PROCEEDINGS OF THE
MERCHANT MARINE COUNCIL

The printing of this publication has been approved by the Director of the Bureau of the Budget, January 14, 1955.

UNITED STATES COAST GUARD

This copy for not less than 20 readers. PASS IT ALONG

CG 129

Vol. 14 November 1957 No. 11

Proceedings of the

MERCHANT MARINE COUNCIL

Published monthly at Coast Guard Headquarters, Washington 25, D. C., under the auspices of the Merchant Marine Council, in the interest of safety at sea. Special permission for republication, either in whole or in part, with the exception of copyrighted articles or pictures, is not required provided credit is given to the Proceedings of the Merchant Marine Council.

The
Merchant Marine Council
of the United States
Coast Guard

CONTENTS

DISTRIBUTION (SDL 65)

A: a aa b c d (2); remainder (1)
B: e (35); c (16); f (4); h (3); g (2); remainder (1)
C: a b (less Quonset Pt.) c d e f g i m o w (1)
D: i (5); a b c d e f g h j k m (1)
E: o (New London only) (1)
List 141M
List 111

TECHNICAL COMMITTEE APPOINTED

Following the *Andrea Doria-Stockholm* collision on July 25, 1956, the House of Representatives Committee on Merchant Marine and Fisheries, pursuant to House Resolution 653, appointed a special staff of technical advisers to assist in the conduct of studies and investigations involving safety of life at sea.

Recommendation (2) of the results of this study published in report No. 2969, 84th Congress, 2d Session, called for "Reevaluation of the standards of subdivision, damage stability, and ballasting with the view to the development of realistic provisions for international adoption."

In accordance with this recommendation, the Commandant of the Coast Guard appointed a technical committee with representation among the shipowners, shipbuilders, naval architects and others concerned primarily with the design and operation of large passenger ships. This committee under the chairmanship of Vice Adm. E. L. Cochrane, USN (Ret.) held its first meeting October 17, 1957.

SHIP RESEARCH AND THE SHIP STRUCTURE COMMITTEE

By Rear Admiral K. K. Cowart, USCG

THE PROPELLER CLUB of the United States is a group of people dedicated to the growth, the quality and the strength of the American Merchant Marine. You members of the Propeller Club are interested in progress.

Technical growth, technical quality, and technical strength will make the physical foundation of the American Merchant Marine that you want. Technical progress is essential to the American Merchant Marine.

There have been days when people had serious doubts about the ability of our ships to hold together. Perhaps you remember the day that the T–2 tanker *Schenectady* snapped in two (*See above*). This was a brand new ship. She had only completed the builder's trial, and she was lying at a dock.

You may also have heard of other ships in which a crack would run all the way across the deck, or halfway down the side, suddenly and without warning.

This was not progress. These were ship failures.

Those failures, the *Schenectady* and others, occurred during World War II at a time when the loss of a ship meant more than just money. Our war effort was imperiled.

Countless ships had been built before without similar recorded failures. What was being done, or not being done, that would lead to a weak structure?

In the last 14 years we have learned a lot about ships that was not known when the *Schenectady* let go. Wartime studies uncovered many areas of technical weakness and plugged many gaps with quick solutions. Scientists and engineers working in the laboratory produced many answers. A research program that would point to progress in ship structures was begun.

Not all the answers to ship structural failures were found in our wartime studies. Another T–2 tanker the *Ponagansett* (*Figure 2*) snapped in two in 1947. You can see how complete and how neat the fracture was from this picture. The break was said to be instantaneous. We have since determined in the laboratory that the crack could have gone all the way around the *Ponagansett* in less than 1 second.

What we did learn in early research was that we knew very little of the true fundamentals of ship structures. If the American Merchant Marine was to move forward with confidence, we would have to learn a lot more about the technical aspects of ships.

SHIP RESEARCH IN THE U. S.

Technical progress can be seen all about us. Few can predict with any degree of confidence the growth and technical progress that will take place in this country in the next 10 years. Even a 5-year prediction would be hazardous. We can make this observation by thinking back to our abilities 5 or 10 years ago to predict the technological achievements that have in fact taken place since then.

The technical basis for these achievements has been research. Research in this country today, over its full spectrum from basic studies to the development of hardware, and covering all fields, is being done at a rate in excess of $5 billion per year. Roughly half of the effort is Government supported and the balance is industry supported.

There is some research in shipbuilding. Certainly the Navy of 1957 reflects the results of research. Thanks largely to the vigorous research program of the Navy we are protected by a mighty and modern fleet.

The shipbuilders principally, and others in the maritime industry, have supported a research program under the Society of Naval Architects and Marine Engineers which is producing new ideas and new developments in the fields of hydrodynamics, hull structures, machinery, and technical operations.

The Maritime Administration has made good progress in its research and development program. All hands who are interested in the American Merchant Marine know how Maritime successfully developed a gas turbine plant that will be a guide to many future applications. Their results on the *John Sargent* and on many other projects are real progress.

THE SHIP STRUCTURE COMMITTEE

Another research effort is the work of the Ship Structure Committee. The work done during World War II to lick the problem of ship fractures has been mentioned. At the end of the war men of foresight saw that

the problem was far from being solved. The Secretary of the Treasury realized the need for continued study and formed the Ship Structure Committee to continue where the war effort had ended.

The Ship Structure Committee is now composed of five agencies, the American Bureau of Shipping, the Maritime Administration, the Navy's Bureau of Ships and Military Sea Transportation Service, and the Coast Guard.

The Ship Structure Committee has, since the beginning, enjoyed the strong support of the National Academy of Sciences-National Research Council. Many of you know of the Academy—Research Council. It is a splendid organization. Through it, many of our nation's leading scientists and engineers contribute freely their vast technical knowledge to the benefit of the whole country. In our case, the American Merchant Marine benefits through the advice, freely given, of some fifty engineers who are outstanding in the fields of structures and metallurgy.

The research program of the Ship Structure Committee is aimed at the improvement of the hull structures of ships. However, we have found that many other types of steel structures experience structural problems similar to the problems in ships and we have cooperated with the people who are working to improve storage tanks, pipelines, bridges, and large turbo generators. The work of the Ship Structure Committee is a splendid cooperative effort. Each of the five member agencies has its own formal responsibilities toward the Merchant Marine, however, when they speak through the Ship Structure Committee they are announcing only the results of research. These results are made available to the whole industry for application in the construction and repair of ships.

ABOUT THE AUTHOR

Rear Adm. K. K. Cowart, Engineer-In-Chief of the Coast Guard, presented this paper at the American Merchant Marine Conference and National Propeller Club meeting in Houston, Tex., October 21, 22, and 23, 1957. A 1926 graduate of the Coast Guard Academy, he has been chairman of the Ship Structure Committee since his promotion to Rear Admiral in 1950. A native of Twin City, Ga., Admiral Cowart has more than 30 years experience ashore and afloat, with World War II service in both the Atlantic and Pacific Ocean areas.

Figure 2.

THE RESEARCH PROGRAMS OF THE SHIP STRUCTURE COMMITTEE

The total program of the Ship Structure Committee is divided into three parts:

Design
Materials
Fabrication

These programs have produced more than a hundred research reports. Since all of you here have more than a passing interest in the quality and the cost of our ships let us examine some of the details of these three programs.

THE DESIGN PROGRAM

When any engineer is asked to design a structure, he first asks what loads must this structure resist. To measure the loads imposed on a ship, you must know the surface of the ocean. All of us know that the surface of the ocean is exceedingly complex. It is dynamic, ever changing. However, as many of us know, ships have always been designed as if the surface of the ocean was made of nice regular waves. Further these waves stand still, in the engineering mind. The ship stands still also. This is the actual situation today. The strength of ships is determined for static loading on a nice simple wave.

What is being done about this situation? We can report some progress and definite plans for a concerted attack. The Navy has made good progress in defining the actual shape of the surface of the ocean and in measuring the response of a ship to real waves. The research program of the Society of Naval Architects and Marine Engineers has put its teeth into the question. The Maritime Administration likewise has contributed much effort toward measuring the true loads acting on a ship.

This may sound like a lot of duplication, an attack that is so often made against research, especially against Government research. It is not duplication. The problem of loads on a ship structure is so vast that we could put twice as many groups to work on different parts of it and still find little if any overlap.

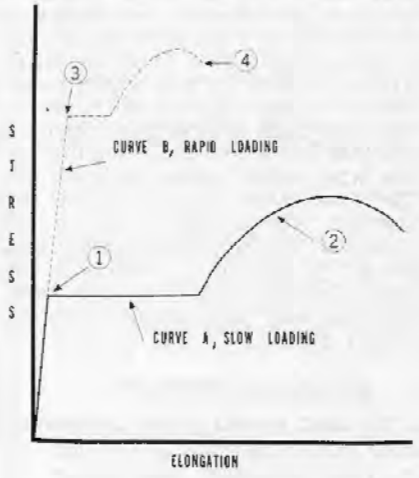
However, it is valuable to have coordination, to try to work out an overall plan for attacking this problem. This is being done by some of our leading engineers under the sponsorship and guidance of the Ship Structure Committee.

We cannot promise the designer, the builder, and the owner that we will know all about seaway loads in a year or in 5 years, but we are confident that solid progress will be made.

Thermal loads are important too. The two tankers which were pictured earlier (*Figures 1 and 2*) broke in still water at the dock. We feel strongly that in these cases, and in the cases of many fractures which occurred at sea, sharp differences in temperature in adjacent parts of the structure have been an important part of the problem. The Society of Naval Architects and Marine Engineers is currently sponsoring a study of thermal stress in one of the west coast reserve fleet ships. We hear that stresses of 8,000 pounds per square inch were measured due solely to heating of the ship by the sun. Eight thousand pounds per square inch is a very significant stress.

THE MATERIALS PROGRAM

Another program which we are attacking is brittle fracture of ship plate. You have heard how the ships which have broken in two, broke with a loud bang. The crack went all the way around in an instant.



THE TENSILE BEHAVIOR OF SHIP STEEL

Figure 3.

The steel broke almost like glass, it was so brittle. Yet we all thought about steel as a tough and ductile material. We thought of it in terms of a slow tensile test in which the steel would stretch a long way before breaking. In that slow test the steel would actually become stronger as it stretched out. The people who built ships did not think of how the steel would act when the load was applied suddenly, and ships do encounter rapid loads frequently. Slamming in heavy seas is one type of rapid load. We did not think that steel might act differently in the cold north than it would in warm southern climates.

We have since learned that steel does act differently when the load is applied suddenly. Ship steel is not always so tough and ductile as we have grown up to believe. Here is an idea of the difference (*Figure 3*).

When the load is applied slowly, the steel stretches in an elastic fashion (curve A). It then yields suddenly (point 1) and finally begins to grow stronger (2). Designers of steel structures have grown up with this curve.

Only recently has research in ship structures measured the curve of steel performance when the load is applied rapidly (curve B).

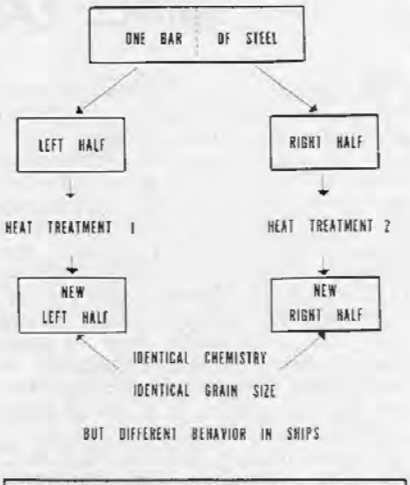
You see that it is elastic up to a much higher stress (point 3). But you also see that the steel breaks with much less total stretch (4). This is the way the steel in your ship actually behaves when she begins to slam against the seas.

Cold weather performance is very important. Our old friend, curve A, the case of loads applied slowly, did not vary much with temperature. Curve B, the case for rapidly applied loads, does vary with temperature. In fact, for much of the steel used in World War II ships, the behavior of steel as measured by curve B could change from very good to very bad when the temperature dropped from 70° to 50°.

Another point about steel is very interesting and very new. Many people think of steel in terms of chemistry. So much carbon, so much manganese and silicon should give a pretty good idea of the steel. Others add that we should look at the grains of the steel under the microscope. Few have suggested that we should look further.

Only this past year a team of top metallurgists doing very precise work in the laboratory has shown that our old standbys, chemistry and grain size, do not tell the whole story.

In essence, this is what they did (*Figure 4*). They took a bar of ship steel and sawed it in half. Each half was given a different heat treatment.



AN EFFECT OF HEAT TREATMENT ON SHIP STEEL

Figure 4.

The heat treatments were controlled, however, so that the same grain size was again produced in each piece. They looked the same under the microscope. They had the same chemistry. However, the behavior of the two pieces was not the same. One was good for ships and one was not.

Fortunately, all the ship steel made in this country is made by the same process. We do not yet know all of the reasons why ship plate as it is made in the United States is good in ships, but we can be sure of the quality of the steel that goes into our ships.

Our research is going to tell us why someday. Those answers will lead to further improvements over those which research has already brought, greater assurance of quality and probably a reduction in cost of building ships.

THE FABRICATION PROGRAM

Once the design and materials for a ship structure are determined, there is still a problem of putting the structure together. We are doing research on this type of problem in our Fabrication Program.

The term "crack arrestor" is familiar to some of you. We learned during World War II that most cracks would be arrested before the ship could break in two. The crack often would stop at a riveted seam. But what about the all welded ship? With no riveted seams, a crack once started might easily run all the way around the hull. The regulatory bodies soon required riveted seams in all ships.

Most shipping people still dream of a safe all welded ship. The Ship Structure Committee is working in

(*Continued on page 189*)

SMALL PASSENGER VESSEL RULES DISCUSSED

THE "Rules and Regulations for Small Passenger Vessels" prescribed under the Act of May 10, 1956 (Public Law 519, 84th Congress), were published as Part II of the Federal Register dated October 5, 1957. In accordance with the Act of August 28, 1957 (Public Law 210, 85th Congress), the effective date for the Act of May 10, 1956, and these implementing regulations will be June 1, 1958. These rules and regulations may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 15 cents a copy.

The Act of May 10, 1956 (46 U. S. C. 390–390g), requires the inspection and certification of certain small passenger-carrying vessels. Under this act a "passenger-carrying vessel" means any vessel which carries more than six passengers and which is:

(1) Propelled in whole or in part by steam or by any form of mechanical or electrical power and is of 15 gross tons or less; or,

(2) Propelled in whole or in part by steam or by any form of mechanical or electrical power and is of more than 15 gross tons and less than 100 gross tons and not more than 65 feet in length measured from end to end over the deck excluding sheer; or,

(3) Propelled by sail and is of 700 gross tons or less; or,

(4) Non-self-propelled and is of 100 gross tons or less.

This term "passenger-carrying vessel" includes any domestic vessel, except public vessels of the United States, operating on the navigable waters of the United States or on the high seas, and any foreign vessel departing from a port of the United States except any public vessel of any foreign state. Any lifeboat forming part of a vessel's lifesaving equipment is exempted from this law.

With respect to foreign vessels which come within the scope of being a "passenger-carrying vessel" and departing from ports of the United States with more than six passengers, the law and the regulations in this document will apply. However, the Coast Guard recognizes the certificates issued to vessels under the Convention for the Safety of Life at Sea, 1948, and certificates issued by the Dominion of Canada, as further described in § 175.05–1 in this document. If a foreign vessel does not have a certificate of inspection or similar document issued by its own country which is recognized by the Coast Guard, the vessel will be subject to an inspection before it may leave a port of the United States with more than six passengers.

The Coast Guard also contemplates issuing the required "ocean operator's license" or "operator's license" only to persons who are citizens of the United States except that resident aliens who are otherwise eligible under these regulations will be granted licenses without complying with this requirement. With respect to licenses issued by foreign countries, the Coast Guard will give recognition to all licenses issued by countries which are signatory to the Officers' Competency Certificates Convention, 1936 (ILO No. 53), and the Dominion of Canada. In other cases, it is contemplated that the local Coast Guard and Customs officials prior to clearance of the vessel will accept certification by officials of such foreign country that the officers on board have been found qualified by their Government to operate such vessels.

EXISTING VESSEL

An "existing vessel" under this act and the regulations in this document is considered to be a vessel which was in existence as a passenger-carrying vessel, or which was contracted for as a passenger-carrying vessel, prior to June 1, 1958. All others will have to comply with the requirements in this document applicable to new vessels.

The regulations in this document will apply to all existing vessels on and after June 1, 1958, as well as to all new vessels, which are considered to be "passenger-carrying vessels" under this act of May 10, 1956. The comments received respecting the proposed regulations indicated considerable concern relative to the application of these regulations to existing vessels. To describe general standards of construction in regulation form for existing vessels, which would correct or remove unsafe conditions and yet provide the necessary flexibility needed because of the numerous small craft involved and the infinite variety of designs and arrangements present, is not practical.

It is not the intent of the Coast Guard to condemn the use of an existing vessel simply because its design and construction do not conform to the minimum standards specifically described in the regulations for new vessels. Therefore, the Officer in Charge, Marine Inspection, has been given discretion to accept alternates or equivalents which will measure up to the standards established, and to give special consideration to departures from these regulations when it can be shown that special circumstances warrant such departures. This subject is further explained in a Navigation and Vessel Inspection Circular which may be obtained upon request.

INITIAL INSPECTION

The intent of the initial inspection of existing vessels will be to correct all unsafe conditions and to issue certificates of inspection to all vessels found to be safe and seaworthy. A reasonable period of time will be permitted to correct minor deficiencies or to replace required lifesaving or firefighting equipment not bearing the approval of the Coast Guard. Where manifestly unsafe conditions are found, the Officer in Charge, Marine Inspection, may require a vessel to discontinue operation until such conditions are corrected. Whenever the owner or operator feels aggrieved by the decision of the Officer in Charge, Marine Inspection, an appeal within 30 days may be made to the Commander of the Coast Guard District. If desired a further appeal within 30 days from the District Commander's decision, may be made to the Commandant, whose decision is final.

It will be virtually impossible to inspect all of the vessels subject to the new rules and regulations in Subchapter T (Small Passenger Vessels), Chapter I of Title 46, Code of Federal Regulations, at the same time. The owner, operator, or agent of every vessel subject to the new regulations will be required to submit a completed Coast Guard form, entitled "Application for Inspection," before June 1, 1958, or before such vessel is placed in operation on or after that date. The Officer in Charge, Marine Inspection, will advise the owner, operator, or agent by letter or other means of notification of the approximate date of inspection. This letter or other written notification will constitute an authorization to operate the vessel on and after June 1, 1958, until the date specified therein or until such inspection is performed, whichever is earlier. The Officers in Charge, Marine Inspection, will arrange to inspect all vessels as expeditiously as time and manpower permit. However, for those desiring them, the inspections required may be conducted before June 1, 1958.

3-YEAR CERTIFICATES

To most vessels found in compliance with the law and the regulations in this document, the Officer in Charge, Marine Inspection, will issue certificates of inspection valid for a 3-year period. This certificate is evi-

dence of the official determination that the vessel described therein has been inspected and found safe to operate as a "passenger-carrying vessel" subject to the terms and conditions set forth therein. The certificate of inspection will describe the route or area of water in which the vessel may operate, the required minimum crew the vessel must have on board, the maximum number of passengers permitted to be carried, the minimum amount of lifesaving and firefighting equipment required to be carried, whether or not these requirements are based on a specified maximum number of hours of operation per day, etc.

This certificate of inspection must be on board the vessel, and to operate the vessel without such certificate, or in violation of such certificate, will subject the owner or operator to penalties provided in the law. A certificate of inspection may be withdrawn or canceled by the Coast Guard if the vessel to which it is issued fails to maintain the required standards or if the vessel is operated in violation of any of the limitations or restrictions set forth therein. Reinspections by the Coast Guard will be made from time to time to check on compliance in these matters.

It should be noted that the new regulations in Subchapter T (Small Passenger Vessels) apply to all passenger vessels carrying more than six passengers and which are 65 feet or less in length. For passenger-carrying vessels over 65 feet in length, the "Rules and Regulations for Passenger Vessels," CG–256 (Subchapter H—Passenger Vessels), apply. For those vessels subject to these regulations and required to be inspected for the first time, the Officer in Charge, Marine Inspection, by new regulation designated 46 CFR 70.05–15, is given authority to give special consideration to departures from the specific requirements of these regulations when it can be shown that special circumstances or arrangements warrant such departures. Special consideration is being given to the problems affecting these vessels. It is anticipated that any required changes in the regulations will be included in the agenda for the next public hearing held by the Merchant Marine Council, and the changes adopted by the Commandant will be published as amendments before May 1, 1958, and with an effective date of June 1, 1958.

LICENSE REQUIREMENTS

Those persons who are now serving as operators of vessels subject to the act of May 10, 1956, under the authority of a "motorboat operator's license" will be required to obtain either an "ocean operator's license" or an "operator's license" issued under the regulations in this document. All operators holding valid motorboat operator's licenses dated before June 1, 1958, will be afforded a period of one year in which to obtain a new license, except for those persons whose licenses expire before June 1, 1959, who shall obtain the required license prescribed in the regulations in this document prior to the time their present "motorboat operator's license" expires. On and after June 1, 1959, no person holding a "motorboat operator's license" only will be permitted to serve as an operator of a vessel subject to the act of May 10, 1956.

The scope of the licenses issued to operators of vessels subject to the act of May 10, 1956, will be according to waters. For those vessels operating offshore in the Atlantic and Pacific Oceans and the Gulf of Mexico, it will be necessary that the "operators" be holders of "ocean operator's licenses." For those vessels operating on waters within the coastline of the United States and the Great Lakes, it will be necessary that the "operators" be holders of "operator's licenses." These licenses will be valid for a period of five years from date of issue. The license will authorize the holder to operate only those described classes of vessels subject to the act of May 10, 1956, on the waters as specifically described, and within the restrictions which may be placed on the license.

A license as master, chief mate, second mate, or third mate of ocean and coastwise inspected vessels, or a license as master of ocean and coastwise steam or motor yachts, or a license as master, mate, or pilot of steam or motor vessels operating under special conditions, or a license as master or mate of motor vessels operating in connection with the offshore mineral and oil industries, will authorize the holder to serve in the capacity of "ocean operator" of those vessels subject to the act of May 10, 1956, which are of the class (steam and motor, or sail) described in his license, on the waters described in his license, and within other restrictions in his license.

A license as master or pilot of inspected vessels on waters other than ocean and coastwise waters, or a license as master or pilot of yachts on the Great Lakes, other lakes, bays, and sounds, or rivers, will authorize the holder to serve in the capacity of "operator" of those vessels subject to the act of May 10, 1956, which are of the class (steam and motor, sail, or non-self-propelled) described in his license, on the waters described in his license, and within other restrictions in his license.

Those persons who are now serving as operators of vessels subject to the act of May 10, 1956, and who do not have any Coast Guard license which qualifies them to operate such vessels, should submit their completed applications, using Coast Guard Form CG–866, License Application, as soon as possible, so that when found qualified the Goast Guard may issue the appropriate licenses.

The regulations in 46 CFR Part 187 contain the requirements governing the issuance of licenses to operators of passenger-carrying vessels which are less than 100 gross tons in size and subject to the act of May 10, 1956. For the operators of those passenger-carrying vessels which are 100 gross tons and over and required to have licensed personnel by the act of May 10, 1956, special consideration is being given to determining what requirements are necessary. At present the "Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel" will be followed. However, special consideration is being given to the problems arising under the act of May 10, 1956, and if any changes are necessary in these regulations, proposals will be included in the agenda for the next public hearing held by the Merchant Marine Council, and any changes adopted will be published before May 1, 1958, and with an effective date of June 1, 1958.

EFFECTIVE JUNE 1, 1958

The act of August 28, 1957 (Public Law 210, 85th Cong.), established the effective date of the act of May 10, 1956, as June 1, 1958. The purpose of this postponement in effective date is to provide more time for those affected to comply with the rules and regulations promulgated under the authority of this act and to allow sufficient time for consideration of any further comments on the regulations. Suggested changes received prior to March 1, 1958, which are found to improve the Rules and Regulations for Small Passenger Vessels will be prescribed as amendments and published with an effective date of June 1, 1958. Those suggested changes received on and after March 1, 1958, which are found to improve these rules and regulations will be processed in the same manner as other changes recommended to Coast Guard rules and regulations and will be published after June 1, 1958.

The owners, operators, and agents of all vessels subject to the act of May 10, 1956, are urged to familiarize themselves with the Coast Guard regulations implementing this law. In this regard Coast Guard personnel concerned with the administration and enforcement of navigation and vessel inspection laws, will extend upon request every possible assistance.

TRADITIONS OF THE SEA

THE ROLL of American Seafarers who have performed their duties in a meritorious manner in accordance with the well known humanitarian laws of the sea is long but never completed.

Home bound from a South Pacific cruise, the passenger ship SS *Mariposa* came about 3 days out of San Francisco and sped to the side of the Coast Guard Cutter *Gresham* in answer to an urgent call for medical assistance.

The *Gresham*, manning Ocean Station November, 30° North latitude and 140° West longitude, requested assistance for a critically ill seaman. Picked up by the *Mariposa*, the two ships plotted courses and speeds and in constant radio contact steamed at full speed to an early rendezvous.

The patient, USCG Apprentice Seaman W. A. Powell was brought alongside the *Mariposa* in one of the *Gresham*'s boats and immediately taken aboard and rushed to the ship's hospital. Here, the *Mariposa*'s medical officer, Dr. W. W. Fallon, found the man with a ruptured appendix and operated at once. According to the physician a longer delay would have been fatal.

This dramatic reversal of the usual roles played by Coast Guard and merchant vessels in distress cases resulted in a "well done" from Rear Adm. Russell E. Wood to the *Mariposa*.

The pictures on this page, all taken by Melvin Morse, the passenger liner's photographer, follow the chain of events from the meeting of the two vessels to the patient being taken to the operating room.

Matson

RADIOGRAM

RECEIVED ON S. S. MARIPOSA DATE AUGUST 12, 1957 TIME

NR1 SANFRANCISCO CALIF OK NC 0923Z12GMT

GOVT USCG SS MARIPOSA/KFCP

COMWESTSEAFRON X COM 12 CGD X USCGC GRESHAM X USPHS SANFRAN X MATSON NAVIGATION CO SFRAN HAS FOR INFO Y RENDEZVOUS WITH GRESHAM AND EVACUATION OF SERIOUSLY ILL CREW MEMBER ON 9 AUGUST AND WHICH NECESSITATED DIVERSION FROM REGULAR ROUTE WAS EFFECTED IN ACCORDANCE WELL KNOWN HUMANITARIAN LAWS OF THE SEA PERIOD TO ALL PARTICIPANTS A WELL DONE SIGNED RADM R WOOD COMMANDER WESTERN AREA U S COAST GUARD

UNITED STATES COAST GUARD

ADDRESS REPLY TO:
COMMMANDANT
U. S. COAST GUARD
HEADQUARTERS
WASHINGTON 25, D. C.

MVI
26 JULY 1957

Commandant's Action

on

Marine Board of Investigation; foundering of SS *Pelagia*, off Coast of Northern Norway, 15 September 1956, with loss of life

Pursuant to the provisions of Title 46 CFR Part 136, the record of the Marine Board of Investigation convened to investigate subject casualty, together with its Findings of Fact, Opinions, and Recommendations, has been reviewed.

The SS *Pelagia*, a Liberty type freighter of 7,238 g. t., built in 1943, was loaded to capacity with iron ore at Narvik, Norway. The ore was untrimmed and peaked in the center of each hold. With good weather, the *Pelagia* departed from Narvik, Norway, for Baltimore, Md., at about 1300 GMT, 14 September 1956.

After departure the weather progressively worsened and by 0500 GMT next morning the wind was force 9, WSW, with heavy seas from the same direction. At about 0510 GMT, a heavy sea struck the vessel, dislodging Nos. 1, 3, and 4 lifeboats from their cradles and damaging the tarpaulins on No. 1 hatch.

The lifeboats were lashed to prevent further damage but the heavy seas prevented the repair or replacement of the damaged tarpaulins. Apparently, because of the fear that the untrimmed and peaked iron ore cargo would shift during any course change, no maneuvers were undertaken which would enable the damage at No. 1 hatch to be corrected.

The vessel continued heading into the sea at a speed presumably calculated to maintain steerageway. The whole gale force winds with heavy seas continued and by 1248 GMT, with No. 1 hold flooded and No. 2 hold flooding, an SOS was sent and received, but because of uncertainty of position and rough weather, search and rescue operations were most seriously hampered.

At about 1300 GMT the general alarm was sounded and the crew, wearing life jackets, mustered at their lifeboat stations. Upon orders, No. 2 lifeboat was lowered with six persons embarked. This lifeboat remained alongside until the painter parted at about 1321 GMT. At this time the *Pelagia* was upright but down by the head with seas breaking over Nos. 1 and 2 hatches and as far aft as No. 3 hatch. She was headed into the sea with propeller still turning, presumably to maintain steerageway.

At about 1420 GMT the *Pelagia* sent her last radio message reading "now sinking." The *Pelagia* sank at about 1430 GMT, 15 September 1956 in approximate position 67°–15′ N., 11°–35′ E., with the loss of all persons then on board. As a result of this casualty, the *Pelagia* was lost, and of her total crew of 37 persons, 31 perished with the vessel, one died of exposure in the No. 2 lifeboat, and 5 unlicensed crew members in such lifeboat survived.

REMARKS

Paragraph 3 of the board's opinions states in effect that the sinking of the *Pelagia* was the result of natural causes and must be considered due to the perils of the sea. Undoubtedly, the perils of the sea, i. e., the whole gale winds and heavy seas caused the foundering of the *Pelagia*. It can be inferred from the record, however, that the failure to properly trim the iron ore cargo prior to departure from Narvik could have also been a contributing factor in the cause for the foundering.

The review of marine casualties involving improper stowage of ore cargoes on board merchant vessels has indicated the need for establishment of minimum standards for the proper stowage of bulk ore and similar cargoes when carried on general cargo vessels.

In the absence of regulations in this field and following preliminary studies, proposals for the establishment of minimum standards for the proper stowage of bulk ore and similar cargoes when carried on general cargo vessels were considered by the Merchant Marine Council of the U. S. Coast Guard at a public hearing held on 24 April 1956. Considerable controversy arose at this hearing and the item was withdrawn for further studies. This subject was given further study and again presented for consideration at a public hearing held on 7 May 1957 by the Merchant Marine Council.

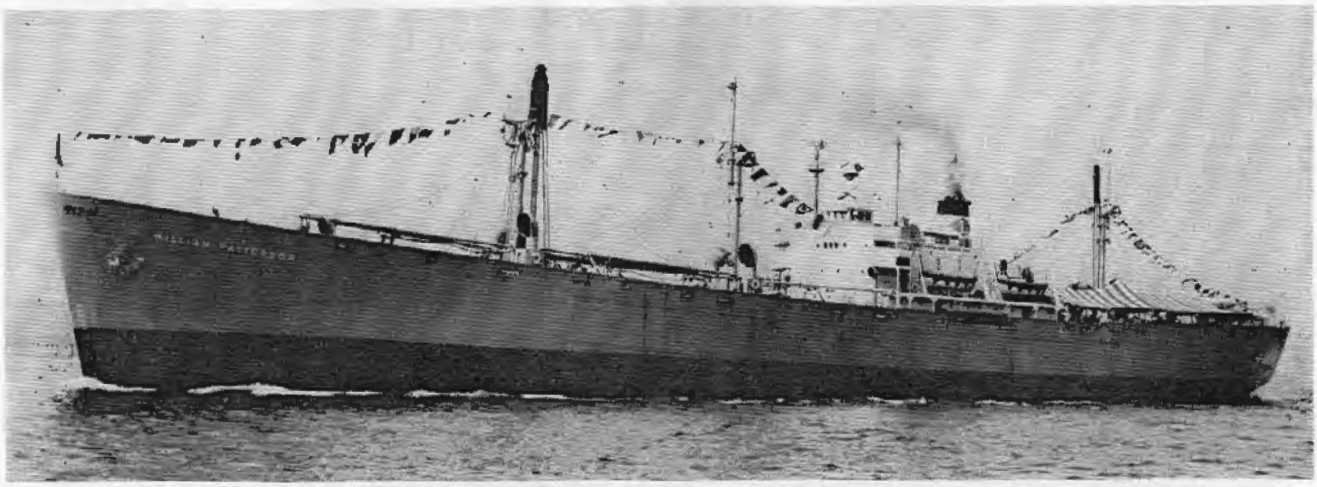
The proposal considered provided that when bulk cargo such as ore or concentrates, phosphate rock, etc. are carried on general cargo vessels, such cargoes shall be well trimmed out to the wings and in a fore and aft direction. After discussion and in view of the differences of opinion indicated, it was decided to appoint a panel of industry representatives to sit with the Coast Guard to analyze all the various phases of the carriage of ore and ore concentrates, with the end view of developing a specific "Code of Good Practice" for the carriage of the several types of such cargo. Further public hearings will be held on the subject when the panel makes its recommendations to the Commandant.

The board's recommendation with respect to steel pontoon hatch covers for cargo vessels carrying bulk cargoes and the carriage of auxiliary lifesaving equipment of the inflatable rubber boat type will be referred to the Merchant Marine Council for further consideration.

The Findings of Fact and Opinions of the Board convened to investigate subject casualty are approved, subject to the above remarks and the further remark that in view of the lack of material witnesses and other evidence covering a considerable period of time prior to the foundering of the *Pelagia*, the Opinions of the Board should not necessarily be taken to exclude other reasonable hypotheses with respect to the cause and responsibility for the foundering.

A. C. RICHMOND
Vice Admiral, U. S. Coast Guard
Commandant

444103—57——



SPORTING A NEW bow, the repowered GTS *William Patterson* cuts through the water on recent trials. Capable of a 17-knot speed the ship provides quite a contrast to her war-built sisters. *Photo Courtesy Bethlehem Steel Co.*

LYKES BROS. OPERATES GTS WILLIAM PATTERSON

THE FOURTH Liberty ship in the Maritime Administration's conversion and engine improvement program, the GTS *William Patterson*, successfully passed her sea trials and now is in service under the Lykes Bros. Steamship Company house flag.

This ship is the world's largest merchant ship to be powered by free-piston gas turbines.

The new 6,000 horsepower engine built by the Cleveland Diesel Engine Division of General Motors replaces the original triple expansion reciprocating steam engine which was standard equipment in the 3,250 ships of this type built for service in World War II.

Propulsion application of a free-piston engine—gas turbine drive—is a first in many respects. Some of these are:

- It is the largest direct reversing gas turbine marine installation to date with six gasifiers on a common piping system supplying the motive pressure to the gas turbines.
- The free-piston gas generator can be compared to a highly supercharged two-stroke uniflow scavenged diesel engine, where the expansion of the exhaust gas is continued in a turbine down to atmospheric pressure. Because the energy in the fuel is first utilized to perform work at the high compression ratios of a diesel cylinder, it is possible to obtain an efficiency at the turbine shaft that is comparable to that of a conventional engine.

OUTSTANDING FEATURES

Some of the outstanding features of the gasifier are:

1. Power stroke every cycle, like a two-cycle diesel engine.
2. No valve gear. The valves are automatic, like that of an air compressor.
3. Uniflow scavenging—compares to an opposed-piston engine.
4. No crankshaft—no rotative external power is generated.
5. No connecting rods; this follows for the reason that there is no crankshaft to connect to the pistons.
6. No crankshaft bearings—main and connecting rod bearings are not involved.
7. No balancing. The reciprocating masses are actually statically balanced by weighing the pieces.
8. Burns heavy fuels. Due to the possibilities of high compression ratios, high actual combustion temperature and high scavenging, all of which is attainable with high thermal efficiency, the engine handles heavy fuels satisfactorily.

On the *William Patterson*, the 6,000 shp designed point rating is to be attained when: (a) each gasifier is delivering 1,233 gas hp at thermal efficiency of 41 percent. This is based on 8.54 pounds of gas/sec. being delivered to the turbines under conditions of 44.4 psig and 850° F. (b) The turbine efficiency is 85 percent overall. (c) The piping losses are computed at 1½ to 2 percent. (d) The reduction gear losses are taken at three percent; this being an actual test evaluation.

SHIP LENGTHENED

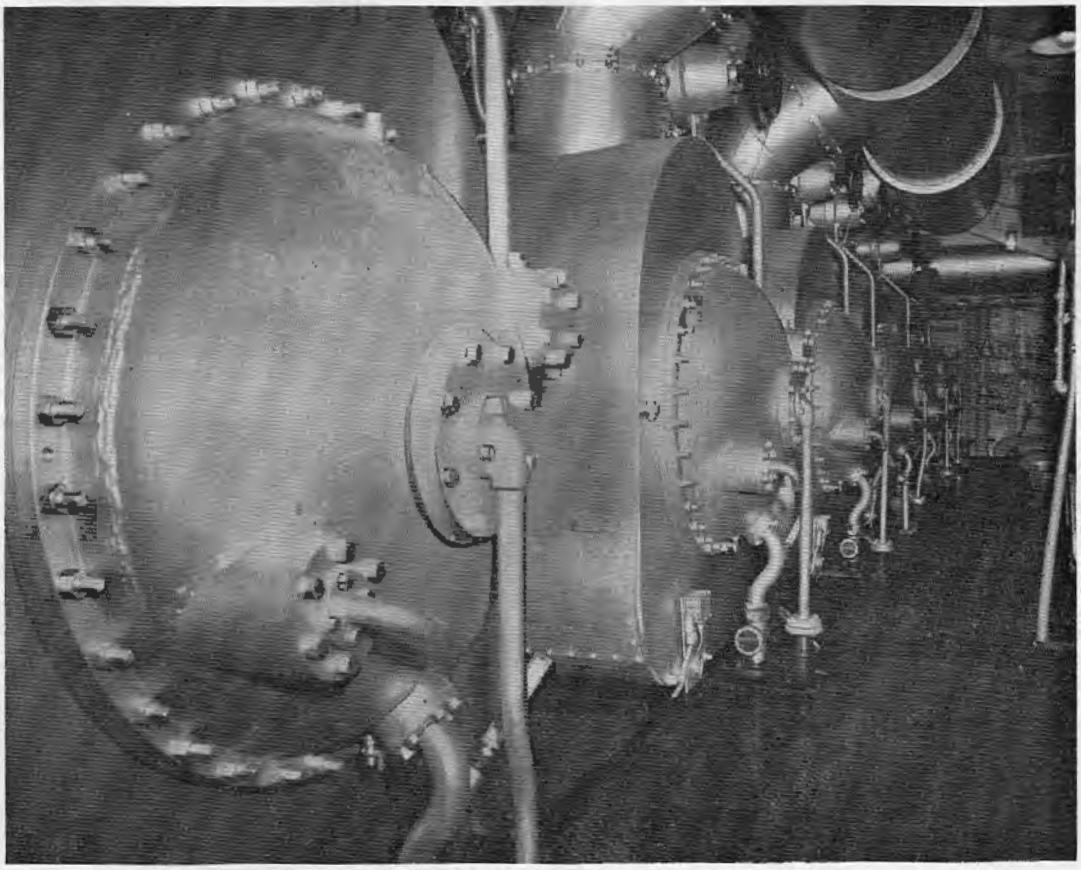
The *Patterson* was built in the Bethlehem-Fairfield shipyard in Baltimore in 1942. The 441 foot hull of the original Liberty ship, which was withdrawn from the Wilmington, N. C., anchorage of the Reserve Fleet, was lengthened some 25 feet by Bethlehem's Baltimore Yard. This was accomplished by removing the original bow, fabricating a new bow section of some 110 feet in length and welding them together. The resulting hull shape was designed to improve the "sea-keeping" characteristics of the original Liberty ship design, particularly while running at the higher speeds possible with the increase in power.

The *Patterson* achieved a speed in excess of 17 knots under optimum conditions during her trials. She successfully met her official trials, including full power and standardization runs. The engine developed 6,000 shaft horsepower with a mean draft of 20 feet, at which time she attained a speed of 16.8 knots. The six "gasifiers" and the gas turbines operated in satisfactory manner.

PROGRAM AIMS

The GTS *William Patterson* is the fourth unit of the Maritime Administration's Liberty Ship Conversion and Engine Improvement Program. This program, carried out by the agency at a cost of approximately $12,000,000 has the following as its objectives:

1. Evaluation of the problems of upgrading the Liberty ships of the National Defense Reserve Fleet under mobilization conditions. There are about 1,400 Libertys in the laid-up fleets. The demands of modern defense call for merchant ships operating at least as fast at 15 knots. The Libertys are 10-knot ships.



LOOKING FROM port to starboard on the GTS *William Patterson* you see the six gasifiers. Photo shows air intake tanks and hoods to the compressor cylinders of the gasifiers. Note the bounce covers with piston cooling inlets fitted in the center of the cover and the piston cooling drains at the bottom.

2. To assist the American Merchant Marine in the comparison of new and advanced types of propulsion plants and to seek development of marine engines that may provide improved fuel economy, lower maintenance, replacement and operating costs.

3. To investigate the possibilities of improving the standard cargo handling techniques and equipment currently in use in order to speed up ship turnaround.

4. To investigate the possibility of improving the sea-keeping qualities of the Liberty ship under actual operating conditions, with and without lengthened bows, at increased speeds, and to take performance measurements hitherto possible only with tank models.

Conversion of the *Patterson* commenced September 22, 1954, with the award of a contract to J. J. Henry Co., Inc., of New York for the development and preparation of contract plans and specifications covering the project.

Award for free-piston gas turbine propulsion plant was made October 6, 1954, to the Cleveland Diesel Engine Division of General Motors at the contract price of $1,228,723.

A contract was awarded to the Bethlehem Steel Co., Shipbuilding Division, Baltimore Yard, on August 9, 1955, for the completion of the conversion at a contract price of $1,857,999. Costs of reactivating the vessel from reserve status were $222,000. The ship arrived in Baltimore on September 18, 1955.

OTHER VESSELS

The previous ships in the Maritime Administration's Liberty Ship Conversion and Engine Improvement Program were:

SS *Benjamin Chew:* This was a minimum Liberty conversion without bow change. It employs existing boilers and pumps, with new superheaters, modified condensers and a new steam turbine and reduction gear. Horsepower was increased from the standard 2,500 to 6,000 shaft horsepower. Slight modifications were made to the cargo gear to carry military cargo in accordance with requirements of the MSTS. The conversion work was done by Ira Bushey & Co., Brooklyn, N. Y.

SS *Thomas Nelson:* This conversion was the first to lengthen and modify the bow section of the Liberty ship. The vessel is powered with geared diesel engines. The *Nelson* was outfitted with movable cranes replacing the original standard burtoning gear. The National Academy of Sciences is cooperating in a comparative study of the efficiency of the new cargo gear. The conversion of this ship was also performed by the Baltimore yard of Bethlehem Steel's Shipbuilding Division.

GTS *John Sergeant:* This converted Liberty was the first large merchant ship in the world to be powered solely by an open cycle gas turbine, which was developed by the General Electric Co. She too has a new bow section. The propulsion machinery, in addition to a regenerative open-cycle gas turbine power plant, uses a controllable-pitch propeller. Now in operation, the *Sergeant* has made several successful ocean crossings.

All four conversions are required by specification to be capable of satisfactory operation on Bunker C (No. 6) fuel, the most economical fuel available in all ports.

40 YEARS AGO:

On September 15, 1917, at 2:45 p. m. the steamer *Platuria* was sunk by a German submarine in Latitude 35°8′ North, Longitude 9°15′ West. The Master and eight members of the crew were lost. In addition, two *Luckenbach* ships were lost during the month. The *Lewis Luckenbach* was torpedoed with loss of ten lives between Brest and Cherbourg, France, and the *D. N. Luckenbach* lost five men after being torpedoed while en route from New York to Havre, France.

* * *

November 1, 1917, the steamer *Alki*, en route from Hoona to Sitka, Alaska, during a violent blizzard, struck a submerged reef at 1:20 p. m. very close to main shore near Point Augusta, Chichikoff, Alaska. The vessel struck one hour before high tide, and all efforts to free the ship were unavailing. All passengers and crew were safely transferred.

* * *

Among life saving appliances displayed at the Southern Commercial Congress in New York, the Steamboat-Inspection Service showed a life preserver that saved a life from the burning steamer *Tivoli*, when 18 men were saved by the same means. A folding screen containing 20 large photographs showing work of the service, license forms, certificates, current publications, and a statement of means to prevent loss of life and property was also shown.

* * *

30 YEARS AGO:

Recent accidents reported to the Bureau include: While lying at dock in Yokohama, Japan, a stop valve on boiler burst, fatally scalding two men aboard the steamer *Edmore*, of 6,999 gross tons; The Steamer *Beaconhill*, of 7,071 gross tons, while lying at Tampico, Mexico, loading crude oil, an explosion occurred in No. 8 port tank putting four men in the hospital; While steamship *President Harding*, of 13,869 gross tons, was in dock at Hoboken, N. J., a steam valve gave way, causing the death of one man and seriously scalding two others.

* * *

The Secretary of Commerce approved a resolution providing that the Master of any vessel under the jurisdiction of the Steamboat Inspection Service on the Great Lakes, and which is carrying cargo, to assure himself before leaving port that all the cargo hatches of his vessel are properly covered and the covers secured.

* * *

20 YEARS AGO:

Numbered Motorboats of the United States on November 1, 1937 totaled 200,413. This was an increase of 1,305 over the previous month.

* * *

On October 1, 1937, American shipyards were building or had under contract to build for private shipowners, exclusive of vessels previously launched, 155 vessels aggregating 315,884 gross tons, an increase of two over the previous month.

* * *

A public hearing on proposed amendments to the rules for tank vessels, which were issued on November 10, 1936, was held in Washington, D. C. The experience gained by the Bureau since the effective date of the regulations indicated revision was necessary particularly in the requirements pertaining to fire fighting apparatus and lifesaving apparatus. The revised supplement should result in better and safer conditions in the operation of tank vessels and more uniform application of the rules relating to the inspection of such vessels.

(Continued on page 190)

CAPTAIN FEDER RETIRES

In ceremonies at Coast Guard Headquarters, Captain Joseph B. Feder, USCG, retired as Chief, Electrical Engineering Section, Merchant Marine Technical Division, on September 30, 1957.

Rear Admiral James A. Hirshfield, Assistant Commandant, and Rear Admiral H. T. Jewell, Chief, Office of Merchant Marine Safety, were among the many well-wishers who bid farewell to Captain Feder after 19 years in the Coast Guard and Bureau of Marine Inspection and Navigation.

After serving in World War I, Captain Feder was engaged in design of electrical installations on naval and merchant vessels before accepting a civilian post with the BMIN in 1938. During World War II he was commissioned and assigned to duty under the Chief, Merchant Marine Technical Division, as head of the Electrical Section. He was promoted to Commander on March 29, 1945 and to Captain on August 26, 1952.

Captain Feder has represented the Coast Guard on a number of important industry committees, including his most recent trip to the International Electrotechnical meetings in Rapallo, Italy.

nautical queries

Q. What precautions should be taken, with regards to the cylinders of a triple expansion steam engine, when operating at slow speeds?

A. When operating at slow speeds the cylinder walls will become cool causing some of the steam to condense. The cylinder and steam chest drains should be cracked open, as necessary, to drain this condensate.

Q. What would be indicated on a reciprocating engine by a decrease in compression at the top of the stroke together with an increase in compression at the bottom of the stroke? Explain how you would remedy this condition.

A. This would indicate that the position of the piston within the cylinder has been lowered, probably due to wear down of the bearings. To remedy this condition additional shims should be placed beneath the foot of the connecting rod to bring the piston to its proper position. (Assuming the affected bearings were otherwise in good condition.)

Q. List the functions of the auxiliary exhaust pressure (back pressure) on a modern steam turbine-driven vessel.

A. 1. Acts as a steam seal for various low pressure glands.

2. Assists in heating and deaerating the feed water.

3. Cushions auxiliary machinery.

Q. What is the most efficient theoretical turbine blade speed in comparison with the steam speed in the following?

(a) A pure reaction turbine.

(b) A simple impulse turbine.

A. (a) In pure reaction turbines, the blade speed should equal the steam speed.

(b) In simple impulse turbines, the blade speed should equal ½ the steam speed.

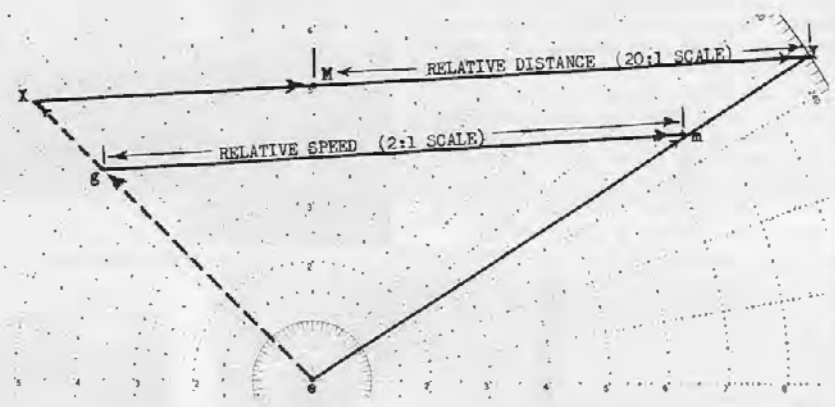
Q. What is a dummy piston and on what type of turbine is it used?

A. The dummy piston is an extension of the rotor drum within the forward end of the casing in a section known as the dummy cylinder. The dummy piston is used on single-flow reaction turbines to counteract the axial thrust caused by the pressure differential acting on each row of moving blades.

Q. Under full power conditions explain how the vacuum is affected when using steam at a pressure higher or lower than the designed pressure on the nozzles of the main air ejector.

A. In both cases the vacuum will be lowered when under full power operation. If the steam pressure at the nozzles is lowered, the capacity of the air ejector will be lowered. If the steam pressure at the nozzle is greater than the designed pressure a reduction of the vacuum can be expected due to overheating of the air ejection.

The maneuvering board diagram illustrated shows a solution to the problem on hurricane maneuvering in last month's issue.



With the storm center at e, M represents the position of the vessel 100 miles to the north using the scale of 20:1. The dashed line e—g—X represents the direction in which the storm is moving, Northwest (315°).

The length of the line e—X is determined by a ratio: $\frac{\text{Speed of storm}}{\text{Speed of ship}} \times$ desired distance from the center of the storm. In terms of this problem: $\frac{10}{15} \times 200 = 133\frac{1}{3}$ miles.

The direction of relative motion is then determined by drawing a line from X through M. This line is extended out to the 200 mile range circle using the 20:1 scale. The course to be steered can be seen as 056.5°. The relative distance M—Y measured on the 20:1 scale is 168 miles.

A line parallel to X—M—Y is drawn from the storm's direction and speed vector at g, using 2:1 scale, until it intersects the 15 knots speed circle of the vessel at m. The length of the line g—m, 19.5 miles on the 2:1 scale is the relative speed which results with the vessel on a course of 056.5°.

The time required to complete the maneuver would be:

$$\frac{\text{Relative distance}}{\text{Relative speed}} = \frac{168 \text{ miles}}{19.5 \text{ knots}} = 8 \text{ hours } 37 \text{ minutes.}$$

Analysis of this problem will indicate that it required a determination of a line of relative motion that will combine a maximum relative speed and minimum relative distance compatible for the solution. A similar problem, together with a geometric proof, is contained in H. O. 217, Maneuvering Board Manual, Case XII. Under certain circumstances, this type solution could cause the vessel to go closer to the storm center in the process of reaching a prescribed distance away from it.

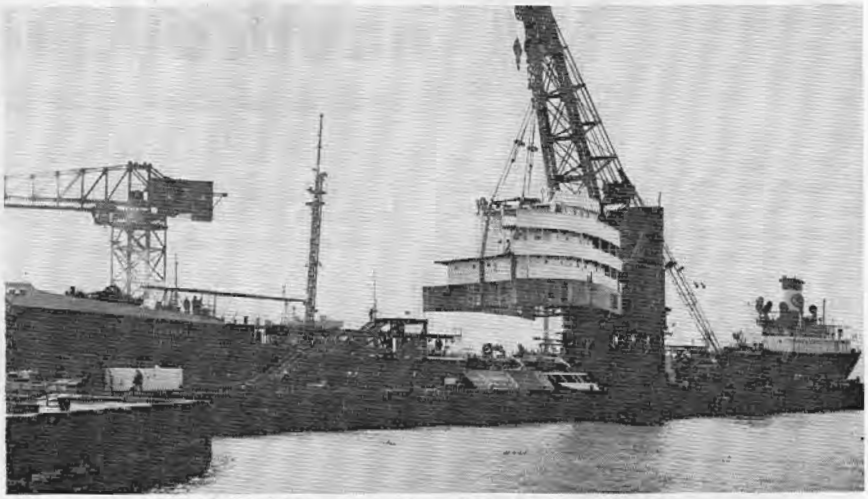
In assessing the practical value of problems such as this, the navigator will recognize that storms seldom behave in such exact conformity with the predictions. Several modern textbooks on meteorology and ship handling describe methods for maneuvering which are based on the probable movements of the storm area within a period of time.

JUMBOIZING A T–2 TANKER

WITH CONSTRUCTION time playing an important role in building a new vessel, operators faced with major repairs or replacement to their war-built T–2 tankers have introduced a new term to the marine industry—*jumboizing*!

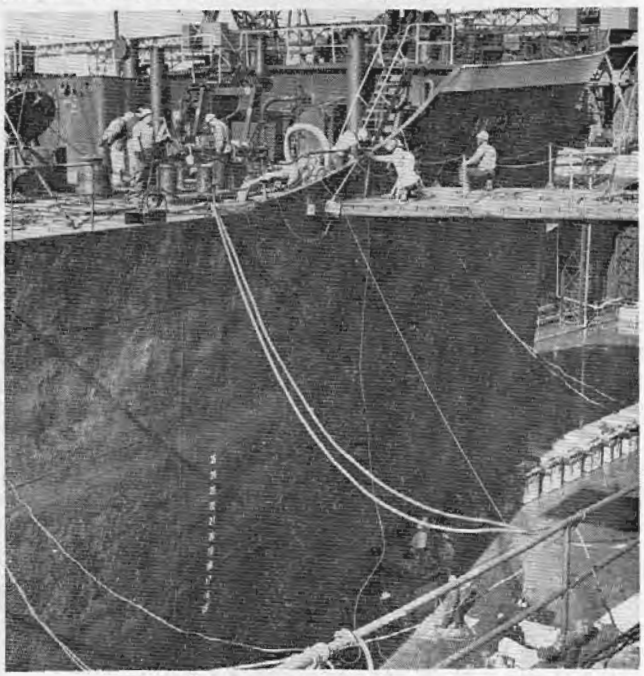
Illustrated on this page are a series of photographs of *jumboizing* the SS *Amoco Delaware* in the Newport News Shipbuilding & Drydock Co. yards. Completed in 42 working days, the vessel is 48 feet longer and has 7 feet more beam than original. Her gross has been increased from 10,414 tons to 12,529 tons, her net from 6,290 tons to 8,277 tons, and approximately 3,500 tons has been added to her deadweight.

All photographs *courtesy Newport News Shipbuilding & Drydock Co.*



DECKHOUSE is removed from the SS *Amoco Delaware*.

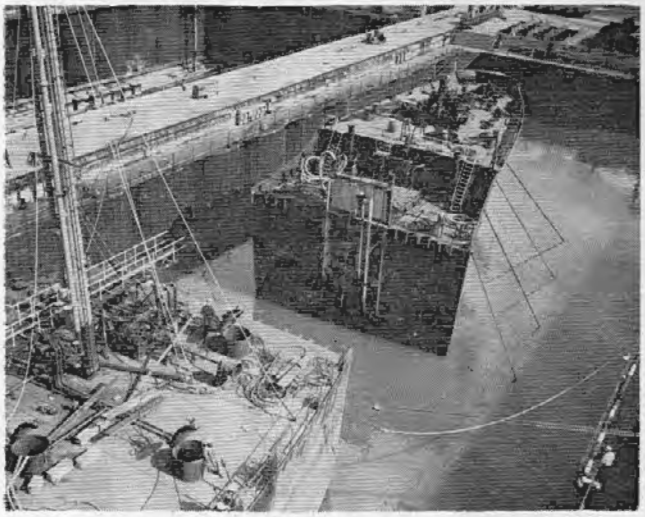
THE DECKHOUSE is placed on new cargo section.



TORCH CUTTING starts to separate ship.

VIEW OF SHIP cut into three parts.

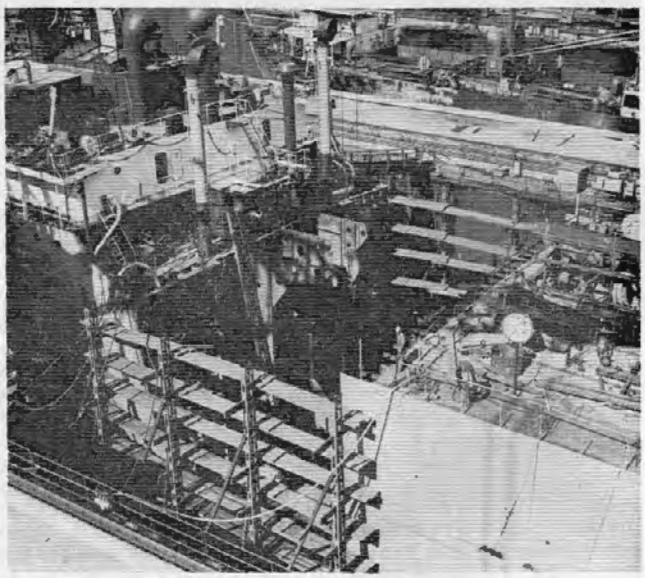
STERN SECTION towed from dock.



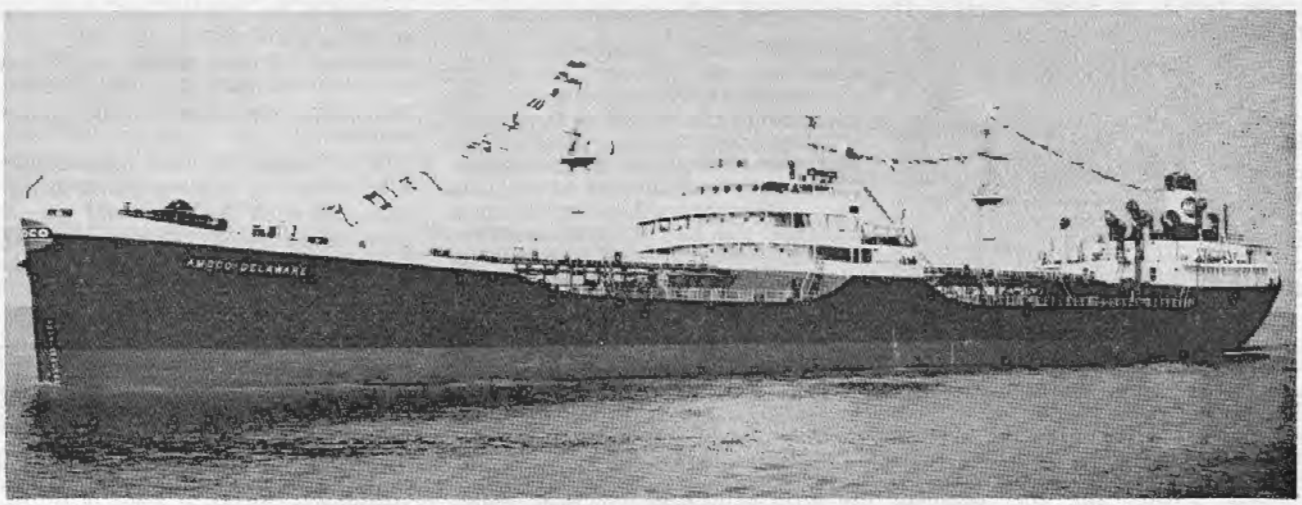
OLD CARGO section removed.

NEW AND LARGER midbody enters dock.

STERN SECTION is returned.



VIEW OF WORK to attach sections.



AFTER 42 working days the "jumboized" *Amoco Delaware* leaves for sea trials.

MARITIME SIDELIGHTS

A new type of lifeboat is to be constructed of laminated reinforced plastic for use aboard American merchant ships. Investigation having indicated their feasibility, and the apparent savings involved being apparent, the U. S. Maritime Administration has issued invitations to bid on construction of oar and motor-propelled laminated glass fiber lifeboats. Upon meeting performance tests by the Coast Guard, the first boats will be used on the GTS *William Patterson*.

⚓ ⚓ ⚓

A bill to make it a criminal offense to transport or sell stolen inboard and outboard motorboats or outboard motors in interstate commerce was introduced into the U. S. House of Representatives before adjournment by Representative Prince H. Preston (D, Ga.). This proposal, H. R. 8964, specifically adds motorboats and outboard motors to the list of items which may not be transported illegally from state to state under the U. S. Code.

⚓ ⚓ ⚓

During August a total of 389 vessels arrived in San Francisco Bay, it was reported by the San Francisco Marine Exchange. Of these, 250 were American registry and the remaining 139 under foreign flags representing 17 nationalities.

⚓ ⚓ ⚓

The SS *Tonsina* of the Alaska Steamship Co. recently landed 314,080 cases of canned Alaska salmon valued at $13,687,000, according to a report in the *West Coast Sailors*. This was the largest single load of salmon, the report said, with most of the cargo picked up in the Bristol Bay area.

⚓ ⚓ ⚓

A report titled "Shipboard Cranes and Burtoning Gear" has been published by the U. S. Maritime Administration which compares the rotating cranes placed on board the MV *Thomas Nelson* and the orthodox boom and winch equipment on the SS *Benjamin Chew*. The study is available from the Office of Sales and Distribution, Room 6329 Commerce Department Building, Washington 25, D. C., for $1 a copy.

⚓ ⚓ ⚓

With only two chargeable accidents for the period January 1, 1957, to June 30, 1957, the SS *Steel Artisan* was announced as winner of the Isthmian Lines, Inc., First Fleet Safety Contest. Company officials indicated that this was the best record ever attained by one of their ships. The individual safety award was made to Leonard Dower, Deck Maintenance, SS *Steel Navigator*, for his entry that plow steel wire be discontinued as spring lines and replaced with braided wire or "Swedish" rope.

⚓ ⚓ ⚓

The National Steel & Shipbuilding Corp. of San Diego, Calif., has been awarded a contract to build a hydrographic surveying ship at the fixed price of $5,712,015, plus $101,228 for air conditioning, or a total award of $5,813,243.

The ship is to be constructed by the Maritime Administration for the U. S. Coast and Geodetic Survey Office. The vessel, MA design S2–S–RM28a, will be 292 feet long, 46 feet beam, 15 feet draft, 15 knots, and will carry a crew of 127 officers and men.

⚓ ⚓ ⚓

Signing of a contract calling for replacement of 14 vessels of the Mississippi Shipping Co., Inc., ocean freight and passenger fleet has been announced by the Maritime Administration. The contract, which becomes effective January 1, 1958, will run until December 31, 1977, and calls for ship construction costing between $150 and $160 million. Operators of Delta Line, the Mississippi Shipping Co., of New Orleans, serve Essential U. S. Foreign Trade Routes Nos. 14 and 20.

⚓ ⚓ ⚓

Officers and men of two Esso Shipping Co. ships were congratulated by the President of their company for taking prompt and efficient fire fighting precautions under threatening circumstances. The entire crew of the *Esso New Orleans* participated in preventive measures "without the least indication of confusion or excitement" when a vessel moored ahead of them at a Central American dock had an engineroom fire. Similar action was taken by the *Esso Florence* when an explosion occurred in a coal ship on the opposite side of the dock. Both incidents typify the benefits that have accrued from their shipboard and shoreside training programs.

RADIOTELEPHONE USERS

An increased use of the International radiotelephone calling and distress frequency of 2182 kc/s has resulted in the Coast Guard discontinuing the distress guard on 2670 kc/s effective January 1, 1958.

During the years prior to 1947 the Coast Guard made available to the boating public its calling frequency 2670 kc/s for use in the event of distress or reporting aids to navigation outages. This was necessary since there did not exist any national or international radio frequency for this purpose. At the Atlantic City Convention of the International Telecommunications Union in 1947 the countries of the world agreed to the use of frequency 2182 kc/s for international radiotelephone calling and distress.

This frequency has been implemented by the boating public in accordance with the rules and regulations of the Federal Communications Commission to such an extent that the guard on 2670 kc/s for distress purposes may be discontinued.

A booklet published by the Radio Technical Commission for Marine Services (RTCM) entitled "Marine Radio Telephony" describes in laymen's language instructions on the licensing, maintenance, and operation of radiotelephone equipment. Copies may be obtained from RTCM, C/O Federal Communications Commission, Washington 25, D. C., for sixty cents a single copy.

COAST GUARD ANNOUNCES CADET EXAMS

THE ANNUAL competitive examination for appointment of cadets to the United States Coast Guard Academy in New London, Conn., will be held February 24 and 25, 1958, in over 100 cities throughout the Nation. Applications are now being accepted.

The examination is open to any unmarried, qualified young man, military or civilian, who will have reached his 17th but not his 22d birthday on July 1, 1958.

After graduation the Coast Guard officer has a choice of duty in many fields, including merchant marine inspection duties.

It is believed that members of the maritime industry will know of young men who might be interested in this examination, and that they will inform their friends and relatives of this opportunity to enter on a highly desirable career.

Requests for information concerning the examination and requirements may be addressed to the Commandant (PTP–2), U. S. Coast Guard, Washington 25, D. C. All such inquiries will be given prompt attention. The deadline for applications is January 15, 1958.

AN AERIAL view of the U. S. Coast Guard Academy, New London, Conn., where future officers of the nation's oldest seagoing force are trained.

SHIP RESEARCH

(*Continued from page 177*)

one direction to make this possible. We are sponsoring research that some day will let the naval architect put into his design strakes of steel that he knows will stop a crack. This study started out to get a quick answer. We have now learned that answers to these problems do not come quick and easy. We must learn the fundamentals and this takes the patient study of good men.

One final word on the specific results of research done under the Fabrication Program of the Ship Structure Committee. This is a point which nearly everyone in shipping can do something about.

We learned early in our work that every crack in a ship has begun at some kind of a hard spot or discontinuity. It may have been a square corner, or a cutout for a ladder, or a chock welded to the main deck stringer plate. Hard spots or notches in a ship structure come in many, many different forms. They are the result of little or no thought. People often introduce new notches into a ship that has been in service for years.

Our experience, and the experience of shipbuilders all over the world, says to avoid notches like the plague. Make the structure smooth in the basic design. Use well rounded corners. Avoid miscellaneous attachments to the strength deck and to the shell. Keep our ships free of dangerous notches and the cracks will not have a place to start.

BETTER SHIPS FOR THE FUTURE

The Maritime Administration jointly with several shipping companies has announced plans for the building of 242 ships worth $2¼ billions. How many more ships are being planned outside of this program may not be known accurately but it is sure to be a larger number.

Billions of dollars of new ships are in the works. Some tankers will be of 100,000 tons and larger. This presents an impressive engineering challenge. Our new merchant ships must be of top quality. They will be built in a highly competitive market. To build them well is going to require that the designers and builders of ships in the United States learn more and more about how to do the job.

We must learn more not only about ship structures but also about all the technical phases of ship building. Technological progress based on good research is becoming more and more vital to the American Merchant Marine.

CONVENTIONS

The Government of the United Kingdom has advised this country that in accordance with Article 66 of the International Convention for the Safety of Life at Sea, 1929, the Government of Cuba notified its acceptance on February 22, 1957, of the International Regulations for Preventing Collisions at Sea, 1948.

The Government of the United Kingdom has advised this country that in accordance with Article 66 of the International Convention for the Safety of Life at Sea, 1929, the Brazilian Government denounced that convention on March 15, 1956. The denunciation will take effect March 15, 1957.

APPENDIX

AMENDMENTS TO REGULATIONS

TITLE 46—SHIPPING

Chapter II—Federal Maritime Board, Maritime Administration, Department of Commerce

Subchapter J—Miscellaneous

[Gen. Order 61]

PART 350—SEAMAN'S SERVICE AWARDS

Effective as March 15, 1957, the following new Subchapter J and new Part 350 are hereby added to Chapter II of this title:

Sec.
350.1 Purpose.
350.2 Authority.
350.3 Korean Service Bar.
350.4 Procedure for purchase.
350.5 Replacements.
350.6 Unauthorized sale.

AUTHORITY: §§ 350.1 to 350.6 issued under secs. 2, 5, 70 Stat. 605, 606; 46 U. S. C. 249a.

§ 350.1 *Purpose.* To set forth the regulations and procedure to be followed, pursuant to Public Law 759, 84th Congress, in connection with the issuance of service ribbon bars to masters, officers and crew members of United States ships in recognition of their service in the defense of Korea, and the replacement of awards previously issued for service in the United States Merchant Marine during World War II, under earlier Acts of Congress and Executive Orders, now repealed.

§ 350.2 *Authority.* The Secretary of Commerce on December 14, 1956 delegated authority to the Maritime Administrator, Maritime Administration, to exercise the functions vested in the Secretary of Commerce under sections 2 and 5 (b) of Public Law 759, 84th Congress.

§ 350.3 *Korean Service Bar.* A red, white, and blue umbra silk ribbon bar, one and three-eighths inches long by one-half inch wide may be issued, in accordance with the procedure set forth in § 350.4, to each master, officer, or member of the crew of any United States ship who, between June 30, 1950 and September 30, 1953, served in the waters adjacent to Korea, within the following bounds:

From a point at latitude 39°30′ N., longitude 122°45′ E.; southward to latitude 33° N., longitude 122°45′ E.; thence eastward to latitude 33° N., longitude 127°55′ E.; thence northeastward to latitude 37°05′ N., longitude 133° E.; thence northward to latitude 40°40′ N., longitude 133° E.; thence northwestward to a point on the east coast of Korea at the juncture of Korea with the U. S. S. R.

§ 350.4 *Procedure for purchase.* Application for the Korean Service ribbon shall be made to the Seamen Services Section, Division of Office Services, Maritime Administration, Department of Commerce, Washington 25, D. C. Such application should include seaman's name, his license or identification number, the name or names of ships on which he served, dates of service, and his mailing address. If found to be eligible, an Authorization Card will be supplied to the applicant whereby he may purchase the Korean Service bar from the only duly certified distributor, the A. & N. Trading Company, Inc., 8th and D Streets, NW., Washington 25, D. C., at a cost of twenty-eight cents. Replacement may be obtained in the same manner if bar is lost, destroyed, or rendered unfit for use, without fault or neglect on the part of the owner.

§ 350.5 *Replacements.* (a) The following ribbon bars, previously issued for service in the United States Merchant Marine during World War II, pursuant to earlier Acts of Congress and Executive Orders, now repealed, may be replaced, if bar is lost, destroyed, or rendered unfit for use, without fault or neglect on the part of the owner, at a cost of twenty-eight cents per ribbon bar by presenting to the A. & N. Trading Company, Inc., either in person or by mail, the appropriate Authorization Card presently in the applicant's possession:

Atlantic War Zone Bar.
Pacific War Zone Bar.

THE LOGBOOK

(*Continued from page 184*)

15 YEARS AGO:

Full militarization of all floating units of the former Lighthouse Service, consolidated with the Coast Guard in 1939, is now taking place, Officers and men of this service who, for reason of age, length of service, physical disability, or other conditions, could not be commissioned or enlisted, are to be transferred to positions ashore.

* * *

The Coast Guard Cutter *Muskeget*, the former Eastern Steamship Line's *Cornish*, has been overdue in the Atlantic for some time and must be presumed lost. The next of kin of personnel aboard have been notified. This is the third Coast Guard ship lost in the Atlantic. Others were the 327-foot *Hamilton* and the tender class cutter *Acacia*.

* * *

Vice Admiral Russell R. Waesche, Commandant of the Coast Guard, addressed a recent meeting of the Propeller Club of the United States in New York. He emphasized the fact that the Coast Guard at war is essentially a guardian of the safety of the merchant marine.

SAFE DRIVING

The seafaring man when he drives his car has a lot of obstacles to overcome, like—

***His time ashore is precious.**

***He must expose himself to unfamiliar hazards such as road-construction jobs that have popped up since he was last in port.**

***His car may not have been in regular use and no time to check out essentials like brakes, headlights, or even gasoline and oil.**

***Maybe license and registration or insurance have lapsed.**

***Usually in a big rush leaving or to make it back to the ship.**

Speed kills! The California Highway Patrol studied records of approximate speed each driver was traveling preceding his accident. Close relationship was revealed between speed and death.

Of total drivers traveling at time of accident between—

1 to 10 mph, 1 out of 47 was a FATAL ACCIDENT.
11 to 20 mph, 1 out of 65 was a FATAL ACCIDENT.
21 to 30 mph, 1 out of 68 was a FATAL ACCIDENT.
31 to 40 mph, 1 out of 27 was a FATAL ACCIDENT.
41 to 50 mph, 1 out of 13 was a FATAL ACCIDENT.
51 to 60 mph, 1 out of 13 was a FATAL ACCIDENT.
61 to 70 mph, 1 out of 6 was a FATAL ACCIDENT.
Over 71 mph, 1 out of 4 was a FATAL ACCIDENT.

***Safety Bulletin*, California Shipping Co.**

Mediterranean-Middle East War Zone Bar.
Combat Bar.
Defense (Pre-Pearl Harbor) Bar.
Victory Medal Bar.

If Authorization Cards are lost or destroyed, replacements thereof may be obtained upon application to the Seamen Services Section, Division of Office Services, Maritime Administration, Department of Commerce, Washington 25, D. C.

(b) The following decorations may be replaced at cost upon application to the Seamen Services Section, Division of Office Services, Maritime Administration, Department of Commerce, Washington 25, D. C.:

Distinguished Service Medal.
Meritorious Service Medal.
Mariner's Medal.
Victory Medal.
Merchant Marine Emblem.
Honorable Service Button.

§ 350.6 *Unauthorized sale.* The sale of any Merchant Marine decoration, without the presentation of appropriate Authorization Card or written authorization of the Maritime Administration, or by anyone other than a certified distributor, is prohibited by law.

Dated: March 26, 1957.

[SEAL] CLARENCE G. MORSE,
Maritime Administrator.

[F. R. Doc. 57-2616; Filed, Apr. 3, 1957; 8:51 a.m.]

EQUIPMENT APPROVED BY THE COMMANDANT

[EDITOR'S NOTE.—Due to space limitations, it is not possible to publish the documents regarding approvals and terminations of approvals of equipment published in the Federal Register dated August 31, 1957 (CGFR 57-40)-(CGFR 57-41). Copies of these documents may be obtained from the Superintendent of Documents, Washington 25, D. C.]

AFFIDAVITS

The following affidavits were accepted during the period from 15 August 1957 to 15 September 1957:

Denison Engineering Co., Columbus 16, Ohio, VALVES.

The Babcock & Wilcox Co., Tubular Products Division, Milwaukee Plant, 3839 West Burnham St., Milwaukee 46, Wis., PIPE FITTINGS AND FLANGES.

Cooper Alloy Corp., Hillside, N. J., FITTINGS, FLANGES, AND CASTINGS.

Leland Tube Co., Inc., 236 First St., Elizabeth 1, N. J., FERROUS PIPE AND TUBING.

MARINE SAFETY PUBLICATIONS AND PAMPHLETS

The following publications and pamphlets are available and may be obtained upon request from the nearest Marine Inspection Office of the United States Coast Guard, except for cost publications which may be obtained upon application to the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Date of each publication is indicated following title.

CG No.	Title of Publication
101	Specimen Examinations for Merchant Marine Deck Officers. 1–50
108	Rules and Regulations for Military Explosives. 5–15–54
115	Marine Engineering Regulations and Material Specifications. 3–1–56
118	Overtime Services. 8–46
123	Rules and Regulations for Tank Vessels. 10–1–56
129	Proceedings of the Merchant Marine Council. Monthly
	Motorboat safety. 1957.
169	Rules to Prevent Collisions of Vessels and Pilot Rules for Certain Inland Waters of the Atlantic and Pacific Coasts and of the Coast of the Gulf of Mexico. 1–2–57
172	Pilot Rules for the Great Lakes and Their Connecting and Tributary Waters. 7–1–57
174	A Manual for the Safe Handling of Inflammable and Combustible Liquids. 7–2–51
175	Manual for Lifeboatmen and Able Seamen, Qualified Members of Engine Department, and Tankerman. 3–5–54
176	Load Line Regulations. 11–1–53
182	Specimen Examinations for Merchant Marine Engineer Licenses. 5–1–57
184	Pilot Rules for the Western Rivers. 7–1–57
187	Explosives or Other Dangerous Articles on Board Vessels. 7–1–54 (Cost Pub. $2.50 from GPO)
190	Equipment Lists. 3–1–56
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel. 9–15–55
200	Marine Investigation Regulations and Suspension and Revocation Proceedings. 4–13–53
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels. 4–1–57
227	Laws Governing Marine Inspection. 7–3–50
239	Security of Vessels and Waterfront Facilities. 6–16–52
249	Merchant Marine Council Public Hearing Agenda. Annually
256	Rules and Regulations for Passenger Vessels. 3–1–57
257	Rules and Regulations for Cargo and Miscellaneous Vessels. 6–1–55
258	Rules and Regulations for Uninspected Vessels. 7–1–55
259	Electrical Engineering Regulations. 6–1–55
266	Rules and Regulations for Bulk Grain Cargo. 2–13–53
267	Rules and Regulations for Numbering Undocumented Vessels. 1–15–53
268	Rules and Regulations for Manning of Vessels. 11–19–52
269	Rules and Regulations for Nautical Schools. 11–1–53
270	Rules and Regulations for Marine Engineering Installations Contracted for Prior to July 1, 1935. 11–19–52
290	Motorboats. 4–15–57
293	Miscellaneous Electrical Equipment List. 2–1–57
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf. 1–2–57

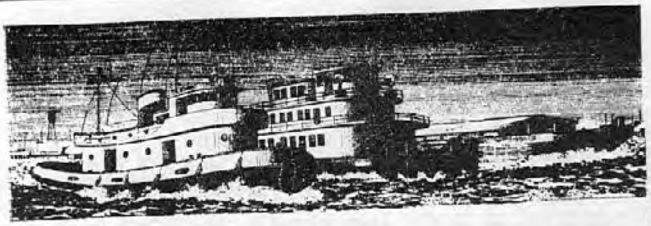
Official changes in rules and regulations are published in the Federal Register, which is printed daily except Sunday, Monday and days following holidays. The Federal Register is a sales publication and may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. It is furnished by mail to subscribers for $1.50 per month or $15.00 per year, payable in advance. Individual copies desired may be purchased as long as they are available. The charge for individual copies of the Federal Register varies in proportion to the size of the issue and will be 15 cents unless otherwise noted on the table of changes below.

Changes Published During September 1957

The following have been modified by Federal Registers:

None.

U. S. GOVERNMENT PRINTING OFFICE: 1957



THE
American Waterways Operators,
INC.

SAFETY NEWS

October 1957

ANY WAY YOU LOOK AT IT