PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

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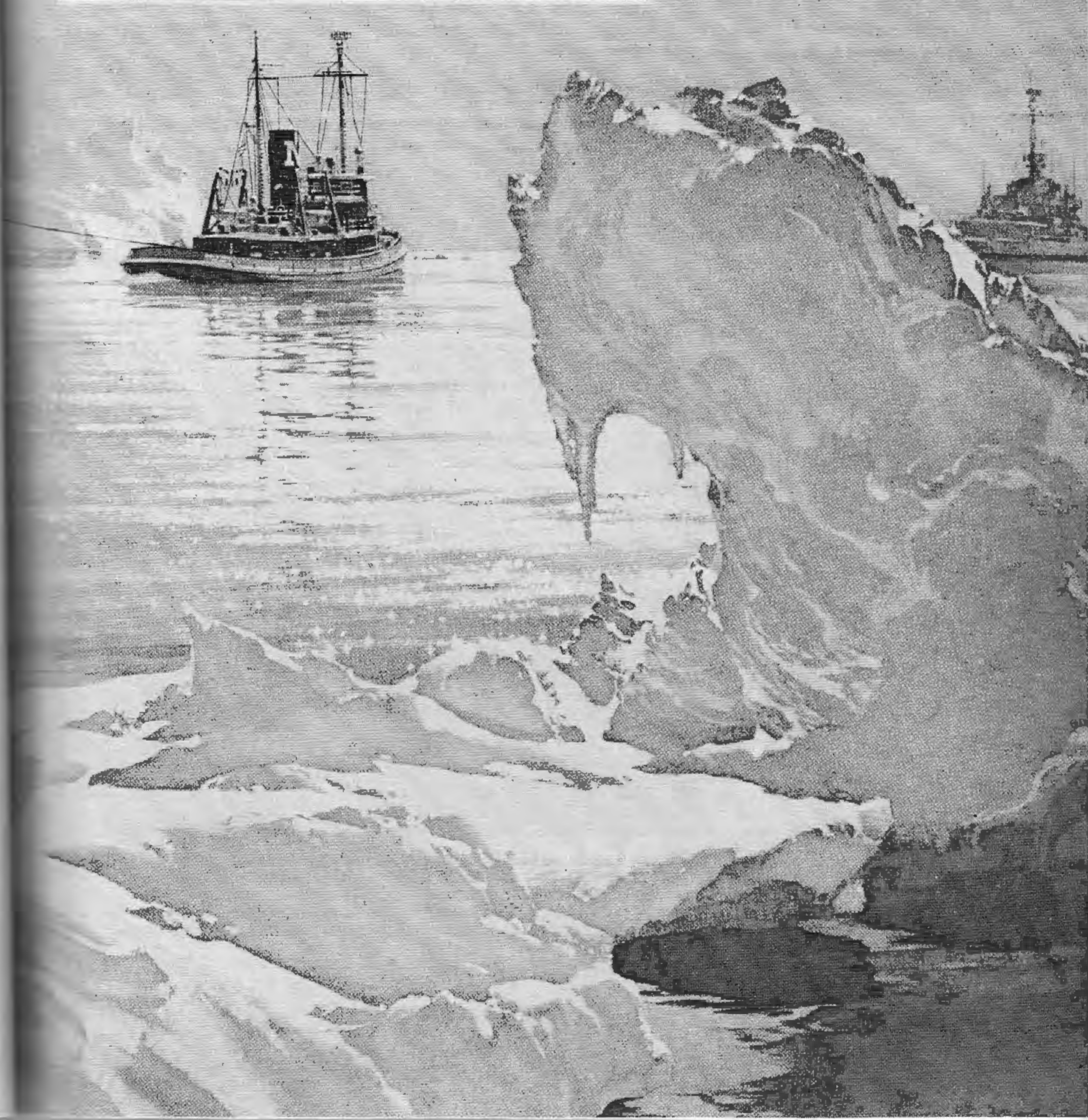

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MERCHANT MARINE COUNCIL

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The Merchant Marine Council of the United States Coast Guard

This Copy FOR NOT LESS THAN 20 Readers PASS IT ALONG

CONTENTS

FEATURES

FRONT AND BACK COVER

The ocean tug *Edmund J. Moran*, one of the ablest and best known units in the "M" fleet, is shown towing the YFP–10, originally a cargo ship, converted into an adequately insulated floating steam-electric power plant for BMEWS (America's Ballistic Missile Early Warning System) in the vicinity of Thule, Greenland. The third vessel shown is the U.S. Coast Guard cutter *Eastwind* (WAGB–279), which met the tow at the entrance to Melville Bay and escorted it into port—safe and sound after 2,800 sea miles. From a water color by Evers. *Courtesy Tow Line.*

CENTER FOLD

Article from Oil Pollution Panel and Poster to be placed on ships' bulletin boards.

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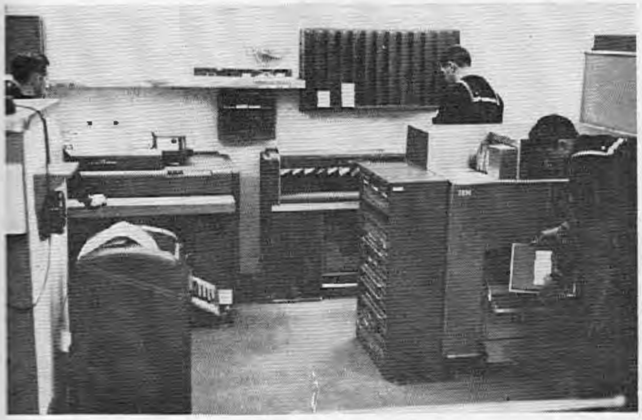
MSTS SHIP HONORED

CREW who manned the boat that picked up the Japanese fishermen, survivors of the *Chiyoh Maru*, lean over shoulders of Capt. Royal Peterson, Master USNS *Sgt. Jack J. Pendleton*, and Vice Adm. M. E. Curtis, Commander, *Western Sea Frontier*, who made presentation in name of Vice Adm. Roy A. Gano, COMSTS, to get a look at the certificate. They are: (from left to right 3d Mate Albert J. Kuntz; Utility Engineman Ted Riesnes; Able Seaman Prado Deguzman; and C. T. Wong, ordinary seaman.

See story on page 68.

ATLANTIC MERCHANT VESSEL REPORT (AMVER) SYSTEM



THE CENTER PHOTOGRAPH shows Capt. Marius De Martino, Deputy Commander Eastern Area, USCG, and part of the crew of the AMVER Plot Center with the main computer unit used in AMVER plotting. Besides the main computer unit the other photographs show several auxiliary pieces of equipment that are essential. Among these are the teletype printer and teletype transmitter, card punch, card verifier, card sorter, card to tape converter, a listing machine, plotting table, call sign dictionaries, various ship lists, and clocks. The equipment is arranged functionally in a relatively small area, actually a 25 by 21 foot space.

THE NUMBER of vessels reporting voluntarily in accordance with the procedure requested by AMVER instructions shows steady increase. At this time the AMVER system each month plots over 4,400 passages, involving 2,100 separate vessels, with approximately 7,300 AMVER messages. Coast Guard Rescue Coordination Centers from Boston to New Orleans and those in Newfoundland, Bermuda, and Puerto Rico are routinely integrating AMVER plot information into everyday operations as cases arise.

One instance of AMVER integration is the case where a Navy destroyer lost 10 men overboard during an evolution about 200 miles east of Cape Henry. The Texas Co. tanker *Alabama* recovered two of the men promptly in a very commendable action, and three others were rescued by the destroyer. However, those still missing justified a rather large-scale search involving many aircraft and several naval vessels. Coast Guard Rescue Coordination Center, Norfolk, in control on this case, was provided a list of merchant vessel locations within the area of interest at intervals of 3 hours for nearly 2 days. There were a number of vessels in relatively favorable position to aid in this search and they were alerted by general ships broadcasts. Knowledge of ship locations on a current basis helped the Norfolk center to plan a more effective search in less covered areas.

Prompt knowledge of vessel positions has frequently removed much of the anxiety which always arises when aircraft difficulties over water are reported.

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THE DANGERS OF DRINKING SEA WATER BY SHIPWRECKED MARINERS

NOTE BY THE NETHERLANDS DELEGATION

INTRODUCTION

DURING and after the Second World War much attention has been given to the problem of survival of shipwrecked persons. Lack of drinking water is clearly one of the main causes of death of such persons. Many experiments have been made to investigate why sea water, which is by no means a poison, should have its well-known deleterious effects.

Sea water is a solution of approximately 3½ percent of different salts, the greatest part (about 2.7 percent) being sodium chloride (common salt), the other salts being present in small concentrations only comparable with well-known natural medicinal waters.

The above-mentioned experiments have made it quite clear why sea water acts as a poison to castaways and why drinking it must be avoided at any price.

THE PHYSIOLOGICAL SIGNIFICANCE OF WATER

After oxygen, water is the most important item that the living organism has to take in from outside. At least 70 percent of the weight of the human body consists of water. This water is contained partly in the living protoplasm of the body cells, the intracellular medium (about 40 percent of the body weight), and partly in the blood circulation system (about 5 percent) and in the spaces between the tissues (about 17–20 percent), together with the extracellular medium.

In normal life the osmotic concentration of both mediums is kept at a fixed level by means of a continuous exchange of fluids between these two mediums, as well as between the extracellular medium and the organs by which the body takes in fluids, i.e. the bowels, and the organs by which it loses fluids, i.e. the kidneys, the organs of respiration and the skin.

In a person at rest, taking neither food nor water, life continues, but to provide the required energy (for instance, to maintain the body temperature), the body sacrifices its own constituents (proteins and fat), the metabolism of which gives products like urea and phosphates which have to be eliminated by the kidneys. On the other hand, a small quantity of water is formed by this metabolism, about 200 cc. in 24 hours.

The body at rest loses about 1,000 cc. of water in 24 hours through respiration by the lungs and perspiration by the skin. Under these circumstances, the urine being as concentrated as possible, the quantity of urine produced is about 500 cc. So we have a loss of water of 1,500 cc. and a gain of 200 cc., the balance being a loss of 1,300 cc.

From experiments with animals it is known that a living organism may lose a maximum of 38 to 40 percent of its body fluid. For the average man, this point would be reached in a fortnight.

The lost body fluid comes in the first instance from the extracellular medium, but since the osmotic concentration is maintained as much as possible, water must be withdrawn from the intracellular medium, thus increasing the intracellular osmotic concentration. As an evidence of this fact, we find the concentration of potassium increasing both in the extracellular medium and in the urine.

Potassium, however, is essential for life. The loss of it cannot go beyond a certain degree without endangering the life of the cells. Withdrawal of water from the cells causes a rise in osmotic concentration as well, and again, this can only continue to a certain degree beyond which life is impossible.

The most delicate cells will suffer earliest, and the most delicate cells are those of the central nervous system, which controls the activities of life, firstly the mental functions and later, physical functions. This pattern shows itself in the records of shipwrecked persons: first, a breakdown in the mental functions, followed by madness, while, as far as is known, the ultimate cause of death is paralysis of the respiratory system. Death may be postponed if fresh water can be taken, however small the quantity.

EXPERIMENTS ON THE DRINKING OF SEA WATER

Experiments on the intake of sea water by castaways by Ladell (1943), Gamble (U.S.A. 1944), Whillans & Smith (Canada 1948) and Hervey & McCance (Cambridge 1950) revealed the following facts:

At first almost all sea water drunk was retained in the body in nearly its original concentration: the quantity of urine did not increase, neither did its concentration since that was already at its maximum. In spite of these facts no significant increase of the sodium and chloride-concentrations of the fluid was observed. Whether the surplus of sodium and chloride had been taken into the cells, or whether water had been withdrawn from the cells, in both cases the result would be the same: an increased concentration of these salts in the cells. Since outward signs of dehydration were not observed, the latter possibility is the more probable.

It is the opinion of Dr. Alain Bombard that the commonly accepted view (which is moreover confirmed by many records of shipwrecks) that a castaway should on no account drink sea water, is only based on prejudice.

In a paper he read at the Seventh International Conference of Rescue Services at Estoril, June 1955, he made the following remarks: "In practice any sailor drinking sea water was supposed to be certain at the very least, to be affected by diarrhoea, vomiting and certain madness, even if death did not necessarily follow * * *."

"Sea water was always drunk reluctantly, *as it was supposed to be dangerous* and as it was in addition unpleasant to taste. The seamen hung on to the hope that, before they would be forced to drink it, rain or a providential rescue would save them before the fourth or fifth day * * *."

"Moreover in the same connection the classical objections based on 'common sense' are raised, e.g., everyone knows very well that sea water drives you mad, that sea water gives you colic, that sea water makes you vomit * * *."

"One expected to go mad from thirst through drinking sea water * * *."

In view of the widespread publicity that has been given to the experiments of Dr. Alain Bombard on the drinking of sea water and to his advocacy of this practice by shipwrecked mariners, the Netherlands delegation brought to the attention of the Maritime Safety Committee of IMCO a paper on the subject prepared by one of its medical officers. The paper shows that this practice, although it may be harmless over very short periods of 2 to 4 days, is likely to be extremely dangerous if carried on for longer periods. Moreover, the drinking of sea water, however small the quantity involved, hastens the dehydration of the tissues of the body and seriously diminishes the possibility of survival.

The delegation of the Federal Republic of Germany supported the proposal of the Netherlands delegation that the Maritime Safety Committee should take steps to insure that the dangers of drinking sea water are widely published.

After considerable discussion it was agreed that all IMCO members should warn their seamen not to drink sea water as a means of survival, and that national experiments should be continued in this regard; that the preponderance of evidence was that the drinking of sea water had very harmful effects and was to be guarded against at all costs.

As a result of this action the papers presented by the Netherlands and German delegations are being published in the PROCEEDINGS.—ED.

Dr. Bombard is convinced that one of the causes of death after shipwreck is despair, which could be prevented by convincing the castaway that the sea can provide for all that is necessary in the way of food and drink to ensure survival until he is rescued, no matter how long a time this might take.

Dr. Bombard said he was prepared to prove this view. For a couple of months he stayed at the Oceanographic Institute of Monaco to study the possibility of getting sufficient food and fluid from the sea. His conclusion was that fish gives, even raw, an excellent food, lacking only in carbohydrates, but knowing that some peoples, like Eskimos, during winter, live only on fat and proteins, he thought castaways might do the same even for a couple of weeks.

For drinking he recommended sea water and after trials he stated that the best way was to begin drinking sea water as soon as possible before dehydration starts in small quantities only, 50 cc. every hour so as to avoid nausea and diarrhea, not more than 500–800 cc. in 24 hours, and not longer than 5 days in succession. As a substitute, if no fresh water was available, he recommended the fluid pressed from fish. However, other experiments have proved that the best food for men short of water are carbohydrates, and proteins the least favorable because of the products of metabolism that need to be eliminated at the cost of body fluid.

Experiments of Hervey in 1956 showed that the composition of the fish fluid at its best is not favorable for men short of water and at its worst it might be deleterious.

After an experiment with a friend in crossing the Mediterranean, Dr. Bombard started his famous voyage, crossing the Atlantic without food and without water, alone. It may be regarded as a miracle that he survived.

Dr. G. Aury, principal medical officer of the French Navy, followed these experiments with keen interest and was convinced by them. In November 1953 and March 1954 he arranged experiments in drinking sea water under shipwreck conditions with volunteers, in which he himself took part. The experiments lasted only 2–4 days. Dr. Aury describes the results as being very favorable, because the sea water was readily consumed, the persons had no serious complaints and were able to resume their duties immediately after conclusion of the experiments.

However, in the light of the abovementioned experiments by Gamble, Hervey and McCance this outcome was to be expected. In the first few days a person who drinks sea water will be in a better physical condition than a person who does not drink at all, owing to the absence of external dehydration. But after a few days, this condition is reversed. Soon after the sixth day the sea water drinker is more dehydrated especially in the intracellular medium than is the other, and near to death, whereas the thirsting individual may hold on for another week or so.

At the Seventh International Conference of Rescue Services of Estoril (June 1955) Dr. Bombard and Dr. Aury have publicized their views in this respect, and caused a great stir in seafaring circles.

Careful examination of the available literature, of the results of experiments and of the facts known about numerous shipwrecks, seems to show that they are mistaken. And, if the results of experiments and calculations are not convincing enough, the records of shipwrecked crews speak for themselves.

McCance and others studied the records of shipwrecked sailors during the war. One of the conclusions of his report was that lack of fresh water became an important cause of death on the longer voyages, and *the effects of drinking sea water seem to have been almost invariably disastrous.* Indeed, the report reveals that the death rate from all causes in lifesaving craft where sea water was consumed was *ten times* as high as in lifesaving craft where no sea water was taken under comparable conditions.

We cannot stress too much the old rule:

ON NO ACCOUNT SHOULD A CASTAWAY DRINK SEA WATER.

Drinking it, no matter in how small a quantity hastens dehydration and diminishes the possibility of survival until rescue comes.

NOTE BY THE DELEGATION OF THE FEDERAL REPUBLIC OF GERMANY

INSPIRED by the report of Dr. Alain Bombard, who in 1952 crossed the Atlantic on an inflatable raft, the German physician Dr. H. Lindemann made three voyages across the Atlantic. On his first voyage he sailed with an African dugout canoe, 76 cm. in breadth and 7.70 m. in length, in 119 days from Portugal to Haiti; on the second voyage in a folding boat of serial manufacture from Las Palmas to the American Virgin Islands. Dr. Lindemann has reported on both voyages in detail in his book: "Allein über den Ozean. Ein Arzt in Einbaum und Faltboot."

At first Dr. Lindemann drank sea water in different quantities of 200 to 500 cc., together with fresh water of 500 to 750 cc. The practical result was that after 24 hours his feet began to swell and that after another period of 25 hours the edema spread to his knees. When he did not drink sea water, he had no edema.

The Kon-Tiki crew reported obtaining fluids from fish by making V-formed incisions in to the flesh. Bombard said that one could get lymph in a towel or plastic bag by wringing or chewing. Those methods failed in the case of Dr. Lindemann. According to his experience fluid from fish can only be gained by means of a press.

In the meantime the German physician has returned from his third ocean crossing in a sailing boat. His opinion on this question is unchanged. He warns emphatically against the drinking of sea water by shipwrecked sailors, and summarizes as follows:

> One should not drink brackish water unless it contains over 50 percent of normal water, and on no account should one drink sea water. It is advantageous to have a supply of milk and beer in the lifeboat. The eyes, blood, and spinal fluid of fish contain normal water; all other products of the sea require additional water from the body. When a shipwrecked man has no fresh water, he must not eat any fish either; "Solarstill" and desalting tablets are of great value. When one has the right equipment, the sea provides sufficient food for a stable diet.

It is said that in France, under the supervision of Dr. G. Aury, principal medical officer of the French Navy, experiments have been arranged when "shipwrecked volunteers" drank sea water for 6 days; whereas it is reported that shipwrecked persons have survived 11 days without drinking sea or fresh water.

Very often it is said in reports that shipwrecked persons went mad and jumped overboard after drinking sea water.

The performances of the two physicians (Bombard and Lindemann) in crossing the Atlantic should be appreciated as they provided valuable knowledge on survival in small boats under most difficult conditions. Of greatest importance for survival is the struggle against thirst and cold, and only in the second place that against hunger. Whether the drinking of sea water should be allowed or not, the meanings of those two physicians are totally different. It may be that during the first days the drinking of sea water by shipwrecked persons may be harmless, but who can guarantee that these persons will be rescued after 5 or 6 days.

The question of drinking sea water was commented on in Hamburg by the learned societies. All of them agree that drinking of sea water is most precarious on physiological and biochemical grounds. With respect to the complicated conditions of the intracellular and extracellular medium, the intake of concentrated salt fluids might cause seriously deleterious, and irreversible effects. Also the intake of pressed fish fluid, containing soluble proteins and therefore nitrogenous combinations, means a certain strain as the produced ammoniac salts must be eliminated from the urine.

Careful investigations in this field were made in Great Britain and published in the brochure "The Hazards to Men in Ships Lost at Sea, 1940–1944." Based on statistical information, it is stated that the drinking of sea water is injurious and that that group which had drunk sea water showed a considerably higher death rate.

Although it is difficult to give at this time a definite opinion, we think that in accordance with the information known to us the drinking of sea water must be considered extremely precarious.

THE NEED for an adequate amount of drinking water in lifeboat and liferaft provisions is emphasized by the accompanying papers on the dangers of drinking sea water.

nautical queries

Q. What are the requirements governing the number and location of fire hydrants serving main machinery spaces aboard ocean passenger vessels?

A. Fire hydrants shall be of sufficient number and so located that all portions of main machinery spaces shall be capable of being reached by at least two streams of water, each of which shall be from a single length of hose from separate outlets.

Q. Will the mere washing of a gasoline tank free it of gases?

A. No. It should be well ventilated also.

Q. Where and how does the law require the name and calling port to be marked on vessels?

A. The name of every documented vessel of the United States is required to be marked upon each bow and upon the stern. The home port is required to be marked upon the stern. These names must be painted or gilded or consist of cut or carved or cast roman letters in light color on a dark background or dark color on a light background. The smallest letters used cannot be less than 4 inches in size. Every steam vessel of the United States must also have her name conspicuously placed in distinct plain letters not less than 6 inches high on each outer side of the pilothouse.

Q. List several (at least five) advantages claimed for turbo-electric drive over geared turbine propulsion of ships.

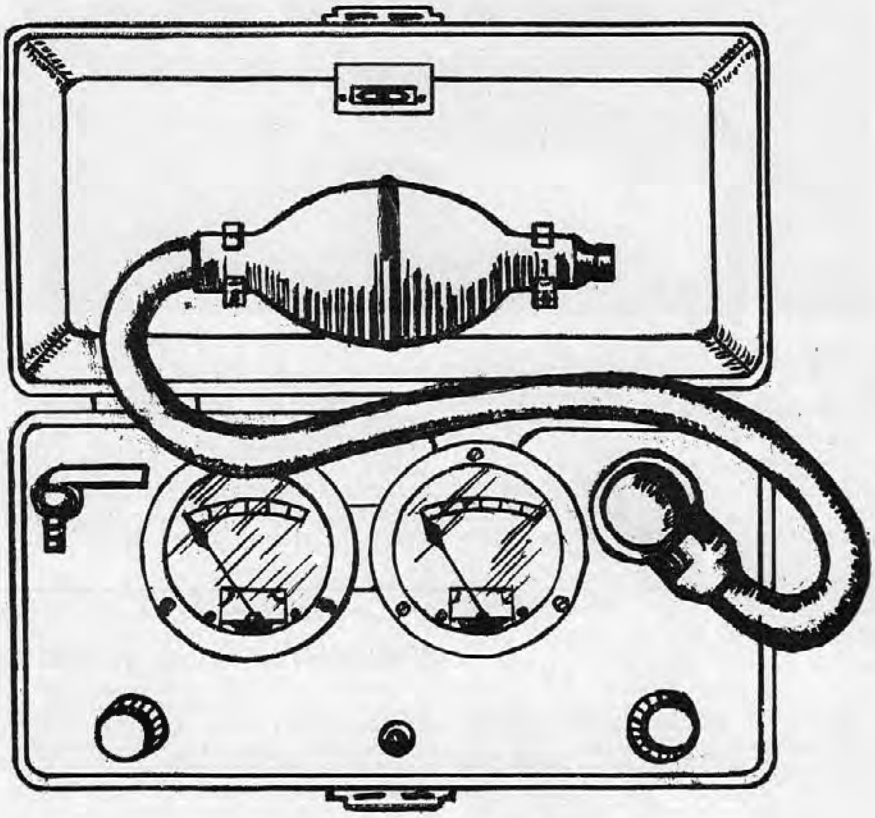
A. Advantages claimed for turbo-electric drive over geared turbine propulsion follow:

1. The turbine machinery does not have to be so precisely located with respect to the propeller shaft.
2. Full power astern is provided without requiring an additional turbine; better maneuverability.
3. Quieter in operation—less vibration.
4. Shorter propeller shaft may be employed.
5. Wheelhouse control is more practical.
6. Electric cables do not have to follow propeller shaft line; they may be placed overhead, around corners, etc.
7. More convenient arrangement of engineroom machinery.

COMBUSTIBLE GAS INDICATOR

Q. (a) What is the principle of operation of a combustible gas indicator?

(b) What precautions would you observe in order to assure proper readings from a combustible gas indicator?



A. (a) A combustible gas indicator operates on the principle that when a mixture of air and combustible gas or vapor is brought into contact with hot platinum wire, rapid combination of the combustible gas with the oxygen of the air takes place at the surface of the wire, raising its temperature and therefore its electrical resistance. This change in resistance, the amount of which depends on the concentration of combustible gas, actuates a sensitive meter.

(b) All instructions issued by manufacturers of such instruments must be carefully followed and all necessary calibrations carefully made. Unless all necessary precautions are taken, incorrect readings might lead to dangerous situations. In ports of the United States and wherever available, qualified chemists should determine gas hazard in accordance with Coast Guard regulations.

The switches for a combustible gas indicator should not be operated in a gaseous atmosphere as the case is not explosion proof.

COMMENDATION

Capt. Edward L. Kimbrell, master of the MV *Western Pioneer*, recently received a letter of commendation from the Coast Guard Commandant, Vice Adm. Alfred C. Richmond, for his part in the rescue of eight crew members of the Canadian fishing vessel *Queen Kathleen* which grounded and later broke up in the surf August 26, 1959 off Cape Lutke, Unimak Island, Alaska.

The letter of commendation was presented by Rear Adm. Allen Winbeck, Commander of the 13th Coast Guard District.

Captain Kimbrell intercepted a distress call from the *Queen Kathleen* when she grounded and immediately raced to her assistance. The *Western Pioneer* had to proceed dangerously close along the rocky shore to search for the stranded ship. Shortly after she was sighted, the *Queen Kathleen* began to break up. Her crew had previously made it to shore.

The *Western Pioneer* maneuvered in close and lowered a lifeboat which rowed ashore towing a surf line from the ship. The boat was carried onto a small sandy beach in a cleft in the rocks by a wave; the survivors jumped in and the boat was hauled off when the next wave struck. In this manner, the entire crew of eight was rescued without injury.

Admiral Richmond in his letter of commendation stated that "the prompt and effective response of the *Western Pioneer* in this emergency reflects the highest credit on the state of readiness of her officers and crew under your command."

The admiral directed that a copy of the letter of commendation be placed in Captain Kimbrell's service record and the service records of the crew members who were serving with him at the time.

The crew members aboard the *Western Pioneer were*: C. W. Barnhart, Chief Mate; William J. Boyle, 2d Mate; Charles W. Jenkins, Chief Engineer; Paul Willanger; Lelonde Hitchings; Francis Ferron; Clyde Thorpe, Jr.; Joseph Kennedy; Clarence Meyers; Jack Kiens; and Delbert B. Welch.

Others in the crew were Gale A. Hanke and Grady O. Tuener.

MERCHANT MARINE STATISTICS

There were 945 vessels of 1,000 gross tons and over in the active oceangoing U.S. merchant fleet on February 1, 1960, according to the Maritime Administration. This was 6 more than the number active on January 1, 1960.

There were 31 Government-owned and 914 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 26 vessels in the custody of the Departments of Defense, State, and Interior.

There was an increase of 6 active vessels and a decrease of 7 inactive vessels in the privately owned fleet. A tanker, *Penn Challenger*, was delivered from construction and the tanker, *Texas Trader*, was sold foreign for scrapping. A freighter, the *Mary Olson*, was being converted to a barge. This made a net loss of one in the total privately owned fleet of 1,022. Of the 108 privately owned inactive vessels, 52 dry cargo ships and 42 tankers were laid up for lack of employment, the same total as on January 1. The others were undergoing repair or conversion.

The Maritime Administration's active fleet remained the same, while its inactive fleet decreased by 14. Seventeen Liberty ships were sold for scrap. One vessel was transferred to the Navy. One Navy-owned ship was transferred to the Administration and 10 were placed in reserve fleet custody. This made a net loss of 7 in the Administration's fleet, or a total of 2,048. The total U.S. merchant fleet decreased by 8 to 3,070.

No new ships were ordered, but three Great Lakes bulk conversions contracts were placed. One new tanker, a passenger, and a container conversion were delivered for U.S. flag. The total of large merchant ships on order or under construction in U.S. shipyards remained at 67.

Seafaring jobs on active oceangoing U.S.-flag ships of 1,000 gross tons and over, excluding civilian seaman manning Military Sea Transportation Service ships, were 47,017. Prospective officers in training in Federal and State nautical schools numbered 2,092.

CORRECTION

The correct title of the article in the March issue of the *Proceedings* regarding the International Ice Patrol should have been "International Ice Patrol and Ice Observation Services, 1960."

SOURCES OF BEACH AND HARBOR OIL POLLUTION

The February 1960 issue of the *Proceedings* carried an article concerning pollution conditions of East Coast ports as reported by the American Petroleum Institute, Division of Transportation. This material is also extracted from the report "Oil Pollution Survey of the U.S. Atlantic Coast," copyrighted by the API in 1959.—Ed.

WHILE LOCATING SOURCES of oil pollution was not a prime objective of the survey, it would have been impossible to have conducted such a survey without becoming aware of some of the many and diverse ways in which oil appears in places where it isn't wanted. Personal bias, however, enters so strongly into matters of this kind that even an impartial observer experiences difficulty in evaluating what he has seen and in knowing how much reliance he can place upon the testimony of others. In view of this difficulty little more is attempted here than to outline sources of pollution met with during the survey or reported upon by those interviewed. The fact that a source is mentioned does not imply that it is a primary source or even a continuing source.

Accidents to shipping, for example, are highly irregular in occurrence and if there is any resultant pollution, and how much, depends upon such factors as the location of the accident, the type of cargo being carried, the extent of the damage, and, often of great importance, the wind and tidal conditions following the accident. Even intentional discharges from shipping cannot be classified with any precision. Harbor violations, to mention one category, may remain an insignificant source for long periods and then suddenly a bad case may occur. The same applies to most other sources in ports and harbors.

Unsuspected sources may crop up from time to time to cause difficulty. An example, reported to the writer, was an underground leakage carried by natural drainage to a section of a harbor with no previous record of oil pollution.

It would be a mistake, therefore, to try to single out one or two sources for remedial action and, at the same time, neglect other sources which may be contributing just as much, if not more, to the problem. Similarly, an attack upon oil pollution in a harbor isn't likely to accomplish much unless the campaign includes efforts to combat pollution of all types. When a broad, well-planned campaign is in effect, oil pollution begins to disappear almost automatically. This is illustrated by the vast improvement that has taken place on the Delaware at Philadelphia.

SOURCES FROM SHIPPING

a. Bilge and Ballast Tank Discharges

Bilge and ballast tank discharges (where ballast is carried in tanks alternately used for fuel oil or oil as cargo) are preventable sources which require both policing and educational work to eliminate. It was the general consensus of opinion among Coast Guard and Army Engineering personnel that there was little evidence of ignorance of the law in this regard. Discharges within territorial waters are in defiance of the law and, when occurring, are either an act of carelessness or are deliberate. Not infrequently ships arrive in port with excess oily water in tanks or bilges. Even where adequate port facilities are available for receiving oily wastes, some vessels will risk a fine by discharging into the harbor whenever there is a chance of being unobserved.

While violations do occur all too often, it was the general opinion of authorities consulted that deliberate discharges are on the wane. Energetic enforcement activities help keep the problem under control. And, it was pointed out, just the presence of Coast Guard or Army Engineer patrol craft is often enough to stop pollution before it happens.

b. Tank Cleaning Operations

These operations, if carried out beyond the 50-mile limit from shore agreed upon internationally through a "gentlemen's agreement," and more recently under the 1954 Oil Pollution Convention, should not contribute to coastal pollution. One large oil company, whose representative was questioned, makes it a practice of sending its tankers out at least 150 miles to clean tanks. Possibly other oil companies also follow this procedure. Tank cleaning operations are required before a vessel goes to a shipyard for periodic overhaul and repair, and whenever there is a change in

(Continued on back of Poster)

YOUR HELP IS NEEDED TO STOP OIL POLLUTION

DISCHARGE OF OIL IN COASTAL WATERS IS ILLEGAL AND PUNISHABLE

(Title 33 U.S.C. Sec. 432—437)

type of cargo carried. For example, a tanker hauling crude oil to a certain port may wish to reload at that same port with a refined product. In such a case, tanks would be cleaned in port and waste delivered to proper shore facilities. On the other hand, if the refined product was to be loaded at another port, tanks might be cleaned at sea in order to save time.

c. Leakage from Hulls

Leakage of oil from the hulls of vessels was more of a problem when vessels were riveted instead of welded. There are still riveted vessels in use today so that this is a source not to be lost sight of altogether.

d. Casualties

Collisions, fires, groundings, and other casualties to ships that result in freeing fuel oil or oil carried as cargo, as has been mentioned, do occur at irregular intervals. Unavoidably many accidents do occur as a result of bad weather, but in view of the excellent navigational aids that exist today, accidents in good weather must often be attributed to carelessness. Several easily avoidable accidents and the oil pollution that resulted were described to the writer at one of the ports visited.

In one instance a ship struck bottom in good weather during the winter and, as a result, released about 40,000 barrels of heavy oil. Under conditions of cold icy water the heavy oil sank to the bottom. But with warmer weather the oil came to the surface, and for some time thereafter was a source of beach pollution. On another occasion, a ship in a crowded port went aground and released oil. This oil was a continuing source of trouble about docks and anchorages for a period of 3 months.

e. Spills

1. Spillage when ships are bunkering with fuel oil is of fairly common occurrence and can add appreciably to the oil pollution problems in ports and harbors.

2. Spillage during loading or nnloading of oil as cargo is a problem similar to the one above, and reflects, in many instances, inexperience and carelessness on the part of operators. There is reason to believe that the problem is more serious at facilities where operations are conducted infrequently and where therefore, in some instances, personnel are inadequately trained, or do this work on a part-time basis.

Spillage may occur with uncoupling of hoses or overfilling of tanks. There are opportunities for error in the rate, pressure, and temperature under which oil is pumped. Breaks in hose lines these days are reported to be very rare indeed. Safeguards against hazards of these kinds at oil terminals are to be seen in more modern equipment, well-trained personnel, and in receptacles for receiving the runoff from any spills that may occur. Runoff is piped to oil separators and the oil itself is reclaimed.

f. Small Craft

Oil pollution from small craft is of some consequence particularly during the summer when the largest numbers are in operation. This is a problem related to but differing in many respects from that attending oceangoing vessels. There is the same problem of bilge pumping but with small craft the oily waste is likely to be of a lighter grade and hence less persistent. Yet, at the same time, far less precaution, as a rule, is taken about pumping oily wastes within territorial waters. When hundreds of pleasure craft, for example, are operating in restricted waters the problem becomes enough of a nuisance to interfere with bathing and other recreational activities.

SOURCES AT SHORE OIL TERMINALS, OIL STORAGE DEPOTS, PIPE LINES, AND REFINERIES

Mention has already been made of problems connected with loading and unloading at shore terminals. Most terminals, it should be added, have facilities for accepting oily wastes from ships. These wastes, in many cases together with effluents from refineries, are processed in large pond type separators. Our ports, for the most part, are well equipped to handle such waste. In various ports private barge companies make a practice of accepting oily waste from ships. They charge a fee for this service, and in turn, can discharge the waste oil at shore facilities where it can be reclaimed for later sale.

Since the writer lacks firsthand information generally on land based oil facilities, little more will be attempted here than to list some of the hazards or sources which may from time to time contribute to oil pollution in harbors.

1. Fires, explosions, floods, cave-ins, and similar disasters which may damage or destroy facilities for storing or transporting oil.

2. Retention of obsolete and worn-out equipment which may be unsafe from an oil pollution standpoint.

3. Effluents from industrial plants not treated sufficiently to remove oil.

4. Spillage in the handling of oil after it has been unloaded from ships.

5. Breaks in pipelines, storage tanks, or other handling equipment.

DISTRIBUTION OF DANGEROUS WINDS IN A HURRICANE

By Vance A. Myers

Hydrometeorological Section, U.S. Weather Bureau

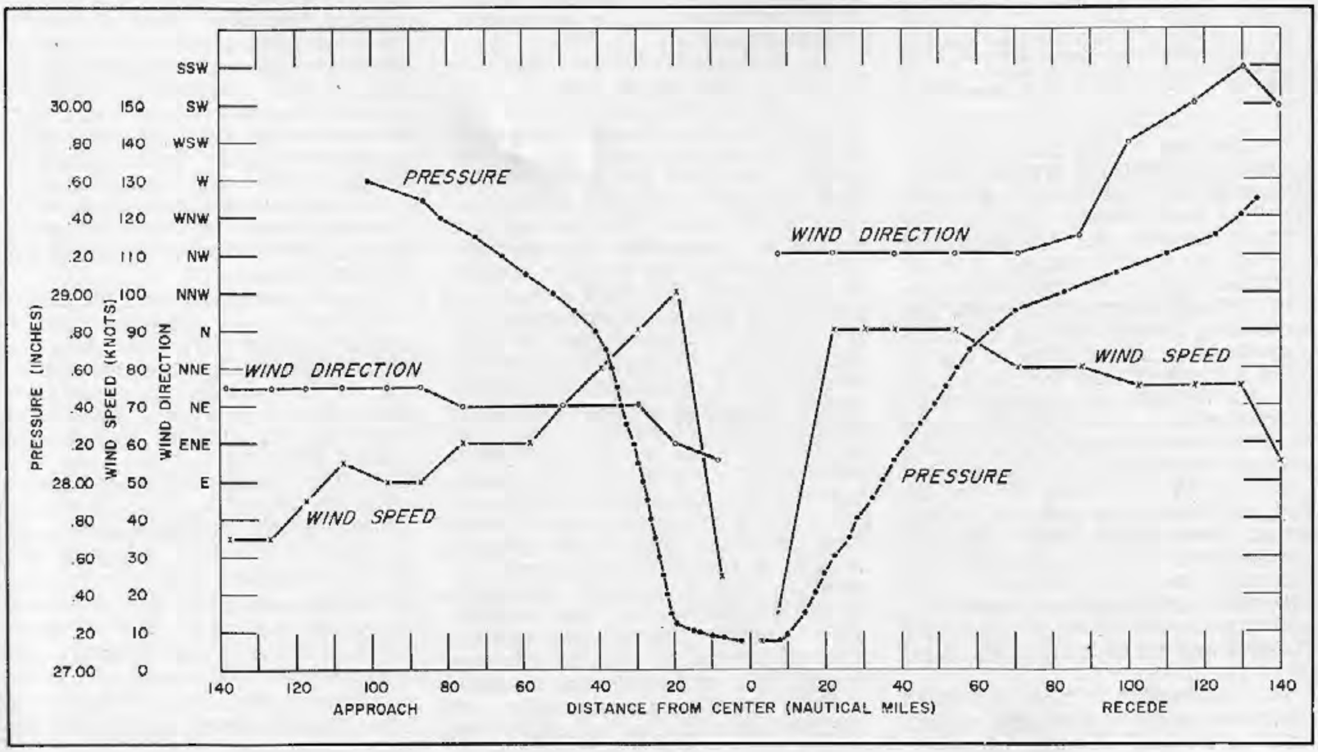


Figure 1.

THE FIRST and foremost rule for the location of the most dangerous winds in a hurricane is that the strongest winds are near the center. The strongest winds form a roughly circular band around the eye of the storm, and are found in most hurricanes at 10 to 40 miles from the geometrical center of the storm. Many cross-sectional views of the wind speed distribution through a hurricane have been obtained from the wind reports of ships which had the unfortunate experience of sailing through a hurricane center. One such profile is shown in figure 1, from a naval vessel that navigated through the hurricane of September 1944 at about 28° N. near the Bahamas. This very severe hurricane later capsized two vessels off the coast of North Carolina. As indicated in figure 1 the extreme winds decrease abruptly from the wall of the hurricane eye inward and except for local squalls diminish more gradually along a line outward from the eye wall. This pattern is characteristic of all well-developed hurricanes.

A second often quoted rule for the distribution of wind in a hurricane is that the right side is the "dangerous semicircle" and that the left side is the "navigable semicircle." (The terms right and left are the directions as sensed by an imaginary observer standing at the hurricane's center and facing in the direction that the storm is drifting.) The remainder of this article will be devoted to the applications and limitations of this rule. This rule, like many useful rules, is only partly correct, and must be used judiciously.

The terminology "dangerous" and "navigable" semicircles appears to have evolved during the second half of the nineteenth century soon after it became common knowledge among mariners that hurricanes were revolving storms and not straight-line winds. There appear to be two bases for the rule, one derived from experience, the other from deduction. Experience shows that indeed in most hurricanes the winds are stronger, or gales prevail over a wider area, on the right hand side than on the left. An average hurricane wind field prepared by Hughes (1), figure 2 shows this tendency. The chart is a map of averages of the wind speeds, in 13 Pacific typhoons as measured by low-level aircraft reconnaissance, near 1,000 feet elevation. Winds at this elevation would be somewhat faster than surface winds but the overall pattern would be the same. In preparing this diagram all storms were oriented the same with respect to their direction of motion as shown by arrow in figure 2, rather than with respect to points of the compass.

The deduction is that the hurricane winds are the sum of two parts, namely, the rotary motion of the storm and the forward motion of the storm. Setting a phonograph to playing then dragging it across a room would impose an analogous two-component motion on the revolving record. According to the deduction, since the two motions are in the same direction and are additive on the right side of the hurricane, but opposite to each other on the left, the winds will of necessity be strongest on

ABOUT THE AUTHOR

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He spent two years aboard Coast Guard vessels, including the *Duane*, *Hamilton*, *Menemsha*, *Dearborn*, and others, on Atlantic Weather Patrol during World War II.

Mr. Myers is presently the Assistant Chief of the Hydrometerological Section of the Central Office of the Weather Bureau, which advises the U.S. Army Corps of Engineers as to the behavior and characteristics of hurricanes in connection with civil works programs for the protection of our shores.

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the right side. This idea was presented in the 1880's by William Ferrel, who had great insight into the nature of winds and storms. He was the first to account for the deflective effect of the earth's rotation (Coriolis force) on winds. However, investigation and reflections in the last few years have shown that the rotation-plus-forward motion concept applies to solid bodies, where the position of each part of the body is permanently fixed relative to the other parts, and also to fluid restrained by a boundary, such as water spinning in a pail, but does not apply to freely-moving air with no restraining internal or external force. Hurricane winds are unrestrained and free-moving and fall into the latter category. The concept of rotation-plus-forward motion as accounting for the asymmetry of hurricane winds is therefore losing its acceptance.

It is interesting to note that Reid (2), who prepared the first sailor's rules for navigating in a hurricane, in referring to the right front quadrant as the quadrant of greatest danger (left front quadrant in Southern Hemisphere) implies no notion that the winds are stronger here than in other quadrants. He had in mind rather, that a sailing vessel scudding before the wind in this quadrant runs the grave risk of being carried around in front of the moving storm and encountering there the extreme winds near the center as the storm progresses forward.

The factor most influential in determining the distribution of wind intensities in the hurricane is the pressure gradient, that is, the spacing of the isobars on a sea level weather chart. The closer the isobars are to each other, the stronger the pressure gradient, or force. The winds of the hurricane encounter considerable frictional resistance to their motion in blowing over the rough ocean surface. The friction is approximately proportional to the square of the wind speed. Thus, while light winds encounter slight resistance, the friction is great for strong winds, for example, approximately 16 times as great for an 80-knot wind as for a 20-knot wind. The only force that overcomes the friction is the horizontal pressure force. The hurricane surface winds must therefore blow across isobars from high toward lower pressure in order to have, so to speak, the push of the pressure force from behind. This is nearly always at an oblique angle to the isobars and not directly across. The wind direction is complicated by the deflective effect of the rotation of the earth, and also by centrifugal force, due to the fact that the path of the air is curved, but these do not provide any driving force to overcome friction.

As air moves from a region of one isobaric spacing to a region of closer spacing, the wind will tend to rise in an attempt to establish a new balance between the pressure force which is hastening the wind onward and the frictional force which is retarding it. The reverse is true for decreasing pressure gradients. This principle is related to, but is not the same as, the geostrophic wind principle which relates isobar spacing to wind speed at elevations sufficiently great that surface friction is of no concern. The surface wind speed (in a hurricane) tends toward values proportional to the square root of the pressure force, while in the geostrophic formula the speed is directly proportional to the pressure force.

Thus it is seen that the most extensive area of gales will tend to be on that side of the hurricane where the isobars are closest together. Frequently the outer isobars of the hurricane are compressed between the storm and an adjacent "high"; this is most often toward the right side of the storm but is by no means necessarily on that side. A great variety of isobaric and wind asymmetries are encountered when all stages in the life of a number of hurricanes are considered. No single rule of thumb as to the bearing of the strongest winds will apply consistently. At more northerly latitudes a high pressure area approaching a hurricane from the northwest may cause the most dangerous winds in the left semicircle for a time if the hurricane moves to the right of the high pressure area.

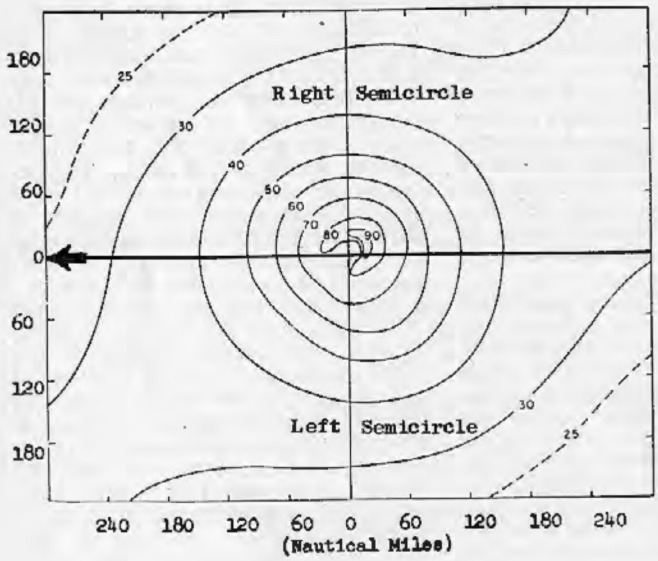


Figure 2.

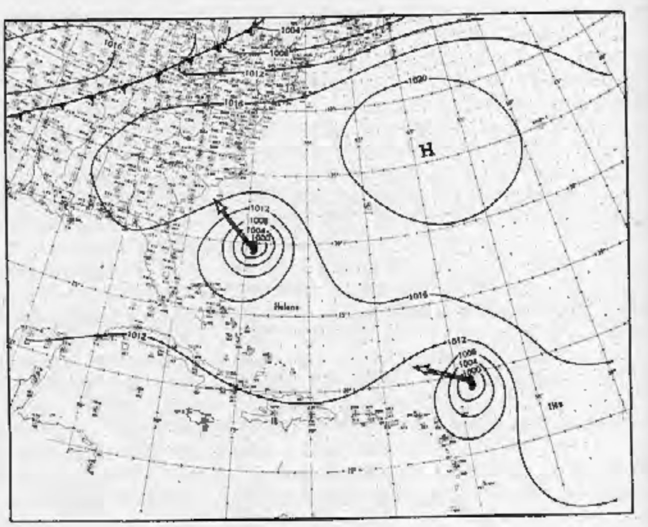


Figure 3.

Another important hurricane characteristic is the tendency for increasing symmetry toward the center of both isobars and wind speeds, especially in the more severe storms. It should always be assumed that violent winds completely encircle the eye in a severe hurricane even though the area of gale winds of less than hurricane force is more prominent in one quadrant than another. In line with this typical distribution, Weather Bureau hurricane warnings often read somewhat as follows: "Highest winds estimated 100 knots near center. Winds of hurricane force extend out 90 miles around the center (no quadrant specified) and gale force winds extend outward 250 miles in the northern and 150 miles in the southern semicircle.

EXAMPLES OF TROPICAL STORM WIND DISTRIBUTIONS

The often encountered closer spacing of isobars on the right side of a hurricane was illustrated simultaneously by hurricane Helene and Ilsa on September 25, 1958, figure 3. The wind distributions are best described by the hurricane advisories issued to the public at the time. "Miami Weather Bureau Advisory No. 10, Helene, 5 p.m., e.s.t., September 25, 1958. . . . The storm is continuing on a northwestward course at about 6 miles per hour. Intensity has remained about the same during the day and highest winds are still estimated at 90 m.p.h. in squalls extending outward 100 miles in the northeast semicircle and 40 miles to the southwest. Gales extend outward 220 miles in the northeast semicircle and 120 in the southwest semicircle as the storm area very slowly expands. . . ." The advisory from the San Juan office of the Weather Bureau at the same time on Ilsa said, ". . . It is moving west-northwest at 15 m.p.h. Movement during the next 12 hours is expected to be west-northwest at about the same speed. Highest winds are estimated to be 80 m.p.h. over a small area near the center and hurricane winds extend outward 75 miles in the northeast semicircle and 30 miles in the southwest semicircle. Gale force winds extend outward 200 miles in the northeast semicircle and 80 miles in the southwest semicircle. Hurricane Ilsa is expected to increase gradually in size and intensity during the next 12 to 24 hours."

A day later, when Helene had become extremely intense, insofar as observers were able to judge from aircraft reconnaissance and land-based radar, the storm was symmetrical and the Miami warning read: "Highest winds are 125 m.p.h. near the center with hurricane winds extending 65 miles out in all directions and gale winds outward 150 miles in most directions."

The most noteworthy recent example of highest winds in the left semicircle was at one stage in hurricane Carrie, the most severe hurricane of the 1957 season in the Atlantic. On September 21, 1957, the German schooner, *Pamir*, capsized in the northern side of Carrie, some 550 miles west-southwest of the Azores. The German meteorologist Rodewald (3) of the Ocean Weather Central (Seewetteramt) at Hamburg estimates from consultation of logs of other ships that at the time of the sinking, wind forces in the left rear quadrant (frequently a relatively favorable quadrant) were 2½ forces higher on the Beaufort scale than at corresponding positions in the right front quadrant (frequently a relatively unfavorable quadrant). This is readily accounted for by the presence of a "high" to the northwest crowding the isobars on that side with no corresponding intense atmospheric pressure feature on the southeast. See figures 4 and 5. Rodewald speculates that the ship's master may have sailed across the front of the advancing hurricane to the most severe part of the storm in an attempt to follow the rule to gain the "navigable" semicircle, which turned out to be the most dangerous one. This, of course, was contrary to Reid's rule not to run before the wind in the right front quadrant.

An example of a tropical storm of less than hurricane intensity with the strongest winds in the left semicircle is Carla, which passed north of Bermuda on September 9–10, 1956. The Weather Bureau tropical storm advisory from Miami is sufficiently descriptive. "At 11 p.m., e.s.t., tropical storm Carla was located near latitude 34.8° N., longitude 65.5° W., or about 550 miles east of Cape Hatteras, N.C. The storm is now moving toward the northeast at about 25 m.p.h. Highest winds are estimated to be 50–60 m.p.h. with gales extending outward 400 miles to the northwest, 250 miles to the northeast, and about 180 miles in the southern quadrant. The large area of gales to the north of the storm is, in part, due to the high pressure system over the United States."

SUMMARY OF SUGGESTIONS TO MARINERS

The Suggestions here pertain only to the distribution of dangerous wind speeds within a hurricane and do not include other questions important to navigational tactics, such as predicting the storm track.

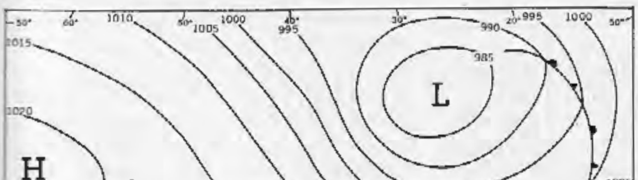


Figure 4.

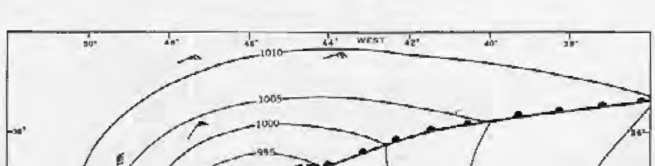


Figure 5.

The strongest winds are near the center, around the eye. The central area should be avoided at all bearings in fully developed hurricanes.

The largest area of strongest gales will tend to be found on the side of the storm where the isobars are closest together. As a detailed weather map is rarely available at sea, the warnings broadcast by radio are the best guide to distribution of gales. The forecast office from which the warnings emanate may have available direct wind observations in various quadrants from ships and aircraft as well as indirect indications.

Lacking radio warnings, one should remember that the right semicircle will usually but not always be more severe than the left. In tropical waters the right semicircle is more dangerous than the left a very high percentage of the time. This is especially true for hurricanes moving toward the west. At more northerly latitudes the right semicircle is usually more dangerous than the left but less frequently than at lower latitudes. If it is known that a vigorous "high" lies on a particular bearing from a hurricane, this increases the odds of stronger winds in the sector on that side of the hurricane.

The concept of rotation-plus-forward motion as applied to hurricanes is losing acceptance and should not be regarded as a physical law governing the wind distribution in hurricanes.

REFERENCES

1. Lawrence A. Hughes, "On the Low-Level Wind Structure of Tropical Storms," *Journal of Meteorology*, December 1952, p. 424.
2. Reid, *The Law of Storms*, London, 1850.
3. Martin Rodewald, "Hurricane Carrie and PAMIR Disaster," *Weather*, October 1958, pp. 337–349.

ST. MARYS RIVER SPEED REGULATIONS

REAR ADM. J. A. KERRINS, Commander, Ninth Coast Guard District, finds the safety of navigation of vessels in certain portions of the St. Marys River and Lake Nicolet hazarded by the necessity for two-way traffic in the Middle Neebish Channel during the temporary closure of the West Neebish Channel and, pursuant to the authority contained in 33 CFR 92.49(c), prescribes the following changes to the existing speed regulations in the areas hereinafter defined:

(a) A vessel of 50 gross tons or over shall, when either upbound or downbound, at no time exceed a speed of 10 statute miles per hour over the ground between the following points in the St. Marys River:

1. From Richardson Point (Buoy No. 30) to Nine Mile Point.
2. From Six Mile Point to East End of Brady Pier.
3. From South Pier West Light to Big Point.

(b) A vessel of 50 gross tons or over shall, when either upbound or downbound, at no time exceed a speed of 12 statute miles per hour over the ground between the following points in the St. Marys River:

1. From Nine Mile Point to Six Mile Point.

The foregoing information will be the subject of a Special Local Notice to Mariners to be disseminated prior to the commencement of the 1960 navigation season on the Great Lakes.

A schedule of distances and times for the St. Marys River shown here reflects these changes. The schedule appearing on page 58 of CG–172 (May 1, 1959), Rules of the Road, Great Lakes, will not be applicable during 1960.

ST. MARYS RIVER—SCHEDULE OF DISTANCES AND TIMES

COURSES	Distance in statute miles	Speed permissible	Minimum time in minutes at speed permissible	Maximum time allowed at minimum speed of 5 miles per hour
UPBOUND				
Richardson Point (Buoy No. 30) to Lookout Station No. 1	5.6	10	34	67
Lookout Station No. 1 to Lookout Station No. 2	5.6	10	34	67
Lookout Station No. 2 to Nine Mile Point	6.4	10	38	77
Nine Mile Point to Six Mile Point	3.0	12	15	36
Six Mile Point to Lookout Station No. 3	4.6	10	28	55
Lookout Station No. 3 to East End of Brady Pier	2.4	10	14	29
South Pier West End Light to Big Point	2.3	10	14	28
DOWNBOUND				
Big Point to South Pier West End Light	2.3	10	14	28
East End of Brady Pier to Lookout Station No. 3	2.4	10	14	29
Lookout Station No. 3 to Six Mile Point	4.6	10	28	55
Six Mile Point to Nine Mile Point	3.0	12	15	36
Nine Mile Point to Lookout Station No. 2	6.4	10	38	77
Lookout Station No. 2 to Lookout Station No. 1	5.6	10	34	67
Lookout Station No. 1 to Richardson Point (Buoy No. 30)	5.6	10	34	67

MSTS SHIP HONORED

Private shipping and maritime safety interests recently honored a Navy transport at Oakland (Calif.) Army Terminal for an outstanding demonstration of mercy, seamanship, and safety at sea. The USNS *Sgt. Jack J. Pendleton* received the Ship Safety Achievement Citation of Merit, awarded jointly by the American Merchant Marine Institute and the Marine Section, National Safety Council, for her rescue December 18, 1958, of the entire crew of the foundered Japanese fishing vessel *Chiyoh Maru*.

Presentation of the citation was made to the *Pendleton's* master by Vice Adm. M. E. Curtis, Commander, *Western Sea Frontier*, in ceremonies held aboard the *Pvt. Joe E. Mann*, a sistership. Present as luncheon guests of the Military Sea Transportation Service, operator of the ship, were representatives of the Institute and the National Safety Council, the Maritime Administration, and other government agencies, and a group of Pacific Coast shipping industry leaders.

The *Sgt. Jack J. Pendleton*, a war-built Victory ship, was en route to Guam late in 1958 on a routine supply mission when she received radio orders to divert to the reported position of the sinking *Chiyoh Maru*. Expert navigation brought her to the spot 28 hours later, to find only the 24-man crew of the fishing boat, standing on a makeshift raft described by the *Pendleton's* master, Capt. Hans C. Von Weien, as consisting of four oil drums, various wooden boxes and fishing balls, held together by a fish net and riding the waves in sections. The exhausted Japanese were all taken aboard safely, cared for, and given cigarettes and $5 apiece by the MSTS ship's crew.

TABULATION OF UNSAFE PRACTICES

July Through December 1959

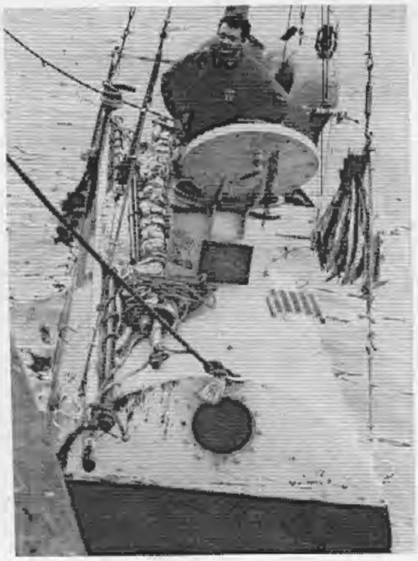
	Atlantic	Great Lakes and Rivers	Gulf	Pacific	Total
A. Access to Vessel					
Gangways, accommodation ladders, etc.					
1. Length, width, strength, etc., inadequate	21	11	12	5	49
2. Rigged or secured improperly	28	9	11	5	53
3. Angle too steep	15	16	3	----	34
4. Not clear at either end	7	5	2	2	16
5. Water discharging onto	1	1	----	5	7
6. Hand ropes or rails not provided or inadequate	24	17	9	6	56
7. Insufficient number	2	1	----	----	3
8. Lifeboat or other object suspended over access	1	1	----	7	9
9. Ring life buoy with lanyard not provided or inadequate	31	22	21	7	81
10. Other	11	2	4	----	17
B. Access to Spaces on Board Vessel					
Ladders					
11. Rigged improperly	6	1	1	----	8
12. Rungs, steps or treads missing or loose	35	14	8	8	65
13. Deteriorated or weakened	29	6	9	5	49
14. Hand rails missing or inadequate	17	5	10	4	36
15. Doors or passages cluttered	18	5	4	7	34
16. Escape means blocked or locked	14	15	2	5	36
17. Other	9	5	----	9	23
C. Deck and Hull Openings					
18. Hatch covers, dangerously piled or placed	4	1	----	2	7
19. Hatch covers, missing or defective	7	1	8	1	17
20. Hatch covers, securing means defective	10	22	14	1	47
21. Hatch beam locking lugs missing or defective	3	3	2	10	18
22. Lifelines, chains, rails or guards missing or inadequate	35	9	14	12	70
23. Other	4	2	2	2	10
D. Decks and Platforms					
24. Slippery due to oil, grease, etc	48	37	35	14	134
25. Cluttered	31	7	7	6	51
26. Floor plates or gratings loose or not in place	26	8	6	10	50
27. Rails and guards missing or inadequate	33	21	9	13	76
28. Other	7	7	1	----	15
E. Cargo Handling					
29. Safe load not marked on booms	3	1	4	3	11
30. Guys, falls, booms, etc., improperly rigged	----	----	----	----	----
31. Overloading gear	----	----	----	----	----
32. Jury rig winch controls	----	----	----	----	----
33. Failure to use guards and gates of cargo elevators and escalators	2	----	----	----	2
34. Using defective cargo gear	1	----	3	1	5
35. Smoking prohibition disregarded	8	2	1	7	18
36. Stowage or handling of cargo or gear	----	2	----	1	3
37. Other	4	----	----	3	7
F. Lifesaving Equipment					
38. Not ready for use	58	9	20	10	97
Lifeboats					
39. Hoisting fully loaded	----	1	----	3	4
40. Personnel riding to fully stowed position	----	----	1	----	1
41. Preventive lashings not used when working in boat	----	----	----	4	4
42. Winch power not shut off when using hand crank or performing maintenance	1	----	----	----	1
43. Starting engine without ventilating	----	----	----	----	----
44. Bypassed safety devices	1	----	1	----	2
45. Tricing and frapping lines improperly used	3	----	----	3	6
46. Davit span life lines not ready for use	4	----	2	1	7
47. Other	44	13	20	12	89
G. Firefighting Equipment					
48. Not ready for use	54	15	20	66	155
49. Fire screen doors bloacked	3	1	----	4	8
50. Other	17	9	14	17	57
H. Ventilction					
51. Neglect to observe safety precautions prior to entering	1	----	1	----	2
52. Use of toxic solvent in confined spaces	1	----	----	----	1
53. Grease, dust, litter in ventilation system	4	23	2	2	31
54. Cowls, mushrooms, etc., frozen	6	1	7	3	17
55. Insufficient ventilation	6	1	4	3	14
56. Other	11	2	5	1	19
I. Electrical					
57. Extension cords defective	23	46	5	12	86
58. Portable equipment not grounded	9	44	7	18	78
59. Overfused circuits	36	5	11	7	59
60. Jury rigged circuits	59	51	26	20	156
61. Caps for receptacle outlets not in place	49	23	22	58	152
62. Switch and fuse box panels in passenger spaces left unlocked	9	----	----	5	14
63. General alarm bells muffled or dampened	18	5	13	14	50
64. Vapor globes and guards not in place	91	82	40	56	269
65. Use of defective equipment in hazardous spaces	12	8	1	1	22
66. Other	39	44	18	25	126
J. Machinery					
67. Failure to take safety precautions in lighting-off boiler	2	----	5	4	11
68. Spring loaded valves on sounding pipes secured in open position or not in place	10	----	7	24	41
69. Machinery guards not in place or defective	33	15	4	14	66
70. Failure to block or safeguard steam valves when working on steam lines or inside a boiler, evaporator, etc	----	1	----	----	1
71. Other	28	7	20	22	77
K. Welding, Burning, Heating, or Riveting					
72. No gas-free certificate for "hot work" where required	3	----	5	----	8
73. Inadequate fire watch	2	----	----	----	2
74. Ventilation insufficient	1	----	----	----	1
75. Personnel protective equipment inadequate	1	----	----	----	1
76. Other	1	1	1	----	3
L. Tank Vessels					
77. Ullage holes or expansion trunk openings open without flame screens	6	22	24	1	53
78. Vent header drains left open	----	1	3	----	4
79. Deck battens or wooden gratings not provided where needed	----	2	----	----	[illegible]
80. Failure to comply with "Declaration of Inspection Prior to Bulk Cargo Transfer"	----	----	----	----	----
81. Other	19	58	27	5	109
M. Ferry and Excursion Vessels					
82. Vehicles not properly secured during navigation	1	2	----	----	3
83. Vehicle motors not turned off during navigation	----	----	----	1	1
84. Insufficient clearance between vehicles for egress of passengers in emergency	1	1	1	----	3
85. Barricades and gates opened prior to docking	1	----	----	----	1
86. Passenger supervision inadequate	1	----	----	----	1
87. Other	2	6	----	----	8
N. Miscellaneous					
88. Job supervision inadequate	5	2	1	5	13
89. Lack of supervision in maintenance of equipment	12	5	4	4	25
90. Lack of supervision in conducting drills	1	5	----	----	6
91. Lack of sufficient personnel	2	----	6	2	10
92. Oil, fuel and/or debris in bilges	60	7	5	7	79
93. Stoves, ranges, heaters, hot plates, lanterns, etc., not secured against vessel's movement	4	----	----	----	4
94. Inadequate deck, gangway, passageway, lighting	1	2	2	5	10
95. Unsanitary conditions	11	7	2	1	21
96. Chain falls improperly used	----	----	----	----	----
97. Lack of precautions while effecting repairs (including warning notices, etc.)	3	1	1	4	9
98. First Aid equipment not ready for use (medical chest, litter)	----	----	----	----	----
99. Stowage of ship's stores improper	11	6	2	7	26
100. Access over deckloads	----	----	1	----	1
101. Other	30	4	6	23	63
Grand Total	1,306	797	569	635	3,307

THREE MEN IN A TUB

Diogenes was the name given to a converted water tank from which a trio of Montreal adventurers narrowly escaped death after an attempted trans-Atlantic crossing. The craft, as shown here tied to the dock before its departure from Newfoundland, was a yellow cylindrical tank 18½ feet long and 6½ feet in diameter, with an escape hatch forward, steering platform aft, and a 15-foot mast.

Twenty miles outside of St. John's a fire from a cooking stove set the interior of the tank ablaze destroying all stores and equipment. When the flames spread, the men fired red flares and attracted the attention of the freighter *Ramon de Larrinaga*, which rescued the men.

The abandoned tank was declared a menace to navigation and ordered destroyed.



NEW MARINERS' BIBLE FOR PACIFIC COAST AND HAWAII

The latest edition of U.S. Coast Pilot 7, Pacific Coast—California, Oregon, Washington, and Hawaii—which has just been published by the U.S. Coast and Geodetic Survey, U.S. Department of Commerce, supersedes the 1951 edition of Coast Pilot 7 and cancels the 1950 edition of Coast Pilot 10, which formerly covered the Hawaiian Islands in a separate volume.

A combination atlas, encyclopedia, geography text, and nautical guidebook, the Coast Pilot contains information of importance to the navigator of U.S. coastal waters. Most of this information cannot be shown conveniently on the standard nautical charts and is not readily available elsewhere. Subjects include landmarks, navigation regulations, channels, anchorages, dangers, routes, weather, ice, pilotage, and port facilities.

The Pacific coast has phenomena that are all its own. San Francisco's fogs are of three kinds: The summer afternoon sea fog that forms a cliff of white vapor and moves inland at an average of 16 miles an hour; the tule fog which is a low-lying dense land or river fog that forms on winter mornings and drains slowly seaward; and nondescript fog, consisting of a mixture of city smoke, dust and vapor, which drifts slowly seaward in the morning, and returns as a dark cloud about 1 p.m. before the west wind.

The Santa Ana, a desert wind that blows offshore, usually in or near San Pedro Bay, may reach a speed of 52 knots and gives the mariner little warning. Rocks and currents make coastwise navigation dangerous, especially in thick weather; many of the rocks are marked by kelp, which can be seen on the surface during the summer and autumn.

The first Pacific Coast Pilot was written a little over a century ago by George Davidson, one of the Survey's most renowned scientists, and appeared in the Survey's report for 1858. Davidson's successors, although they must speak the language of the sea, have kept high standards of clarity and English.

The new 383-page eighth edition covering the Pacific coast and Hawaii is based on the work of the Coast and Geodetic Survey and includes the results of Coast Pilot field inspections made in 1957. It contains nautical information that required more than 800 pages in the previous books. New editions are published about every 7 years, and supplements, containing changes and new information, are published annually and distributed free. The latest supplement together with Notices to Mariners subsequent to it will correct the Coast Pilot to date.

Coast Pilot 7 is available at the sales agents, district offices, and Washington office of the Coast and Geodetic Survey. Price, $3 a copy.

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, Government Printing Office, Washington 25, D.C.]

TITLE 33—NAVIGATION AND NAVIGABLE WATERS

Chapter I—Coast Guard, Department of the Treasury

[CGFR 59-63]

INFORMATION TO BE FURNISHED BY APPLICANTS FOR, AND HOLDERS OF, SPECIAL VALIDATION ENDORSEMENT OR COAST GUARD PORT SECURITY CARDS

It is hereby found that compliance with the notice of proposed rule making, public rule making procedures thereon, and effective date requirements of the Administrative Procedure Act is contrary to the public interest since these amendments of 33 CFR Parts 121 and 125 are to give effect to Executive Order 10173, as amended, and in the public interest should be placed in effect as soon as possible.

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

SUBCHAPTER K—SECURITY VESSELS

PART 121—SPECIAL VALIDATION ENDORSEMENT FOR EMERGENCY SERVICE FOR MERCHANT MARINE PERSONNEL

SUBCHAPTER L—SECURITY OF WATERFRONT FACILITIES

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

(Federal Register of February 24, 1960.)

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from 1 February to 29 February 1960, inclusive, for use on board vessels in accordance with the provisions of Part 147 (46 CFR 146–149) of the Dangerous Cargo Regulations are as follows:

CERTIFIED

Reslabs, Inc., 2155 West 80th St., Chicago 20, Ill., Certificate No. 419, dated 1 February 1960, NO. 110 EMULSION CLEANER-DEGREASER.

Lamco Chemical Co., Inc., 33 Commercial Wharf, Boston 10, Mass., Certificate No. 420, dated 4 February 1960, LAMCO RUG AND UPHOLSTERY SHAMPOO.

Lamco Chemical Co., Inc., 33 Commercial Wharf, Boston 10, Mass., Certificate No. 421, dated 4 February 1960, LAMCO MIRACLE CLEANER NO. 111.

Chemical Compounding Corp., 262 Huron St., Brooklyn 22, N.Y., Certificate No. 422, dated 11 February 1960, QUIST NO. 1400.

Lamco Chemical Co., Inc., 33 Commercial Wharf, Boston 10, Mass., Certificate No. 423, dated 17 February 1960, LAMCO DIET-KITCHEN DETERGENT (ODORLESS).

Dunham Chemical Co., 840 North Michigan Ave., Chicago 11, Ill., Certificate No. 424, dated 24 February 1960, DUNHAM D-111.

Dunham Chemical Co., 840 North Michigan Ave., Chicago 11, Ill., Certificate No. 425, dated 24 February 1960, DUNHAM D-122.

AFFIDAVITS

The following affidavit was accepted during the period from 15 January 1960 to 15 February 1960:

Rothwell Brass Foundry, Inc., Mill Street (Lonsdale), Cumberland, R.I. CASTINGS.

"Curb Indicator! . . . Her old man is really getting fussy!"

Courtesy Maritime Reporter

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. Date of each publication is indicated following title.

CG No.	*Title of Publication*
101	Specimen Examinations for Merchant Marine Deck Officers. 7–1–58
108	Rules and Regulations for Military Explosives and Hazardous Munitions. 8–1–58
115	Marine Engineering Regulations and Material Specifications. 3–1–58
123	Rules and Regulations for Tank Vessels. 12–1–59
129	Proceedings of the Merchant Marine Council. Monthly
169	Rules of the Road—International—Inland. 5–1–59
172	Rules of the Road—Great Lakes. 5–1–59
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. 9–2–58
182	Specimen Examinations for Merchant Marine Engineer Licenses. 5–1–57
184	Rules of the Road—Western Rivers. 5–1–59
190	Equipment Lists. 4–1–58
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel. 5–1–59
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. 3–2–59
257	Rules and Regulations for Cargo and Miscellaneous Vessels. 3–2–59
258	Rules and Regulations for Uninspected Vessels. 9–1–59
259	Electrical Engineering Regulations. 9–2–58
266	Rules and Regulations for Bulk Grain Cargo. 5–1–59
267	Rules and Regulations for the Numbering of Undocumented Vessels and the Reporting of Boating Accidents. 5–1–59
268	Rules and Regulations for Manning of Vessels. 10–2–59
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	Pleasure Craft. 7–1–59
293	Miscellaneous Electrical Equipment List. 3–10–59
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf. 10–1–59
323	Rules and Regulations for Small Passenger Vessels. (Not More Than 65 Feet in Length) 6–1–58
329	Fire Fighting Manual for Tank Vessels. 4–1–58

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 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 February 1960

The following have been modified by Federal Registers:

CG–267 Federal Register, February 13, 1960.

CG–239 Federal Register, February 24, 1960.

U.S. GOVERNMENT PRINTING OFFICE: 1960