 million tons of new shipping under construction throughout the world. Of these, our British shipyards are building more than half. In fact the world is coming to Great Britain to build its post-war merchant fleet. South American nations, I am glad to say, are well to the fore in this respect.

Work for 20 Countries

The technicians and craftsmen in our shipyards are constructing new, fine, fast modern ships for 20 different countries outside Great Britain, including even those like Denmark, Holland and Sweden, which ordinarily are important shipbuilding and shipping nations themselves. Just now, our shipyards are building for Argentina, Brazil and Chile ships to carry coastwise and oceanwide the varied yet important produce of those countries. For Belgium we are constructing cargo

ships and fishing trawlers; for Denmark coal and timber carriers; for France and Portugal passenger ships, cargo liners and fishing vessels are on the stocks; for Holland the same. As for Iceland, always an important fishing community, practically the whole of her post-war trawl fishing fleet will come from British shipyards. Norway, one of Britain's regular customers, has placed orders for a large number of cargo liners, tankers and medium sized general purpose type vessels. Egypt, Nigeria and South Africa have ordered cargo vessels and fishing trawlers, while India, Eire, Switzerland, Poland and China and Panama also have cargo and passenger ships building in our shipyards. In few instances are these ships building to the same pattern. This, surely, is an example where the wide versatility of British shipbuilding is evident.

It might be thought that our shipyards are too busy attending to our own needs to look to those of our friends overseas. Nothing is further from the truth, if only for the fundamental reason that the building of ships for overseas is vital to our export trade. We are ready now to provide accommodation in our shipyards to construct any kind of ship that may be required by our overseas friends. The variety of requirements for our own merchant marine places us in an enviable position internationally to deal with the varied needs of others.

Differing National Requirements

I doubt if any British shipbuilder has ever been seriously attracted to the idea of constructing several dozen ships to the same size, design and type of machinery and then, merely by altering, say, the profile of the superstructure or funnel, attempting to sell them to two or three nations. There is a very practical reason against this. No two ports or harbours in the world offer the same facilities to itinerant shipping. The arrangement of loading and discharging berths, cranes and depth of water alongside varies considerably. A number of ports are badly equipped in respect of cargo handling facilities. The ships designed to trade to them must therefore have special gear for lifting the produce they carry over the side. Again, some ports are the focal point for their country's principal produce . . . Meat, for example. Facilities must be available for quick transit from store to ship. You cannot carry meat in a ship unless she is fully refrigerated; the meat would otherwise go bad on the voyage. Again, few meat ships are alike in general design excepting possibly those owned by one company. The same with coal, grain and other bulk cargoes. Some ports have facilities which even obviate the use of cargo handling equipment on the ship. But at other ports every winch and derrick has to be brought into use if time is to be saved.

You will see, therefore, that as long as British shipbuilders prefer to build quality ships it is impossible to standardise. Standardisation stultifies initiative and the satisfying joy of creative originality and, further, the attainment of that high standard of craftsmanship for which British-built ships are renowned. British ships, like British suits of clothes, are tailor-made. They are reliable. Their quality is guaranteed. You should know that in Britain to-day every class of ship is under construction. Each differs very materially from pre-war designs; they are new and they are attractive from every viewpoint. They embody every modern feature that has been proved worth while through the science of ship design. Each new development receives the closest of attention by our research engineers who, incidentally, have not been idle during the terrible war years.

Our research organisations are an integral part of the industry; they are also unique. They have in them the best shipbuilding brains in the country. Their job is to examine the potentialities of new ideas, to search for new developments, to test and prove their technical and commercial value to achieve yet greater efficiency for British shipbuilding. We seek to build always better ships that in the hard and exacting conditions of sea service will uphold the reputation that has been earned, and deserved, for British ship craftsmanship over the years. In proportion to what we have suffered as a nation through war, our progress in shipbuilding research and development, I make bold to say, has reached to a level that transcends every other shipbuilding nation.

Under the auspices of the Worshipful Company of Shipwrights, one of the London City Guilds, there is to be held in London from Jan. 28 to Feb. 8, 1947, a Shipbuilding and Marine Engineering Exhibition in which will be featured models of the vast range of the modern products of British shipyards. Practically every British shipbuilding and marine engineering firm are exhibiting models, many of them working models. Seldom, if ever, will there have been gathered together in one place a more striking visual proof of the potentialities of British shipbuilding and marine engineering to supply the varying needs of the maritime nations of the world. It will provide a unique opportunity of which we hope the widest possible advantage will be taken by representatives from all countries to see what the British shipbuilding industry can provide.

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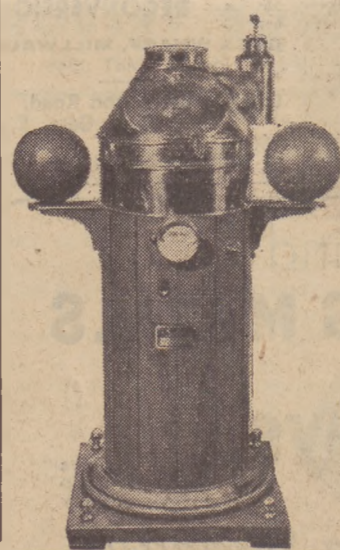
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ELECTRICITY AND THE SHIP

The Necessity for Efficient Servicing

By OUR SPECIAL CORRESPONDENT

As the use of electricity on board ship continues to increase, the marine electrical firm is moving out of the status of a mere sub-contractor. Events of the war have proved that marine electrical firms were in fact able to produce and deliver propulsion machinery in quantities which could not be approached by any other type of concern. Particularly this is true of the United States of America. One of the results of there being so many electrically-propelled ships afloat, and ships in which electricity is used to a major extent, is a realisation on the part of the big electrical machinery contractors, at any rate, that servicing is a necessary adjunct to their commercial progress.

Smaller concerns making steam generator sets have always had a close relationship with the shipping industry, simply because 90 per cent. of their work has been concerned with the equipping of ships. Such has not always been the case with the larger firms. Indeed, until fairly recently many big companies regarded their marine side as a kind of Cinderella. The happenings of the war must surely have dispelled any ideas of this nature.

The subject-matter of this article is inspired by a recent happening in the Port of New York. The 10,000-ton collier *Jason* sank in New York Bay after colliding with another collier. She is a self-unloading ship with an electrically operated boom which handles the coal over the side from hoppers at the bottom of the coal hold. The *Jason* and one or two similar colliers occupy a position, so far as New York power stations are concerned, somewhat similar to that of the Thames flat iron colliers. The going out of service of ships of this kind would seriously affect a city's light and power supply.

After her collision the *Jason* settled down by the bow, and salt water entering through a large hole in her side damaged most of the electrical equipment on board. Miles of cable in the conveyor system were ruined and the windings on a dozen motors were useless. Indicating instruments were also rendered unserviceable. The best delivery promises for new equipment on a commercial basis in the open market ranged from a fortnight to 26 weeks.

A Quick Refit

The General Electric Company, of Schenectady, has a complete service organisation, keeping large stocks of standard material available at various ports. It is therefore interesting to place on record that 27 days after their service engineers first visited the sunken collier, her entire conveyor system was refitted with rewound motors, new cables and instruments, and a rebuilt control panel. Before the ship dry-docked her conveyor motors were out and being rewound locally. Batteries of resistances were dried with infra-red lamps. Such items as 600 volt sump pump motor controllers were completely rebuilt, all coils, relays, breakers and wiring being renewed.

Though the *Jason* and her sister ship *Achilles* were originally old steam-propelled colliers with Scotch boilers and reciprocating engines on twin screws, and when built depended upon shore appliances for discharge, they are at the present time highly mechanised, in fact they are electric in every sense of the word. The modernisation which is taking place in the United States coastwise coal trade is on all fours with that now going on in the British Isles.

The belt system is fairly conventional in practice, and is a sea-going adaptation of that employed in so many ships on the Great Lakes. The bottom of the holds are built hopper-wise in W-sections. Belts run fore and aft under the peak of the W, and after dropping on the belt the coal is then transferred to another conveyor, where it is taken to the long arm and discharged over the side. This arm or boom is 162 ft. in length, which is a fair proportion of the 536-ft. overall length of the ship herself. The arm is pivoted at the tail end and suspended at a point about two-thirds of its length from the supports by a series of cables fastened to the head of an

A-frame. It can be swung 113 deg. to either side, and topped at an angle of 20 deg. to the deck.

Power for the whole of the unloading system is supplied by a 500-kw. turbo-generator installed on the second deck abaft the machinery space. It is a low-pressure turbine because it takes steam from the ship's ordinary Scotch boiler plant, and operates at 185 lb. per sq. in. unsuperheated. By means of a speed control on the turbine the frequency of the generator can be varied from 45 to 66 cycles. The normal voltage is 480 volts at 66 cycles. Because the conveyor speed is directly proportional to the frequency, the speed can be varied according to the type of cargo, using a low speed for coal, which is of a brittle nature. In addition, there are two 75 kw. generators in the same compartment, these supply D.C. at 125 volts for lighting and other auxiliary purposes.

Control Stations

The main control stations for the unloading system are at the port and starboard side of the A-frame. A control compartment for the hold conveyors is at the forward end of them, overlooking the cross conveyors and the pan conveyor. From these positions the operators control all switches in the adjacent panel room, and by flashing signals to the men in the fore and aft tunnel in the hold they indicate which hoppers have to be unloaded, and thus control the trim of the vessel. If the load on the conveyors is too heavy, the lights operate automatically until the situation is improved. The conveyors can also be stopped by means of an overhead pull cord which runs the full length of both tunnels, and it is impossible to start the conveyors as long as the cord is held down. In case of emergency, the entire electrical system can be brought to a stop in three seconds.

The conversion of the *Jason* and *Achilles* early in the war was a most ingenious piece of work, and it points the way to the increasing use of electricity in ships of this kind, ships which are completely self contained. At the same time it should be remembered that a conversion such as that mentioned in this article brings many difficulties in its train, one of which is the fact that the men operating the machinery, unless fully trained, may easily damage it.

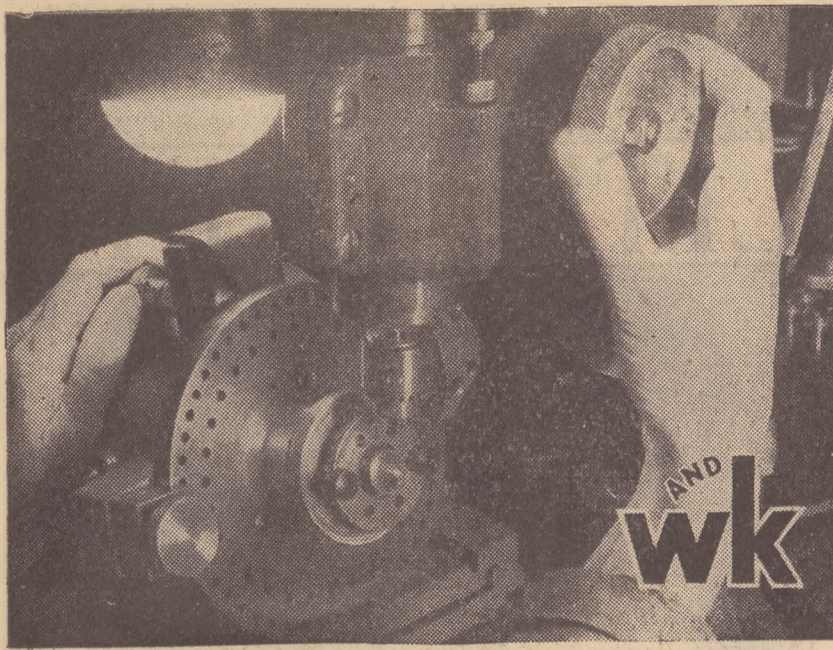
It is only reasonable, therefore, that the marine electrical industry should be able to provide complete servicing—in this particular case they seem to have done so very rapidly. It is upon the servicing of novel equipment that the reputation of a ship of this type rests. A good or bad reputation frequently makes or mars further contracts. It must also be said that service undoubtedly gives a feeling of confidence to the operator.

IRON AND STEEL

Shortage of Semis

A Middlesbrough correspondent telegraphed yesterday regarding the Tees iron and steel market:—

Iron and steel producing plants are operating at as high a pressure as conditions permit and orders in hand assure great activity at the works for the first half of next year. Purchasers, though extensively bought, are keen to negotiate for further supplies, but makers of many commodities are unable to keep pace with delivery obligations. Pig iron distribution is not unsatisfactory, though consumers of some descriptions would readily accept larger quantities than they are receiving. Users of high phosphorus qualities are now entirely dependent on supplies from other producing areas, and the increasing quantities of Midland iron coming to hand almost cover actual needs. Hematite makers are able to provide tonnage on a scale that deals adequately with home requirements, while basic iron production is promptly absorbed by the needs of makers' consuming plants. The shortage of semi-finished steel is arousing anxiety and fear that operations at re-rolling mills will have to be much curtailed now that imports from the United States cannot be looked for. The demand for finished steel far exceeds supply.



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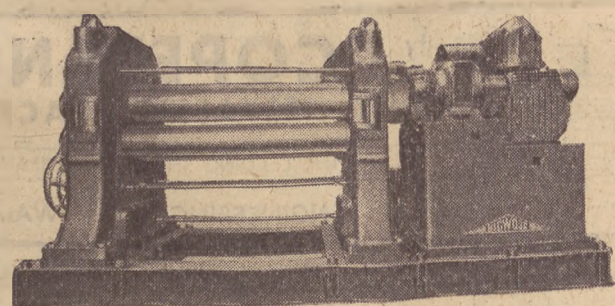
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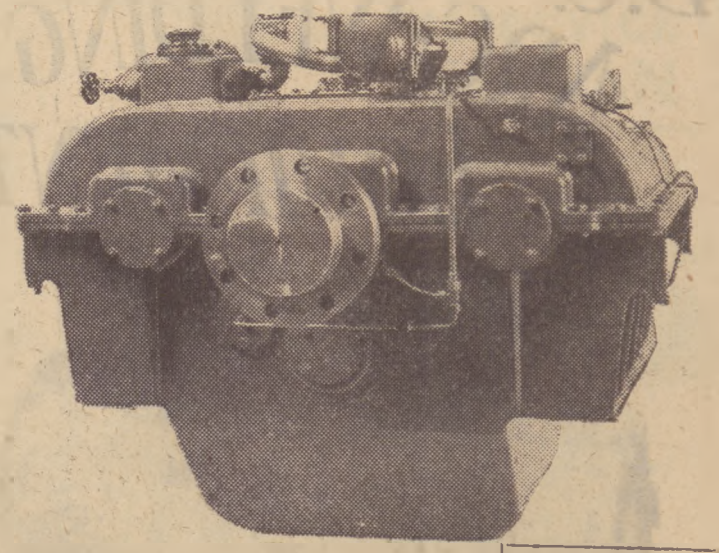
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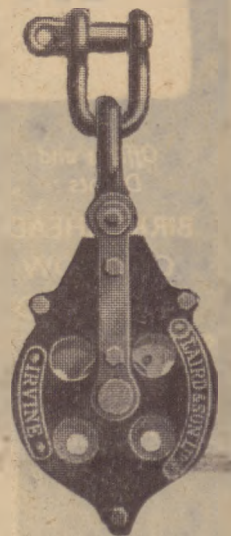
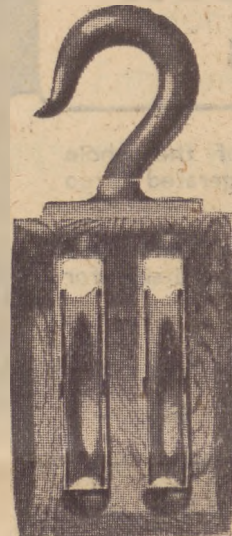
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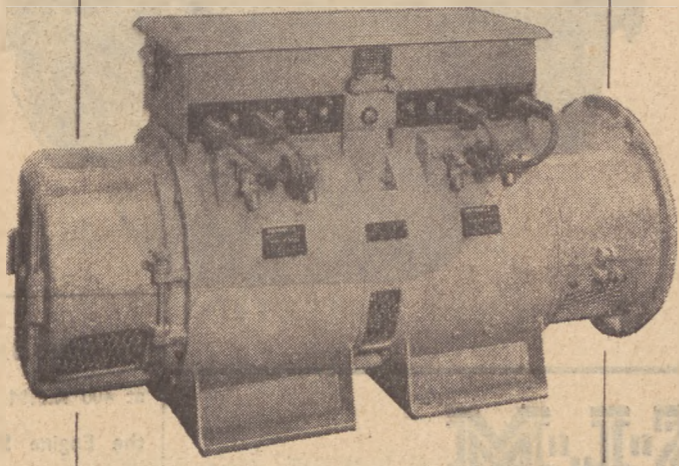
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THE STANDARDISATION OF TUGS

Outboard Propulsion

By Our Special Correspondent

The standardisation of tug hulls, as well as of the machinery which drives them, has long been the ambition of those who feel that small ships of all kinds can easily be produced in considerable numbers. The standardisation of such ships as motor-driven tugs did prove not only a possibility but a necessity during the war years. The Americans showed what could be done in this respect in the hundreds of small vessels of about 80 ft. in length, with a direct drive diesel, which they brought over to British ports just before "D Day." They took tug production technique a stage further in divorcing the propeller and its driving unit from the tug and making it portable.

The Murray Tregurtha unit was used with considerable success for the propulsion of the famous Rhino units intended to be used as ferries between the lowered ramp of L.S.T.s and the beach. One Rhino barge, formed of naval landing pontoon equipment, was able to discharge one L.S.T.

Murray Tregurtha Unit

The Murray Tregurtha unit consisted, in simple terms, of a long oblong box in which the propulsion unit of internal combustion type was housed. At the after end of this box was a joint, attached to the joint was a long tapering arm, at the end of which was a three-bladed propeller, a skeg fin and two horizontal fins of similar shape and size. By means of suitable adjusting gear, the angle of the arm to the water could be made to correspond with the draught of the craft to which the propulsion unit was attached. Eventually, as that unit beached or came into very shallow water, the propeller arm could be raised vertically above the deck. It suffered from a certain obvious disadvantage, however, in that the nearer the arm approached the horizontal, the less was the propulsive efficiency of the unit. It resembled the Voith Schneider propeller, in being a propeller and rudder in one, though this was achieved by different means.

At the forward end of the power box on the port side was an arm extending from the box, to which was attached a conventional type of steering wheel. Though movement of the steering wheel to port or to starboard did not turn a rudder, it actuated gear which was capable of turning the propeller arm on its axis through a circle of 360 degrees. By this device the thrust of the propeller could be directed at any desired angle.

The whole gear worked admirably, the machinery was reliable and everything was flexible. It was constructed mainly in connection with the naval landing pontoon equipment and could be fitted to any combination of these square steel boxes. Small units were made which served as tugs. On the other hand, the largest of all barges was self-propelled by the same means. The

propulsion unit could be lifted from barge to tug or tug to barge, as required.

Although built essentially for wartime duties, it was obvious that such a device could be employed usefully in times of peace. Tropical rivers were a peacetime sales target for the makers. It was suggested that dumb barges employed for the carriage of rubber and other tropical material could well be mechanised by these means. The propulsion unit, having taken one barge to its destination, could then be lifted to another barge waiting to be loaded and quickly bolted into position.

The latest news of the development of this large size outboard propeller (for that is what it is) is in its application to what is known as a "Duoform all steel tow boat." In Canadian waters, for example, it is considered suitable for towing log booms in shallow and restricted waters, and at the same time is suitable for harbour, lake or river operation.

Contrary to the original tugs which were nothing more or less than oblong steel boxes trimming by the stern, due to the extra weight of the engines, the Duoform has certain of the attributes of a ship. It is "formed" forward, has a deep keel, a bilge and a marked absence of deadwood aft. The bilge sweeps down in a circle which merges with the bow to a fairly full form amidships, above the keel, and then up in a graceful curve aft, where it joins the stern.

The intriguing part of the design is that the oblong-shaped tug body is slotted on the centre line. The arm of the outboard motor itself when vertical and in full propulsive trim hangs down at about one third of the length of the hull from the stern. There is also an arrangement whereby the apparatus can be lifted up and lie flush with the deck.

In fully lowered position the bottom of the skeg is about 4 ft. below the bottom of the keel. It would seem that those responsible for the operation of the tug will have to accustom themselves to this fact, being constantly ready to adjust the depth of the skeg as necessary, according to operational conditions.

The Power Box

The power box itself is on the deck of the tug, placed fore and aft. The steering wheel has been moved away from the forward end of the box on the port side to about mid-length above the power box, thus giving a clear field of vision to the helmsman-engineer, allowing for a kind of small wheelhouse to be erected as necessary.

The forward end of the deck of the tug is carried out square and there are four large towing knees welded to the deck of the type commonly employed on the Western Rivers. The forward ends of these knees are reinforced with wood. Suitable bulwarks are fitted all round the tug. An average size tug has a 165 h.p. unit. This can be removed as necessary, and so an enterprising owner is able to operate a fleet of tug hulls of this kind with more propulsion units than tugs, so that no tug need ever be laid up for engine overhaul or breakdown, the spare unit being placed in position as required.

This particular type of propulsion has not yet been introduced into our country, though there is no reason why it should not find a ready sale here. It is one of the many unique wartime developments which would appear to have a solid use in times of peace. In a tug with suitable hull form it should be adaptable to a wide variety of rivers, and for use in fish docks, for example, where small tugs are needed to tow coal barges and move trawlers from berth to berth. Many of these are now due for replacement and diesels are being considered for propulsion.

FOREMAN SHIPWRIGHT'S RETIREMENT

From Our Own Correspondent

JARROW, Tuesday
 At the end of the year Mr. James Matthews, of Jarrow, will retire from the position of head foreman shipwright to the Mercantile Dry Dock Company, Ltd., Jarrow. Mr. Matthews has 46 years' service with the Mercantile Dry Dock Company.

The cargo motorship *Vika II*, the second of two built at Ekensbergs Varv, Stockholm, for the Skanska Cement A/B., has been launched. She is of about 1750 tons d.w., and her propelling machinery consists of a Polar diesel engine developing 960 h.p. at 250 r.p.m.

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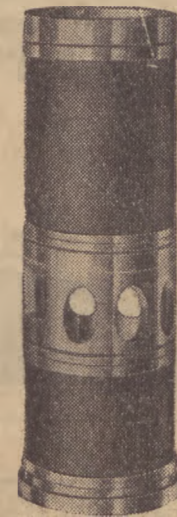
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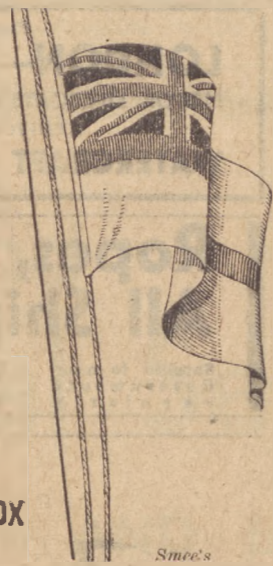
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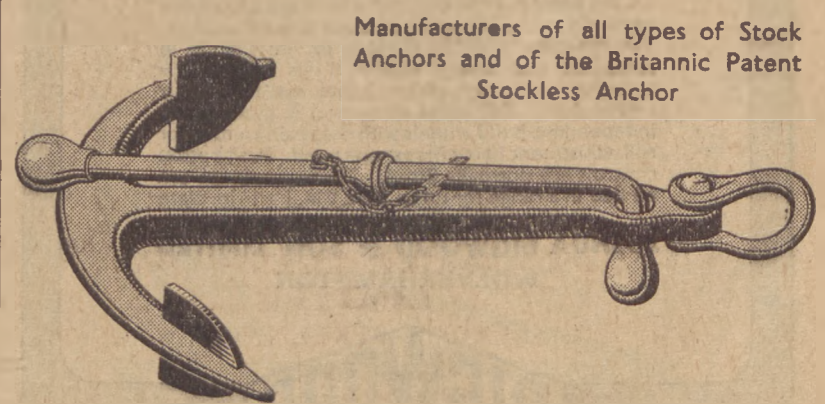
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Table with columns for ship names, destinations, and dates. Includes entries like Felania, San Ambrosio, and ALEXANDRIA.

Table with columns for ship names, destinations, and dates. Includes entries like TAKORADI, Beira, and MADRAS.

Table with columns for ship names, destinations, and dates. Includes entries like SAIGON, PORTLAND, and RIO GRANDE.

Table with columns for ship names, destinations, and dates. Includes entries like CARACOL, HOUSTON, and FORT LIBERTE.

Table with columns for ship names, destinations, and dates. Includes entries like SANTS, PORT ARTHUR, and KINGSTON.

Table with columns for ship names, destinations, and dates. Includes entries like LA GUAIRA, CUBACAO, and RIO JANEIRO.

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VESSELS EXPECTED AT UNITED KINGDOM PORTS

Showing Vessel, Voyage, Probable Date, Broker and Berth

Table listing ship arrivals from various ports including London, Southampton, Bristol, Liverpool, and others. Columns include ship name, origin, arrival date, and agent.

Table listing ship departures to various ports including London, Southampton, Bristol, Liverpool, and others. Columns include ship name, destination, departure date, and agent.

Table listing ship arrivals from various ports including London, Southampton, Bristol, Liverpool, and others. Columns include ship name, origin, arrival date, and agent.

Advertisement for SHIPBUILDERS AND REPAIRERS, CAMMELL LAIRD & CO., LIMITED, BIRKENHEAD. Includes details about shipbuilding, repairs, and contact information.

Advertisement for ASSOCIATED FUMIGATORS LTD. 112, VICTORIA DOCK ROAD, E.16. Undertake most ship fumigation in London.

Advertisement for THE ANGLO-SWEDISH ELECTRIC WELDING CO. LTD. Experts in High-Class Welding and Repairs.

