PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

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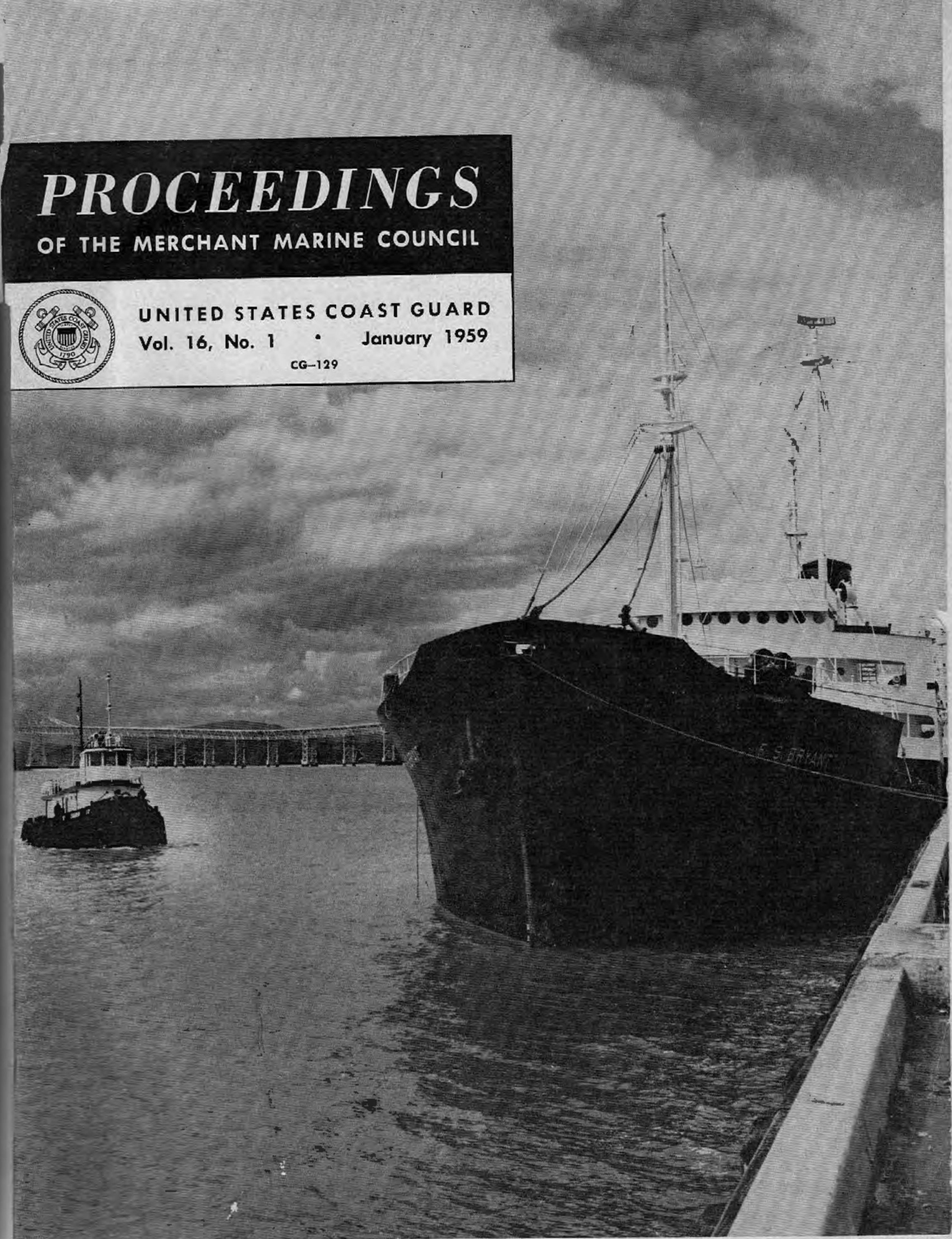

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OF THE

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The Merchant Marine Council of the United States Coast Guard

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FRONT COVER

The *Standard No. 2* is pictured coming alongside the SS *F. S. Bryant* at the Richmond, Calif., Long Wharf. Seen in the background is part of the new San Rafael-Richmond bridge. Photo Courtesy *Standard Oil Company of California.*

BACK COVER

First of two cartoons which depict the engine room as seen from the bridge and the bridge as seen from down below. By A. E. Merrikin from the *Range Light* published by the *Marine Department* of the *Texas Company.*

DISTRIBUTION (SDL 68)

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COMMENDATION

MR. FRANK J. STULLER
1312 West 21st St.
Lorain, Ohio

DEAR MR. STULLER:

It is my pleasure to commend you on your quick positive action which you took to rescue James D. Eckert from probable drowning as described below.

On the 18th of July 1958, while you were serving as Second Mate on board the SS *Ralph H. Watson*, at approximately 1:20 a. m., you heard the cry of "man overboard" and immediately went down to the dock where it had been indicated to you that a man had fallen into the water. On observing a hand break the water and again submerge, you, with little thought for personal safety, climbed down onto a fender between the vessel and the dock, and thence into the water, where you managed to get hold of James D. Eckert, who had fallen overboard and was helpless, and held him until help arrived.

Your quick action, without a doubt, saved the life of Mr. Eckert. This act of yours was in the finest tradition of the sea, and reflects credit on you as a licensed officer of the United States Merchant Marine.

This commendation will be made a part of your official record in the files at U. S. Coast Guard Headquarters, Washington, D. C.

Sincerely yours,

O. A. PETERSON,
Captain, U. S. Coast Guard,
Commander, 9th CG District,
Acting.

ELECTRONIC AIDS TO NAVIGATION

By LT. COMDR. R. T. NORRIS, USCG

WORLD LORAN COVERAGE is reproduced in this chartlet. A full size copy of this chart may be obtained from the U. S. Navy Hydrographic Office as Loran Accuracy Diagram, H. O. 15308a.

THESE COMMENTS are on electronic aids to navigation and their applicability to marine safety. Safety at sea through knowledge of your position has long been a necessity for every seagoing person, from the first log-riding adventurer many thousands of years ago to the present commanding officer of an atomic submarine.

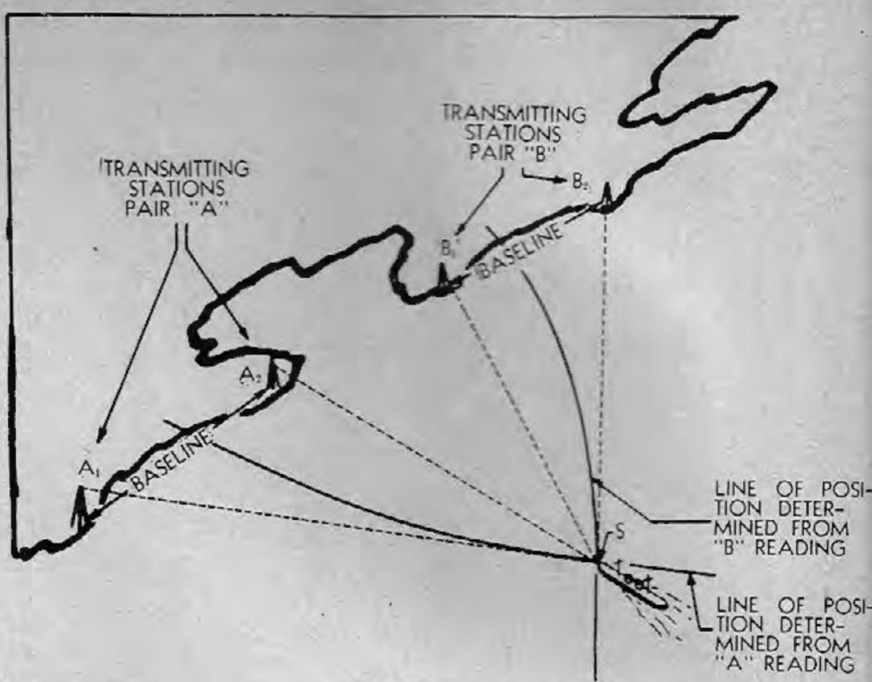
Electronics has played its part in marine safety for less than 50 years. The first important use of electronics as an aid to navigation was in the early 1920s when direction finder stations were being implemented to take and report bearings on the radio transmissions of ships at sea. Misinterpretations of these readings or errors in the readings themselves lead to several tragic disasters and eventually elimination of DF stations in the United States.

Speaking of navigation reminds me that as a cadet at the Coast Guard Academy, I was advised that as the ship's navigator I would usually navigate in one of two ways. The commanding officer could either tell me where he wanted to go and I would get him there or he could tell me how to go and I could tell him where he was—I have found that sometimes after I told him where he was, he told me where I could go—but, regardless of which way you navigate, if you are to know where you are at all times and how to get to the destination in a safe and efficient manner, you must have available an efficient, all weather 24 hour tool.

Generally speaking, the captain of a vessel needs to be assured that his vessel is safe in its present position, that present and planned courses are safe courses and he has the ability to get to his destination—this last item is determined by speed, fuel available, distance to go and is determined as a direct result of present position.

Safety at sea means different things to many people—to Admirals Richmond and Jewell it means many things, to the shipping companies it means dollars and sense—S, E, N, S, E—to me in my present job, it means aids to navigation and specifically electronic aids to navigation.

I have stated that the safety navigated vessel must have available an efficient, all weather tool to determine present position whenever necessary or desired. Electronics is the present answer to this demand. My purpose is to explain what the United States, as well as other free countries of the world are doing to meet this demand.



A GRAPHIC reproduction of a shipboard fix obtained from Loran lines of position.

SHORT AND LONG DISTANCE AIDS

First, let me say that the electronic aids to navigation are arbitrarily divided into short and long distance aids. This classification is not perfect since people are frequently stating that some short distance aids often provide navigation information to long distance trips and, therefore, should be classed as long distance aids. Most people recognize, however, that when we speak of a short distance aid we mean one that is only capable of providing navigation information at a relatively short distance from the facility—this has come to have a connotation of a maximum range of about 200 miles. In the long distance field, we mean an aid capable of giving useful navigational information great distances from the facility and generally such aids also give equally useful information at short ranges—the difference here being that short distance aids cannot do the job of long distance aids but long distance aids providing suitable accuracy can do the short distance job. Additionally, electronic aids to navigation can be divided into two categories—self contained or carried aids and aids external to the vehicle.

Self-contained aids include compass, heaving lead, chronometer, sextant, log, and charts supplemented by the modern electronic gadgets, radar fathometers, and others which I shall mention in a moment. Aids external to the vessel and requiring special equipment to be useful include buoys, lighthouses, daybeacons, shoreline (charts are necessary) and those modern additions loran, radiobeacons Decca, Consol, or other shorebased electronic types.

CELESTIAL TRACKERS

For new additions to the self-contained aid category (a category, by the way, which does not fall into either the short- or long-distance definition) we have star, moon, or sun trackers. These devices seek out the characteristic radio frequency emission of specific heavenly bodies and, thus, are usable regardless of the weather or time of the day. Another self-contained system under development is the inertial navigation system. This system relies on Newton's second law of motion which states that force is equal to the time rate of change of linear momentum.

Such systems, thus far, are very expensive, difficult to control, have poor long time accuracy rates but it is certain they will be useful in the future. Another self-contained system would be the marine application of the Doppler navigator which works on the principle that the change in frequency of a reflected wave is directly proportional to the velocity of the target or if the source is moving and the target stationary, then the reflected wave is proportional to the speed of the source. To determine speed you merely compare the frequency of the transmitted signal to the frequency of the received reflected signal. Such a device is well known by all law abiding citizens who drive only a few miles over the speed limit until they see the little black box beside a police car—by then it is too late.

Let us consider aids external to the vessel which are now available—all nations provide nondirectional radiobeacons—a worldwide marine frequency band between 285 kc. and 315 kcs. is provided for this service. Nondirectional beacons can provide useful information from nearly zero range to over 300 miles to the vessel suitably equipped with a direction finder. Gross errors are calibrated out both at the transmitting site and the receiving unit. The overall error of the manual direction finder bearing should be about $\pm 2°$. At 300 miles the error amounts to ± 10 miles. A fix based on two lines of positions with

ABOUT THE AUTHOR

Lt. Comdr. Norris is the Chief, Electronics Section, Aids to Navigation Division, at Coast Guard Headquarters and is responsible for the proper operation of the Loran and Radiobeacon systems operated by the Coast Guard. After attending the University of Illinois, he was graduated from the Coast Guard Academy in 1943 and saw service in several combat cutters in the North Atlantic area during World War II. Since the end of hostilities he has served in ship and shore billets including a tour as commanding officer of the CGC *Chautauqua*. In his present capacity he represents the Coast Guard on the Joint Aids to Navigation Panel of the Joint Chiefs of Staff as well as being a member of several subcommittees of the President's Air Coordinating Committee dealing with electronic aids to navigation. This paper was delivered at the Marine Section, National Safety Council, in Chicago, Ill., October 21–23, 1958.

such an error is not acceptable—however, as one approaches the station, position accuracy improves—at 30 miles the line of position accuracy would be ±1 mile which is more acceptable. One further comment on radiobeacons—their use at night is severely restricted due to skywave reflections.

RADIOBEACONS

In the United States, we operate radiobeacons which provide certain ranges—class A radiobeacons provide a useful range of 200 miles, class B, 100 miles, class C, 20 miles and class D, our Homer beacon, 10 miles. Thus, radiobeacons cover short distance as well as the long distance field. Nondirectional beacons are truly international aids since each maritime country provides them—it is the one international system which all can use. From this point, the nations of the world part, each going his separate way.

Now, let us look at specific electronic aids used in various parts of the world for marine navigation purposes and later discuss some aids that are being developed and/or implemented.

At the present time, in the free world, three navigation systems are currently being operated—loran, Consol, and Decca. In the United States, the Coast Guard operates in addition to the radiobeacons mentioned above—loran-A. For those of you familiar with marine aids the term loran-A is new, but it is the well-known standard loran developed and implemented during World War II and expanded since then. This system has gained wide acceptance by the maritime, surface and air, civil and military, user. It provides a highly accurate fixing capability to a distance of about 800 nautical miles during the day and lesser accuracy at night to a range of 1,400 nautical miles.

LORAN-A

Sixty stations are currently in operation with 11 being operated by countries other than the United States. The coverage provided by these stations stretches from northern Norway across the United States and polar areas to Japan and south to northern Australia. Loran-A is a pulsed hyperbolic system operating in the 1800–2000 kcs. band. A master station and 1 or 2 slave stations transmit highly synchronized pulses so that the time difference of receipt can be measured and plotted. The coverage off the east coast of the United States provides fixes within ±1 mile where the groundwave can be received. The skywave provides ±5 mile fixes to a range of 1,400 miles.

Consol is essentially a rotating radio range—an improved nondirection beacon. Implemented by Germany during World War II it helped guide Nazi U-boats. Consol can operate on any low frequency so that its range depends on the operating frequency and power of a given installation. It has the problem of skywave contamination at night between 200–400 miles which eliminates that coverage sector from use at a time when the service may be needed the most. The accuracy claimed varies with the bearing from the facility but operationally accuracies of ±1° are about the best experienced. At substantial ranges, nautical mile error would be excessive. Additionally, the system cannot be used within ahout 40 miles because of the antenna spread. And since it is an aural system it is most susceptible to interference.

The third system is known as standard Decca. This system is privately operated by the Decca Navigator Co., England. It is essentially a low frequency, hyperbolic, continuous-wave system, providing particularly high accuracies within the uncontaminated groundwave area. Although no frequency allocation is available in the North American area for Decca, several experimental chains are in existence on the east coast of Canada and the United States. In the European area, Decca coverage is provided over a large percentage of western Europe. Chains are also available in Pakistan and India. The system suffers from ambiguities which must be rectified or serious errors can result. Starting from within the Decca coverage and proceeding out, no difficulty is experienced unless the signal is lost: however, traveling into the coverage area from an area where no signal is available requires determination of one's proper position in order that future positions will not perpetuate an initial error. At the present time, the airways modernization board is experimenting with a Decca chain in the New York area to determine the applicability of hyperbolic navigation systems to helicopter operation and air traffic control. Decca operates in special frequency bands between 70 to 130 kcs. The principal drawbacks of Decca are its poor frequency utilization, short range, and the ambiguity problems.

These four aids, standard loran, Consol, Decca and radiobeacons, cover the electronic aids that are external to the vessel which are currently used for marine navigation. The nations of the world are not standing still, however, in the development of new electronic aids to navigation which overcome the disadvantages of each system mentioned above.

LORAN-C

In the United States we are currently implementing loran-C which joined the family of loran about 1 year ago, making it necessary to redefine the term, standard loran, as loran-A. Loran-B is also a new development and is a short-range high-precision system which is currently undergoing tests on the east coast of the United States. Its use is several years away and I shall not discuss it further. I merely mentioned it so that you will not wonder what happened to the B.

Loran-C operates in the internationally allocated navigational aid band 90 to 110 kcs. It is a pulsed, hyperbolic, phase comparison system which was a portion of a special system developed for the Air Force named CYTAC. CYTAC was a tactical bombing system which employed technics far beyond what are normally considered necessary for "navigation systems." Although the system as a whole was not adopted, the navigation portion offered so much promise that additional development was undertaken and the system renamed loran-C since it was an extension of the basic loran principles into the low-frequency band. Thus, it joined the well-known, medium range, medium accuracy, loran-A and the high accuracy loran-B in the loran family. It employs pulse technics and utilizes cycle matching within the pulse envelope to preclude contamination of the groundwave by the skywave thereby obtaining extreme accuracy and eliminating ambiguities.

Since the Air Force has established loran-C parameters at ranges of less than 1,000 miles, the Coast Guard had only to determine its usefulness at greater ranges. As a result, the Coast Guard is studying and verifying the extent of the groundwave signal and the extent of the various skywave modes as well as their stability and accuracy. These tests have been made using the loran-C chain which is operational on the United States east coast.

Basically, loran-C has married the best features of standard loran and standard Decca. Pulse transmissions (from standard loran) with phase or cycle comparisons (Decca basic) give

(Continued on page 21)

HOW IS YOUR ACCOMMODATION LADDER SUPPORTED?

FOR PERMITTING a lifeboat fall to be used as support for an accommodation ladder, a shipmaster recently had his license suspended for 4 months by a Hearing Examiner. On appeal to the Commandant the order was affirmed.

Despite a plea that a usual practice on Liberty ships definitely establishes the reasonableness of the act, the Examiner found that the test of negligence in this case is whether the appellant permitted something to be done which a reasonably prudent Master would not have allowed under the same circumstances. In his decision the Examiner stated as follows:

"It is a fundamental proposition of law that a custom or practice which is contrary to laws or regulations, or is not reasonable in itself, is not proper behavior and, therefore, may constitute negligence."

In this regard Title 46 CFR 94.15-5 (a) states:

> The lifeboats and life rafts shall be readily available in case of emergency and shall be kept in good working order and available for immediate use at all times when the vessel is being navigated, and insofar as reasonable and practicable, while the vessel is not being navigated.

DETAILS FOLLOW

The vessel in this case was in anchor in Inchon Harbor and the forward lifeboat fall on the port side had been detached from the boat and was used to support the after, lower section of the two-section accommodation ladder. The starboard accommodation ladder was also over the side, but the record does not disclose how it was supported.

Shortly after 8 o'clock one morning a boat load of Korean workers capsized while approaching a ship ahead. Since the 5-knot current would carry the natives down along the port side of this Liberty ship, the word was passed for the crew to stand by their port lifeboat station. Many of the 36-man crew were ashore on Sunday leave but the stations were manned expeditiously. The Master went from the bridge to the vicinity of the port lifeboat. The Second Mate also was present.

There was considerable confusion on deck and no orders were given with respect to the intended launching of the boat for the purpose of rescuing the Koreans from the water. Someone released the gripes and the boat slid off the inboard chocks and landed on the deck due to the fact the forward boat fall was secured to the accommodation ladder rather than to the boat.

None of the ship's lifeboats were launched and survivors were rescued by other persons.

The Master contended that the testimony of four witnesses as to established practice on Liberty ships shows that this use of the forward lifeboat fall was reasonably prudent procedure according to the standards of seamanship rather than negligent conduct; and that making the boat unavailable for lowering for a period of about 20 minutes longer than usual while shifting the boat fall to the boat was "reasonable and practicable" for the further reason that there was no other means of supporting the accommodation ladder.

The Examiner concluded that this was not the act of a reasonably prudent Master under the prevailing circumstances regardless of whether the lifeboat on the starboard side was available for immediate use. "Appellant failed to have the port lifeboat available for use insofar as 'reasonable and practicable' by permitting the forward fall to be detached from the boat for another use while anchored in an exposed harbor."

It is abundantly clear by this decision that Masters are required by the ordinary practice of good seamanship to have their ships lifesaving equipment ready for use at all times to the fullest extent that it is reasonable.

How is your accommodation ladder supported?

A LIBERTY SHIP gangway supported by a boat fall. This practice resulted in a shipmaster having his license suspended for 4 months for failure to have the lifeboat available for use while at anchor.

MANEUVERING BOARD—LARGE OR SMALL?

By LIEUTENANT EDWARD F. OLIVER, USCG

SINCE THE END of World War II when radar sets became common installations on merchant ships and especially since the *Andrea Doria* debacle, various maritime publications have made profound statements to the effect that deck officers should be specially trained in radar plotting and analysis. Such training would undoubtedly be desirable, however it is possible that many deck officers may be lulled into the assumption that until some benevolent organization sets up such a school to teach the mysticism of radar, little can be done to improve their radar navigation.

Such is not the case. It is time that the cloak of mystery is stripped from radar interpretation and the deck officer accepts the fact that until he takes the time to learn *on his own* how to work the simplest maneuvering board problem (which is all that is required), he is an incompetent navigator.[1]

Perhaps the crux of the problem is the term *maneuvering board.* Long before radar was ever designed Navy officers were using maneuvering boards to plot intricate tactical maneuvers involving fleet formations. In fact for many years one of the more charitable ways a merchant marine officer might describe a professional naval officer was to the effect that he used a maneuvering board.

That differentiation is now a thing of the past—whether the deck officer likes it or not, as long as he is shipmates with radar he is going to have to become familiar with the *maneuvering board,* and look on it as a radar plotting sheet designed especially to assist him.

The three usual arguments against the use of the maneuvering board are: (1) An old salt can look at the pips on the scope and with his seaman's eye determine the course and speed of an approaching ship; (2) By using a grease pencil to mark on the scope, a determination of course and speed can be made; (3) There are too many things to do on a merchant ship bridge in a meeting situation for the mate to find time to solve a maneuvering board problem.

[1] EDITOR'S NOTE: See the instructions for radar plotting in the article "Plot—For Safety" by Captain L. M. Thayer, USCG, in the April 1957 *Proceedings.*

The first argument is so specious as to merit only a brief comment. Suffice to say that the number of proponents of this argument vary inversely to the growing number of radar assisted collisions.

The second argument concerning the use of a grease pencil on the scope has some merit but the disadvantages far outweigh the advantages. The most obvious objection is that as soon as the observer shifts the range scale all the previous information he has plotted is canceled. The next objection is that the parallax (the PPI face is approximately 12 inches above the actual tube image) makes it difficult to mark the pip of light on the scope. Those of you who have tried to aline the tip of your grease pencil with the image below know how accuracy is sacrified.[2]

The third argument concerning the number of things the watch officer must do has a ring of truth but it is not realistic. The prudent mariner will accept the fact that the time has come when an admiralty judge or hearing examiner will no longer accept the explanation "there was too much going on to plot the radar information." *Remember that while there have been many collisions where the mate said he was too busy to use the maneuvering board, there has never been a collision because the mate was busy using the maneuvering board.*

There is no question that maneuvering board problems can be difficult. However, those problems are of no concern of the merchant officer. The Navy has plenty of manpower to look after their involved problems of fleet maneuvering. You, the merchant officer, alone on a dark bridge except for the helmsman, are concerned only with the most elementary problem—how to miss that ship approaching and still keep six inches of water beneath the keel. In short—is the ship ahead on a collision course.

Anyone who has passed his third mate's license examination can solve this simple problem by using the maneuvering board . . . if you can't it is because you have been led to believe the solution is highly technical.

[2] EDITOR'S NOTE: The reflecting plotter which is installed on some radar sets is designed to eliminate the parallax error; however, it should be remembered that the other disadvantages pointed out in the article remain inherent.

Unfortunately, text book discussions of maneuvering boards fail to point out that the standard size form, H. O. 2556a, the 12" x 12" sheet, was never meant to be used by a harassed mate alone on a dark bridge. This small scale form was designed for use in a lighted CIC room on a man-o-war where a petty officer with a wide desk and a drawer of sharp pencils could devote his full time to developing the plot.

Surprising as it will be to most deck officers, for many years the Hydrographic Office has published a large scale maneuvering board which has received no publicity. Known as H. O. 2556, it is 24" x 24", and is ideal for use on a merchant ship bridge.

The size itself makes plotting simpler and faster but there are other things you can do to cut the plotting time down even more. Have the carpenter cut you a piece of plywood of the same size. Tack the form to the plywood and cover it with a piece of heavy plastic (the port captain might be persuaded to instruct the purchasing agent to procure a piece of plastic for each ship in the fleet.) Now, the harassed mate is all set for heavy traffic. With a grease pencil, a rag, and the light from the gyro repeater (with a small scale maneuvering board it is necessary to do all the plotting in the chart room) he

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ABOUT THE AUTHOR

Lieutenant Oliver is a 1941 graduate of the California Maritime Academy and former merchant marine officer who was commissioned in the Coast Guard in 1949 under provisions of Public Law 219. Prior to his present assignment in the Cleveland Marine Inspection Office he saw duty as Executive Officer of the CGC *Avoyel,* was Editor of the Proceedings, served a tour in the Merchant Vessel Personnel Division at Coast Guard Headquarters, and in the Marine Inspection Office, San Francisco.

can cross the Atlantic a hundred times without changing the rig. As one ship passes astern and ceases to be a "target" he wipes it off and commences to plot the next.

If this article does no more than cause a few merchant ship captains to deep-six the small scale maneuvering boards and order the large scale size, it will have served its purpose; but, there are a few other practical tips which should encourage and simplify radar plotting.

With a large scale maneuvering board you can dispense with dividers without appreciably affecting the accuracy. To step off distance on a small scale maneuvering board you need dividers and plenty of light. This necessarily prolongs the plotting time. On the large scale you can use a "rule of the thumb" method to step off distance—*use your grease pencil as a ruler.* Let the tip of the pencil represent one point and hold your thumb and index finger at the other point. The pencil can then be held against the appropriate range scale and the distance you have indicated by the position of your fingers can be read off.

Concerning scales, you can ignore the 2:1, 3:1, 4:1 range scales at the side of the maneuvering board and thereby simplify your plotting. Use the concentric rings as a range or speed scale. For example, let each ring represent 2,000 yards (1:1) or 4,000 yards (2:1). This range scale arrangement should cover the vast majority of meeting situations. As for speed scale, since most speeds nowadays are better than 10 knots, let each ring equal two knots. There are ten concentric rings so that will cover all cases of vessels making up to 20 knots.

Another "rule of the thumb" which may come in handy is the *Three-Minute Rule. The number of yards traveled in 3 minutes divided by 100 equals the relative speed in knots.* Plot two bearings 3 minutes apart. Now using the grease pencil as a ruler measure the distance between the two bearings (this is relative movement) and compute it in yards. Divide the distance by 100 and the dividend is the *relative* speed. This rule is particularly applicable in arriving at the course and speed of the target as will be explained later.

Now, equipped with your handy, plastic-covered, large scale maneuvering board, a grease pencil, and a rag, you are ready to navigate through a hypothetical meeting situation.

It is a dark night and you are on the North Atlantic run approaching

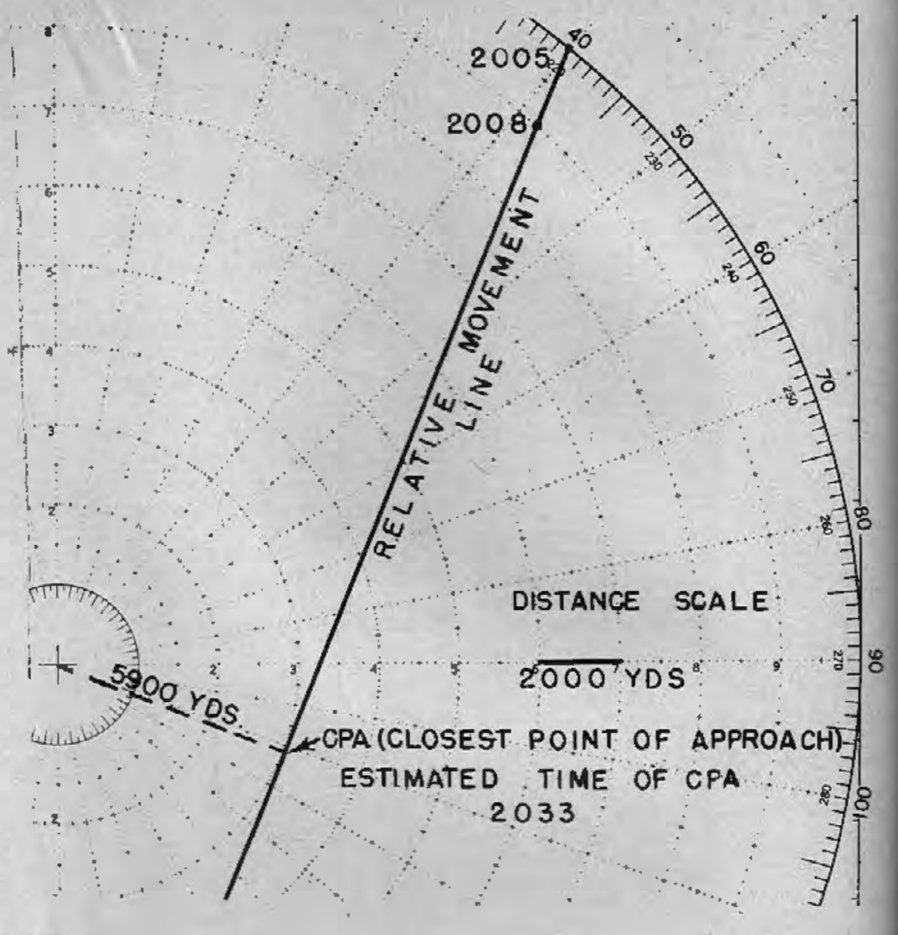


Figure 1.

the English Channel, a few miles southwest of Lizards Head. Your ship is on a true course of 055° making 15 knots. You have the radar set on the 20-mile scale and pick up a target 20,000 yards ahead.

Now, you can do one of two things. You can light up a cigarette, watch the PPI scope semihypnotized, and take a chance the target will pass clear (you can try for a hit with the next target then); or, with the *Andrea Doria* sinking fresh in your mind, you can with a minimum of effort determine the following: (a) Closest point of approach (CPA); (b) Time of CPA; (c) Course and speed of vessel observed.

Assuming that you have enough pride in your profession to do the latter, let us continue step by step and see how simple it is to analyze the radar information without waiting for someone to send you to school.

First, take an accurate range and bearing and plot the pip on the maneuvering board. (See figure 1.) Your plot shows the range to be 20,000 yards and the bearing to be 040° T at 2005 hours. (You have let each concentric ring represent 2,000 yards.)

Now you can light up that cigarette and check to see that the helmsman is still awake.

In a few minutes, say at 2008, take another range and bearing and plot as before. This time the range is 18,000 yards and the bearing is 042° T.

First, you want to find the CPA. Since your ship is always at the center of the relative plot on your maneuvering board, the CPA will lie on the relative movement line where it passes closest to the center. Therefore, connect the two points you have plotted by fairing in a straight line between them (note that it was impossible to fair in a straight line with accuracy on the small scale maneuvering board) and extend this line across the page. (See figure 1.) Now, by inspection you can determine

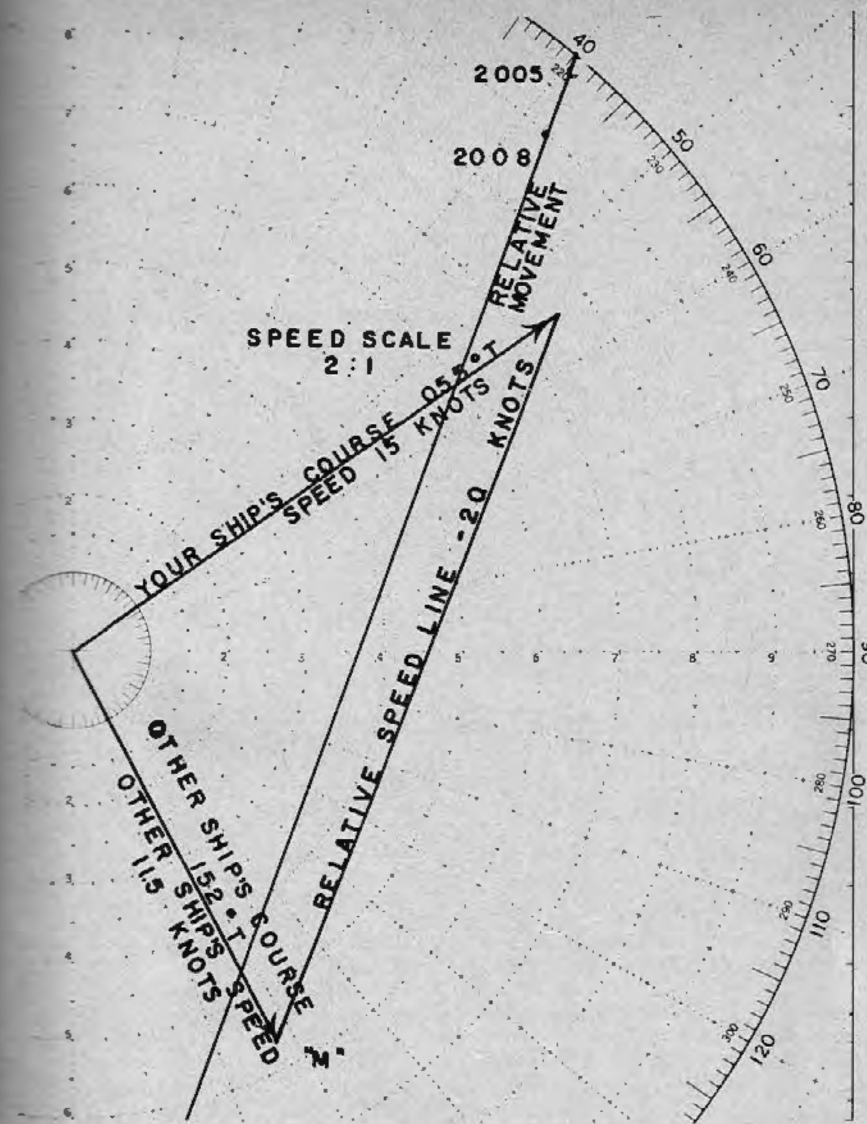


Figure 2

where this line is closest to the center. Measure the distance with your grease pencil ruler and you find that the target will pass 5,900 yards off on a bearing of 112° T, *providing she does not subsequently change course or speed.*

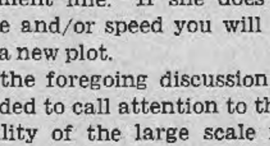
The next question is when will the CPA occur. Take off the distance between the 2005 and 2008 positions by using your grease pencil ruler. Using the concentric ring range scale you determine that the relative movement in the three minutes was 2,000 yards. Again use your grease pencil ruler to measure the distance between the 2008 position and the CPA—it is 16,800 yards. Then, you use simple arithmetic—if the target's relative motion was 2,000 yards in 3 minutes, it will take approximately 25 minutes to reach the CPA, or, 2008 plus 25 equals 2033 hours.

Last you want to find the course and speed of the vessel observed. On your maneuvering board lay off your ship's course and speed by an arrow. (See figure 2.) Use a 2:1 scale (one concentric ring equals two knots). The length of the arrow represents the speed in knots. Next, draw a line parallel to the relative movement line (the 2005–2008 line) through the end of your course and speed arrow and extend it in the direction of the relative movement. Now, by using the *Three-Minute-Rule* determine the relative speed of the vessel observed. Take off the distance between the 2005 and the 2008 position by using your grease pencil ruler. Using the concentric ring range scale you determine that the relative movement in 3 minutes was 2,000 yards. Divide 2,000 by 100 and you find the *relative* speed is 20 knots. Using the same speed scale (2:1), lay off 20 knots on the relative movement line you drew through your course and speed arrow. Mark the end of the relative speed line by "M". Connect the center and point "M" and you have the course and speed arrow for the vessel observed. The course is 152° T and the speed is 11.5 knots.

You've now determined all the information you need in less than 5 minutes. It is interesting to note that the watch officers on the *Andrea Doria* and the *Stockholm* saw each other's pips *26 minutes before the collision.* One can but wonder whether the disaster would have occurred if they had taken 5 minutes to work out the CPA, course, and speed of the other.

In the event the other vessel changes course and/or speed, you are now able to quickly determine the fact by noting whether subsequent positions plot on the extended relative movement line. If she does change course and/or speed you will have to start a new plot.

In the foregoing discussion, it was intended to call attention to the practicability of the large scale maneuvering board and demonstrate how quickly radar information can be plotted and interpreted. Naturally some accuracy was sacrificed to obtain the minimum plotting time. A 6 minute run between positions will obviously assist you in fairing in a more accurate relative movement line. Likewise, a straight-edge and dividers will help the accuracy. What method or tools you use is up to you—you have the responsibility for the safe navigation of your ship. Just remember that lack of time or schooling is no excuse for not interpreting radar information.



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MARINE MACHINERY BREAKDOWNS

By J. H. MILTON
Senior Surveyor in charge of Engineering Investigation, Lloyd's Register of Shipping

Reprinted from the Transactions, North East Coast Institution of Engineers and Shipbuilders, Volume 73, 1957, this Paper will cover, in this and subsequent issues, some of the problems which can confront Surveyors and Superintendents when serious defects, necessitating the delay of a vessel, have developed at sea or have been brought to light at a survey. The cases will cover the following groups: (a) Steam Reciprocating Engines, (b) Boilers, (c) Turbines and Gearing, (d) Diesel Engines, (e) Thrust and Inter Shafting, (f) Tailshafts.

BOILERS

CRACKING OF water tube boiler drums in any form is a matter of much concern and two instances come to mind. The first was circumferential cracking, originating at the tube holes of the superheater drum of a 5-drum Yarrow boiler working at 350lb./in.^{2} This cracking at the superheat outlet end of the drum where the heat transfer rate would probably be least, was visible on the steam side but was most marked when shown up by magnetic crack detection on the fire side—the tubes being removed for access. There was little doubt in this case, that local overheating of the drum surface had occurred, causing surface plastic flow in the longitudinal direction whilst at peak temperature, with subsequent contraction cracking in a circumferential direction on cooling. The locality of these defects is shown at "X" in figure 1 and in view of the fact that they were all of a circumferential nature and that it was a superheater drum as distinct from a boiler drum, it was ultimately decided to vee out the fractures, which in some cases were right through the drum thickness, and to repair by electric welding. It was ascertained that earlier in the vessel's history a percentage of the fire row generating tubes had been removed to allow the products of combustion easier access to the superheater, with a view to raising the superheat temperature—these tubes were subsequently replaced and an additional brickwork baffle also fitted to protect the drum from any further overheating. Further examination after a year's service showed the welded repairs to be perfectly sound.

Another failure of a somewhat similar nature occurred on a passenger vessel, but in this instance it was the water drums which were affected. These drums were found to be extensively fractured circumferentially (see figure 2) over an area below the fire row tubes about 5 in. wide and for practically the full length of the furnace. The fractures varied in depth, one being through the full drum thickness. The cause of the cracking was attributed to direct flame impingement through collapse of the refractory brickwork in way of the drums. In this instance strain gauge relaxation tests showed that surface strains of a high order existed in the longitudinal direction, and strains corresponding to a stress of 12½ tons per sq. in. were recorded circumferentially. The drums in question were both renewed and modifications made to the refractory material to prevent a re-occurrence of the trouble. That this thermal cracking, due to the cylindrical form of the drum, takes place circumferentially and not longitudinally is providential, as had the reverse been the case a major disaster could have resulted.

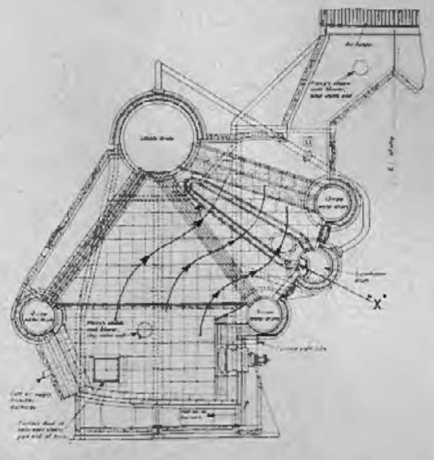


Figure 1.

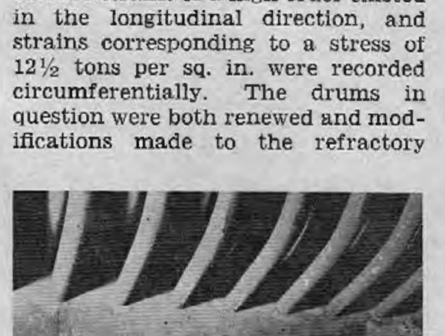


Figure 2.

SCOTCH BOILER DEFECTS

Scotch boilers are still favored for many uses at sea, they stand up manfully to all kinds of abuse and give very little trouble even when handled by unskilled personnel. Local overheating caused through shortage of water, oil or heavy scale, brings in its train the majority of Scotch boiler defects responsible for delaying vessels—these including collapsed and distorted furnaces, distorted combustion chambers, leaking tube ends, leaky seams, grooved end plates and furnace necks, etc.

It is not proposed to delve deeply into the nature of these defects which, along with others, are shown clearly in figure 3. Generally speaking, these defects do not occur in boilers which are treated with the respect they deserve, but most of them can and do at times make themselves felt at inopportune moments.

A typical example of a seriously grooved boiler front endplate is shown in figure 4. This first made its presence known when, on raising steam prior to leaving port, a wisp of steam was noticed coming through the endplate beneath the bottom manhole door. Examination of this boiler internally after it had been blown down, showed that very extensive and deep mechanical grooving had taken place. This so-called "grooving" is caused through variation in expansion and contraction of the different parts of the boiler, with heating and cooling. Poor circulation, rapid steam raising, continued forcing, irregular firing, and indifferent feed water are all factors combining to produce this type of defect.

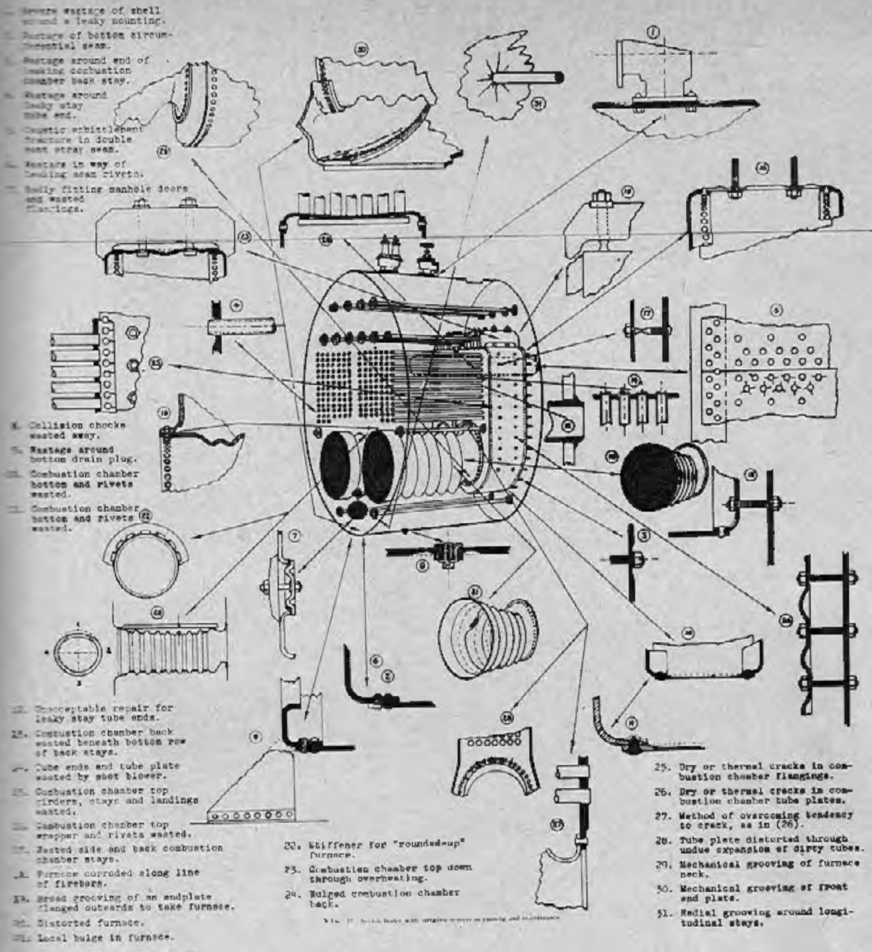


Figure 3.

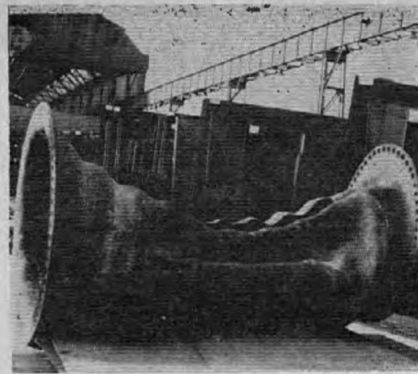


Figure 6.

The only repair deemed possible in this instance, in view of the extensive nature of the defect, was to cut out the lower part of the endplate and fit a new section. When repairs of this kind are undertaken it is essential that every care is taken in the fitting, bedding and riveting, if subsequent trouble from leakage is to be avoided.

Figure 5 shows vividly the extent to which wastage can proceed without disaster. In this instance the combustion chamber bottom illustrated was smoothly wasted to such an extent that it had caved inwards, and when removed it showed that the chamber back flange, as can be seen from the illustration, was practically nonexistent at the bottom.

The boilers of motor vessels with steam auxiliaries, situated in spaces some distance from the engine room control platform, and often under the supervision of motor engineers with little or no steam experience, are often neglected.

Figure 6 illustrates vividly what happened to the furnaces of an oil-fired Scotch boiler aboard a motor vessel owing to water shortage. In this case the combustion chamber crowns also came down and had to be renewed.

Figure 7 illustrates a similar defect of a more localized nature—both of the foregoing instance are a tribute to the furnace makers, showing, as they do, the extremely ductile and tenacious nature of the steel used in the manufacture of modern furnaces.

Figure 4.

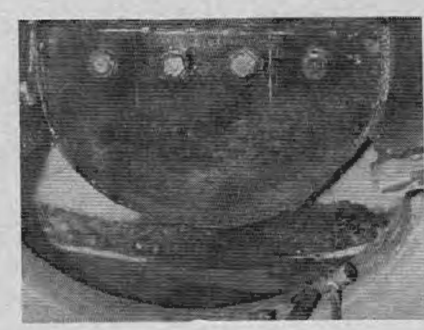


Figure 5.

Figure 7.

NATHANIEL BOWDITCH • • • • • MATHEMATICAL WIZARD

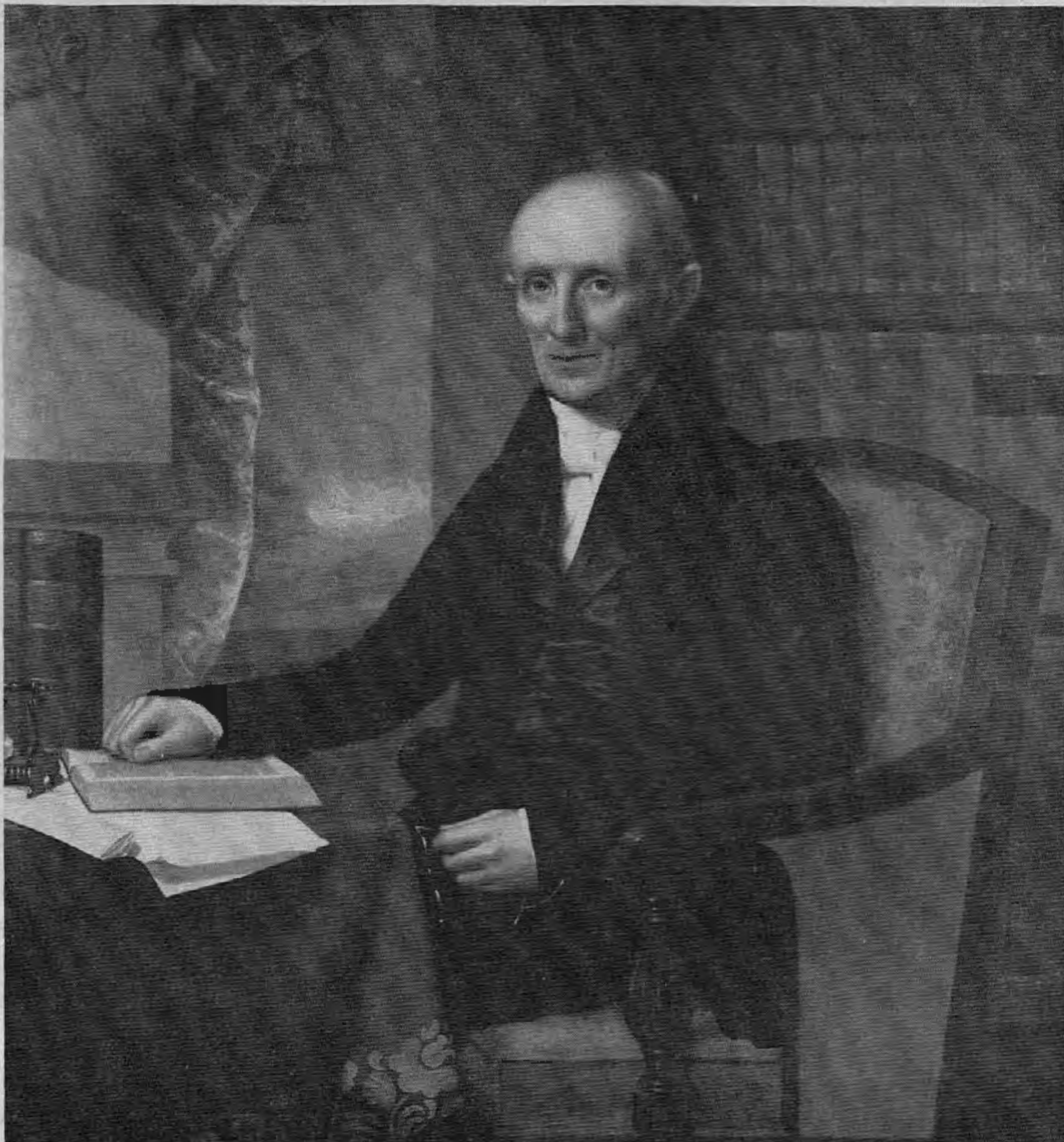


Photo Courtesy *Peabody Museum*, Salem, Mass.

BORN in Salem, Mass., in 1773, Nathaniel Bowditch became an apprentice at the age of 10 after only 4 years of formal schooling. Circumstances forced him to educate himself in spare time, which he did with such zeal and ability that at the age of 21 he mastered Latin, Spanish, French, and German. His linguistic skill made it possible for him to read and absorb the great scientific works of his age and he became an outstanding mathematician.

In 1795, he went to sea on the first of four voyages as supercargo and captain's writer. A fifth voyage he made as master and part owner before he retired to his studies and insurance business. Keenly interested in navigation, Bowditch commenced the laborious task of recomputing the latest navigational tables. He found so many errors, one so serious that it was said it caused the loss of two ships, that he decided to write his own book and to "put down in the book nothing I can't teach the crew."

The immense popularity of his work is reflected in the fact that 10 separate editions totaling 30,000 copies were sold prior to his death in 1838. The introduction to each edition of the book makes this tribute:

". . . as long as ships shall sail, the needle points to the north, and the stars go through their wonted courses in the heavens, the name of Dr. Bowditch will be revered as one who has helped his fellowmen in time of need, who was and is a guide to them over the pathless oceans, and who forwarded the great interests of mankind."

THAT OLD FRIEND of navigators everywhere, Bowditch's American Practical Navigator, has been completely rewritten and published by the U. S. Navy Hydrographic Office.

The new 1524-page edition is a far cry from the one authored by Nathaniel Bowditch in 1802, but it retains the original objective that any mariner willing to apply himself can understand it without an instructor. Quite a tribute to the genius who started the book and his contributions to 156 years of safer seafaring.

In 1868 the Navy purchased the copyright and plates and since that time has published the book, with revisions to keep step with modern changes in navigational methods. The new "Bowditch" has been given a dark blue cover with gold lettering to distinguish it from previous editions and includes more than 500 illustrations, some in color. An extensive 68-page index makes the reference material easy to locate.

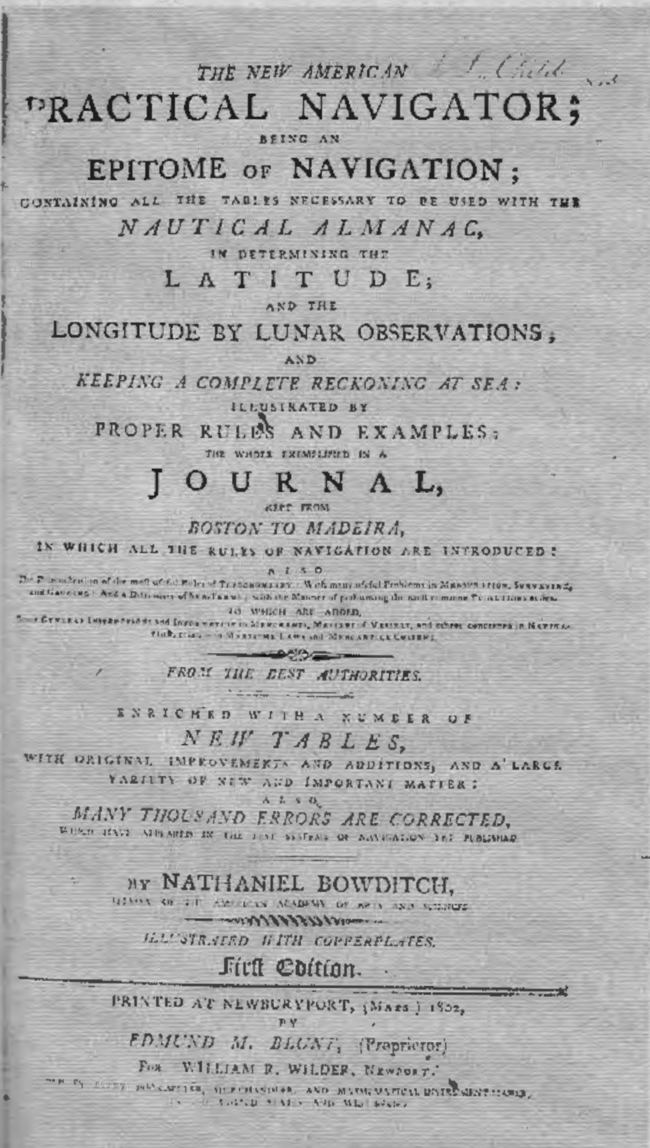
The book is divided into eight "Parts". The first deals with background information and fundamentals, the second with piloting and dead reckoning, the third with electronics and navigation, the fourth with celestial navigation, the fifth with the practice of navigation under various conditions, the sixth in oceanography in its various navigational aspects, the seventh with weather, and the eighth with the production of charts. Throughout, universal methods are given greater emphasis than those with special application, where a choice is available. The need for judgment based upon experience is stressed.

The eight "Parts", of some 900 pages, are divided into 44 chapters. These are followed by 29 appendices and 34 tables and their explanation for use. All tables have been checked for accuracy, arrangement, and limitations.

Even the paper for this edition was given careful consideration for strength, wearing quality, effect of dampness, opacity, thickness, freedom from glare, and noncurling qualities.

The book is considered a worthy successor to the one which so long has been affectionately called the "Sailor's Bible".

It may be obtained from sales agents of the Hydrographic Office and from the Superintendent of Documents and his sales agents, at $6.25 per copy.


THE NEW AMERICAN

PRACTICAL NAVIGATOR;

BEING AN

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ILLUSTRATED BY

PROPER RULES AND EXAMPLES:

THE WHOLE EXEMPLIFIED IN A

JOURNAL,

KEPT FROM

BOSTON TO MADEIRA,

IN WHICH ALL THE RULES OF NAVIGATION ARE INTRODUCED:

ALSO

TO WHICH ARE ADDED,

FROM THE BEST AUTHORITIES.

ENRICHED WITH A NUMBER OF

NEW TABLES,

WITH ORIGINAL IMPROVEMENTS AND ADDITIONS, AND A LARGE VARIETY OF NEW AND IMPORTANT MATTER:

ALSO,

MANY THOUSAND ERRORS ARE CORRECTED,

BY NATHANIEL BOWDITCH,

ILLUSTRATED WITH COPPERPLATES.

First Edition.

PRINTED AT NEWBURYPORT, (Mass.) 1802,

BY

EDMUND M. BLUNT, (Proprietor)

FOR WILLIAM P. WILDER, NEWPORT.

Photo Courtesy Peabody Museum, Salem, Mass.

Photo Courtesy U. S. Navy Hydrographic Office

MARITIME SIDELIGHTS

The revival of a 2,000-year-old custom was celebrated recently in the West India Dock, London, aboard the Ben Line SS *Bendoran* when the Lord Mayor of London and other officials were invited to taste a special sherry which had been carried in the hold of a ship to Hong Kong and back purely "for the benefit of the voyage."

Related in the current issue of *Fairplay*, British shipping journal, the travelled sherry is regarded as being smoother to the palate.

⚓ ⚓ ⚓

In July 1929 the last North German Lloyd liner *Bremen* made her maiden trip to the United States winning the North Atlantic "Blue Ribbon." In July of this year the fifth ship to carry this famous maritime name will make her "maiden" trip to New York. The present day *"Bremen"* is the former French liner *Pasteur* and will emerge as a modern two-class passenger ship after rebuilding in a West German shipyard.

⚓ ⚓ ⚓

Captain Thomas Simmons of the SS *Brasil* has been named Commodore of the Moore-McCormack fleet, first man to hold that rank in the 45-year history of that company.

⚓ ⚓ ⚓

The 24th annual request for magazines, books, and financial help has been issued by the American Merchant Marine Library Association. The services of this Association are enjoyed by crew members of all American-flag merchant ships and all waterborne operations of the Government, and they require a half million books, three quarters of a million magazines, and a budget of $110,000. Complete details may be obtained from the main office of the organization, 45 Broadway, New York 6, N. Y.

⚓ ⚓ ⚓

Figures released by Lloyd's Register of Shipping show the United States as the world's leading merchant shipping nation for the period ending June 30, 1958. This country led with 25,590,000 tons, although this was a

STANDING BEFORE A model of the NS *Savannah* are three of the key States Marine Lines officers who will head the crew of our first nuclear powered merchant ship. Left to right are J. A. Morrissey, Chief Engineer; Captain T. C. Price, States Marine Commodore; and C. R. Ryerson, Chief Engineer. In addition to these men, the following engineer officers are attending the U. S. Maritime Reactor School in Lynchburg, Va.: Frank L. Schonbacher and Francis C. Bradford, First Assistant Engineers; John Jay Greene and John Joseph O'Keefe, Second Assistant Engineers; Roy Boyett, Charles H. Carson, Albert N. Dayton, and Herbert A. St. Laurent, Third Assistant Engineers; and John Bersey, Robert C. Boyle, Raphael Garey, Lawrence P. King, George W. MacLeod, and Andrew G. Townsend, Fourth Assistant Engineers. Photo Courtesy *States Marine Lines.*

decrease of 321,000 tons from 1957. In second place was the British Commonwealth with 24,655,000 tons, an increase of 623,000 tons. Liberia was third with 10,079,000 with the biggest increase of all—2,612,000 tons.

⚓ ⚓ ⚓

Ship Achievement Citations to the Isbrandtsen and Texas Companies were presented by the American Merchant Marine Institute and the Marine Section, National Safety Council, in recent ceremonies.

Captain Lars Bjotvedt of the SS *Saxon* accepted the award for his ship's rescue of five survivors from the German training bark *Pamir* for the Isbrandtsen Co.

J. Lawrence Filson accepted the award for the Texas Co. for its achievement of operating four tankers a total of 5,773 days without a lost-time accident. The ships were: *New Jersey*, 1,686 days; *Colorado*, 1,583; *Delaware*, 1,301; and *Indiana*, 1,203.

⚓ ⚓ ⚓

A bibliography of studies of the application of nuclear power to merchant ship propulsion has been prepared by the Atomic Energy Commission and is available to the public through the Office of Technical Services, Department of Commerce. The bibliography costs $2.50 and the order number is ASA E–S–10.

nautical queries

Q. (a) Explain the effect of "linking in" the H. P. engine when going in the ahead motion.

(b) Explain the effect of "linking in" the H. P. engine when going in the astern motion.

A. (a) Linking in the H. P. engine when going in the ahead motion will shorten the travel of the valve and consequently reduce the quantity of steam admitted and the total power of the engine.

(b) When in the astern motion, the adjusting screw is in a perpendicular position and will neither affect the travel of the valve nor the power of the engine.

Q. How could you check the alinement of shafting without dismantling the main engine?

A. Misalinement of shaft sections may be detected by slacking off the coupling bolts and using a set of feelers around the entire circumference of the shaft coupling to find if the coupling had parted on any quarter.

Q. Explain the results of using steam at a lower superheat temperature than the turbine is designed for.

A. There will be a loss of power and efficiency in the turbine, due to the fact that there will be less total heat in the steam and there will be an increase in the moisture content of the steam in the later stages. There will also be an increase in corrosion and erosion of the blades in the later stages due to this increased moisture content of the steam.

Q. Considering impulse and reaction turbines, which type occupies less space and has less weight for development of a given power?

A. The length of the reaction element is many times that of the impulse element which would do the same amount of work with equal efficiency at the high pressure end. Less space and weight are required by the impulse turbines.

Q. What is a steam seal? How is it used in turbine operation?

A. The term "seal" means that each end of the rotor shaft has between the packing a steam line, through which steam at low pressure is admitted to prevent the entrance of any air, so that vacuum can be maintained easily and it also keeps cold air from striking the rotor when it is cooling off.

Q. Explain why the evaporation rate is greater in small diameter tubes than in large diameter tubes, all other factors being the same.

A. With all other factors the same, the evaporation rate is a function of the ratio of generating surface area to the volume of contained water, and the smaller the tube, the greater will be the ratio of generating surface area to the volume of contained water.

Q. What are the advantages of using waterwalls in boilers?

A. Waterwalls permit the use of higher furnace temperatures and higher combustion rates. They add greatly to the generating capacity of the boiler and at the same time reduce refractory maintenance by cooling the refractory lining of the furnace.

Q. Explain the precautions that should be observed in connection with blowing down the waterwall header of a boiler.

A. The fires should be secured and the boiler taken off the line. Waterwall headers should never be given a bottom blow while the boiler is steaming because the normal circulation of water in the tubes might be stopped, endangering the tubes. These valves should be labeled, warning against opening, and some method used to lock the valves closed and prevent their being inadvertently or accidentally opened.

Q. State four operating conditions that decrease the life of the furnace refractory lining.

A. The life of the furnace refractory lining is influenced by (1) the high sustained furnace temperature; (2) rapid changes in temperatures; (3) vibration or panting of the boiler; (4) flame impingement.

Q. (a) If the temperature of a unit mass of a perfect gas is doubled and the volume is kept constant, what will happen to the pressure of the gas?

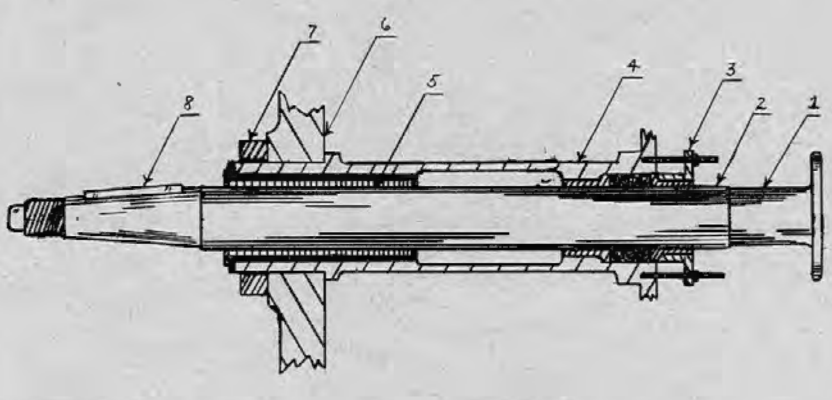
(b) Whose law is this called?

A. (a) If the temperature of a unit mass of a perfect gas is doubled and the volume is kept constant, the pressure of the gas will double.

(b) This is known as Charle's Law.

PROPELLER SHAFTING

Q. Name the numbered parts on the following drawing.



A.
1. Tailshaft
2. Bronze shaft liner
3. Stern tube gland
4. Stern tube
5. Bearing
6. Stern frame
7. Stern tube nut
8. Propeller key

UNITED STATES COAST GUARD

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

MVI
31 Oct 1958

Commandant's Action

on

Marine Board of Investigation; collision of U. S. Army Corps of Engineers Dredge *William T. Rossell* and Mv *Thorshall* (Norwegian), Coos Bay, Oregon, on 10 September 1957 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.

On the afternoon of 10 September 1957 the Norwegian freight vessel *Thorshall* of 3,676 g. t. departed Coos Bay, Oreg., under the conn of a Coos Bay pilot, with a partial cargo of lumber, en route to Seattle, Wash. The weather was overcast, winds southwest, force 1 to 2, visibility good with an ebb tide.

The *William T. Rossell,* a U. S. Army Corps of Engineers hopper dredge of 2,690 g. t. was engaged in dredging operations in the Coos Bay Entrance Range Channel which consisted of loading her hoppers with dredged material and dumping it offshore. Each evolution required one hour.

At the time of the *Thorshall's* departure the *Rossell* was returning from dumping. The pilot boat *Cygnet* contacted the *Rossell* by radio advising that the *Thorshall* was outbound. It was agreed that the *Rossell* would hold to the south of the center of the Entrance Range Channel to seaward of Guano Rock Lighted Whistle Buoy 4 (LL 879) and that the *Rossell* and the *Thorshall* should exchange passing signals since the *Thorshall* was not in radio communication with either vessel. The *Rossell* arrived abeam of Coos Bay Entrance Bell Buoy 1 A as the *Thorshall* rounded the bend at the intersection of the Inside and Entrance Ranges. One blast passing signals were sounded by both vessels. The *Thorshall's* signal was not heard aboard the dredge but a normal port to port passing appeared to be developing as the *Thorshall* was observed hauling to her own right hand side of the channel after coming out of the turn. When the two vessels were approximately 1,200 feet apart the *Thorshall* suffered a steering gear failure and, before any preventive action could be taken by either vessel, she came left into the *Rossell* colliding with her and penetrating her hull at nearly a 90° angle slightly aft of amidships in way of the hopper space. After impact the *Thorshall* backed out of the *Rossell* which listed sharply to port, sunk and righted herself in about 30 feet of water with her superstructure awash in breaking seas.

Participating in the rescue of survivors was a helicopter owned and operated by Mr. Wesley C. Lematta, the pilot boat *Cygnet*, various privately owned small boats from the Coos Bay area and Coast Guard surface units.

As a result of this collision four members of the crew of the *Rossell* lost their lives and several others were injured or suffered from exposure to varying degrees. There were no personnel casualties reported aboard the *Thorshall.*

REMARKS

As determined by the Board, the proximate cause of this collision was the failure of the electric steering gear aboard the MV *Thorshall*. It appears that the steering gear motor controller, which was not of the type that automatically restarts after interruption of power, tripped out as the two vessels were approaching each other. The reason the motor controller tripped out was not definitely determined, but subsequent tests conducted by the Board demonstrated that vibration in the area of the controller housing could have been the cause.

The Board was of the opinion that the sinking of the *Rossell* would have been avoided had the watertight doors in bulkheads 48 and 78 which enclosed the vessel's hopper space been closed prior to the collision. However, a further review of the vessel's plans, curves of form and stability curves, Exhibits 29 through 35, indicates that the port and starboard void spaces are completely separated by the centerlined dredging well. In view of this, it appears highly probable that the dredge would have capsized as a result of unsymmetrical flooding if the watertight doors to these spaces had been closed.

In accordance with the recommendation of the Board, a copy of the record in this case will be referred to the Coast Guard Board of Medals and Awards for formal consideration of the lifesaving achievements of Mr. Wesley C. Lematta, pilot of the helicopter and Boatswain's Mate, Third Class, Myron G. Colburn, Jr., USCG, Coxswain of the Coast Guard motor lifeboat CG–36496.

Subject to the foregoing remarks, the report of the Marine Board of Investigation is approved.

A. C. Richmond

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

ACCIDENTS IN BRIEF

Here is a condensation of some accidents reported to Coast Guard Headquarters during the past month. A capsule glimpse into the cause * * * and effect. In each case the victim was incapacitated for at least 72 hours.

CAUSE	EFFECT
Standing on empty paint can	Fell, lacerating forearm.

Reefer box door	Deep bruise above ankle.
Wire mooring line	Injured leg and ankle.
Belt and pulley	Cut off end of index finger.
Foot in eye of line	Over 60 days incapacitation.
Slice of cheese on deck	Cerebral concussion and back injury.
Hand caught in swinging door	Fractured hand.

Scooping flour from bin	Lid fell, lacerating hand.
Deck cargo lashing	Tripped, fractured hand.
Improperly secured airport	Cut by flying glass.
Stepped on a grape	Fractured left wrist.
Chipping without goggles	Fragment in eye, 4 days incapacitation.
Tools contact winch resistors	Electrical burns to fingers.
Using chair for ladder	Thirteen days off the job.

APPEAL DECISIONS

For delaying the sailing of his vessel, failure to perform his duties on five separate dates, and for engaging in a fist fight, this seaman was found guilty of misconduct by a Coast Guard Examiner. An order was entered suspending all documents issued to the man for a period of 15 months outright and 9 months on 18 month's probation. The Commandant affirmed the order on appeal.

★ ★ ★

Found guilty of misconduct, this deck maintenance man had all his documents revoked by order of a Coast Guard Examiner. On appeal it was contended that the order was too severe, but the revocation was affirmed by the Commandant because the record indicates the Appellant's conduct has become progressively worse. "Since every indication is that the Appellant would continue to be an unreliable and undesirable seaman if permitted to sail again, it is my opinion that the only appropriate order is one of revocation," the Commandant said in affirming the order.

★ ★ ★

The Commandant affirmed the order of a Coast Guard Examiner revoking all documents held by this seaman for misconduct, to wit, assaulting the chief steward with a dangerous weapon, a razor; using his fist to batter and assault the same crew member, and failure to perform his duties.

★ ★ ★

For failure to join his vessel on departure in a foreign port, this licensed engineer was found guilty of misconduct by a Coast Guard Examiner. This was his third offense of failure to join and the Examiner's order suspending all documents for a period of 4 months was affirmed by the Commandant on appeal.

★ ★ ★

Found guilty of negligence, a Coast Guard Examiner suspended all documents held by this pilot while serving aboard an American-flag vessel. The specifications alleging that the Appellant contributed to a collision between the ship he was serving and a second vessel, when the former was the burdened vessel in a crossing situation, by initiating a two-blast whistle signal, and for failure to keep clear of the privileged ship were found proved. The order suspending all documents for a period of 2 months was affirmed by the Commandant on appeal.

WALK—DON'T JUMP!

By Arthur E. Wills,
United States P. & I. Agency, Inc.

IT'S FINE to be young and full of zip with springs in your legs. You come to a gap in your path and you don't walk around it or wait for it to close, you jump right over it. It's even fun to jump across voids when there's a wee bit of danger if you fall. Along the waterfront and on river craft, that element of danger may not be so "wee"; it may be disastrous.

"Look before you leap!" That admonition has been preached down through the centuries ever since man learned to leap. In the caveman age Mothers dinned it into the ears of their yonng. Monkey mothers exhorted baby monkeys before that. "Look before you leap!" But where seamen and rivermen are concerned, "BETTER NEVER LEAP!"

You're standing on a barge that is closing in on another barge. The barges are twenty feet apart and there is no temptation to see if you can jump it. But as the distance between the barges narrows, you lean forward, your leg muscles tense, and first thing you know, you've taken off and are in the air.

Where—and how—you land, is something else. If you land topside up where you wanted to land, all well and good. If you land some other way or you land some place you didn't figure on landing, it's not so good. No use then to think about how much more sensible it would have been to wait until the barges came together, when you could have stepped across.

Same thing when you're coming alongside a river bank or dock. Perhaps you are in a hurry to go home. Again you take off on that premature jump. Maybe you make it, only to find out too late that your landing place is a lot more slippery than it looked. You can think a lot of thoughts while you're sliding or falling backward into the water. Fish can jump out of water but you can jump only into it.

If it is foolish to jump when a tug or barge is closing in, certainly it is just as much so to jump when the craft is pulling out. No matter how late you may be or what may happen if you miss sailing, it can be a lot worse if you fall in the water as the result of a missed jump. Don't forget that a few drinks may make that jump look shorter than it really is. "A leap in the dark" may mean good night forever. A good safety rule is that if you cannot walk on board, wait until you can.

Even a jump over water of not more than a foot or so, particularly at different levels, can lead to disaster. Many a man on the golf course has missed a shorter putt than that and many a jumper has missed that distance, too. A one-foot jumper has been known to become a one-footed jumper when he slipped or tripped and fell between barges or between barge and dock, instead of jumping it safely.

Another jump that is not on the safety list is the one an eager beaver takes down the bottom two or three ladder rungs onto the deck. Perhaps he didn't see so good and it's three or four rungs instead of two or three. Maybe he didn't notice those loose boards which slid out from under him when he alit, or that patch of grease on deck which landed him where it would do the most harm.

Such things do not happen to a man every time he jumps. In fact, they don't happen most of the time. They only have to happen once to make you a has-been as a jumper—or a has-been, period.

One of the dictionary definitions of to jump is "to hazard or expose to danger." When you get old enough, you get over that urge to jump. Your legs no longer tempt you—in fact, they warn you "don't take a chance." Until you reach that stage, you'll have to learn to restrain yourself, no matter how much those traitor legs may tempt you.

DON'T JUMP TO A CONCLUSION—
IT MAY BE YOUR OWN.

LEGAL OPINIONS

Collision, ship and two tugs with moored barge; pilotage clause. In *Penn. RR Co.* v. *SS Beatrice, et al.*, 1958 AMC 1612, two tugs under different ownership were assisting a ship to a pier when one of the tugs became wedged between the ship and a properly moored barge. The master of the tug which did not hit the barge was aboard the ship and in charge of the operation. The ship had her own power, was using it, and her master was on the bridge, but did not take over from the pilot. There was the usual pilotage clause in the towing contract, making the pilot a servant of the ship and stating that neither the pilot nor tug should be liable for any damage. The court held that the *"Flotilla,"* colliding with a stationary object, was presumptively at fault, and that the temporary absence of the bargee from the moored barge on a legitimate errand did not contribute to the collision.

The court also said that the tug which collided was at fault because her master did not tell the pilot that her engine and rudder was rigged for another type of work, that the pilot was negligent in failing to consult weather reports, in failing to know rudder and engine adjustments of the tugs, and for negligent navigation; that the master of the ship was negligent in failing to check the weather reports and in not countermanding erroneous orders of the pilot. As for the pilotage clause, the court said it might be determinative of the rights and obligations as between the vessel, the pilot, and his regular employer, but it was not binding on the other tug and its owner, and did not affect the rights of the innocent barge. The court held that the ship, and tug owners should each bear one-third of the damage to the barge, but that in view of the pilotage clause and the fact that the negligence of the pilot came within the scope of the clause, the ship must indemnify the pilot's employer for the one-third for which he was liable.

+ + +

Death on the High Seas Act, applied to death over or under high seas. In the first appellate decision squarely on the point, *D'Aleman* v. *Pan American World Airways, Inc.*, October 2, 1958, 27 LW 2169, the Court of Appeals, 2d Circuit, held that the Death on the High Seas Act, 46 U. S. C. 761–768, gave a right of action in admiralty for an air passenger's death caused by a wrongful act, neglect, or default occurring in the airspace above the high seas.

CASUALTIES TO VESSELS—FISCAL YEAR 1958

(1 July 1957–30 June 1958)

	Groundings and Founderings	Collision With Other Vessels	Collision With Miscellaneous Objects	Fires and Explosions	Heavy Weather and Materiel Damage	Damage to Lifesaving Equipment	Total
Number of Casualties	824	343	280	266	217	17	**1,947**
Number of Vessels Involved	876	839	334	308	224	17	**2,598**
Gross Tonnage of U. S. Merchant Vessels Involved	2, 431, 248	1, 563, 226	1, 277, 226	267, 408	1, 658, 166	110, 393	**7,307,667**
Number of Inspected Vessels Involved	318	244	196	48	199	17	**1,022**
Number of Uninspected Vessels Involved	558	595	138	260	25	0	**1,576**
Type of Vessel Involved:							
Passenger	17	19	14	12	2	0	**64**
Freight	191	112	125	25	129	15	**597**
Tank Vessels	128	106	50	19	52	2	**359**
Public Vessels	4	22	2	0	10	0	**38**
Ferry	5	9	15	0	6	0	**35**
Towing	101	217	75	28	11	0	**432**
Fishing	142	60	3	82	1	0	**288**
Foreign Flag	0	89	0	0	0	0	**89**
Miscellaneous	288	205	48	142	13	0	**696**
Persons on Board:							
Passengers	121	1, 970	4, 915	710	2, 416	26	**10,158**
Crew	12, 806	9, 973	7, 491	2, 380	8, 868	703	**42,221**
Others	139	101	52	410	144	35	**916**
Value of Property Loss or Damage:							
Vessels	$17, 611, 856	$4, 979, 470	$2, 954, 176	$7, 987, 264	$2, 618, 969	$53, 231	**$36,204,966**
Cargoes	$2, 156, 357	$145, 525	$2, 050	$973, 377	$263, 138	$0	**$3,540,447**
Vessels with damage unreported	18	79	14	8	6	0	**125**
Cargoes with damage unreported	18	79	14	10	6	0	**127**
Vessels Totally Lost:							
Inspected	8	1	0	1	0	0	**10**
Gross Tonnage	16, 857	3, 015	0	34	0	0	**19,906**
Uninspected	195	14	2	177	0	0	**388**
Gross Tonnage	13, 310	1, 464	0	4, 894	0	0	**19,668**
Number of Casualties Due to Personnel Faults:							
Employed under license or certificate	20	26	7	0	0	0	**53**
Others	95	124	18	12	0	0	**249**
Lives Lost in Casualties:							
Passengers:							
Off Inspected Vessels	0	0	0	0	0	0	**0**
Off Uninspected Vessels	127	8	3	2	1	0	**141**
Crew:							
Off Inspected Vessels	4	2	0	2	0	0	**8**
OffUninspected Vessels	182	18	7	16	2	0	**225**
Others:							
Off Inspected Vessels	0	5	1	0	1	0	**7**
Off Uninspected Vessels	3	0	1	4	0	0	**8**
Assistance Rendered By U. S. Coast Guard	163	20	14	55	2	0	**254**
Deaths not Involving Casualty to Vessel:							
Passengers	91	---	---	---	---	---	---
Crew	356	---	---	---	---	---	---
Others	36	---	---	---	---	---	---

Injuries to personnel not involving casualty to vessel: Number of personnel incapacitated for more than 72 hours: 1,296.

MERCHANT FLEETS OF THE WORLD

Seagoing Steam and Motor Merchant Vessels of 1,000 Gross Tons and Over as of JUNE 30, 1958

(Excludes vessels on the Great Lakes and Inland Waterways and Special Types such as channel vessels, icebreakers, cable ships, etc., and merchant vessels owned by any military force.)

(Tonnage in Thousands)

FLAG	TOTAL—ALL TYPES			Combination Pass. & Cargo			Combination Pass. & Cargo-Refrigerated			Freighters			Freighters—Refrigerated			Bulk Carriers			Tankers (Includes Whaling Tankers)		
	No.	Gross Tons	Dwt. Tons	No.	Gross Tons	Dwt. Tons	No.	Gross Tons	Dwt. Tons	No.	Gross Tons	Dwt. Tons	No.	Gross Tons	Dwt. Tons	No.	Gross Tons	Dwt. Tons	No.	Gross Tons	Dwt. Tons
TOTAL—ALL FLAGS	16,557	108,012	152,063	1,189	9,170	6,462	49	703	454	11,027	57,964	84,690	383	2,345	2,493	802	4,387	6,871	3,107	33,443	51,093
United States	3,047	23,840	33,315	238	2,289	1,638				2,341	16,830	24,313	45	270	268	39	289	543	384	4,162	6,553
Privately Owned	1,000	8,973	13,091	39	506	368				575	4,345	6,209	21	131	120	39	289	543	326	3,702	5,851
Government Owned	2,047	14,868	20,223	199	1,783	1,270				1,766	12,485	18,104	24	140	148				58	460	701
British Commonwealth	3,105	20,903	27,424	247	2,242	1,481	33	582	384	1,771	9,708	13,794	152	1,367	1,544	304	1,169	1,651	598	5,835	8,570
United Kingdom	2,512	18,292	23,921	164	1,913	1,267	31	572	378	1,347	7,888	11,146	143	1,305	1,468	260	982	1,392	567	5,632	8,270
Australia	125	486	632	13	77	47				82	265	386				30	144	199			
Canada	68	289	316	28	88	27				21	79	104				3	6	9	16	116	176
Ceylon	2	3	5							2	3	5									
Ghana	1	5	9							1	5	9									
India	115	594	859	10	51	57				103	527	779							2	16	23
New Zealand	57	212	244	5	34	10	2	10	7	47	161	219				2	4	5	1	3	3
Other Colonies	178	756	1,063	24	71	69				127	550	815	9	62	76	8	27	39	10	46	64
Pakistan	22	123	182	1	4	2				19	107	163				1	5	8	1	7	9
Union of South Africa	25	142	197	2	3	3				22	123	169							1	16	25
Argentina	143	892	1,161	18	109	87	4	47	33	65	376	550	6	18	18	3	4	6	47	338	467
Belgium	76	522	693	10	106	93				54	296	426	2	6	6	1	3	4	9	111	164
Brazil	196	757	1,070	28	113	110				133	453	678				8	32	46	27	159	236
Bulgaria	7	25	41							7	25	41									
Burma	6	23	30	2	4	3				4	19	27									
Chile	47	197	267	4	14	14				28	115	154				14	57	82	1	11	17
China	157	489	676	18	41	25				112	375	547				4	10	16	23	63	88
Colombia	23	84	122							20	75	108	1	5	8				2	4	6
Costa Rica	122	529	824	1	2	1				106	483	752				14	36	59	1	8	12
Cuba	15	41	58							12	37	53				1	1	1	2	3	4
Czechoslovakia	4	24	36							4	24	36									
Denmark	342	1,877	2,699	23	78	67	2	3	3	240	1,060	1,503	12	36	42	7	18	26	58	682	1,058
Dominican Republic	5	13	18							4	11	15							1	2	3
Ecuador	7	19	27							6	18	25							1	1	2
Ethiopia	2	3	5							2	3	5									
Finland	230	711	1,095	7	15	6				189	492	781				16	49	75	18	155	233
France	610	4,085	5,212	63	641	352	2	25	10	340	1,552	2,157	31	130	99	38	141	191	136	1,596	2,403
Germany (West)	838	3,577	5,266	23	214	178	1	2	1	700	2,571	3,955	25	82	86	42	303	442	47	405	604
Germany (East)	8	42	57	2	15	15				6	27	42									
Greece	263	1,575	2,260	21	116	56	1	3	2	211	1,255	1,890				10	35	56	20	166	256
Honduras	45	211	275							25	110	171	17	74	64				3	27	40
Hungary	4	4	6							4	4	6									
Iceland	16	49	60	3	7	4				9	21	31	3	9	8				1	12	17
Indonesia	22	69	78	9	32	28				12	29	42	1	8	8						
Ireland	23	103	146							18	76	106				3	12	19	2	15	21
Israeli	34	214	264	6	54	27				24	126	183							4	34	54
Italy	709	4,654	6364	78	708	415				440	2,250	3,392	12	40	36	35	229	346	144	1,427	2,175
Japan	800	4,877	7,076	21	104	113	1	23	9	660	3,550	5,155	7	41	44	18	131	204	93	1,028	1,551
Korea	32	111	166	2	3	4				25	93	142				1	2	3	4	13	17
Lebanon	13	38	60	1	2	2				10	28	44				2	8	14			
Liberia	965	10,425	16,457	7	54	34	1	2	2	516	3,719	5,521	2	7	4	53	588	1,221	386	6,055	9,675
Mexico	29	154	218							7	16	17	2	5	5	1	6	8	19	127	188
Monaco	1	4	6							1	4	6									
Morocco	7	12	18							7	12	18									
Netherlands	581	4,034	5,321	85	709	605				363	2,047	2,850	4	24	23	7	87	124	122	1,167	1,719
Nicaragua	6	14	23							6	14	23									
Norway	1,248	8,956	13,355	30	126	69	2	9	3	695	3,180	4,737	20	64	61	35	318	451	466	5,279	8,034
Panama	563	4,397	6,670	18	135	84	1	7	6	305	1,633	2,470	3	7	7	41	271	446	195	2,344	3,657
Peru	23	87	125	1	6	8				18	68	98				1	3	5	3	10	14
Philippines	25	91	128	4	8	8				19	81	117				1	1	2	1	1	1
Poland	85	380	534	2	23	15				67	293	430	3	10	9	7	14	20	6	40	60
Portugal	83	423	509	19	170	126				56	174	266							8	79	117
Rumania	8	32	39	1	7	2				7	25	37									
Saudi Arabia	10	48	72	1	1					6	14	21				2	4	4	1	29	47
Spain	310	1,257	1,650	44	244	179				208	665	985	2	5	8	14	41	57	42	302	421
Sweden	585	3,069	4,446	27	182	141				388	1,308	2,007	24	102	103	50	437	606	96	1,040	1,589
Switzerland	18	97	152							17	87	138				1	10	14			
Thailand	6	13	16	1	3	3				5	10	13									
Tunisia	2	7	12							2	7	12									
Turkey	138	527	686	33	143	96				95	319	490				2	4	5	8	61	95
United Arab	28	124	147	12	61	62				14	47	59							2	16	26
Uruguay	13	63	91	1	8	10	1	2	1	8	30	44							3	23	38
U.S.S.R (a)	735	2,634	3,599	71	359	268				546	1,767	2,627	9	35	42	20	48	73	89	425	589
Venezuela	47	228	351							12	45	69				5	17	38	30	166	244
Viet-Nam	1	3	5							1	3	5									
Yugoslavia	86	375	578	6	23	28				74	318	497				2	10	17	4	24	36
Unknown	3	11	16	1	3	4				2	8	12									
(a) Includes United States Government Owned Vessels transferred to U.S.S.R. under lend-lease agreement and still remaining under that registry.																					
U.S.S.R.	83	518	785	1	5	5				79	495	752				2	11	17	1	7	11

Source: Maritime Administration, Dept. of Commerce. From *The Bulletin*, American Bureau of Shipping, October 1958.

MORE ON LORAN

is a highly accurate system based on hyperbolic coordinates without operationally significant ambiguities. The fact that the loran-C system uses pulses enables it to eliminate skywave contamination where the groundwave can be used and to provide accuracy which is approximately 8 times better than the standard loran-A system and triples the range.

The second United States system currently being developed is called Omega. Omega uses frequencies in the 10 to 14 kc band and is a continuous wave, phase comparison, hyperbolic system. Eight synchronized stations are planned for worldwide coverage, each to operate on a basic and secondary frequency differing by approximately 500 cycles. The range of the system is estimated at 5 to 6,000 miles with a predicted accuracy of ± 1 mile on a 95 percent probability basis within the coverage. Very high power is required and complex very low frequency antennas are necessary.

The third United States system is called Navarho. This system has been completely evaluated. It failed to meet the accuracy requirements of the user. Further development and testing have been suspended. Thus, it is seen that the United States has under active development and evaluation two systems—loran-C, in the 90 to 110 kc. band and Omega, in the 10 to 14 kc. band.

ELECTRONIC PROGRESS

In the free world, aside from the United States, only the United Kingdom and France have made any substantial progress in developing new electronic aids to navigation. In the United Kingdom, the only development being undertaken is directed by the Decca Navigator Co., who is presently evaluating the Decca tracking system, short-title "Dectra," in the North Atlantic. It uses two standard Decca rates at either end of a specific route. Two of the stations at either end are synchronized across the desired track area. Thus, the standard Decca at either end of the coverage provides track guidance while the synchronization pattern between the opposite end stations provides range guidance and the combination provides the fix.

This system is being operationally evaluated in the North Atlantic by both civil and military aircraft. Preliminary results indicate that the system has a great deal of promise and has a substantial amount of inherent accuracy. In addition to Dectra the Decca Co., also has a proposal for a very low frequency system in the 10 to 14 kc. band which is similar to the United States Omega system. This system is called Delrac. No installations have been made.

The French system is known as radioweb or radio mesh. Two separate stations transmit signals on adjacent but distinct frequencies, these signals are received in phase along a moving interference pattern or equiphase line which is hyperbolic in shape. The speed of this line is determined by the choice of the basic frequencies. The distance between the two stations is, therefore, scanned at the predetermined rate. The receiver measures the time interval between the passage of two equiphase lines from which the position lines are determined. In Radioweb, four stations would be located as a quadrilateral. Although Radioweb has been tested as a short-range system, by choosing suitable frequencies and increasing the size of the quadrilateral it can be used as a long distance aid. At present, Radioweb is an experimental system and no complete test results are available.

I have now described in broad terms the electronc navigation systems which are available to assist the maritime user to find his place in the world. I have not described microwave beacon systems or radar guidance installations. At present these are not used in the United States.

One further matter remains to be mentioned. Since World War II, our United States national policy on long distance aids to navigation has promoted the development of a single system to provide for the needs of all users. A new policy recently developed, supports and expands upon this conclusion and states that within the framework of aids to long distance navigation there should be a single standardized ground based long distance system suited to the needs of the various users, civil and military, surface, subsurface and air. Until the time arrives where we have a single system, the national policy recognizes that loran-A, loran-C, Consol, nondirectional beacons and various self-contained aids will be utilized.

Insofar as the Coast Guard is concerned, it believes that the loran system can meet the requirements stated by the maritime operator, civil and military, surface and air. I feel sure that as long as safety at sea is desired, systems such as I have described today, must be available.

The Coast Guard believes that the general concept of loran offers the best solution to positional safety at all ranges and provides for an all range compatible system.

MERCHANT MARINE STATISTICS

There were 944 vessels of 1,000 gross tons and over in the active oceangoing United States merchant fleet on November 1, 1958, according to the Maritime Administration. This was seven more than the number active on October 1, 1958.

There were 24 Government-owned and 920 privately owned ships in active service. These figures did not include privately owned vessels temporarily inactive, or Government-owned vessels employed in loading grain for storage. They also exclude 28 vessels in the custody of the Departments of Defense, State, and Interior.

There was an increase of seven active vessels and a decrease of eight inactive vessels in the privately owned fleet. One new combination passenger-cargo ship, the *Santa Paula*, and three new tankers, the *Atlantic Endeavor*, *Eagle Courier*, and *Hans Isbrandtsen*, were delivered into service, and 1 freighter, the *Wang Trader*, was returned from foreign to United States flag. Four freighters, the *Leslie Lykes*, *Jean Lykes*, *Nancy Lykes*, and *Solon Turman*, were traded in to the Government on new construction, while one freighter, the *Arlyn*, and a tanker, the *S. E. Graham*, were sold for scrap. This decreased the total privately owned fleet by a net of one to 1,004.

Of the 84 privately owned inactive vessels, 36 dry cargo ships and 28 tankers were laid up for lack of employment, 9 less than on October 1. Most of the others were undergoing repair or conversion.

The Maritime Administration's active fleet remained the same as that of the previous month, while its inactive fleet increased by 1. One hospital ship, the *Rescue*, and 12 Liberty ships were sold for scrap.

Four new cargo ships were ordered. One new passenger ship and three new tankers were delivered for United States flag. One tanker, *Sanssinena*, was delivered to foreign flag. The tanker *Redstone* was converted to a collier, the *Consolidated Coal*, and the jumboized tanker *R. F. McConnell* was delivered. The total of large merchant ships on order or under construction in United States shipyards dropped by three vessels to 92.

Seafaring jobs on active oceangoing United States flag ships of 1,000 gross tons and over, excluding civilian seamen manning Military Sea Transportation Service ships were 52,654. Prospective officers in training in Federal and State nautical schools numbered 2,174.

APPENDIX

AMENDMENTS TO REGULATIONS

[EDITOR'S NOTE.—The material contained herein has been condensed due to space limitations. Copies of the Federal Registers containing the material referred to may be obtained from the Superintendent of Documents, Washington 25, D. C.]

TITLE 33—NAVIGATION AND NAVIGABLE WATERS

Chapter I—Coast Guard, Department of the Treasury

Subchapter L—Security of Waterfront Facilities

[CGFR 58-43]

PART 125—IDENTIFICATION CREDENTIALS FOR PERSONS REQUIRING ACCESS TO WATERFRONT FACILITIES OR VESSELS

PART 126—HANDLING OF EXPLOSIVES OR OTHER DANGEROUS CARGOES WITHIN OR CONTIGUOUS TO WATERFRONT FACILITIES

PERMITS FOR HANDLING DANGEROUS ARTICLES AND SUBSTANCES

By Executive Order 10173 the President found that the security of the United States is endangered by reason of subversive activities and prescribed certain regulations relating to the safeguarding against destruction, loss, or injury from sabotage or other subversive acts, accidents, or other causes of similar nature of vessels, harbors, ports, and waterfront facilities in the United States, and all territory and waters, continental or insular, subject to the jurisdiction of the United States exclusive of the Canal Zone. Because of the national emergency declared by the President, it is found that compliance with the Administrative Procedure Act (respecting notice of proposed rule making, public rule making procedure thereon, and effective date requirements thereof) is impracticable and contrary to the public interest.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by Executive Order 10173, as amended by Executive Orders 10277 and 10352, the following amendments in this document are prescribed and shall become effective upon the date of publication of this document in the FEDERAL REGISTER:

(Federal Register of November 1, 1958)

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 58-40]

ENFORCEMENT OF NAVIGATION AND VESSEL INSPECTION LAWS AND PROCEDURES FOLLOWED

The increased use of the navigable waters of the United States for recreational purposes prompted Congress to pass legislation to provide means for meeting the current needs for greater safety in boating activities. The act of April 25, 1940, as amended (46 U. S. C. 526–526t), was further amended and the changes, effective immediately, are as follows:

(1) The operator of a vessel shall stop and render assistance if involved in a boating accident and shall furnish his identification to others involved.

(2) The Coast Guard is authorized to impose civil penalties for reckless or negligent operation of vessels, including pleasure craft of all types.

It is the policy of the Commandant, U. S. Coast Guard, to publicize major changes in safety laws so that persons affected will be apprised of the requirements. The procedures governing the enforcement and administration of the maritime safety and navigation and vessel inspection laws are continued in effect. The amendments to the regulations contained in this document are procedural requirements, references or quotations of law currently in effect, or appropriate cross references to procedures or applicable requirements. It is hereby found that compliance with the Administrative Procedure Act, respecting notice of proposed rule making, public rule making procedures thereon, and effective date requirements thereof, is unnecessary.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by Treasury Department Orders 120, dated July 31, 1950 (15 F. R. 6521), 167–9, dated August 3, 1954 (19 F. R. 5915), 167–14, dated November 26, 1954 (19 F. R. 8026), 167–20, dated June 18, 1956 (21 F. R. 4894), CGFR 56–28, dated July 24, 1956 (21 F. R. 5659), and 167–32, dated September 23, 1958 (23 F. R. 7605), to promulgate regulations in accordance with the statutes cited with the regulations below, the following amendments and regulations are prescribed and shall become effective upon the date of publication of this document in the FEDERAL REGISTER:

(Federal Register of November 1, 1958)

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 58-44]

MISCELLANEOUS AMENDMENTS TO CHAPTER

LIFE LINES FOR LIFEBOATS, LIFE RAFTS, LIFE FLOATS, AND BUOYANT APPARATUS

In the administration of maritime safety, navigation, and vessel inspection laws and regulations the Coast Guard permits equivalents as alternates to fittings, apparatus, or equipment, or types thereof, which are specifically prescribed in 46 CFR Chapter I for various types of vessels. The conditions under which such equivalents may be used are set forth in 46 CFR 30.15–1, 70.15–1, 90.15–1, and 175.15–1.

A number of manufacturers of lifesaving equipment requested permission to substitute polyethylene plastic life lines without seine floats for the required life lines with seine floats prescribed for lifeboats, life rafts, life floats, and buoyant apparatus. The purpose for the seine floats in life lines attached to certain lifesaving appliances is to keep such lines afloat and thereby making it easier for persons to grab such lines in an emergency. The rules and regulations governing passenger vessels, small passenger vessels, tank vessels, cargo and miscellaneous vessels, and nautical school ships, as well as specifications for life rafts, life floats, and buoyant apparatus, specifically require the life lines attached to lifeboats, life rafts, life floats, and buoyant apparatus shall have a seine float in each bight of such lines. It has been shown to the satisfaction of the Commandant that polyethylene plastic lines are inherently buoyant, absorb little or no water, are more resistant to deterioration than manila or sisal; and such lines of a size and strength of not less than ⅜-inch diameter manila without seine floats are satisfactory for use as life lines on lifeboats, life rafts, life floats, and buoyant apparatus, either for new construction or for replacement lines on existing equipment.

The purpose for the amendments to the regulations as set forth in this document is to inform shipowners and operators, as well as manufacturers of certain lifesaving appliances, that seine floats may be omitted from life lines when such lines are inherently buoyant and that the Commandant has accepted this alternate under the provisions of 46 CFR 30.15–1, 70.15–1, 90.15–1, and 175.15–1. The text of some of the regulations was editorially changed to insure that the same requirements will apply to this equipment regardless of type of vessel on which it may be carried.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by Treasury Department Orders 120, dated July 31, 1950 (15 F. R. 6521), 167–14, dated November 26, 1954 (19 F. R. 8026), 167–20, dated June 18, 1956 (21 F. R. 4894), and CGFR 56–28, dated July 24, 1956 (21 F. R. 5659), to promulgate regulations in accordance with the statutes cited with the regulations below, the following amendments are prescribed and shall become effective on and after the date of publication of this document in the FEDERAL REGISTER:

(Federal Register of November 19, 1958)

EQUIPMENT APPROVED BY THE COMMANDANT

AFFIDAVITS

The following affidavits were accepted during the period from 15 October 1958 to 15 November 1958:

W. S. Rockwell Company, 200 Eliot St., Fairfield, Conn., VALVES.[1]

Nuclear and Power Equipment Corp. (Formerly U. S. Valve & Mfg. Co.), 298 East Grand Ave., South San Francisco, Calif., FLANGES.

American Manganese Bronze Co., Holmesburg, Philadelphia 36, Pa., CASTINGS.

FUSIBLE PLUGS

The regulations prescribed in Subpart 162.014, Subchapter Q Specifications, require that manufacturers submit samples from each heat of fusible plugs for test prior to plugs manufactured from the heat being used on vessels subject to inspection by the Coast Guard. A list of approved heats which have been tested and found acceptable during the period from 15 October 1958 to 15 November 1958 is as follows:

The Lunkenheimer Co., Cincinnati 14, Ohio. Heat Nos. 584, 585, 586, 587, 588, 589 and 590.

[1] Synthetic rubber-lined Butterfly valves limited to Class II piping and a maximum temperature of 200° F. and to the piping systems specified in Commandant (MMT) letter of 13 Nov. 1958.

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. 3–1–58
123	Rules and Regulations for Tank Vessels. 4–1–58
129	Proceedings of the Merchant Marine Council. Monthly
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. 4–1–58
172	Pilot Rules for the Great Lakes and Their Connecting and Tributary Waters. 4–1–58
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. 6–1–55
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
190	Equipment Lists. 4–1–58
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel. 9–15–55
200	Marine Investigation Regulations and Suspension and Revocation Proceedings. 7–1–58
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. 7–1–58
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. 9–3–57
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. 7–1–58
293	Miscellaneous Electrical Equipment List. 4–15–58
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf. 1–2–57
323	Rules and Regulations for Small Passenger Vessels. (Not More Than 65 Feet in Length) 6–1–58

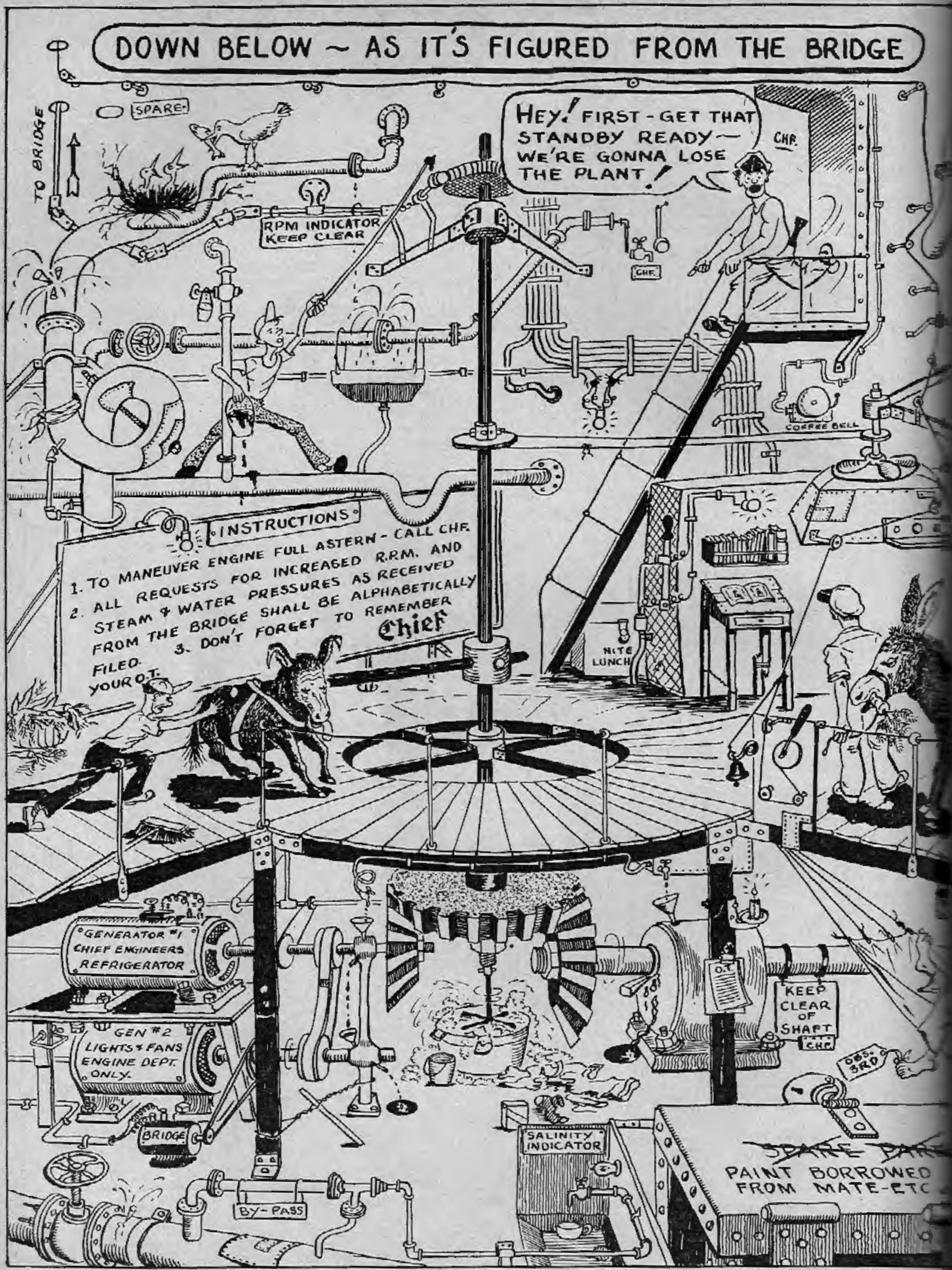
Official changes in rules and regulations are published in the Federal Register, which is printed daily except Sunday, Monday and days following holidays. The Federal Register is a sales publication and may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. 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 November 1958

The following have been modified by Federal Register:

CG–123, CG–239, CG–256, CG–257, CG–258, and CG–269 Federal Register, November 1, 1958

CG–123, CG–256, CG–257, CG–269, and CG–323, Federal Register, November 19, 1958



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