

A MARITIME SURVEY FOR 1970; SEAMEN, FISHERMEN, PROSPECTORS: WHO WILL OWN THE OCEANS?

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Seventy percent of the surface of the earth is water, but for eons man has been a land animal. Most of his history has been of his struggle to obtain a livelihood from that land and to shape it to his ends. In so doing, he has scarred it and wasted it. The great waters however, have defied him and at times punished him cruelly for searching their secrets. Man today knows far more about outer space, visible to him each night, than he does about the dark of the oceans. He has walked on the moon but not on the deepest bottoms of the sea.

Yet the waters have also served him well. They have long opened up their depths to him as a source of food. The Bible is rich in fish references, and

fishermen of northern Europe found the Grand Banks of Newfoundland decades before Columbus discovered America. It was only five centuries ago that Western man, with the help of the compass and the square-rigged ship, dared to cross the open, unknown ocean. In doing so, he broke out of his European peninsula and commenced the geographic age, whose results our own scientific age has yet to match.

The oceangoing ship brought the centuries of discovery and exploration opened great new lands, made possible the dominance of the world by Europeans, and, above all, created the United States. This geographic age, one of the great outbursts of energy in history, became possible when the ship was able

to master its own element and remain at sea for long periods, thereby enabling it to transport landmen and their goods to the far reaches of the earth. The men who worked and sailed these ships became known as seamen, a word that entered our language only in the 16th century. Their counterparts in the Middle Ages were known as "shipmen."

This geographic era is now over. In the present industrial age, chemicals and metals form the basis of our materialistic societies. For the present and foreseeable future, the primary needs of these societies will be fossil fuels and the ores of iron, aluminum, and perhaps uranium. These raw materials are bulk commodities, and since they are seldom found where they are needed, they must be moved by some reasonably cheap means. The cheapest is water transport, and for this reason the ship is still very important.

Before these raw materials can be transported by ship, they must be found, and the search for them is becoming more and more difficult. Besides the Arctic and Antarctic regions, the waters of the sea remain the only substantial unexplored area of the earth. So the sea now beckons and offers its challenge to the bold among prospectors as it once did to the same breed of seamen and fishermen.

The realm of the seaman is the surface of the oceans, while the fisherman uses the waters beneath it to a depth of at least a half mile. The prospector, on the other hand, needs the seabed, the ocean's bottom, for there is where minerals will be found. For the foreseeable future, this seabed will be the Continental Shelf, the area of relatively shallow water which extends out from shore.

At the Geneva Conference on the Law of the Sea in 1958, one of the four conventions adopted dealt with the Continental Shelf. In force since 30 June 1954, article 2 (1) of this convention provides: "The coastal state

exercises over the continental shelf sovereignty rights for the purpose of exploring it and exploiting its natural resources." However, article 5 (1) contains a joker: "The exploration of the continental shelf and the exploitation of its natural resources must not result in any unjustifiable interference with navigation, fishing, or the conservation of the living resources of the sea."

These articles reveal that the oceans are no longer just a water resource, and seamen and fishermen must prepare themselves for the inroads of landmen into their traditional domains. With these landmen will come imposition of municipal law upon maritime law and endless litigation on a variety of sea questions.

The history of international law indicates that its lasting precepts and precedents are established not by treaties and conventions but, as in other forms of the law, *in the courts*. One has only to look at a map of the Gulf of Mexico or the North Sea to presage the political and legal controversies that article 2 (1) will cause.

Another future maritime legal trend no doubt will result from litigation resulting from collisions between ships and oil rigs. About 50 such collisions took place in the Gulf of Mexico in 3 years. There are about 2,000 oil well structures off the coasts of Texas and Louisiana, some as far as 60 miles out at sea. Although the areas in which they are located are legally the high seas, it has already been necessary to restrict the movement of ships in these localities. In the approaches to many of the gulf ports, the U.S. Army Corps of Engineers has established shipping lanes which are shown on Coast and Geodetic Survey charts. These lanes, in some cases, extend out as far as 120 miles offshore.

The prospector's encounter with the fisherman may be more dire than that with the seaman. Fishermen are a complaining lot, always blaming

someone other than themselves for their disappointing catches. Any destroyer sailor knows what the explosion of a depth charge does to fishing for miles around. The search and recovery of the missing nuclear weapon off Palomares, Spain, early in 1966 curtailed the lucrative shrimp trawling of Francisco Simo Orts. The United States has been a long time settling Simo's claim for damages and services. And in the waters off Palomares, a deep submersible touching the bottom would cause a cloud of sediment that would hamper search operations for hours. This indicates that strip mining of the seabed, a practical possibility today, would foul the waters as this technique has scarred the land.

Who are these men—seamen, fishermen, prospectors—who contend for the oceans?

SEAMEN AND THEIR SHIPS

Man still cannot cope individually and directly with the sea as he can with the land; he must do so in conjunction with a tool, an envelope or vessel which contains a bit of his own environment. This tool, this vessel, is called a ship, and seamen work it and make it do their bidding. They thereby give it life of its own to an extent that they consider "her" to be almost an animate object. The ship still remains the largest, the most complex tool that man has yet devised.

Most maritime operations, therefore, are still conducted in terms of ships, and it will be ships rather than seamen that will be discussed in this section. Commercial ships are composed of three primary types, carriers of dry cargo, of liquids, and of fish. At one time there was a fourth category, passenger ships, but these have been largely displaced by the airplane.

Bulk Cargo Carriers. Since 1956 world seaborne trade has been increasing at an annual rate of almost 7

percent. The ships that carry this trade are relatively new, two-thirds of them being less than 10 years old. Seventy percent of this seaborne trade is now in bulk commodities comprising the food-stuffs and raw materials necessary to support populations and the basic industries of industrial nations. This bulk material is carried in ships specially built for the purpose and divided into categories, the tanker and the dry-bulk carrier. Even this breakdown no longer holds entirely, as smaller tankers are being employed in the grain trade, and ships are being designed so that they can carry either liquid or dry cargo in any of their holds.

Low-cost water transport for bulk commodities is feasible because large quantities can be moved, and fast loading and discharge are possible. Tankers have now reached sizes three times larger than any warship ever built. The limitation on size is determined only by characteristics of the ports to be entered and by depths of water in critical seaways. Even before the Suez Canal was closed by the Arab-Israeli war, petroleum in increasing quantities was being moved around Africa by ships larger than 70,000 tons, the limiting displacement for that canal. Displacement and draft of one of the largest ships recently built, the 206,000-ton Japanese *Idemitsu Maru*, were determined by the 60-foot limiting depth of Malacca Strait which she traverses on her run between the Persian Gulf and the home country.

In the overseas movement of basic commodities, the United States is both an importing and exporting nation. Two major wars and a voracious industrial economy have made telling inroads into our once plentiful resources. Before World War II the United States was able to supply all of its iron ore needs, but now 35 percent of these needs are imported, mostly from the ore-rich areas of Canada and South America.

In petroleum the United States is still able to supply its own requirements but only because this mineral is now being extracted offshore in increasing quantities. The demands of European countries and Japan for petroleum are heavy as these nations shift from coal to oil economies. Since no major petroleum sources within these areas have been developed, the parade of tankers from the Middle East and North Africa to Europe and Japan is increasing.

The United States exports 70 percent of the world's coal shipments and 51 percent of its grain. The coal which mostly goes to western Europe and Japan was formerly supplied by Great Britain. The United States is the world's major food exporter, followed by Canada, Australia, and the Argentine. These four countries send overseas one-quarter of the world's production of grain to nations short of it. Today the United States is also, surprisingly, the leading producer of rice, the staple foodstuff of the Orient. The increasing movement of food by sea promises to have profound social, economic, and strategic impact on international relations.

Australia is a producer of both coal and ore for export to Japan. A quarter century ago these countries were enemies in war. Today Australia, rich in resources, and Japan, with a growing dynamic economy, mutually support each other. The sea route between them is therefore one of the most critical in the world. Across this route the archipelago of Indonesia is like an open breakwater or another Great Barrier Reef.

Most of the modern ships engaged in the raw materials trade are built in Japan. They fly the flags mainly of Norway and Greece, true maritime countries, and of Liberia, the stand-in for the United States which has virtually priced and legislated its own flag off the high seas. International law allows nationals of one country to register their ships under flags of another, and Liberia

offers attractive registration and tax advantages. The Liberian fleet, which in tonnage is the world's largest, is 45 percent American owned and controlled and 85 percent American financed. This, and not the decrepit U.S.-flag fleet, is the real American merchant marine.

The world's foremost shipping men are Americans such as Daniel K. Ludwig, in the tanker business since 1925 and owner of National Bulk Carriers, one of the largest sea movers of raw materials. After World War II Ludwig recognized the shipbuilding potential of Japan where the largest warships of World War II had been built. In 1952 he leased the former Kure Navy Yard which had been spared in the bombing of that country and began building supertankers in its 150,000 ton capacity drydock. Ludwig is as responsible as any one man could be for Japan's shipbuilding revolution. In 1952 that nation launched only 400,000 tons of new ships, but 15 years later the annual figure reached 6,000,000, more tonnage built than in all other countries combined.

This Japanese success story has not been due to cheap labor or government subsidy, but to know-how and foresight, hard work, high technical standards, and, above all, to superior planning and management.

Liners: the General Goods Sea Carriers. When Americans use the term "foreign trade," they usually are thinking of the exchange of processed goods carried by ships that follow a definite route and schedule and accept any freight offered. Such ships are called liners, and their general cargo comprises about one quarter of what actually moves in ships across the oceans. Likewise, when most people speak of merchant ships, they contrive a mental picture of a stubby vessel having a single stack extending out of a midships superstructure with a forest of booms above

five deep cargo holds. To see such a ship loading is to carry away a confused image of noisy winches, swinging nets, and groups of longshoremen handling every piece of cargo.

Such scenes are now passing. As the once plodding tramp has been replaced by the specially designed bulk carrier, so the liner carrying a multiple cargo stowed in holds is being replaced by a radically new type, the container ship with facilities for roll on/roll off loading and discharge.

The container ship is nothing more than an extension to the sea of an efficient American land transport concept. The loaded trailer that can be moved from origin over rail or auto roads is simply continued on to destination by sea in a ship fitted to transport this large package. It is natural that this maritime adaptation of land transport should have been conceived by American firms forced to efficiency in cargo handling by high labor costs.

The movement of containers by sea evolved largely from the fact that the United States is no longer a geographically integrated country joined together by highways and railroads. The offshore state of Hawaii and the Commonwealth of Puerto Rico, as well as the land isolated state of Alaska, must be served by transport as efficient as that which serves other areas of the United States. For them, this can only be done by sea.

Movement of containers by specially altered ships was pioneered by two nonsubsidized American companies: Matson, serving Hawaii, and Sea/Land, subsidiary of the progressive McLean trucking complex. The concept has now been extended to the logistic support of Vietnam military operations and to the northern European trade, largely through the up-to-date port of Rotterdam. Maritime European countries moved to meet this American challenge by forming consortiums, one being the Atlantic Container Line owned by Dutch, Swedish, French, and British

concerns. This is an example of European economic cooperation largely missed by political scientists.

Most American container ships to date have been conversions of World War II transports with C-4 hulls released from the Maritime Administration's reserve fleet. But 1968 saw the first U.S.-built-from-the-keel-up container ship, the world's largest and fastest and a roll on/roll off type. *Ponce de Leon* was built by Sun Shipbuilding and Drydock Co. of Chester, Pa., for the New York and Puerto Rico service of Trans-America Trailer Transport. Looking something like an aircraft carrier, she is 700 feet long, 24,000 tons, can make 25 knots, and has space for 260 40' by 8' by 8' trailers plus 300 automobiles or light trucks.

The cause of this new trend in shipping, of course, is the automobile going to sea. The roll on/roll off concept of rapid cargo handling was first used in amphibious operations of World War II. However, the U.S. shipping community, with an excess of conventional vessels on hand, ignored this revolutionary innovation, and it was another decade before Europeans adopted it for their car ferries and short sea traders. Europe is a continent of two giant peninsulas with offshore islands and intervening seas. Her coasts must be kept connected for the automobile.

Concern with ships should not infer ignoring the movement of goods overseas by air which has been increasing at a rate of almost 50 percent each year. Already, 10 percent of the cargo value, moving out of the port of New York for overseas is airborne. It is premature, however, to argue that the cargo airplane can replace the merchant ship. Until nuclear energy becomes feasible as a cheap power source for aircraft, there is little point in speculating when it will replace the ship as a bulk carrier. And the roll on/roll off container ships portend a land-sea transport system that could make a viable challenge to the

movement of all but the most valuable cargo by air.

Another challenge to the airplane is the hover ship which rides, not floats, on the surface of the sea. It rides on a cushion of air formed by a centrifugal lift fan. The largest of this class built today, the British SRN4, is 130 feet long, weighs 170 tons, and is powered by four gas turbines coupled to air propellers which give it a speed of 50 knots while carrying 250 passengers and 30 automobiles. The first of this class, *Princess Margaret*, made her first commercial run on 4 August 1968, carrying passengers between Dover, England, and Boulogne, France, on a comfortable but somewhat noisy channel crossing of 37 minutes, one-third of the usual time. At least three more of her type are now employed in this service.

The hover craft is a British development, and it gives promise of restoring some of Britain's seapower. Its potentialities, both as a commercial vessel and warship, are unlimited. And with its air movement and good maneuverability, even at high speed, it could avoid much of the promised future discord between seamen on the surface and prospectors on the bottom.

FISHERMEN AND FISHING WAYS

The second breed of men who make their living from the sea are fishermen. To learn something of their craft we need only examine the modern Russian version, for these are the best in today's fishing world. Fishermen have always been forerunners of a nation's maritime greatness. If the Soviet Union now poses a threat to U.S. domination of the oceans, it comes not from their navy but from their hard-working, efficient fishing fleet. Soviet fishing craft were on the Grand Banks of Newfoundland and off the Oregon coast long before Soviet merchantmen began appearing in the ports of the world. Soviet trawlers were

watching off Cape Kennedy years before Soviet destroyers began harassing 6th Fleet formations in the Mediterranean.

Soviet fish production is now exceeded only by that of Peru, Japan, and Communist China. Until the 1950's the United States, in size of catch, ranked second only to Japan. Today our country is in sixth place behind Peru, Japan, Communist China, the Soviet Union, and Norway in that order.

The fishing phenomenon of today's world is Peru, which now nets almost 15 percent of the world's total. This venture commenced in the early 1940's when most of the other maritime nations were engaged in an ocean-wide war. By 1946, however, the Peruvian take was only 27,000 tons, by 1952 it was 106,000 tons, but since then, until 1960, it almost doubled each year and is still increasing about 30 percent annually. The Peruvian catch, however, is specialized, being largely anchovies which are converted into fishmeal, fertilizer, and oil.

The Soviet catch, on the other hand, is primarily for human consumption within their own country, to add needed protein to the Russian diet. It increased from 2.5 million tons in 1954 to 6 million tons in 1966, although the Soviet goal for that year was only 5 million tons. The goal for 1970 is 8 million tons, which will, no doubt, also be exceeded.

Before discussing the Soviet fishing phenomenon further, it might be well to review some basic fishing facts. Fish for commercial purposes are divided into two categories, demersal or ground fish which live near the bottom and pelagic fish which are taken near the surface. Fish also inhabit the middle layers, but these are hard to catch. Examples of the demersal species are haddock, cod, halibut, and whiting; of pelagic are tuna, mackerel, herring, salmon, and sardine. The basic types of fishing gear are nets, hooks and lines, impaling instruments,

and traps. Drift and seine nets, trolls, tuna jigs, and harpoons are used for near surface fishing, trawls and traps on the bottom.

The biggest catches are made by trawls, large nets towed along the bottom. The largest fishing type is the deep sea trawler. The general practice is to put the heavy trawl nets over the side, a laborious task. This is being replaced in the latest ships by the easier method of streaming the net through a specially designed stern.

The Fishing Fleets of the Soviet Union. The Russians began their high seas fishing effort in a big way about 1950 with a complete reorganization of the industry. Before that time commercial fishing was a crude affair confined to inland and coastal waters. These overfished areas, notably the Caspian Sea, could no longer meet the nation's need for protein. The Soviet fishing capability had also been increased by the acquisition of the former Baltic countries of Latvia and Estonia which had historic maritime traditions. At the same time, economic studies showed that fish products could be marketed at less than one-third of the capital investment needed for the same quantity of meat products.

Today, almost all Soviet deep sea fishing takes place far from home waters, off the coasts of the Atlantic, Pacific, and Indian Oceans and in the Antarctic. With virtually no overseas bases, except in Cuba, the Russians have been forced to develop methods for processing the catch on the fishing grounds. This has resulted in a steady increase in the size and capability of their trawlers and the development of auxiliary ships capable of supporting large groups of such trawlers for months, thousands of miles from Soviet ports.

The ships of the modern Soviet fishing fleet are basically of three types: trawlers for catching, factories for

processing, and carriers to take the catch home. Some of the factory ships, as large as 16,000 tons, serve as flagships and tenders for sea groups. Unlike U.S. fishing, which is done by men of an independent stock who work their small craft individually, the Soviet effort is a highly organized affair with various types formed into units that function not unlike naval task forces. Such groups are controlled by a commander or commodore who designates the fishing areas and directs efforts based on reports from trawlers making the actual catches. When a Russian vessel was seized in 1967 by the U.S. Coast Guard for fishing in Alaskan territorial waters and the captain fined, he was accompanied to court by his commodore, both dressed in natty naval uniforms.

Most ships of the new Soviet fishing fleet were built in other countries, notably East Germany, Finland, Great Britain, and France. The first trawlers, built after 1950, were of the small British type, less than 1,000 tons displacement. These proved unsuitable for long overseas deployment so a new building program, based on years of careful research, was commenced after 1960 so that today the Soviets have the world's most advanced and efficient fishing equipment.

The latest example of a modern Soviet fishing type is the combination trawler fish factory built in France. The first, *Natalia Kovchova*, was delivered by her builders, Ateliers & Chantiers of Nantes, in 1966. Looking something like an LSD (landing ship, dock), she is rigged for passing the trawls through the stern, can remain at sea fishing for 120 days, and has a processing plant that can turn out 100,000 cans of fish in 12 hours. Heavy catches can be quickly frozen until the processing plant is ready for them. This ship is 8,425 gross tons, 423' long, 66' beam, 23' draft, equipped with three diesels for electric drive to give her a speed of 14 knots.

Natalia Kovchova operates out of Sebastopol on the Black Sea.

A new type of trawler with catamaran hulls was sighted during July 1969 in a Soviet fishing group, about 50 miles south of Nantucket Island. The vessel *Experiment* with her name spelled in English on her sides, is 130' long 70' beam, and is propelled by two 600 hp. diesel engines, one in each hull. With a crew of 25, she is reported capable of midwater or bottom trawling and also seining.

The U.S.S.R. also has three relatively new whale factories. One of them, *Sovietakaya Ukraine*, is the largest ship yet built at Nikoloyev near Odessa. (It is here a battleship was started in 1939 and later destroyed by an advancing German Army.) This whaler is 46,000 deadweight tons, 714' long, 94' at the beam, and has a crew of 500. She can process 65 whales a day or 4,000 in a 3- to 4-month Antarctic season.

Soviet research in oceanography, fish habits, and fishing methods is outstanding as its results show. New research vessels are being received annually from foreign yards. And, for the past 7 years, the converted W-class submarine *Severyanka* has been employed in research work. Equipped with outside lighting and advanced photography, she operates between depths of 100 to 600 feet to gather data for the study of fish habits and to make underwater observations of the efficiency of trawling methods.

THE OCEAN PROSPECTORS

The new breed of ocean men are the prospectors with their forerunner associates, the oceanographers and ocean engineers. They are, for the most part, Americans, and their progress on the Continental Shelf has been marked. Already one-sixth of the world's petroleum is coming from underwater wells. But the enthusiastic oceanographic promises of a few years back—such as men working in the depths of the ocean

by the turn of the century—are now being revised. A fatal accident marred the Man in Sea program, and SeaLab III, the work project with divers at 600 feet, has had to be continuously postponed. The early enthusiasm for deep submersibles has been eroded by high costs and the money cutbacks caused by the Vietnam war. The only real accomplishments beyond the Continental Shelf, so far, have been of an emergency character, such as the recovery of the nuclear weapon off Palomares, Spain, and the locating of the lost submarines *Thresher* and *Scorpion*, all combined U.S. Navy and civilian efforts.

So the ominous confrontation of prospectors with fishermen and seamen has not yet taken place. It is just as well, for international law is certainly not yet ready to deal with it. The first question that must be adjudicated is: Can the ocean bottoms be kept free like the ocean surfaces and outer space?

SEAMEN AND FISHERMEN: WHERE FROM?

Geographically the United States is the center of an oceanic world, the foremost exporting and importing nation whose contact with every other nation except Canada and Mexico has to be maritime. The same is true for our offshore states of Hawaii and Alaska, the Commonwealth of Puerto Rico, and the Panama Canal. Americans, however, are not a sea-minded nor a seagoing people, so the merchant and fishing fleets that come and leave our shores are built and sailed by men of other lands.

Why Americans, capable and efficient in so many other endeavors, cannot build ships within reasonable costs is a long, sad story going back 100 years. Why Americans do not go to sea is less difficult to explain; they do not have to, for they can make an easier and better living ashore. Until shipbuilding in the United States receives some major management surgery and until American youths are required to go to sea in the

so-called fourth arm of defense as they now serve in the three military branches, all the laws enacted and all the money appropriated will not give the United States a merchant marine or a fishing fleet worthy of the nation. The future portends that in the struggle for the oceans, American prospectors will be contending not with their own countrymen but mostly with Russian fishermen and Chinese mariners. Here is why.

The ships of the Soviet fishing fleet have already been discussed. The men who man them—and the women—come from all parts of the U.S.S.R. but more likely from Estonia and Latvia, from the Black Sea coasts, and from the Far East maritime territory of Siberia. A fisherman's base pay, about 300 rubles (\$330) a month, is about the same as that for a similar job ashore, but there is a sea pay bonus of up to 50 percent, depending on the size of the catch. Leaves are generous, and shipboard food and medical services are free. But the major fringe benefit is housing and schooling for dependents provided near bases and home ports for merchant marine as well as naval personnel. Despite inducements, however, Soviet sailors, like men of the sea everywhere, are evidently hard to handle on shore. Drunkenness and missing ship are reported to be problems of major proportions.

Natives generally man the fishing fleets of their respective countries, but this is not true of the merchant services. The sea is a hard taskmaster, and men will not go to it to make a living unless forced by economic circumstances. Americans mostly quit going to sea as merchantmen after the West was opened by the War of 1812. Today the young men of prosperous northern Europe are shunning the seafaring vocation. On the other hand, the sea has always given promise to youths whose country can offer them little. For a young Greek, life holds no sweeter promise than to be master of a ship. Moreover, the high pay

and better living conditions won by the militant U.S. maritime unions have forced owners everywhere to improve the lot of their crews. As a consequence of both trends, Italians, Spaniards, and Portuguese are manning ships of such maritime countries as Norway and Holland in greater numbers, and the U.S.-owned Liberian fleet has no trouble obtaining sufficient competent crews.

As conditions throughout all Europe improve, however, there will be fewer poor countries and fewer Westerners interested in the seafaring life. Unless the Soviet Union starts exporting its mariners, the major suppliers of seamen will be China and India. Half of the crews of British merchant ships are already Indian or Pakistani, and these countries may have maritime futures of their own. Over 100 agencies in Hong Kong are reported to be supplying Chinese seamen to ships flying many flags. Some U.S.-owned Liberian-flag ships use crews from Taiwan and Okinawa.

We Westerners tend to forget that China is a foremost seafaring nation with more ships (albeit junks), seamen, and fishermen than the rest of the world combined. One British shipping authority has sounded a warning. S.G. Sturme, Professor of Economics at the University of Lancaster, England, predicts that Japan will soon take over maritime leadership but will lose it after the next 50 years when the present transport of oil and ore will be superseded by a mammoth sea movement of grain, rice, and other cereals. Then, he claims, other Asian importers will have the advantages of low maritime costs and wage rates and that the successor of Japan will most likely be China.

American prospectors in the sea have to be ready for foreign battles ahead. These battles for the surface, depths, and bottom of the oceans will certainly be legal, probably political, possibly naval.