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Masters, Mates and Pilots'

REVIEW

Columbia River Association No. 17

Golden Gate Association No. 40

1923-24

Masters, Mates and Pilots' Review

1923-24

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WE EXTEND OUR THANKS---

to the financial, industrial and commercial interests of the cities on the Pacific Coast who have given us their liberal support and hearty cooperation, thereby making possible this publication for distribution among the many members of the National Organization of Masters, Mates and Pilots of America, in the West; and we recommend these supporters to our members and ask that the Review be mentioned when in need of their services.

REVIEW COMMITTEE.

Harbor Activities on San Francisco Waterfront

Carrying forward improvement plans of the Board of State Harbor Commissioners announced early in the year, activities have been largely in development of extension of shipping facilities along the harbor front. As the demands of commerce increase the entire southern area of state property will be improved and plans adopted at this time are in line with such development. The state owns 280 acres on the southern waterfront along which the seawall will be extended and the enclosed submerged area will be reclaimed for uses of commerce.

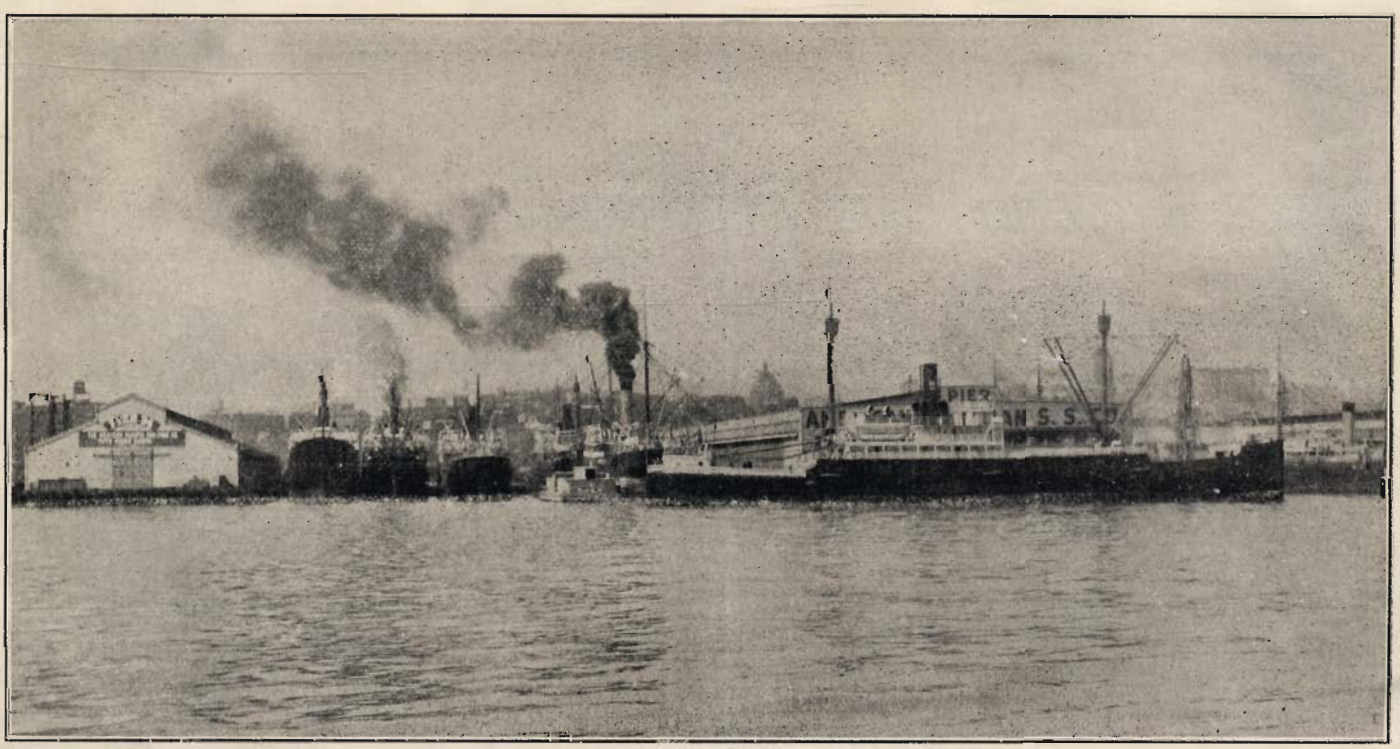
The immediate development in that direction calls for the expenditure of $2,000,000, for which state bonds will be sold on the authorization of Governor Richardson. These bonds are a part of $7,000,000 available from the bond issue of $10,000,000 approved ten years ago. The $2,000,000 will be used for needed improvements as follows: Warehouse 100 feet wide and 800 feet long on Islais Creek waterfront at a cost of $500,000; concrete pier to be numbered 50, 660 feet long and 380 feet wide, costing fully $1,000,000, and seawall extension with filling for the uses of the increasing lumber business, to cost about $500,000. These bonds will be sold in time to start the outlined improvements during the coming winter

From harbor revenues during the year the Board of State Harbor Commissioners expended nearly $1,000,000 for betterments, including extensions of piers and the Belt Railroad, the necessary grain terminal, street paving, and the subway on the Embarcadero, which is to be finished during the year. At this date the actual expenditures for improvements on the waterfront for the current year total $902,561.18.

Since the water problem in the construction of the subway on the Embarcadero has been controlled, insofar as the water is being handled by pumps, work is progressing and it is believed the job may be finished in ninety days, an extension having been given the contracting company to include the month of December.

The engineering department having superintendence of the work estimates that the subway work has been 70 per cent finished at this time. The contract was awarded in November, 1923, and work started early in December. The southern half of the project is now being paved by the Board's expert force with specially cut basalt blocks laid on a heavy concrete base two feet in depth and resting on long piles driven to firm foundation. The pavement is being grouted with cement, the whole work being smoothed and made solid to carry heavy travel in the trucking business.

To control seepage water and the force of tide water under the substructure drainage conduits lead to a sump in the central section, where



Activity at Piers 32 and 34, San Francisco

an automatically started pump will operate to keep the thoroughfare dry. This great improvement is considered the most important project of the harbor authorities in recent years.

Gain in Tonnage

Tonnage for the fiscal year ending June 30, 1924, was 519,373 tons in excess of the business of the preceding year. This gain was in a season of under production in agricultural and horticultural fields. The tonnage for the season January-August, 1924, was 7,549,083 tons, an increase of 696,093 tons over the corresponding season of 1923. For August, 1924, the tonnage was as follows:

Inbound		
Coastwise	123,950 Tons	
Inland	284,563 Tons	
Foreign	200,929 Tons	609,442 Tons
Outbound		
Coastwise	51,822 Tons	
Inland	152,324 Tons	
Foreign	103,169 Tons	307,315 Tons
Total tonnage for month of August		916,757 Tons

Portland, the Gateway of an Empire

According to figures compiled by the Traffic Department of the Port of Portland for the first eight months of the year 1924, shipments to and from this port promise to break all previous records. Lumber exports have been particularly good with 244,883,956 feet placed on board ship during this time, in comparison with 182,521,737 feet during the same period in 1923 . With this start for the year it seems very likely that we will maintain our position as the greatest lumber exporting port in the world.

Exports for the year to date were divided as follows: 182,776,769 feet to the Orient, 17,632,007 feet to South America, 12,976,274 feet to Europe and 29,278,672 feet to Australia. Shipments to Japan were particularly heavy during the first few months of the year, but during the late spring and summer China was the leading customer. During January shipments of more than forty million feet were made to Japan alone with total shipments for the month of 55,470,390 feet. The month showing the second largest shipments was August with 39,006,879 feet. During this month, however, there were especially no large shipments to any one place.

Shipments to Europe have been heavier than usual during the past year with greater shipments for the first eight months of this year than for the entire year of 1923. Exports to Australia from Portland also average heavier this year.

Domestic shipments of lumber likewise have grown, showing 158.218,976 feet in 1924 and 123,923,000 feet in 1923. This increase has been particularly noticeable in connection with the intercoastal trade.

Wheat shipments are also much heavier with 11,228,460 bushels, compared with 5,646,448 bushels for the same period in 1923. The bulk of this grain moved to Europe, in fact the ship-

Portland has twenty-nine miles of water frontage.

Portland has experienced firms handling stevedoring, bunkering, freight forwarding and customs matters. There are, as well, samplers, inspectors, graders, licensed weighmasters, etc.

Customs officers and appraisers have permanent quarters on all piers of the Port of Portland where foreign cargoes are handled.

ments during the first eight months of 1924 to this district are as large as for the entire year 1923. Oriental shipments, however, do not come up to last year's standard, although with the heavy shipping months yet to come it is possible that last year's mark will be reached in this territory also.

Domestic shipments particularly show a very great increase with 1,544,567 bushels this eight months, compared with 214,261 bushels during the same period last year. Shipments were made to Atlantic ports during the latter part of 1923 and the first few months of 1924 for the first time in many years. California shipments were also much heavier.

For the fiscal year ending June 30, 1924, Portland was the leading export port for American wheat in the United States.

According to figures compiled by J. A. Leclarc, Food Stuffs Division at Washington, exports of wheat from the Columbia River during the season of 1923-24 amounted to approximately one-third of all the American wheat exported. From the Pacific Coast this amounted to 41.5 per cent of the whole from the United States, nearly 80 per cent of which was placed on board ship on the Columbia River. In regard to wheat shipped to Europe, approximately 92 per cent was shipped from Oregon, while of the wheat going to Asia 69 per cent originated in this district. It is particularly noticeable the trade routes for this commodity during 1923-24. During the fiscal year of 1923. 75 per cent of the wheat shipped from Oregon was delivered to Europe. In 1924 only 47 per cent was destined to this country, with 50 per cent destined to the Orient. Exports to China on the Pacific Coast increased very materially during the 1924 fiscal year from all ports on the Pacific Coast shipping wheat.

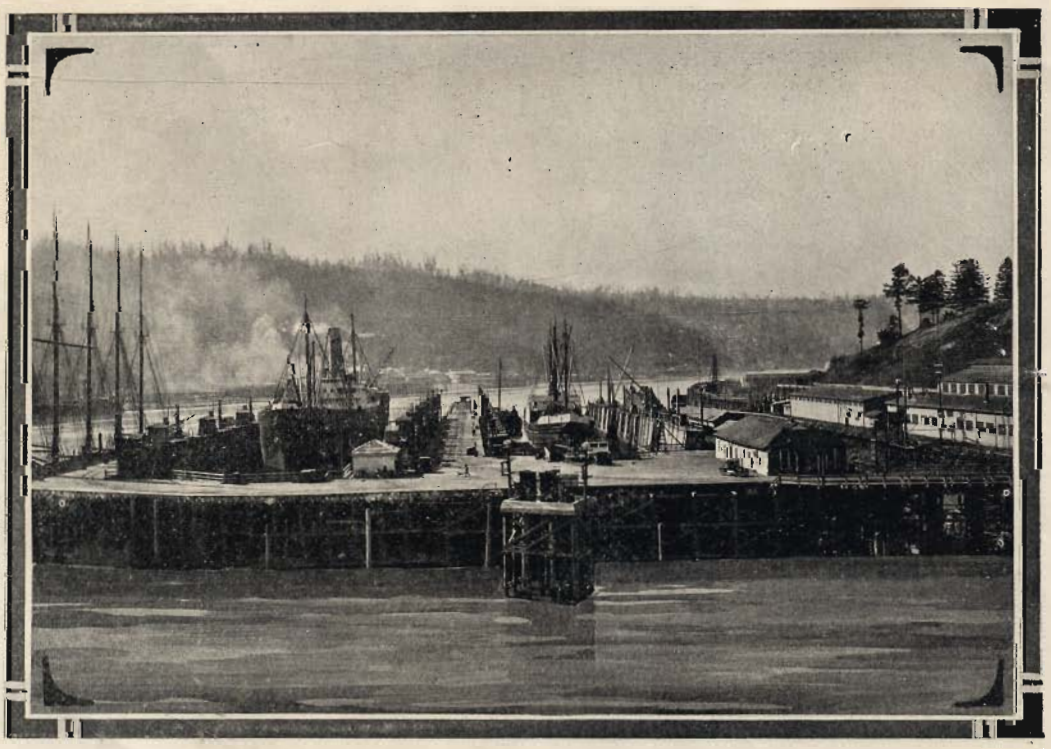
Exports of flour from the Oregon district during the fiscal year of 1924 show an increase of 106 per cent over the previous fiscal year. The value of this comparison can be shown by the fact that the Customs District of Washington showed an increase of only 29 per cent and on the United States as a whole of 16 per cent over the previous fiscal year.

Flour shipments from Portland during the first eight months of 1924 was 1,088,750 barrels, compared with 675,270 barrels during the first eight months of 1923. Of this amount more than one million barrels were shipped to the Orient, the greater part of which was delivered in China. Our next largest customer district was Europe, with 43,817 barrels, the balance of 42,000 barrels being delivered in South America. The four Northwestern states of Washington, Montana, Idaho and Oregon are large producers of several varieties of grain which permit the millers to supply grades of flour for all countries. Shipments so far this year have been made to nineteen different countries, while last year's record showed deliveries in twenty-one countries.

Flour shipments from the Columbia River during the fiscal year ending June 30th totaled 3,672,832 barrels, an exceptionally large increase over the previous year, which totaled 2,029,673 barrels.

Domestic flour shipments during this period were 591,410 barrels compared with 427,256 barrels during the first eight months of 1923. Also in connection with flour the shipments for the first eight months of this year to Atlantic Coast ports were greater than for the entire year of 1923.

Fruit shipments show an excellent increase over the previous year. Shipments of dried fruits, such as prunes, show 4,340 tons for the



PORTLAND'S DRY DOCKS

Portland owns and operates two sectional floating dry docks, one of 10,000 tons and the other of 15,000 tons dead weight lifting capacity. In connection with the dry docks is a modernly equipped machine shop and repair plant.

The services of a privately owned floating repair and machine shop are available for any part of the harbor. Portland also has other private machine shops for marine work

period of 1924 compared with 1,152 tons during the same period of 1923.

Canned goods also show increases with 3,363 tons exported during the first eight months of 1924, compared with 1,567 tons during the like period of 1923. In connection with the exports of canned goods, the movement of canned loganberries is particularly noticeable with a very large movement this year. During July the Dominion Miller of the Furniss Pacific Lines cleared from Portland with more than 1,000,000 pounds of canned goods, consisting almost entirely of canned loganberries. There were in this cargo 26,423 cases, of which 20,811 were loganberries, destined to Liverpool, London, Manchester, Glasgow, Newcastle, Howell, Leith, Cardiff, Avonmouth and Swansea in the United Kingdom.

A new item of export during the past season is apple rings, or dried apples. This commodity is just coming into the export market, and the growth of this trade should be rapid. The fresh apple shipments during the spring were not as good as during the spring of 1923. The outlook for the fall season is especially good and the total for the year should therefore be larger. We could go on down through the line, taking the various commodities, and we would find an increase in almost all of them.

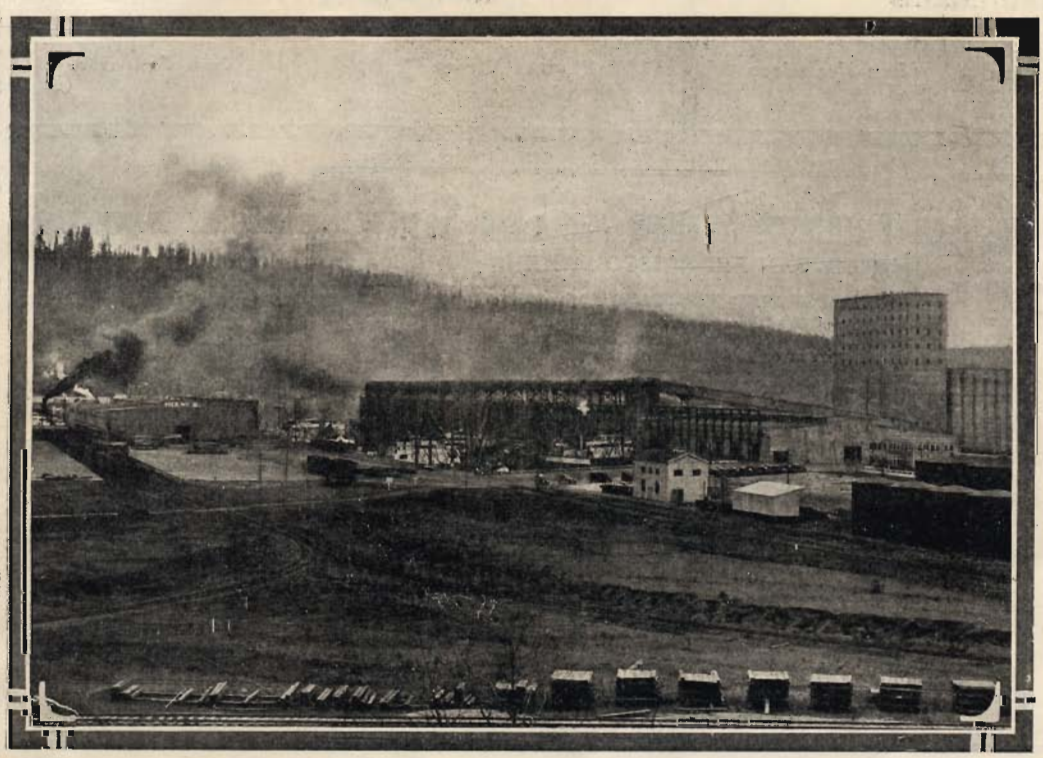
One other item that shows a particularly large increase is doors, of which 18,000 tons have been shipped this year, compared with 400 tons last year. Total exports from Portland during this period amounted to 809,127 tons with a value of $27,160,705 compared with 559,851 tons valued at $18,405,351 during the same period of 1923. Total shipments, both inbound and outbound, in the various trade routes, all show increases over last year.

Clearances from Portland for foreign ports are particularly noticeable this year, with 252 vessels with a net tonnage of 921,035 tons for the first eight months, compared with 188 vessels with a tonnage of 680,218 tons for the eight months of 1923. Total exports show 897.127 tons of cargo valued at $27,160,705 moved so far during 1924, as compared with 569,851 tons, valued at $18,459,203 moved during the first eight months of 1923, with the heavy shipping months of the year to come.

Ship Board Losses Detailed

Operating losses, after including insurance, repairs and administrative expense, of the Shipping Board services for the eighteen months ending last December were detailed to the House Appropriations Committee recently by President Palmer of the Emergency Fleet Corporation.

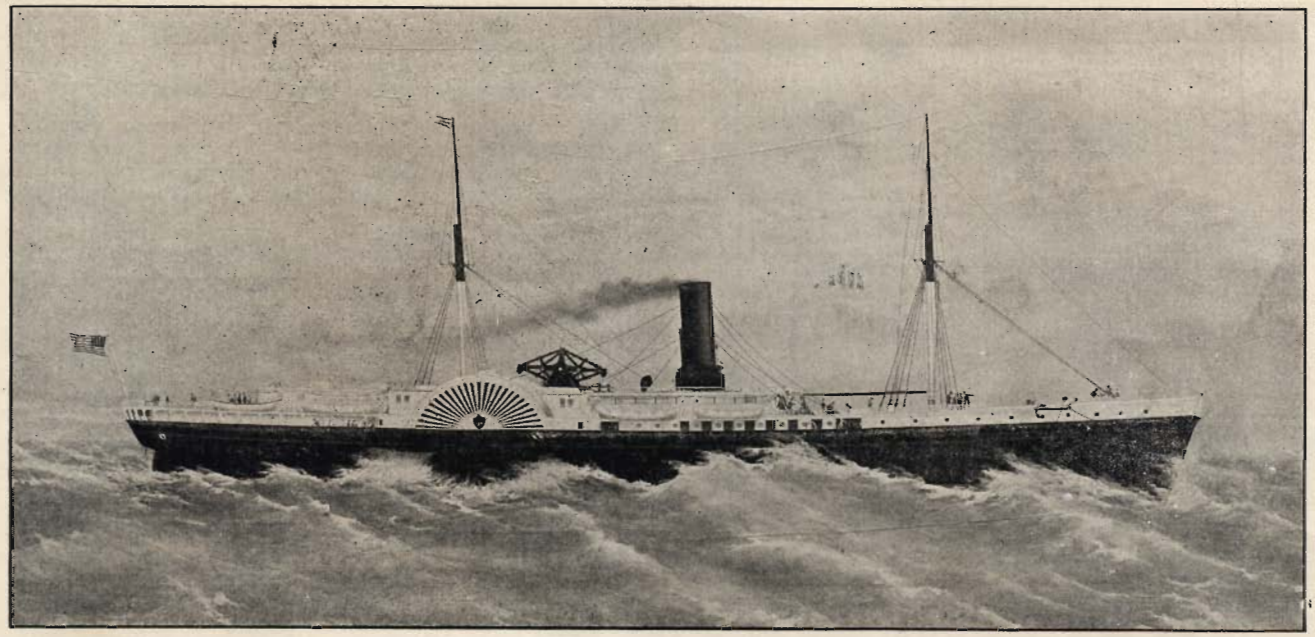
The figures for the Pacific Coast companies were given as follows: Swayne & Hoyt, to East Coast of South America, $1,166,000; Admiral Oriental Line, Puget Sound to Orient, $1,514,000; Columbia Pacific, Portland to Orient, $1,187,000; Struthers & Barry, California to Orient, $1,142,000; Struthers & Barry, California to East India, $179,000; Pacific Mail, San Francisco to Orient, $881,000; General Steamship Corporation to West Coast of South America, $94,000; General Steamship Corporation, to Australia, $44,000; Swayne & Hoyt, to Australia, $587,000; Nawsco Line, intercoastal, $685,000; Los Angeles-Pacific (references uncertain), $412,000; Admiral Oriental, Far East feeder service, $136,000; Pacific Mail, Far East feeder service, $148,000; Struthers & Barry, tankers, $70,000; Barber Line, round the world, $902,000; Elder-Mittnacht, intercoastal refrigerator, $239,000.



PORTLAND MUNICIPAL TERMINAL NO. 4

This terminal is the most extensive and modern development of the Port. It occupies more than 162 acres of land, 50 acres of which are industrial sites available for leasing to private companies.

Some of the modern improvements at this terminal are a million bushel capacity grain elevator, a battery of steel tanks, complete for handling vegetable oil or other liquid cargoes, an apple storage warehouse, a cotton fumigating plant, and bulk storage plant for handling phosphate rock, coal and other bulk cargoes.



The paddle wheel steamer Golden Age of the New York and Australian Steam Navigation Company. The Golden Age was the first steamer to cross the Pacific Ocean, running from Melbourne to Panama, in 1854

With the Trans-Pacific Mails

From San Francisco to the Antipodes

By WILL LAWSON

Reprinted From Pacific Marine Review

The oldest route from San Francisco to Sydney is that which goes by way of Tahiti and New Zealand. The calm weather experienced over the greater part of the distance and the prevailing trade winds made it a popular sea road for the early steamers, which carried considerable sail to assist the steam. It is seventy years since the first mail and passenger steamer crossed the Pacific by this route. And though her port of arrival in America was Panama and not San Francisco, that was due to the fact that the transcontinental railway was not completed, while there was a short, American owned line operating across the Panama Isthmus.

The steamer referred to was the Golden Age, belonging to the New York and Australian Steam Navigation Company. The proposal was to run between Australia and Panama, and eventually to make San Francisco the home port. Five other vessels were to be built and a regular service maintained. This project was typical of the enterprise shown in the United States in regard to steam lines in the Pacific at that time. China and Japan were also being linked up with Panama by similar American steamer lines.

The Golden Age

The ships employed were of typical American design. The Golden Age was a wooden vessel, 285 feet long, 43 feet 6 inches beam, and with a depth of hold of 32 feet. Her net register was 2864 tons. She was built at New York by H. Brown, her lower frames being of live oak and top frames of locust and cedar. Her entire hull was double-diagonally braced with iron bars.

The Golden Age had accommodations for 1200 passengers in three classes, the steerage taking 600. Three saloons took up a good deal of space. They were handsomely finished, two being paneled in rose, satin and zebra woods, with crimson and gold plush furnishings and plenty of mirrors. The upper saloon was somewhat the same, but finished in white and gold.

The engine was a single beam with an 85-inch cylinder and side paddles 35 feet in diameter. Her crank had a 12-foot throw and her boilers worked at a pressure of 20 pounds of steam. She had two boilers, each 40 feet long with furnaces at each end, smoke flues in the center, and one smoke stack

First Voyage

The Golden Age left New York in charge of Lieutenant D. D. Porter of the U. S. Navy on December 30, 1853, and arrived in the Mersey on January 12, 1854. Other paddle steamers of similar design were being run across the Atlantic by the Collins Line. But the Golden Age was destined for the Pacific trade, and as rapidly as could be she was loaded with cargo and took on board a large number of passengers bound for the gold diggings of Australia.

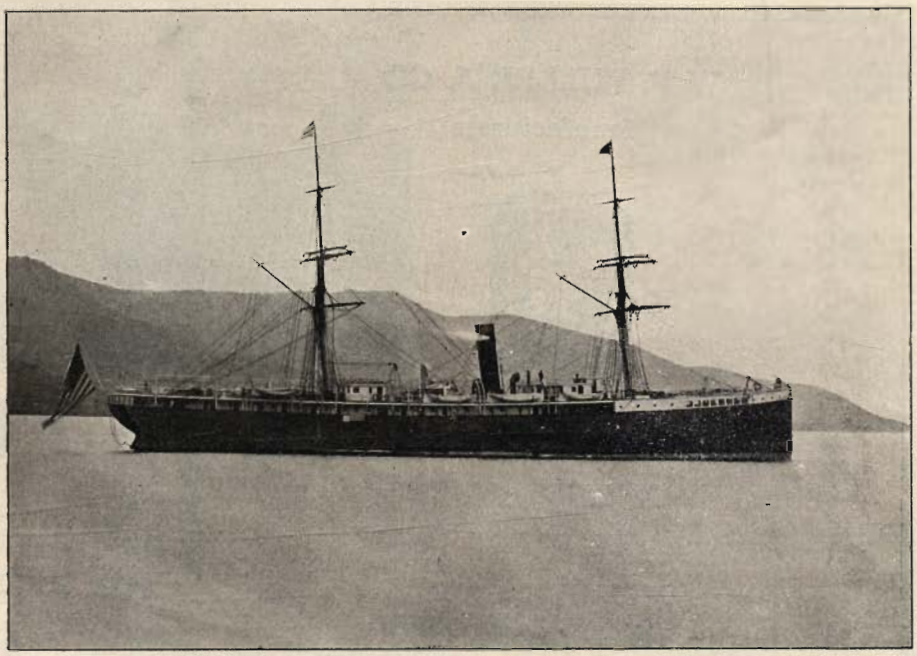
The steamer reached Melbourne on February 20, 1854, and after discharging she was loaded for Panama. She called at Sydney on her way, final departure being taken from Sydney on May 11 at 11 a. m. Every cabin was occupied. She also took a valuable consignment of gold dust and a heavy letter mail. A gun was fired and bugles blown as this, the first trans-Pacific mail steamer, ploughed her way out of the Sydney Heads and steered for

Panama via Tahiti. Though she passed through Cook's Strait she did not call at Wellington, as there was no wharf there and no coaling station.

The Golden Age took 13 days and 6 hours to reach Tahiti and from there to Panama the time was 19 days. Her lowest daily run was 220 knots and her highest 272, using Australian coal. At Papeete she took on 1500 tons of soft coal, and her lowest and highest runs fell respectively to 200 and 270 knots. The amount of coal consumed on the voyage was 2600 tons, which cost $20 a ton. Owing to the high cost of coal the loss on the round voyage was $50,000.

Subsidy Needed

In reporting on the venture, Lieutenant Porter said that until coal could be provided in New Zealand at a moderate cost, the Panama route must be abandoned unless a mail subsidy of $4.50 a mile could be secured. The actual distance logged between Sydney and Panama was 9862 miles.



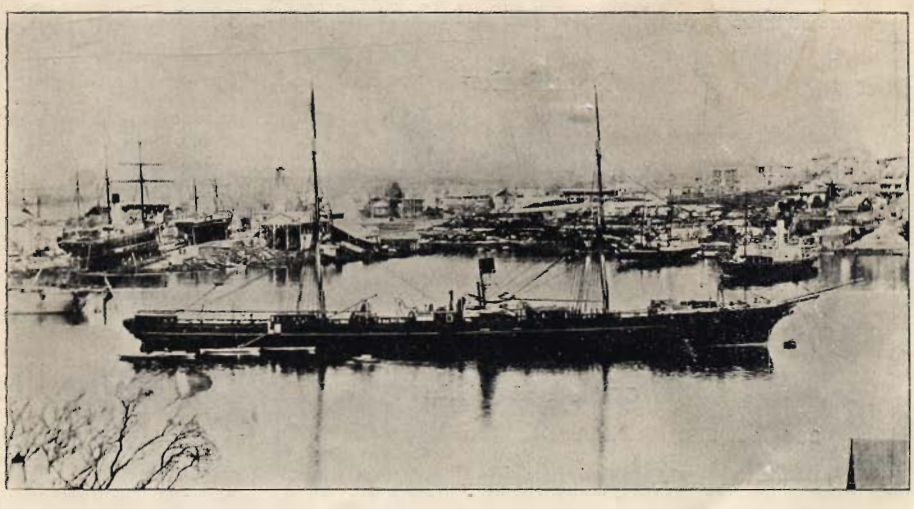
The screw steamer Granada

The Mongol, one of the first Pacific Mail screw steamers

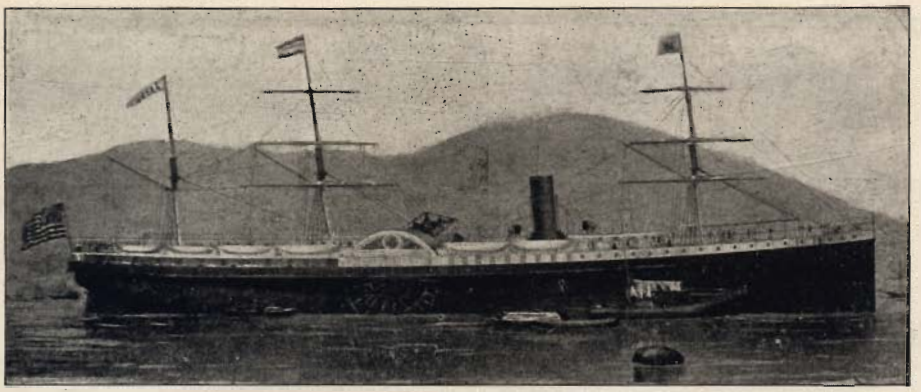
This unprofitable voyage checked the ardor of an Australian concern, styling itself the Australasian Pacific Mail Steam Packet Company. This firm had six screw steamers ready of about 1500 tons and 300 horse power. They were to run via Panama, connecting with the rail and the West India Royal Mail boats. The outbreak of the Crimean war stopped effectually the company's operations, as the vessels were all taken as transports, and the steam lines across the Pacific were abandoned, as far as the southern portion of that ocean was concerned, until the 'sixties, with the exception of stray small vessels which found their way across on various occasions.

British Effort

In 1866 the Panama, New Zealand and Australian Royal Mail Company was formed to run 1500-ton steamers. These were the Kaikoura, Ruahina, Rakaia and Mataura. They were 230 feet long and were brig-rigged. Instead of calling at Tahiti, these steamers were coaled at a station which the company established at Rapa, an island lying 700 miles to the southeast of Tahiti. This was done to enable them to avoid the



The screw steamer Rakaia of the New Zealand-Australian Royal Mail Company, one of the first four screw steamers on the Pacific Ocean



Trans-Pacific paddle wheel steamer Japan

head winds. The saloon fare from Wellington to Panama was $325, which is about the same as the fare charged from Sydney to San Francisco today.

Shift to San Francisco

The opening of the transcontinental railway to San Francisco in 1868 made the California port the shipping center of the Pacific Coast. The fevers contracted by passengers in crossing the Panama Isthmus had already made the line unpopular, so it ceased business soon after the railway came through over the Sierra Nevada, and the trans-Pacific traffic took a new lease of life, with San Francisco as the port of arrival and departure in the United States.

A report on the best route for these services was made to the British Government by Lieutenant G. A. Woods, Colonial Mail Surveyor, in 1869. He selected the same route as did the owners of the Golden Age, except that San Francisco was substituted for Panama.

"Assuming Sydney to be the port of departure and Wellington and Tahiti the ports of call," wrote Lieutenant Woods, "the distance would be 7190 miles. This is only 50 miles longer than if Auckland was made the New Zealand port of call, and by calling at Wellington (which is further south) all the advantages of the prevailing westerlies of the equator would be gained. These winds would carry the steamers well into that part of the Pacific where the trade winds are regularly established throughout the year." This route is used today, and the trade winds are a refreshing feature of the voyage in the tropics.

Another claim for the Tahiti route that time was that a lighthouse had been built at Point Venus, near Papeete, in 1857, while on the Fiji and other routes there was scarcely a light to guide the steamers through the maze of islands, which often were low-lying and dangerous.

With California linked up with the East and Middle West by the new railway, it was natural for enterprising Americans to turn their attention to steam communication across the Pacific. A fleet of 3000-ton paddle boats was put on the China and Japan routes. Then it was realized that the quickest way from Sydney to London lay across the United States.

Regular Liner Service

In 1870 the first San Francisco Sydney service was started. It was the beginning of a 50-years' war with time and distance, the history of which is a record of ambitious aims and fast passages. Pending the launching of a big scheme, H. H. Hall, American consul at Sydney, ran a temporary service with some small screw steamers, the Rangatira and Balclutha. These ran as far as Honolulu, where they connected with the Northern Pacific Company's vessel Ajax. The City of Melbourne and Wonga Wonga, bigger boats, soon replaced the Rangatira and Balclutha. In the following year the Californian Line, owned by Webb & Holliday, opened a service to Australia with four big paddle steamers, the Nebraska, Nevada, Dakota and Moses Taylor. They were very like the Golden Age in size and appointments and speed. The News of the World of San Francisco thus described them at the time of their arrival at San Francisco:

Last of the Paddlers

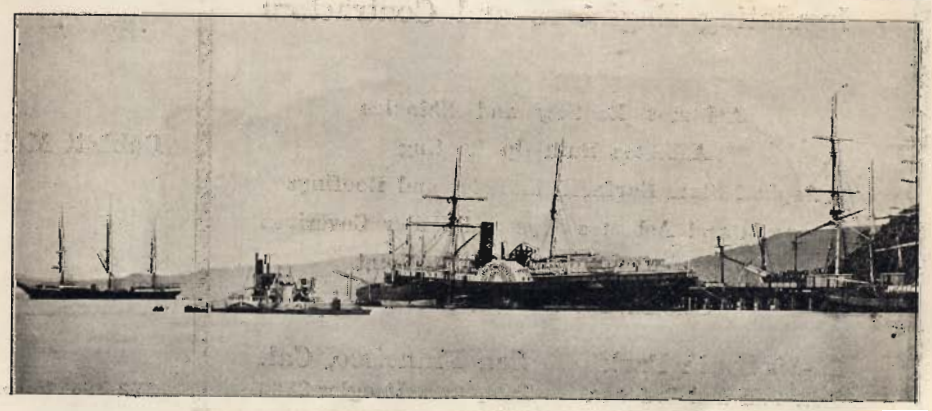
"The Nevada and Nebraska are sister ships of 3000 tons burden, built of live oak, double-planked 4 inches thick, iron stripped. On her trial the Nebraska averaged 15 knots and is looked upon as the fastest ship on this coast."

The Nebraska opened the service from San Francisco on April 8, 1871. With many ups and downs, it lasted till April, 1873, when the Nebraska made the last voyage of the big paddle boats across the Pacific.

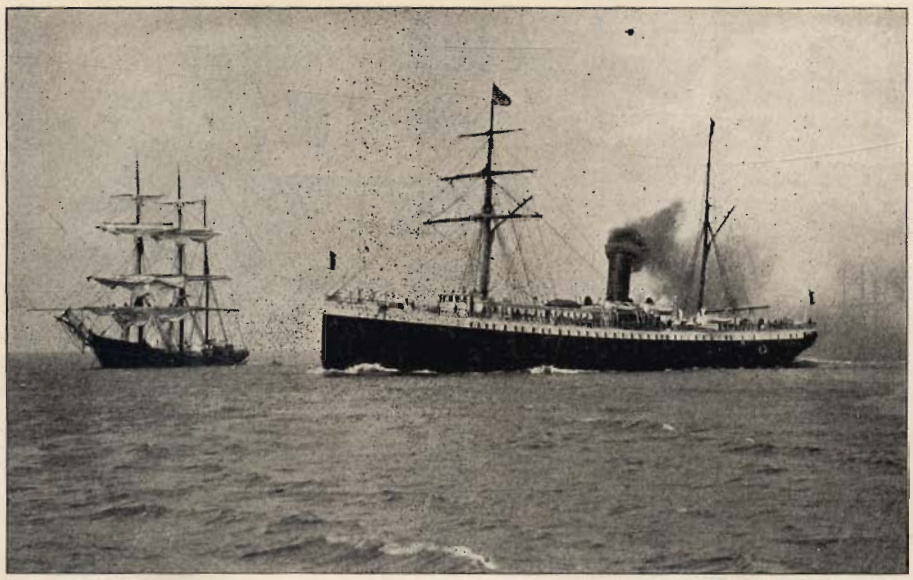
The Mongol and Tartar were then chartered by H. H. Hall from the New York, London and China Steamship Company, vessels of 2000 tons register. Another ship, the MacGregor, also joined in the service. The routes were from New Zealand to Kandavau, and from Sydney to Kandavau. As a rule the boats transshipped there to a vessel on the American run, but sometimes they ran right through. The Granada was the San Francisco - Honolulu - Fiji steamer.

Pacific Mail

After a time a joint service



The paddle-wheeler Nebraska at the dock



The Oceanic Steamship Company's Mariposa steaming down San Francisco Bay

was run by the Pacific Mail Company and the Fairfield Shipbuilding Company of Glasgow, who had built two fine vessels, the Australia and Zealandia. The fleet running in this contract also included the Vasco de Gama, Colima, City of San Francisco, City of New York, City of Sydney, Australia and Zealandia. The City of Sydney is now trading as a six-masted schooner. The three "Cities" were built at Chester, Pennsylvania, in 1875, and were handsome vessels of 3000 tons with three masts and one funnel. The City of San Francisco on one occasion made the run from Auckland in 24 days, 12 hours, or 34 hours under contract time. The Zealandia and Australia were 2737 tons gross and 500 horsepower.

In 1877 the route through the Fijis was abandoned as it was held by the underwriters to be unsafe for night running. Honolulu became the only port of call.

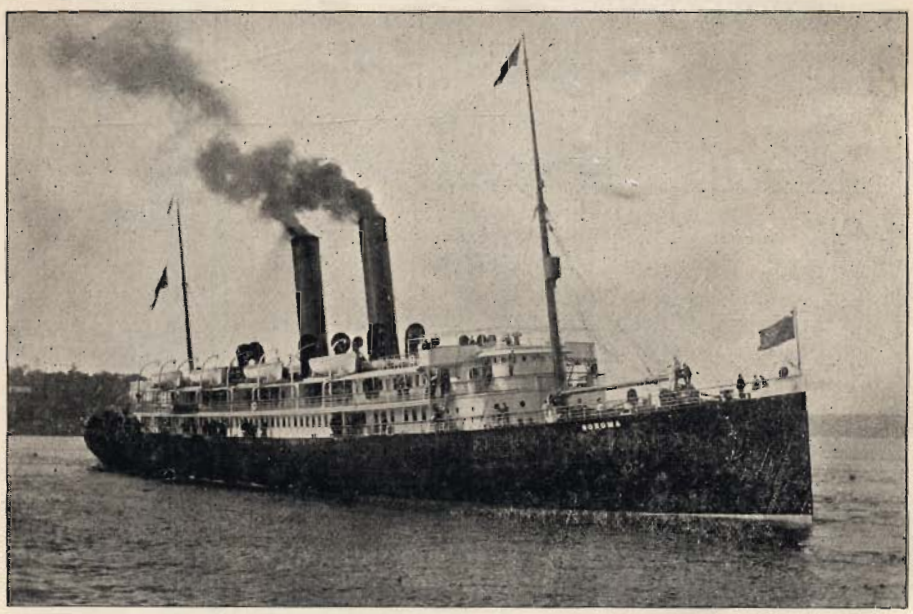
Mail Contracts

The Pacific Mail Company's mail contract expired in 1885 and the company did not seek renewal. A contract was made jointly with the Oceanic Company of America and the Union Steamship Company of New Zealand. The Oceanic boats were the Alameda and Mariposa, built in 1884 of 3158 tons and 3000 indicated horsepower. The Union boat was the Mararoa, 2598 tons, 3500 horsepower. The Mararoa's officers were entertained at San Francisco and her engineers were presented by the American Society of Marine Engineers with three brass eagles to be fitted on each of the Mararoa's tailrods, as she was the first triple expansion steamer to enter the Pacific. After one or two runs the Mararoa's mail room was found to be too small. She was withdrawn and the old Zealandia took her place, under charter, till the arrival of the Monowai, a new ship, specially built by the Union Company for the trade. The Monowai was later replaced by the Monona and the joint service continued till 1900. In that year Hawaii was formally taken over by the United States, which had passed legislation debarring any but American ships from trading between two American ports. This put the Union steamers out of court, and Spreckels' Oceanic Line took over the entire service, the Alameda and Mariposa being replaced by the Sonoma, Sierra and Ventura, with which ships a three-weekly service to New Zealand and Australia was maintained till 1907.

From that year until 1909 there was no regular San Francisco-New Zealand service. Then the Union Company began a service which connected at Tahiti with the Mariposa, while the Oceanic Company resumed running to Sydney with the Sonoma and Ventura, cutting out New Zealand. The Union Line now runs a monthly service via Tahiti, Raratonga and New Zealand with the steamers Tahiti and Maunganui. The Spreckels service to Sydney has become a three-weekly one, the Sonoma, Ventura and Sierra having been thoroughly reconditioned and retained in that service, which runs to Sydney via Honolulu and Pago Pago.

The establishment of the All Red route via Canada in 1893 added another line of communication between the north and south Pacific. The opening of the Panama Canal also brought many lines of steamers from the Cape and Horn routes across the Pacific.

Yet the San Francisco mail route to New Zealand and Australia still holds its own, and it is richer in history than any other route leading from the Pacific Coast to Australia.



The Oceanic Steamship Company's steamer Sonoma as she originally appeared

UTILITY OF THE PANAMA CANAL

Ten years after the opening of the Panama Canal the business through this waterway has attained such large volume that it outranks the long-establisihed Suez Canal. Aside from this very satisfactory condition stands out the more important fact that this American waterway has brought the Eastern coast of the United States into closer touch with the Pacific coast as well as all the nations bordering the shores of the Pacific Ocean, an achievement which places America in a dominant position for controlling the commerce of the world's two greatest oceans.

Attention is also called to the fact that the canal has materially reduced the cost of transportation between the Atlantic and Pacific coasts.

Reports that the Panama Canal has established its highest record in 1923 attracted the attention of the world to the remarkable gains in commerce made by the Pacific states and countries. The countries and colonies to which it gave a shorter vessel route to the Atlantic coast include Japan, Korea, Asiatic Russia, the Philippines, Australia, New Zealand, Chile, Peru, Ecuador, Colombia, Salvador, Bolivia, Alaska and Hawaii. The commerce of the South American countries now passes by rail to the Pacific coast and thence through the Canal to the Atlantic ports of North America.

The Panama Canal has shortened the distance from New York to Yokohama by 3,000 miles, the former steamship route having been by way of the Suez Canal; to Shanghai, China, by 1,500 miles; to Australia and New Zealand by 3,000 miles, the former route having been by way of the Straits of Magellan, and to Vladivostok, Russia, by 7,000 miles. To the West Coast of South America the distance has been reduced by one-third.

Senator Ransdall of Louisiana in a recent address on the Panama Canal described it as one of the most rapidly growing assets possessed by any country in the world. He said in part:

"It was built at a great cost, but, in my opinion, the question of national defense alone, and the ability to quickly concentrate our fleet in either ocean, amply justifies the entire cost of the Canal, aside from the purely commercial aspects. It is the commercial aspect which appeals most largely to the public, however, and it is from this viewpoint that we should consider the place which the Panama Canal holds in our national life.

"The first question the public usually asks is, 'does it pay?' and I would answer from three distinct points of view. First, as a commercial investment; secondly, as an investment of national defense; and thirdly, as an investment of national prestige. And in each case I should answer unhesitatingly, 'yes, it does pay, and it will pay more handsomely as the years go on.'

"The Panama Canal was opened for traffic on August 15, 1914, and its cost was $375,000,000, of which $100,000,000 is chargeable to national defense and the remaining $275,000,000 to commerce. The value to this country, from the national defense point of view, of the Canal's usefulness cannot be computed until there occurs some crisis in our affairs which make the rapid assembling of our entire fleet in either ocean vital to our safety. Then, indeed, it may be said that the canal has repaid itself by saving the life of the nation.

"In the meantime what do we gain? In the year 1913, just prior to the opening of the Panama Canal, the entire group of 20 countries, known to us generally as 'Latin America,' imported from the United States approximately 24 per cent of their requirements from the countries beyond their own borders. In the years since that time and up to 1921, the commerce has grown to a point where those countries, as a whole, import 45 per cent of their foreign needs from the United States.

"Of course this startling growth of trade between the United States and the countries of Central and South America cannot be directly attributed to the Panama Canal, but no one conversant with the indirect influences which contribute to the growth of trade, can gainsay the fact that our venture at Panama opened the way. As a result, the United States will do a business with those countries for the calendar year 1923 which will reach the enormous total of almost $2,000,000,000.

"In the cases of individual countries, particularly those islands of the West Indies and the countries of Central America near Panama, the effect of the Canal may be said to be enormous. Cuba now imports from the United States 75 per cent of her outside requirements; Brazil's imports from the United States have jumped from 10 per cent in 1913 to 31 per cent in 1921. These figures show the extreme value of the investment in the Panama Canal, as well as the impetus to our Latin American trade, which we may assume it supplied.

"The Panama Canal belongs to the United States, but we realize that it is the most effective bond possible between continents."

A new high record for traffic through the Panama Canal was set during the fiscal year ended June 30, according to a report made public by the War Department.

Commercial traffic through the Canal in the month of June was 377 ocean going ships, paying $1,792.821 in tolls, and two launches paying $13.20. This brings the total for the fiscal year ending June 30 to 5,230 commercial ships paying $24,290,963.54 in tolls

During the fiscal year 1923 there was a total of 3,967 transients, paying tolls of $17,508,414, while during the calendar year 1923 there was a total of 5,037 transients, paying tolls of $22,966,838.

Comparing the fiscal year 1924 with the calendar year 1923, the previous record year, shows the following: Transients, an increase of 193, or 3.8 per cent; tolls, an increase of $1,324,125, or 5.8 per cent. Comparison with the fiscal year 1923 shows an increase in transients of 1,263, or 31.8 per cent, and an increase in tolls of $6,782,548.69, or 38.7 per cent.

"OIL POLLUTION ACT, 1924"

Congressional Act to Prevent Discharge of Oil Into Navigable Waters

Approved June 7, 1924. Effective September 7, 1924. (Public—No. 238—68th Congress.)

An Act to protect navigation from obstruction and injury by preventnig the discharge of oil into the coastal navigable waters of the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that this Act may be cited as the "Oil Pollution Act, 1924."

Sec. 2. When used in this act, unless the context otherwise requires—

(a) The term "oil" means oil of any kind or in any form, including fuel oil, oil sludge and oil refuse;

(b) The term "person" means an individual, partnership, corporation or association; any owner, master, officer or employee of a vessel; and any officer, agent or employee of the United States.

(c) The term "coastal navigable waters of the United States" means all portions of the sea within the territorial jurisdiction of the United States, and all inland waters navigable in fact in which the tide ebbs and flows;

(d) The term "Secretary" means the Secretary of War.

Sec. 3. That, except in case of emergency imperiling life or property, or unavoidable accident, collision or stranding, and except as otherwise permitted by regulations prescribed by the Secretary as hereinafter authorized, it shall be unlawful for any person to discharge, or suffer or permit the discharge of oil by any method, means or manner into or upon the coastal navigable waters of the United States from any vessel using oil as fuel for the generation of propulsion power or any vassel carrying or having oil thereon in excess of that necessary for its lubricating requirements and such as may be required under the laws of the United States and the rules and regulations prescribed thereunder. The Secretary is authorized and empowered to prescribe regulations permitting the discharge of oil from vessels in such quantities, under such conditions, and at such times and places as in his opinion will not be deleterious to health or sea food, or a menace to navigation, or dangerous to persons or property engaged in commerce on such waters, and for the loading, handling and unloading of oil.

Sec. 4 That any person who violates section 3 of this Act, or any regulation prescribed in pursuance thereof, is guilty of a misdemeanor, and upon conviction shall be punished by a fine not exceeding $2,500 nor less than $500, or by imprisonment not exceeding one year nor less than thirty days, or by both such fine and imprisonment, for each offense. And any vessel (other than a vessel owned and operated by the United States) from which oil is discharged in violation of section 3 of this Act, or any regulation prescribed in pursuance thereof, shall be liable for the pecuniary penalty specified in this section, and clearance of such vessel from a port of the United States may be withheld until the penalty is paid, and said penalty shall constitute a lien on such vessel which may be recovered in proceedings by libel in rem in the disitrict court of the United States for any district within which the vessel may be.

Sec. 5. A board of local inspectors of vessels may, subject to the provisions of section 4450 of the Revised Statutes, and of the Act entitled "An Act to provide for appeals from decisions of local inspectors of vessels, and for other purposes," approved June 10, 1918, suspend or revoke a license issued by any such board to the master or other licensed officer of any vessel found violating the provisions of section 3 of this Act.

Sec. 6. That no penalty, or the withholding of clearance, or the suspension or revocation of licenses, provided for herein, shall be enforced for any violation of this Act occurring within three months after its passage.

Sec. 7. That in the administration of this Act the Secretary may make use of the organization, equipment and agencies, including engineering, clerical and other personnel, employed under his direction in the improvement of rivers and harbors, and in the enforcement of existing laws for the preservation and protection of navigable waters. And for the better enforcement of the provisions of this Act, the officers and agents of the United States in charge of river and harbor improvements, and the assistant engineers and inspectors employed under them by authority of the Secretary, and officers of the Customs and Coast Guard Service of the United States, shall have power and authority and it shall be their duty to swear out process and to arrest and take into custody, with or without process, any person who may violate any of said provisions: Provided, That no person shall be arrested without process for a violation not committed in the presence of some of the aforesaid officials. And provided further, That whenever any arrest is made under the provisions of this Act the person so arrested shall be brought forthwith before a commissioner, judge or court of the United States for examination of the offenses alleged against him; and such commissioner, judge or court shall proceed in respect thereto as authorized by laws in cases of crimes against the United States.

Sec. 8. That this Act shall be in addition to the existing laws for the preservation and protection of navigable waters and shall not be construed as repealing, modifying or in any manner affecting the provisions of those laws.

Sec. 9. That the Secretary is authorized and directed to make such investigation as may be necessary to ascertain what polluting substances are being deposited into the navigable waters of the United States, or into nonnavigable waters connected with navigable waters, to such an extent as to endanger or interfere with navigation or commerce upon such navigable waters or the fisheries therein; and with a view to ascertaining

the sources of such pollutions and by what means they are deposited; and the Secretary shall report the results of his investigation to the Congress not later than two years after the passage of this Act, together with such recommendations for remedial legislation as he deems advisable: Provided, That funds appropriated for examinations, surveys and contingencies of rivers and harbors may be applied to paying the cost of this investigation, and, to adequately provide therefor, the additional sum of not to exceed $50,000 is hereby authorized to be appropriated for examinations, surveys and contingencies of rivers and harbors.

JAPAN ON THE SEA

Japan has renewed her generous system of steamship subsidies. This step is all the more necessary because of the grave injury to Japanese steamship interests wrought by the terrible Yokohama earthquake of last September. It is stated that the Nippon Yusen Kaisha, greatest of Japanese steamship organizations, lost on its office buildings alone the sum of 1,000,000 yen through this earthquake, and that the Toyo Kisen Kaisha, operating an important route to San Francisco, has an overdraft of no less than 27,500,000 yen in one Japanese bank. Amalgamation of this line with the Nippon Yusen Kaisha has been long discussed, but is not yet accomplished.

Forty-seven Japanese steamship companies have formed a central organization of a total tonnage of 2,500,000, after the example of the American Steamship Owners' Association. Japanese merchant tonnage laid up is not at present large but is noticeably increasing. Patriotic sentiment among the Japanese toward their merchant marine is strong and persevering. The Japanese merchant fleet now rivals in tonnage the merchant fleet of France, with a total gross register of 3,604,147, according to Lloyd's Regisetr, as compared with a total of 3,737,244 under the French flag. All observers agree that the Japanese merchant marine owes its remarkable extension very greatly to a liberal national system of subsidies to ship lines and bounties to native shipbuilding. In fact, before these national aids were given the Japanese merchant fleet was an insignificant collection of junks and small steamers.

Trans-Bay Travel by Ferry During 1924

The following statistics of passengers carried on transbay ferries from and to San Francisco and on up-bay auto ferries during the fiscal year ended June 30, were prepared under the direction of Captain John K. Bulger, supervising inspector of steam vessels for this district.

Southern Pacific Company
(From and to San Francisco)

1921	
Oakland and Alameda piers (main ferries)	24,318,471
Oakland Creek Route (passengers and auto ferry)	2,753,452
Oakland pier (autos and auto-passengers only)	*
Total	27,071,923
1922	
Oakland and Alameda piers (main ferries)	22,744,806
Oakland Creek Route (passengers and auto ferry)	2,438,913
Oakland pier (autos and auto-passengers only)	275,395
Total	25,459,114
1923	
Oakland and Alameda piers (main ferries)	23,311,650
Oakland Creek Route (passengers and auto ferry)	1,929,647
Oakland pier (autos and auto-passengers only)	1,007,021
Total	26,248,021
1924	
Oakland and Alameda piers (main ferries)	23,506,866
Oakland Creek Route (passengers and auto ferry)	1,166,687
Oakland pier (autos and auto-passengers only)	2,282,487
Total	26,954,040

*Not operated until after July, 1921, and then practically for a year on Saturday afternoons, Sundays and holidays, then daily ferry established.

Key Route
(San Francisco-Oakland)

1921	14,950,765	1922	15,259,009
1923	15,987,719	1924	17,279,158

Western Pacific
(San Francisco-Oakland)

1921	105,043	1922	83,834
1923	86,226	1924	90,480

Santa Fe
(San Francisco-Richmond)

1921	40,978	1922	179,219
1923	168,563	1924	190,874

Northwestern Pacific
(San Francisco-Sausalito)

1921	7,010,046	1922	7,008.941
1923	*6,536,807	1924	*6,707,721

*Decrease probably caused by establishing Golden Gate Ferry.

Golden Gate Ferry
(San Francisco-Sausalito)

1922	*36,871	1923	1,048,332
1924			1,543,201

*Began operation May 28, 1922.

Monticello Steamship Co.
(San Francisco-Vallejo)

1921	851,288	1922	706,235
1923	596,145	1924	622,337

Petaluma and Santa Rosa Ry. Co.
(San Francisco-Petaluma)

1921	871	1922	658
1923	404	1924	464

Martinez-Benicia Ferry Co.
(Martinez-Benicia)

1921	142,264	1922	132,862
1923	227,177	1924	344,839

Richmond & San Rafael F. & T. Co.
(Richmond-San Quentin)

1921	333,152	1922	408,176
1923	477,978	1924	582,335

Rodeo-Vallejo Ferry Co.
(Short Way-Morrow Cove)

1921	*598,043	1922	*919,131
1923	990,027	1924	1,210,157

*Includes also Six-Minute Ferry which delivered boats and terminals to Rodeo-Vallejo Ferry Co. March 22, 1922.

THE FATHOMETER

The following is a brief description of the work done by the research laboratory of the Submarine Signal Corporation in developing the "Fathometer."

The problems which confronted the experimenters who first endeavored to make accurate measurements of the time elapsing between the production of a sound under water and the return of an echo from the bottom were somewhat similar to those which presented themselves in the earlier days of wireless communication, with the additional difficulty that it was necessary to work within very small time limits. If the sound had a duration of a tenth of a second, the initial waves of the disturbance had time enough to reach a depth of forty fathoms and return before the initial sound ceased, and the echo blended in with the original so that it was impossible to make any measurements. Whatever was used to produce the sound waves, it was imperative that the disturbance be over in less than one-hundredth of a second if any accuracy was to be obtained. Explosions or impact sound producers, which depended on a single sharp blow on a diaphragm, answered this requirement successfully, but produced difficulties at the receiving end. The case was analogous to the difficulties with wireless spark stations which produce a series of electrical impacts, because in both cases it is useless to employ sharply tuned or selective receivers. The solution followed very much the same lines as in the wireless field. A sound producer was developed which gave a short musical note, or continuous wave, and could be excited during a very small interval of time. This made it possible to utilize a tuned circuit for receiving the echo and decrease the effect of water noises and other sounds which might blur the real echo.

The sound producer used in the present depth sounding apparatus is known as an oscillator. It consists of a steel plate firmly clamped on the edges and having properly chosen dimensions so that it vibrates naturally with a frequency of 1,050 cycles a second, giving a short, clearly distinguished musical tone under water. The plate or diaphragm is actuated by a powerful electromagnet energized by an alternating current, so that a pulsating pull results one thousand and fifty times a second. The instant that the current ceases to flow the pressure of the water on the diaphragm acts like a brake, so that the signal ends sharply and does not tail over and merge with the returning echo.

The echo itself is detected by means of a hydrophone, which consists of an ordinary microphone, similar to those used in telephone transmitters for changing sound waves to electric waves, enclosed in a water tight case and connected to a diaphragm in contact with the water. The diaphragm takes part in any under-water vibrations and transmits them to the microphone button where they produce variations in an electric current which are faithful reproductions of the underwater disturbances. When it is necessary to increase the feeble energy of the echo or weed out extraneous noises, a vacuum tube amplifier with tuned circuits is utilized.

The current from the hydrophone goes to a "Fathometer," where the time required for the echo to reach the bottom and return is accurately measured and the depth is automatically indicated on a graduated dial.

The indicator mechanism is sturdy and foolproof. It will operate in any position and contains no delicate adjustments which can be put out of order by the rolling of the ship, or even by severe shocks, but it is extremely accurate and gives readings that can be relied upon within a fathom. In operation a luminous finger points to the spot on the scale corresponding to the depth, jumping about when the bottom is rough and rocky, varying slightly when the ocean floor is shelving, and remaining fixed when the depth is constant The light itself is not continuous but flashes four times a second, giving the illusion of a nearly constant light by the phenomenon of optical persistence of vision, of which the moving pictures are an example.

A glow discharge tube is mounted behind a slit on a disc which makes four rotations a second. In front of the disc is a circular glass plate graduated in fathoms from 0 to 100, corresponding to the depth from which an echo could return during the time of one rotation, or a quarter of a second. On the shaft, which rotates the disc and the light, is a cam which closes the circuit of the sound producer, or oscillator, and sends a current through the lamp when the latter is opposite the zero on the scale. When the returning echo causes a pulse in the hydrophone current a relay sends a luminous discharge through the rotating lamp and indicates the point on the scale corresponding to the depth.

For depths greater than 100 fathoms the speed of the rotating light is changed and the cam which closes the circuit of the oscillator operates once every second and a half. A light of different color and a different scale are used so that there can be no confusion, a single gear control effecting all the changes simultaneously. In order to differentiate between the two scales and extend the readings to depths from which the signals are too weak to operate a relay with certainty, the echoes are sent through a telephone and the revolving light is made continuously luminous. The position occupied by the light when the echo is heard corresponds to the depth, which can be read directly on a scale graduated from 0 to 600 fathoms. If the depth is greater than 600 fathoms the light makes more than one revolution and the depth can still be accurately determined by adding 600, 1,200, etc., fathoms to the reading according to the number of complete revolutions of the light between the instant when the sound source is actuated and the instant when the echo is heard.

In a series of tests made under service conditions the apparatus described above has proved trustworthy and accurate. Its operation is entirely automatic, for it starts by pushing a button and indicates depths without adjustment or attention as long as it is allowed to operate. Soundings by this method are nearly instantaneous, and it is impossible to fall into error by taking a sounding above a small uncharted hole, for the apparatus gives a continuous series of soundings at very short intervals during the time it is in operation The constant or varying na-

ture of the light flashes indicates whether the bottom is level or changing, and when the echo is heard in the telephone an experienced operator can judge with fair accuracy the nature of the bottom.

It is felt that this system of finding ocean depths offers one of the greatest aids ever made in insuring the safety and speed of navigation. By the aid of this system of the Submarine Signal Corporation the navigating officer is enabled to obtain a visual indication when his ship comes on "soundings," i. e., depths which in the past could be obtained by the use of a "lead," and when on soundings he is enabled to obtain his position by noting the changing depths as shown by the "Fathometer" and comparing such indicated depths with those recorded on the chart.

USE OF AMERICAN VESSELS

Approximately $205,000,000 more was paid to foreign than to American ships last year for the carriage of American imports and exports. These figures are based on the returns of the Department of Commerce, and are of interest in connection with the call made by Chairman O'Connor of the Shipping Board upon American business men to use American vessels. The total ocean carried freight during 1923 was valued at $6,850,000,000, and if the freight bill is figured at an average of 10 per cent on the value of the goods, including brokerage and allied services, the earnings of foreign vessels in our trade for the year were $445,000,000, as compared with $240,000,000 for Shipping Board and privately owned American vessels.

If 51 per cent of the business had been American carried, which Mr. O'Connor indicates is the least that American ships are entitled to, the freight revenue of our vessels last year would have been nearly $350,000,000. The Jones Act provides for the establishment and maintenance of an American merchant marine to carry the greater portion of our foreign commerce. Great Britain now carries more than 60 per cent of her foreign commerce, and about 30 per cent of that between non-British nations as well, while other foreign merchant marines carry from 60 per cent to 90 per cent of their foreign trade. There is no reason, therefore, why the United States cannot justly look to the carriage of at least 60 per cent of its ocean trade.

It may be questioned, however, whether changed world conditions (meaning presumably an increase in world trade) will make it possible to transfer the government's vessels to private American owners, so long as a differential in operating costs continues in favor of the foreign ships in our trade. Legislation that will offset this differential and, at the same time, make it more profitable to the American shipper to use our own instead of foreign ships, is regarded as a means towards the end of establishing and maintaining an adequate American merchant marine operated by private enterprise. Such legislation will be laid before the next session of Congress.

Mexico is now looking forward to the establishment of a merchant marine and a decree has recently been signed by President Obregon, following the report of a special committee appointed to study the subject. Amendments to the railway law are announced, so that the Mexican railway companies may establish reduced export, import and coastwise preferential joint tariffs with the National Steamship Lines, which give some national service, subject to the itineraries approved by the Secretary of Communications. Official action must be taken, says the decree, "so that the national commerce and industries may not be left to the mercy of foreign merchant marines, without proper control of tariffs."

INSPECTION LAWS

It is now four months since the Georgia explosion in Port Orchard harbor called attention to the crying necessity for reforming the country's steamboat inspection regulations and laws. Yet no step, governmental or private, has been taken to safeguard the lives of those who travel on such vessels as the one in question. If less than 65 feet in length, steam passenger carriers still enjoy full immunity from inspection by the government's officers. They still enjoy full immunity from the law that requires other steam passenger carriers to carry liicensed officers.

As usual, everybody's business is nobody's business. There is the same old human tendency to let things drift until a catastrophe shocks the general public.

The supervising inspectors of the Steamboat Inspection Service will hold their annual meeting in Washington, D. C., next January. All such bodies move slowly. If it is necessary to educate the supervising inspectors, it is time that something was being done along that line. Otherwise, it is highly improbable that they will be ready by January to take the necessary action.

While the small steam passenger carriers are exempted from the steamboat inspection laws and regulations, these same laws and regulations are enforced against all steam towboats regardless of size. This solicitude for the safety of steam tugs and utter disregard for the safety of the traveling public in small steamboats is nothing more nor less than a barbarous and brutal inconsistency. If the small steam passenger carrier is to be exempt, then why should the small steam tug be forced to toe the mark?

Aside from that inconsistency, how is it figured out that the passenger on a carrier of more than 65 feet is entitled to every safeguard and that the passenger on a smaller steam carrier is entitled to no protection of any kind? Just where is the distinction? Is the life of a passenger on a 60-foot steam carrier not as valuable as the life of a passenger on a 70-foot steam carrier?

It would be interesting to dig back into the record and discover who was responsible for such a distinction. It would be interesting also to dig back into the reports of the supervising inspectors and discover why they have tolerated the continuation of a rule so unjustifiable and barbaric.—The Marine Digest.

HAVE YOU PAID YOUR DUES?

That is a leading question, we'll admit, but it is a vitally important one to your Local.

Your Local's financial calculations and engagements are made on the basis of its expectant or pledged income, and this must necessarily be so. At the very beginning of the fiscal year we are required to remit to the national organization for each member to cover his assessment to that body. And remember, we are required to do this whether you have paid or not. If you have not paid, of course it comes from the money paid by your fellow Mates, who have paid their dues. Surely you do not want your brother Mates to carry your load! If you are unable to pay, then in that case your fellow Mates are willing to carry the load for you. But if you can pay then you should lose no time in doing so.

TRAVEL BY BOAT SAFE

In the fiscal year 1922-23, 323,130,362 passengers were carried on vessels reporting to the Steamboat Inspection Service. The total accidents on these vessels during the year involving loss of life were 197, and the aggregate loss of life was 247, of which but 59 were passengers; 116 of the fatalities were due to suicide, falling overboard, and other acts of the deceased, leaving only 81 directly chargeable to collisions, explosions, founderings, etc. The ratio of passengers lost through such accidents to total passengers carried was one to 5,476,785.

MARINE INSURANCE FOR 1923

Total ocean marine premiums received during 1923 in the United States were $39,000,000 as compared to $29,000,000 in 1922, according to a tabulation completed by the Shipping Register. Losses during 1923 were $26,000,000 as compared with $28,000,000 the year previous.

THE MAN WHO JUST BELONGS

The men who "just belong" sit back
And think how much they aid
To keep the Local upon the track,
Because their dues are paid.
Well, that's a virtue, I admit
A mighty virtue, too—
But if you want to make a hit
There's something else to do.
To pay your part is first of all,
But not the first and last:
A dozen other duties call
When that is done and past.
To pay your money cheerfully
Is not of man the test—
A man may pay and still may be
Delinquent in the rest.
Don't be the man who "just belongs,"
Who just gets on and rides,
Who joins the fellows in their songs,
And nothing else besides.
For men must work as well as play,
Must give as well as take—
You have to work as well as pay,
My boy, a Local to make.

DECREASE IN IDLE WORLD TONNAGE

Based on a survey of the world's shipping situation, just issued by the Department of Commerce, it is shown that while the available seagoing tonnage of the world has declined during the fiscal year ended June 30 by about seven-tenths of one per cent, its idle tonnage has also decreased by 24 per cent. Approximately five-eighths of this decline in idleness took place, however, in the last half of 1923, during the period of generally increasing volume in world trade as enhanced by the seasonal crop movement and notably by the demands created following the Japanese earthquake.

This decline accompanied a rise in the average level of charter rates from their unprecedentedly low postwar level struck in the third quarter of 1923.

Trip charter rates are still at a somewhat lower actual average level than on July 1, 1923, and the volume of overseas trade is smaller than a year ago. Sales prices on used ships of five to ten thousand deadweight tons, not over five years old, are still around $20 per deadweight ton below the cost of replacement.

In spite of this, construction under way on June 30, 1924, was 74,000 tons greater than a year earlier and 169,000 tons more than on December 31, 1923, but this construction activity is without prospects of profit.

In the face of the increase in active tonnage and the shrinkage in volume of cargo, it is encouraging that the fall in charter rates during the closing quarter of the fiscal year has not been greater. The most that can be hoped for in the ocean shipping situation, however, is a very gradual improvement, considering that about 10 per cent of the world's merchant fleet is still out of employment.

The world's idle steam shipping is now 1,920,000 gross tons less than a year ago, having declined 1,157,000 tons during the six months ended January 1, 1924, and 763,000 tons during the six months ended July 1, 1924. Its employment, however, is on the basis of lower charter rates and a decreased volume of overseas trade.

A gratifying feature of this record is the decline in the American privately owned and idle fleet between January 1 and July 1, 1924, by 229,000 tons—the greatest such change recorded for any country during that period. The decline in the United Kingdom's idle fleet during the same interval amounted to 209,000 gross tons; in France's, 133,000 tons; in Italy's, 175,000 tons.

In spite of the supposedly bottom level for charter rates reached in the last quarter of 1922, when the index figure stood at 109 (1911-1913 average equal to 100), followed by the fluctuating but slight advance to an average of 109.5 in the second quarter of 1923, the third quarter of 1923 witnessed a drop to 104—a level unprecedented since prior to the war. In the fourth quarter of 1923 the index figure advanced to 107 and in the first quarter of 1924 reached 111, dropping again in the second quarter to an average of 110.