PDHonline Course M454 (8 PDH)

NORMANDIE: Ship of Dreams

Instructor: Jeffrey Syken

2020

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5272 Meadow Estates Drive
Fairfax, VA 22030-6658
Phone: 703-988-0088
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NORMANDIE: Ship of Dreams

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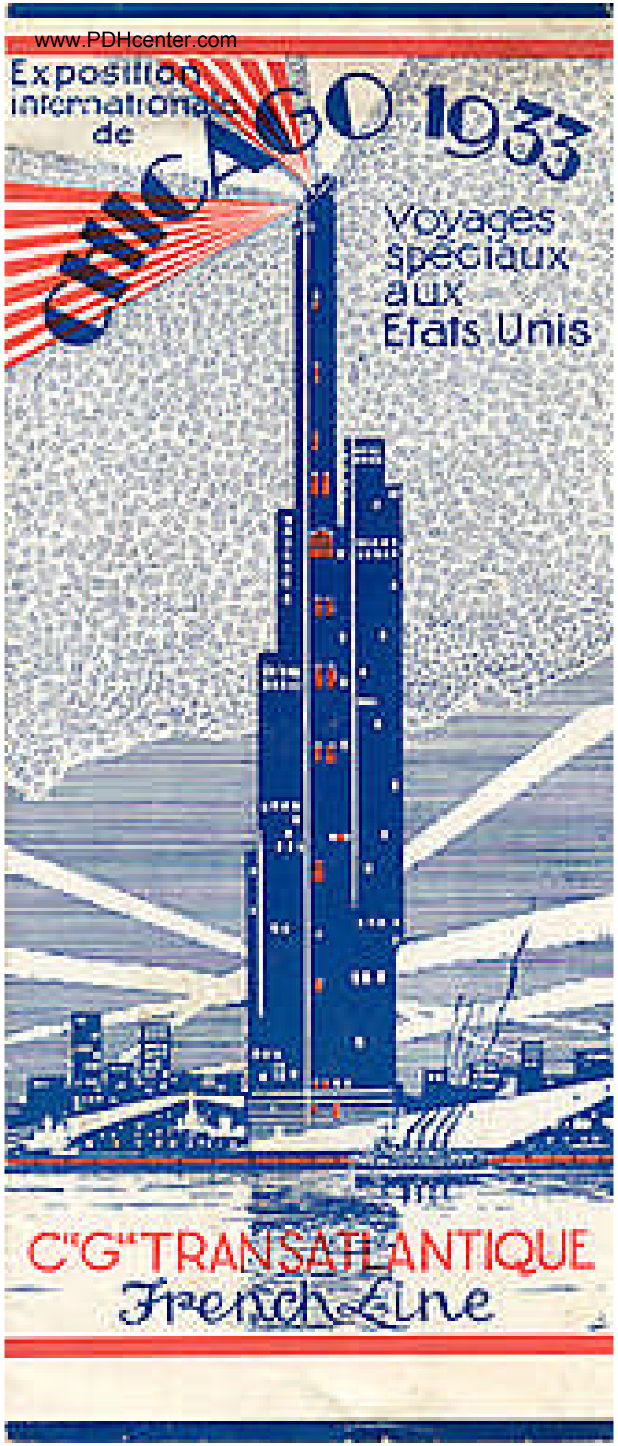
Part 1

The French Line

Compagnie Generale Transatlantique

Founded in 1855 by the *Pereire Brothers* as the *Compagnie Generale Maritime* (changed in 1861 to: *Compagnie Generale Transatlantique*), *CGT* contracted with the French Government to build a fleet of freighters and liners that was subsidized annually by the French government. A shipyard (*Penhoet*) was established near *Saint Nazaire* for the CGT fleet. CGT's first ship – the *S.S. Washington* (a paddle steamer), made its maiden voyage in June of 1864 between *Le Havre* and *New York* providing postal service. In 1867, the CGT fleet was converted to propeller drive (for greater efficiency). The following year (1868), a financial crisis forced the Pereire Bros. to file for bankruptcy. They resigned from the Board, but CGT survived.

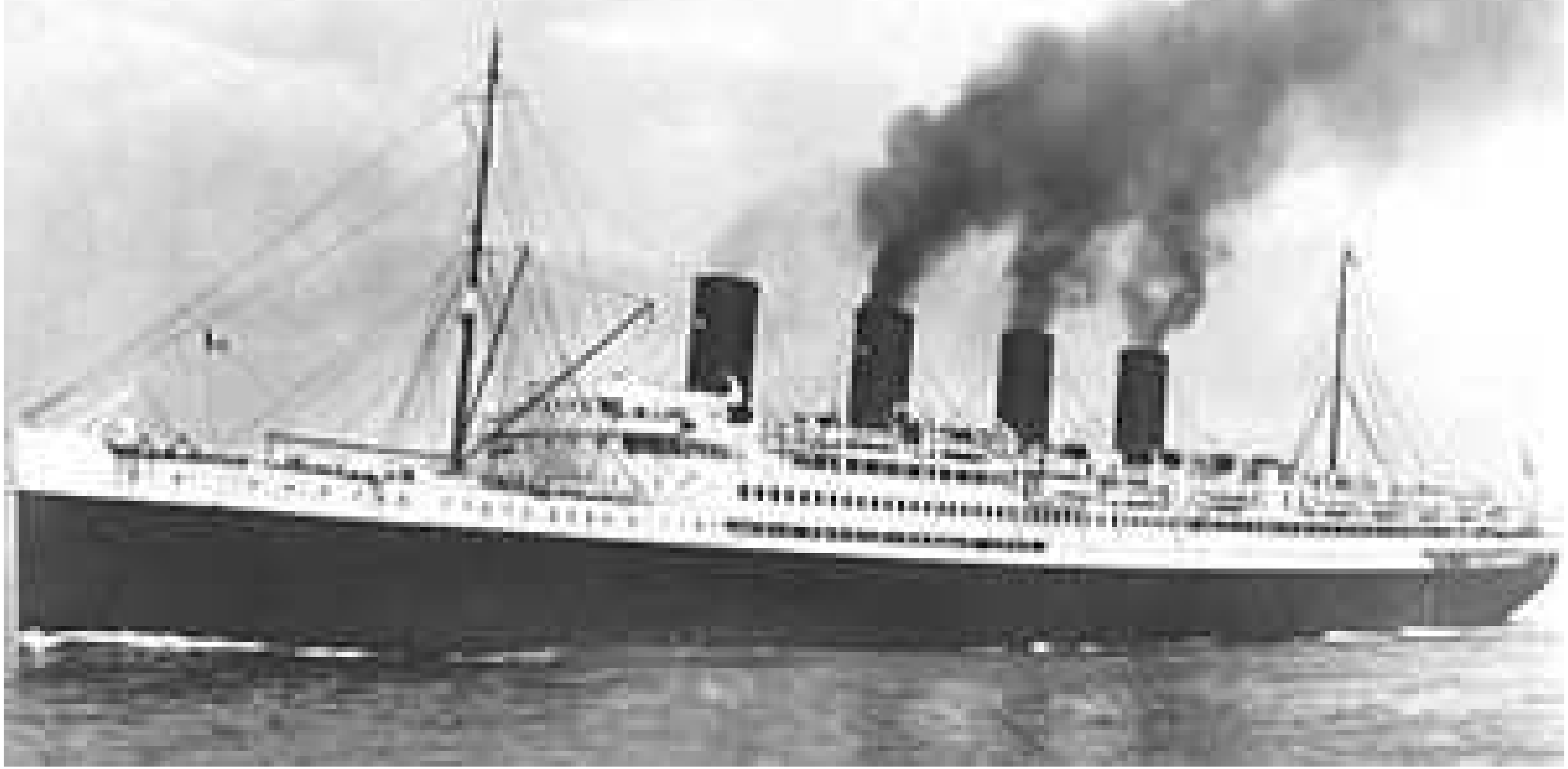
The Pereiere Brothers
(Emile and Issac)



In 1879, CGT incorporated and was awarded a contract for postal service in the Mediterranean while maintaining earlier postal contracts with the French government. In 1886, CGT's *S.S. La Bourgogne* made the crossing from Le Havre to New York in slightly more than seven days, securing first place in transatlantic postal service and establishing a competition for speed in transatlantic crossings. After two major maritime disasters (in 1897 and 1898), the company was reorganized (in 1904) to provide cargo service between Le Havre and New York and to emphasize luxury rather than size and/or speed in her transatlantic liners such as the *S.S. France*. During WWI, CGT transformed its fleet to wartime service losing one-third of its vessels by war's end. In the post-WWI years, the company recovered and in 1927 CGT launched the first art deco-style liner: *S.S. Ile de France.*

<u>Left</u>: CGT advertising poster for the 1933 *Century of Progress* World's Fair held in Chicago, Illinois


COMPAGNIE GÉNÉRALE TRANSATLANTIQUE
HAVRE
NEW YORK
SERVICE SUPPLÉMENTAIRE A MARCHE ACCÉLÉRÉE



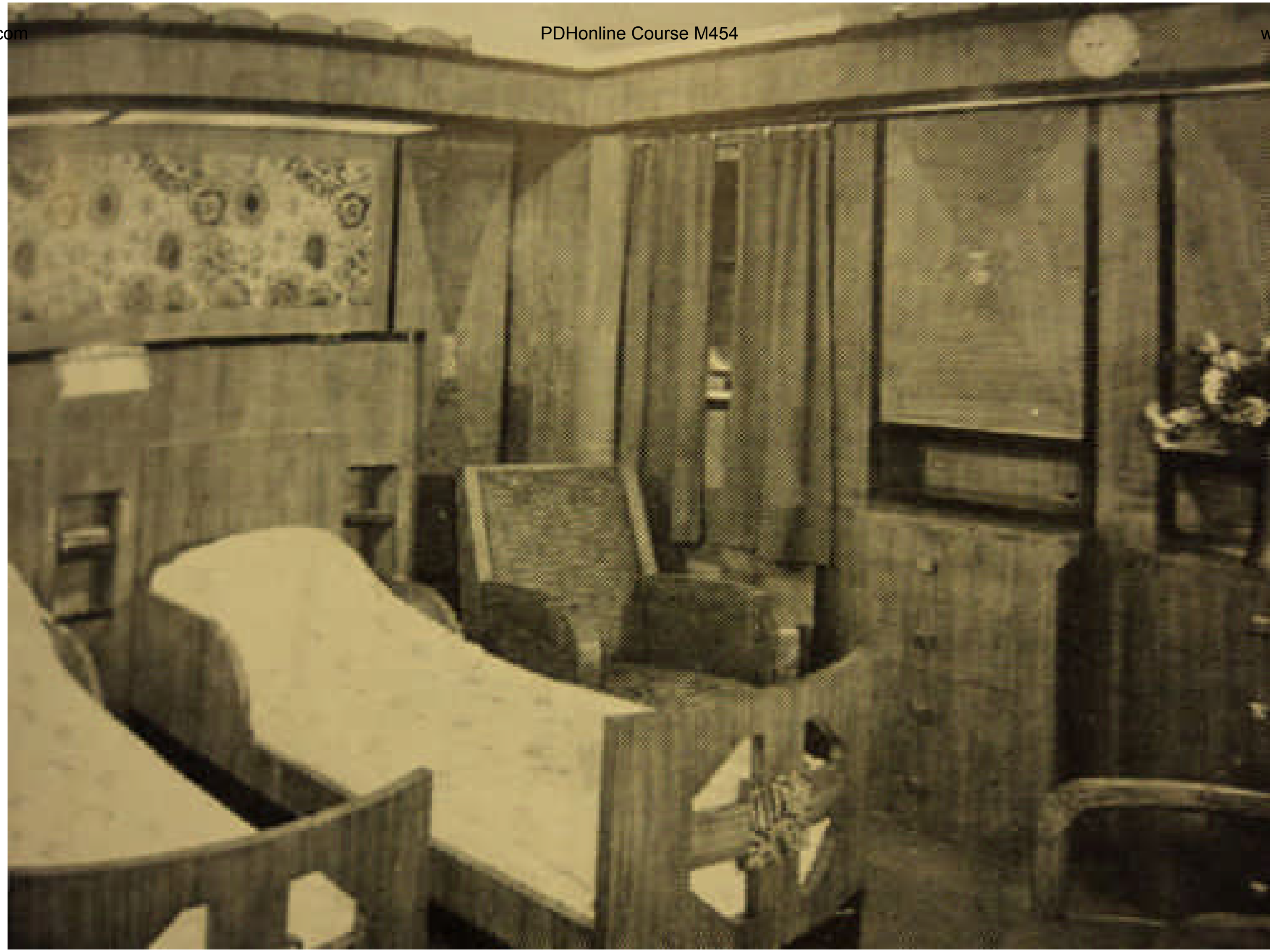
S.S. France
(1912)

S.S. Ile de France
(1927)

<u>Left</u>: the art-deco inspired *First-Class Dining Room* of the *Ile de France*
<u>Above</u>: the art-deco *Grand Salon* (at night the carpet was rolled back to uncover the dance floor)

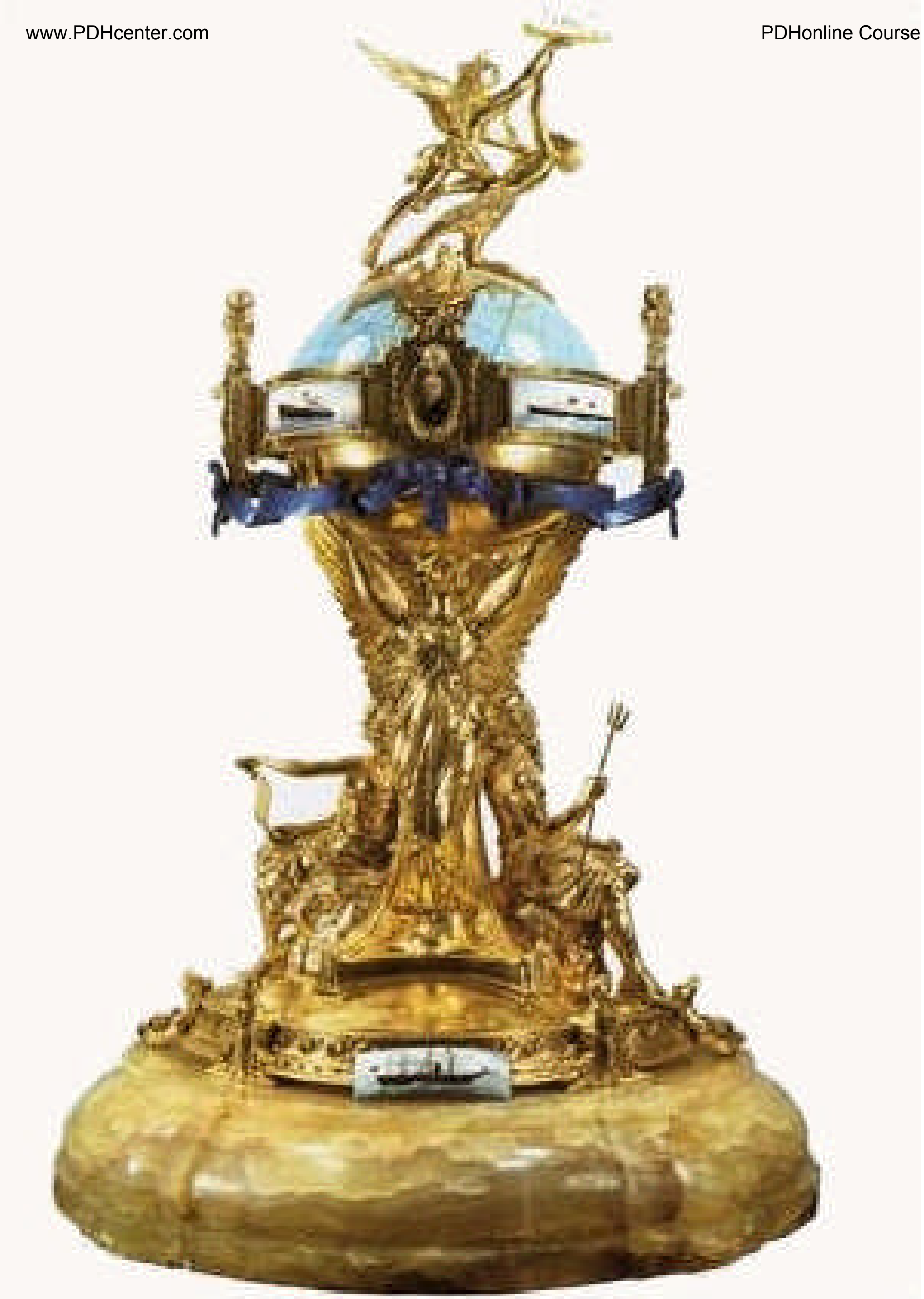
In 1931, the ninth-floor restaurant of *Eaton's Department Store* (in *Montreal, Canada* – at left) was styled after the First Class Dining Room of the *S.S. Ile de France*. The store owner's wife had recently made a transatlantic crossing on the great ship and was much impressed with its art-deco styling. Earlier CGT liners such as *France, Paris* and *De Grasse* had brought the best of French cuisine, interior design and service to the high seas earning *The French Line* a sterling reputation among the traveling public by bringing the amenities of a first-class hotel to sea. With the *Ile de France*, the situation had reversed; now (land-based) first class hotels, restaurants etc. were imitating a passenger ship for the very first time.

Salon
(*S.S. Ile de France*)

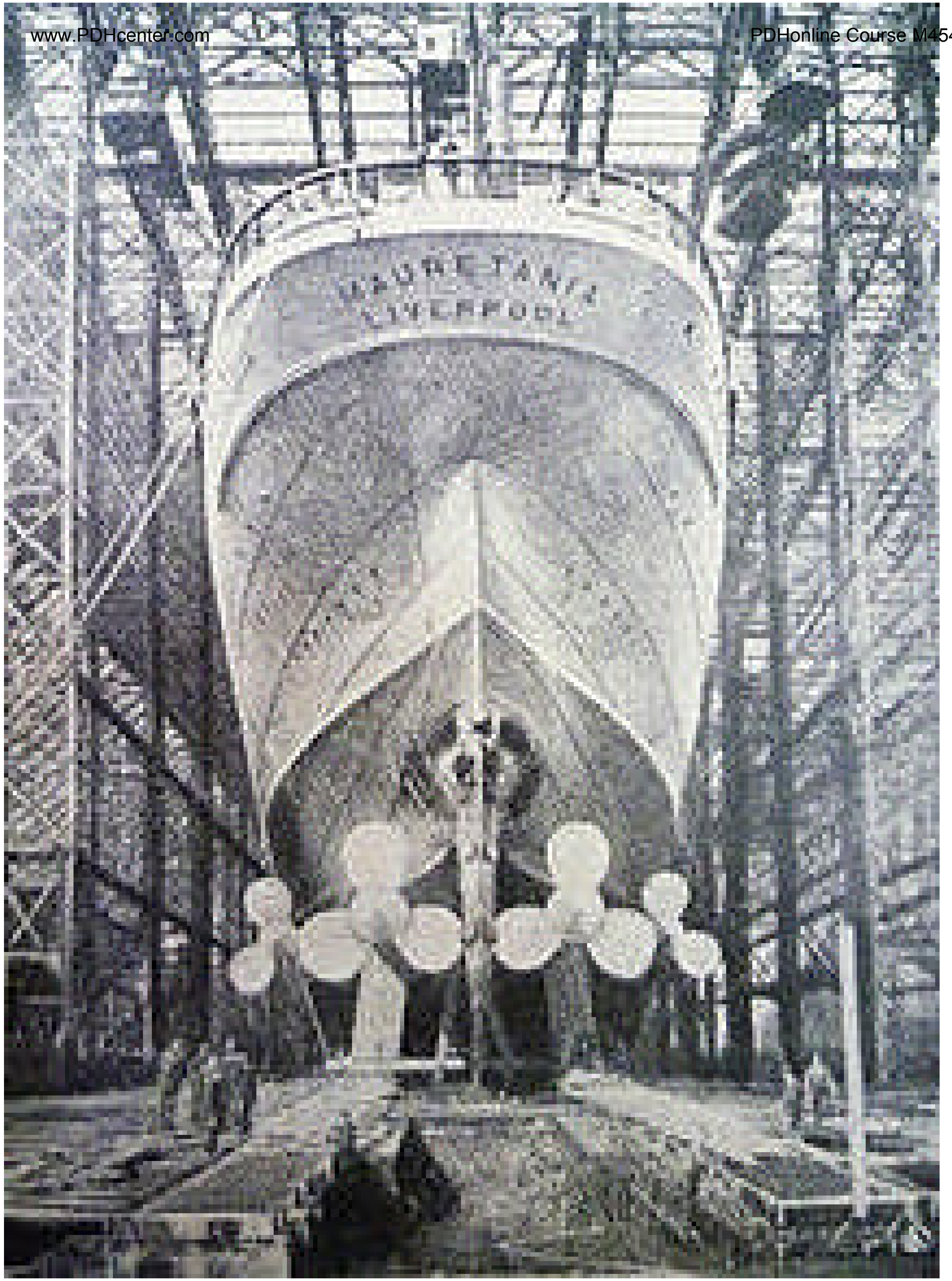


First Class Cabin
(*S.S. Ile de France*)

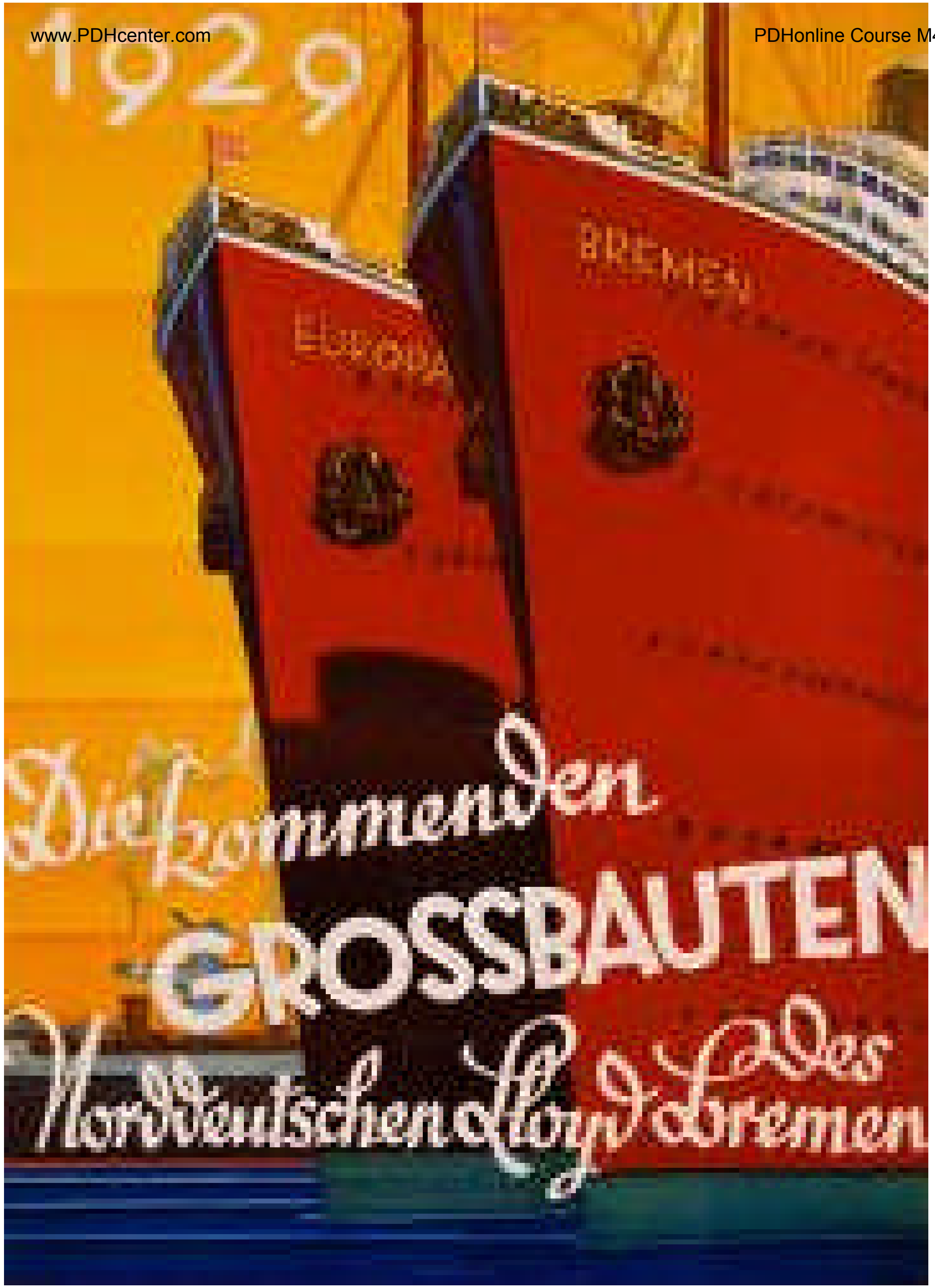
Le Ruban Bleu



The *Blue Riband* (*Le Ruban Bleu,* in French) was awarded to transatlantic passenger liners for *average speed* rather than time to cross (since ships use different routes). The term was taken from horse racing and came into unofficial use after 1910. For setting an eastbound speed record, a ship was a "record breaker." However, it was for the more difficult westbound crossing (against the Gulf Stream) that the Blue Riband was awarded. It was not until 1935 that the *Hales Trophy* (left) was awarded to a Blue Riband winner. Of the thirty-five winners, most were British (25), five were German, three American, one Italian and one French.



By the 1920s, liners such as the *R.M.S. Mauretania* (1906) – which won the Blue Riband in 1907, were nearing the end of their service life. Such ships were designed to accommodate the large number of steerage passengers emigrating to America; a lucrative market for steamship companies such as *Cunard* and the *White Star Line*. When the United States closed its doors to mass European immigration in the early 1920s, the focus was changed to luxury and speed. In particular, wealthy Americans traveling to Europe on business, pleasure and/or to escape the "dry" years of prohibition.



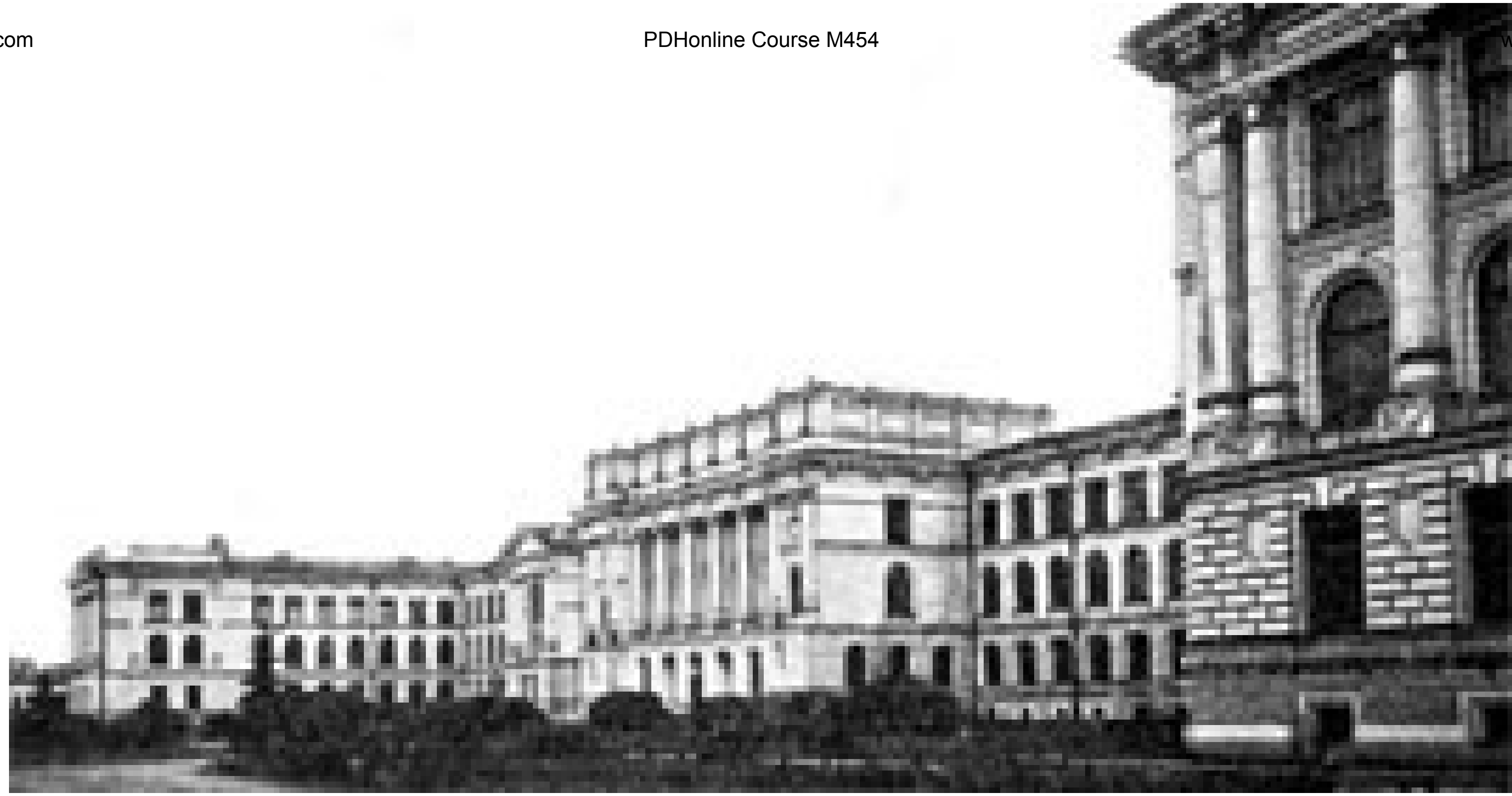
Though defeated in the World War, it would be Germany that, by the late 1920s, initiated the era of the "Super-Liner." In 1929, the North German ***Lloyd Line*** launched the 50K-ton ***S.S. Bremen*** and a year later her sister; ***S.S. Europa*** (1930). Built with speed in mind, both the ***Bremen*** and ***Europa*** would be Blue Riband winners. Not to be outdone, both Cunard and the White Star Line were planning even greater super-liners. With national pride and market share at stake, CGT began planning a super-liner of their own to compete with the British, Germans and Italians. The Penhoet shipyards at Saint-Nazzaire had built the venerable ***Ile de France*** and many of the French Line's previous ships, so it was natural that the ship CGT had in mind be designed and built there. The grand strategy of CGT was to build the largest and fastest ocean liner in the world – and the most beautiful, in keeping with the standards set by the French Line's flagship ***Ile de France***. A Paris factory worker would help make it a reality.

Part 2

Russian Father

They Taught Us Extremely Well

"First of all, to my school - the St. Petersburg Polytechnic Institute. They taught us extremely well. Russian leaders in shipbuilding; professors Bubnov, Krylov and Von Der Flit taught us, their students, everything they themselves knew."
Vladimir Ivanovich Yourkevitch (1885-1964)
RE: reply to a reporter's question (in later years) as to whom he owed his worldwide fame as a ship designer. Founded in 1902 *"for training shipbuilding engineers to design commercial ships and other vessels,"* the *Shipbuilding Department* of the *St. Petersburg Polytechnic Institute* was considered the most difficult area of study at the school. Students were expected to excel in several fields, especially mathematics. The intensive course of study, excellent equipment and first rate professors led him to work with many famous shipbuilding engineers in Germany (before WWI) and in France, England and the United States (after WWI). He believed the professors and graduates of the Polytechnic provided the theoretical calculations by which ship design was advanced around the world.



"The Shipbuilding Department at the Polytechnic Institute was founded for training shipbuilding engineers for designing commercial ships and other vessels, because before 1902 there were only two educational institutions of this kind - the Kronstadt Naval Engineering School for the Navy and the Institute of Communications for inland water transport."

Vladimir Yourkevitch

"According to the traditions of this first-class educational institution, the best professors and specialists were on the staff of the Shipbuilding Department: K.P. Bolklevsky (the first Dean of the Department) lectured on ship architecture, A.N. Krylov - on vibration and flood analysis, I.G. Bubnov - on ships' structural mechanics, S.P. Timoshenko - on the theory of elasticity. Moreover, professors from other engineering departments of the institute were available for reading lectures on general technical and mathematical matters, while professors from the Economics Department lectured on general education subjects. I remember how eagerly we, the students of the Shipbuilding Department, listened to the lectures given by professors N.I. Nareev, Ivanyukov, Bernatsky, Gregory Petrov and others…It goes without saying that the draughting rooms, laboratories and moulding lofts where the ships' structural dimensions were laid out to their actual size were very well equipped, too. Since there were only a few 'shipbuilders' (the enrollment used to be 25 students per year), we knew each other very well, and the professors knew every student personally. They could tell them even by their hand, and our studies took place in a friendly, family-like atmosphere. Nobody wanted to lag behind. After full days of lectures, we all used to work together on our projects in the draughting rooms every night until midnight. We used to leave only after all the lights in the drafting rooms had been turned out. Our Dean, Konstantin Petrovich Bolklevsky, cultivated in us, with the help of his personal example and in his lectures, a special love for ships, for their shape, for their speed and for the grace of their interiors. During our compulsory summer training voyages, we got to become even more inspired by the love for the sea and the ships."

Vladimir Yourkevitch

"Absolutely unusual and new. The ship was paunchy in the middle and looked like a boiler or a barge, while the extremities, on the contrary, were exceedingly pointed."

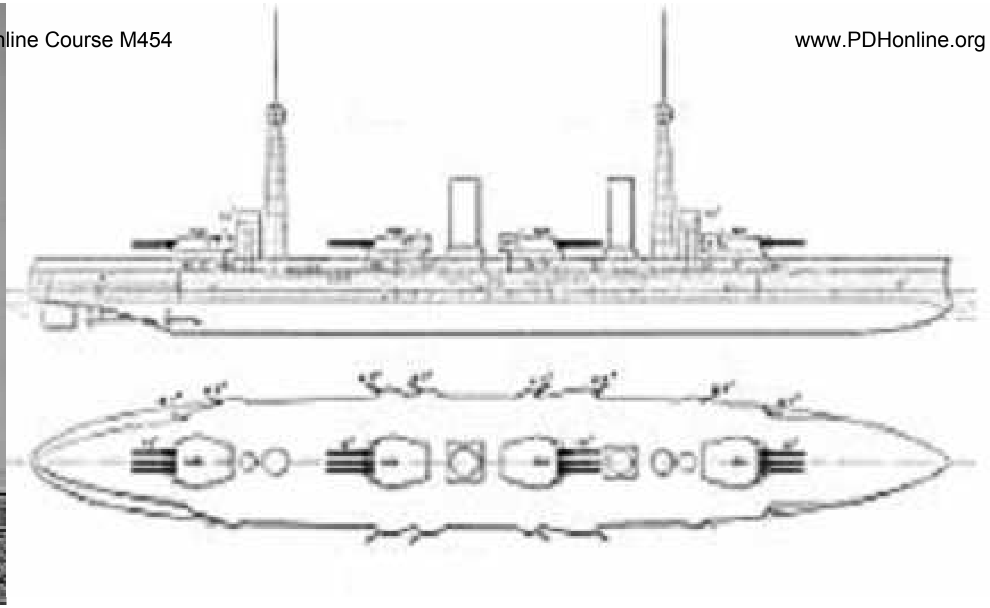
Professor K.P. Bolklevsky, St. Petersburg Polytechnic Institute

RE: observation by one of Yourkevitch's professors at the St. Petersburg Polytechnic concerning his star student's course papers. Under Professor Bolklevsky's guidance, Yourkevitch worked out his famous hypothesis for the perfection of a ship's streamline form.

"Many theoretical calculations carried out by our professors Krylov and Bubnov and by the graduates of our institute, engineers Kharitonovich, Papkovich, Khlytchiev and many others laid down the foundation for further progress in the shipbuilding industry in all countries, of which I was convinced based on my own experience when I worked with many famous shipbuilding engineers."

Vladimir Yourkevitch

After graduating with honors from the Polytechnic in 1909, Yourkevitch enrolled at the *Kronstadt Naval School* where he spent the final year of his formal education. He graduated with a degree as *Shipbuilding Engineer* and was promoted to the rank of Second Lieutenant. After graduation, he was assigned to work in the design bureau of the *Baltic Shipyard* which was to play a special role in the modernization of the Russian Navy in the wake of the disastrous (for Russia) *Russo-Japanese War* of 1904/05 and loss of the fleet at the *Battle of Tsushima* in May 1905.



Russian Battleship *Sevastopol*

Launched in July 1911 and completed in mid-1915, *Sevastopol* was the first Russian *Dreadnought* to join the *Imperial Russian Fleet*. Yourkevitch's "streamline form" was evident in the hull design which could maintain a top speed of 24-knots (27mph). Yourkevitch was also the main designer of four Super-Dreadnoughts: *Borodino*, *Kinbourn*, *Tzmail* and *Navarin*. Their hydrodynamic hulls provided excellent results on test models, but the ships were never built due to the October 1917 *Russian Revolution*. In 1915, Yourkevitch was transferred to the *Sailing Department* of the Baltic Shipyard where he designed the *Forel* and *Ersh* submarines.

During the Russian Civil War, Yourkevitch served as an officer in the "White Russian" army. After their defeat, in early 1920 he found himself a war refugee in *Constantinople* (now *Istanbul*), *Turkey* where he worked at first as a stevedore and later (with a group of other White Russians) he set up an auto repair shop. By 1922, he was in Paris working as a "turner" on an assembly-line in a *Renault* car factory. At the same time, he worked as a draftsman for a shipyard in *Argentat*. Six years later – in 1928, he got his opportunity to work once again in his chosen profession as a naval engineer for the passenger shipbuilding firm Penhoet - shipyard of choice to the Compagnie Generale Transatlantique (CGT).

"…compelled inactivity, shipbuilding engineering in Europe had made such incredible progress that my ideas would turn out to be too outdated…was absolutely amazed and overjoyed to realize that Europe still hadn't got any nearer to the problems our teachers had given us in Russia…even before the war the Russian shipbuilding industry had more opportunities than the contemporary European one."

Vladimir Yourkevitch

RE: his unfounded concerns that; being out of the shipbuilding business for several years, his original ideas were outdated by the late 1920s. His study of the conservative hull design for the *Ile de France* (1927) confirmed to him that his ideas were still fresh and worthy of consideration.

"He created his work in primitive, refugee-style surroundings, where the drawing board was the most sacred object. On the walls, on the floor and on the desks there were volumes of correspondence, tables, diagrams…"

Friend of Vladimir Yourkevitch

RE: with the stock market crash of October 1929 and the widening depression thereafter, work on Cunard's super-liner *Queen Mary* was put on hold and the White Star Line's *Oceanic* (begun before the crash) was cancelled. However, the *Societe Anonyme des Chantiers de Penhoet* – having commenced design work (in 1929) on the French Line's super-liner (yet to be named) went ahead undaunted. Yourkevitch decided to go-it alone working independently on the hull design of the super-liner. He worked late into the night for five years on complex calculations, checking and re-checking them. The design he came up with featured a wide-beamed hull (pointed at the bow and stern) with a slanting clipper-like bow featuring a bulbous forefoot (protruding bulb) below the waterline. Reputedly, Yourkevitch first tried to convince Cunard to use his hull design on the *Queen Mary*, but the conservative British considered it too unconventional. Yourkevitch then demonstrated the efficiency of his design to the French engineers at Penhoet and, after testing, they were sold on it. He was invited to join the design team.

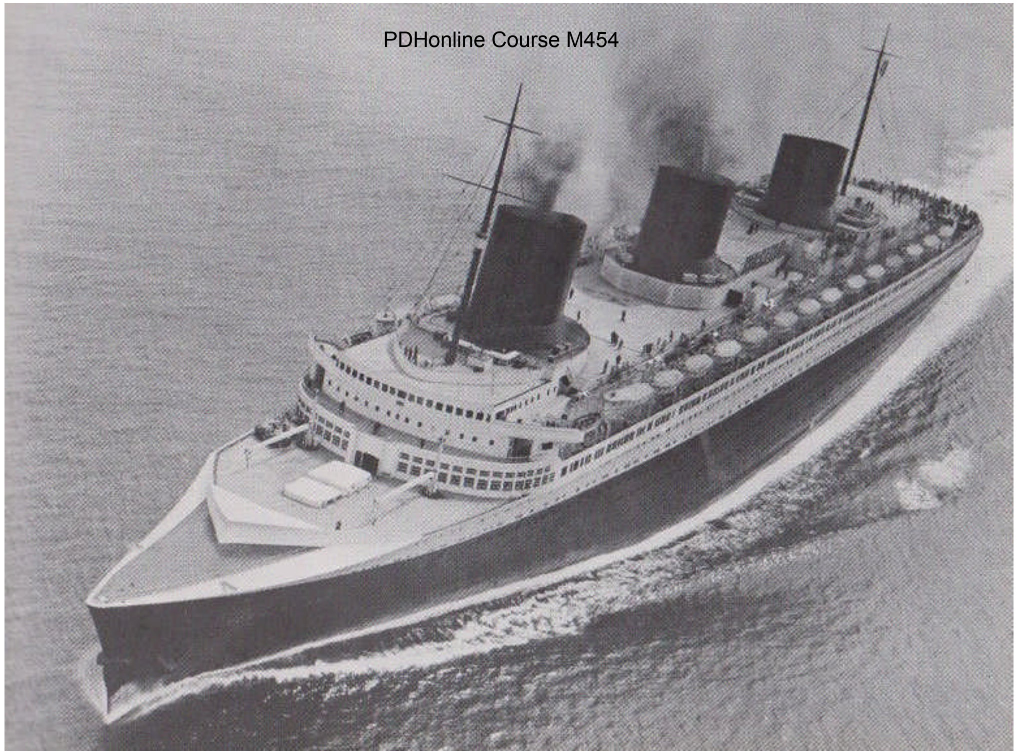
Normandie's "Protruding Forefoot"

(a.k.a. Protruding "Bulb" or "Nose")

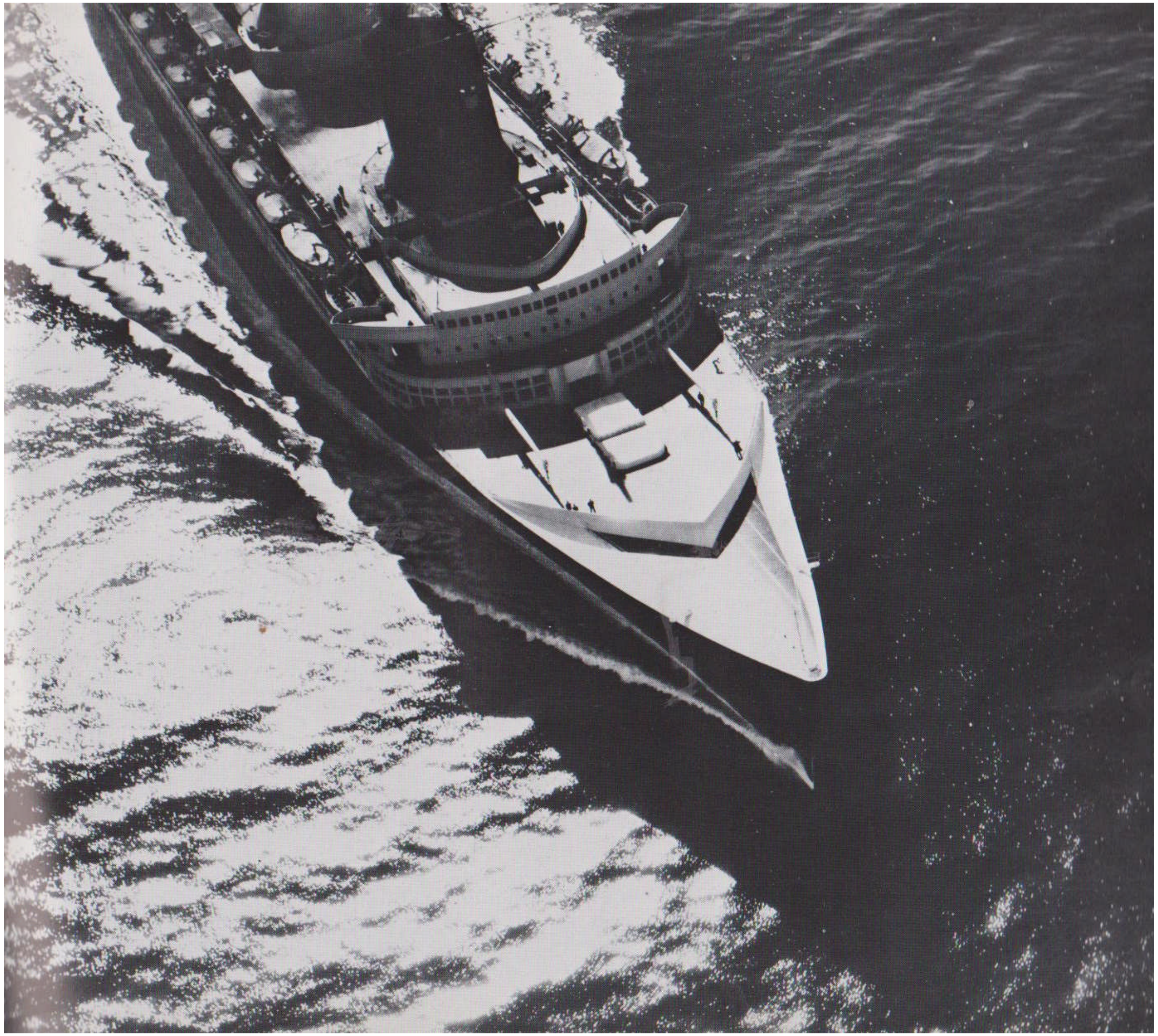
The shape practically eliminated the bow wave and left a flat wake astern of the ship, greatly increasing hydrodynamic efficiency.

"…The ship's bow presents a number of unique and promising characteristics. It is neither like the full bulbous bow on the Bremen **(at left)** ***nor like the old fashioned knife-edge type, but is clipper shaped with a very graceful semi-bulbous effect near the keel; it curves up into a rounded, streamlined rigid deck covering such as no ship is known to have…"***

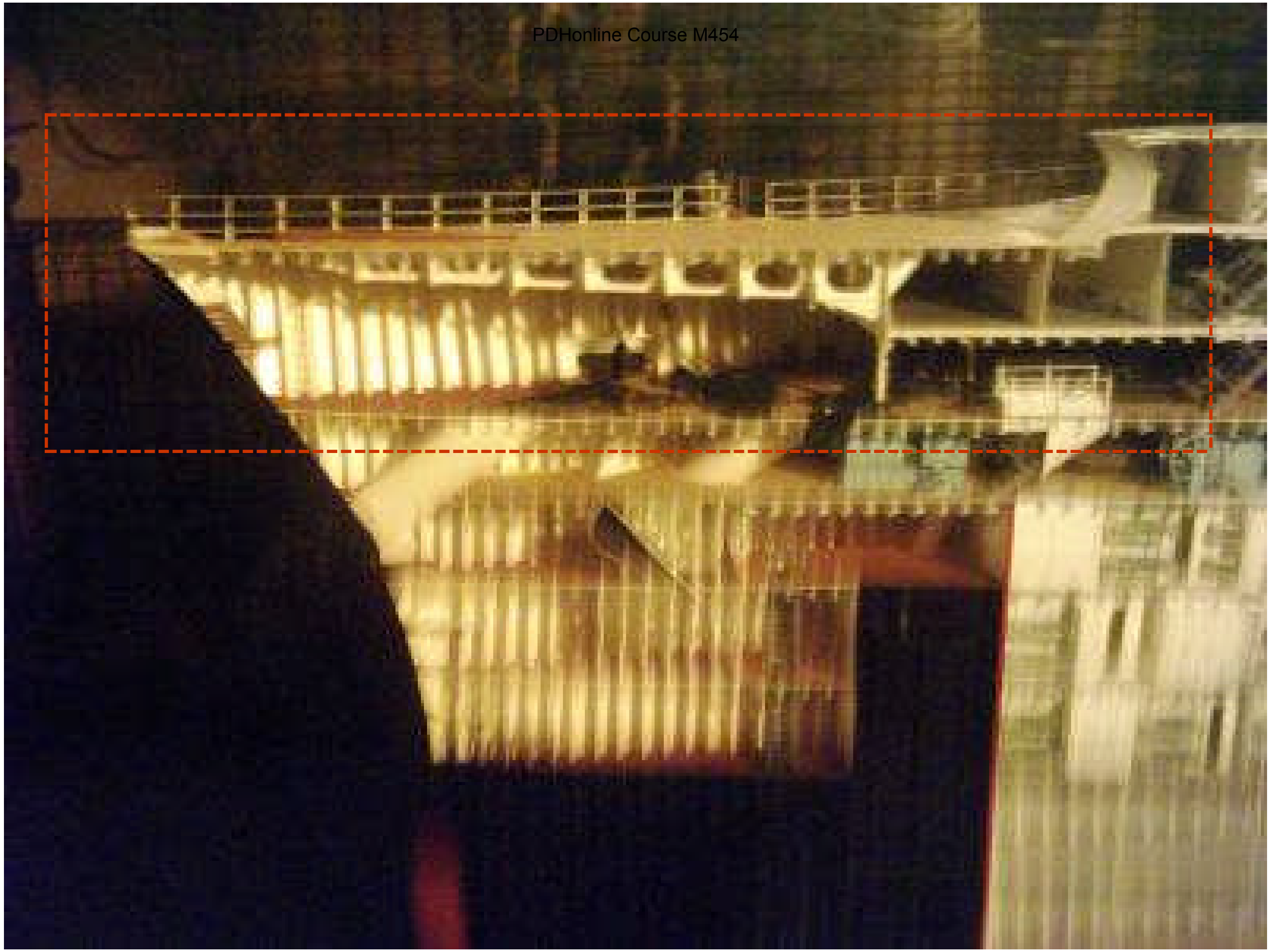
***Popular Mechanics*, Dec. 1932**



Another important innovation in Yourkevitch's design for the *Normandie* was the first enclosed ***Whaleback Bow*** for an ocean liner. It featured a convex deck housing all equipment/machinery for lowering and/or raising the three, 16-ton bow anchors (there was one, 12-ton anchor at the stern) and a ten-foot high ***Breakwater*** (for preventing crashing waves from reaching the superstructure/decks). Made of *Teak* wood, the curve of the Whaleback's deck served two purposes; decrease wind resistance and disperse quickly the tremendous weight of water crashing over the bow in rough seas. Aesthetically, the Whaleback Bow and concealed deck fittings throughout the superstructure gave *Normandie* a sleek modern, streamlined appearance. Whaleback Bows and breakwaters are a common feature on modern liners.



Front (left) and rear (right) view (Main Deck) of the *Breakwater*

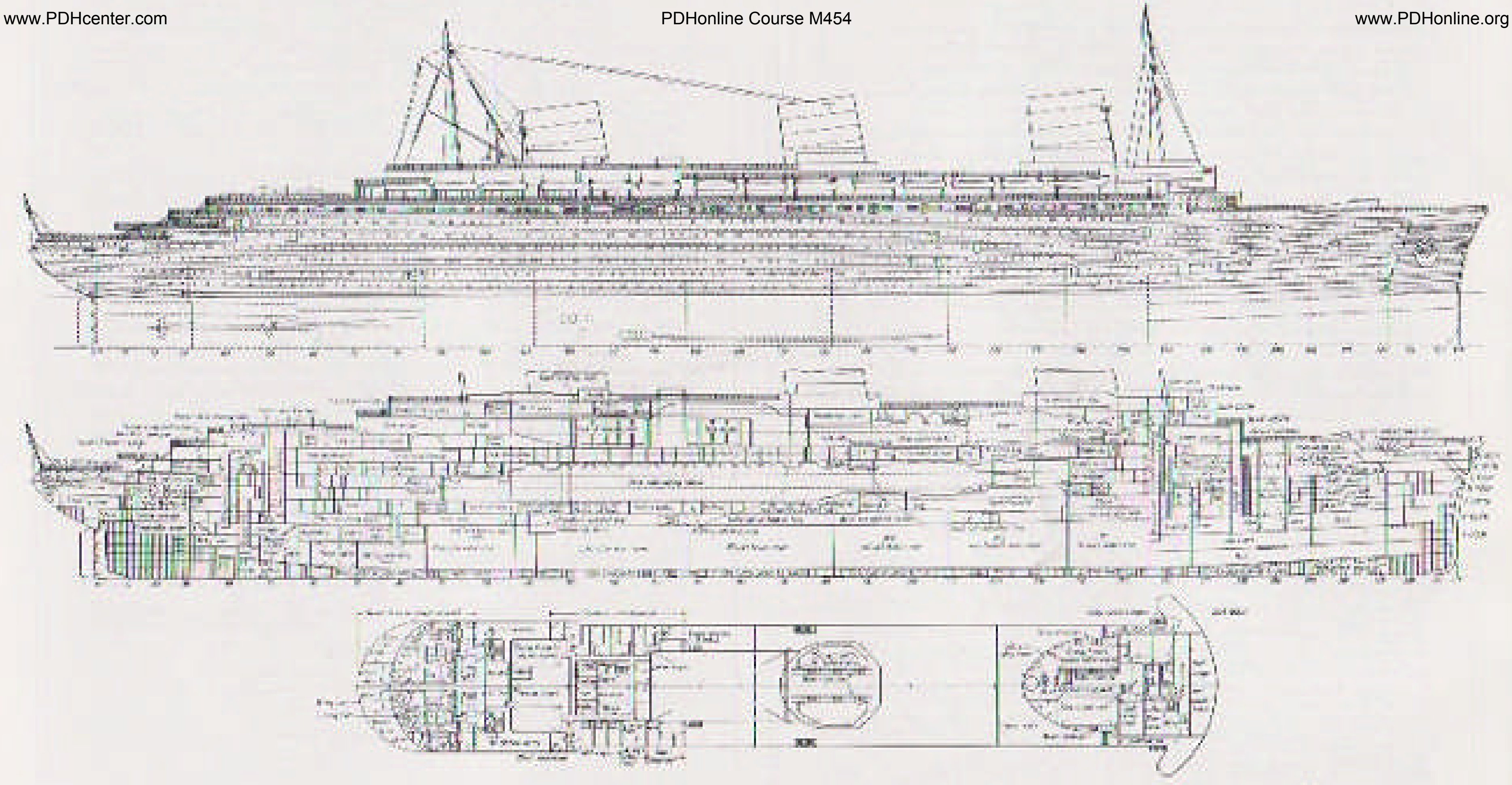


Sectional View of Whaleback Bow and Breakwater
(model)

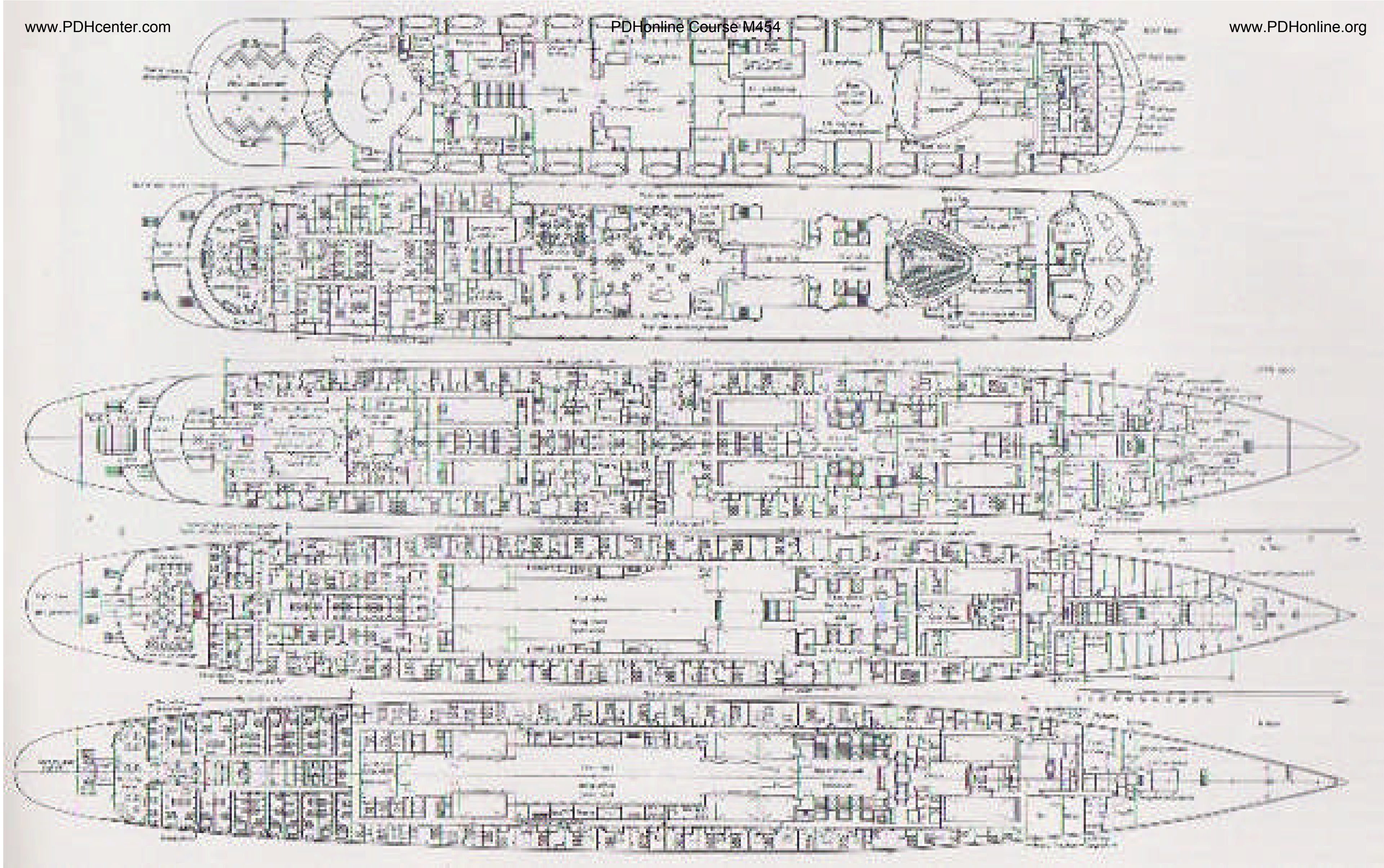
"I had to sustain a long fight: the forms I suggested were so different from the ones that were generally accepted, that I had to argue in their favor to the end. It cost me a lot of emotions."

Vladimir Yourkevitch

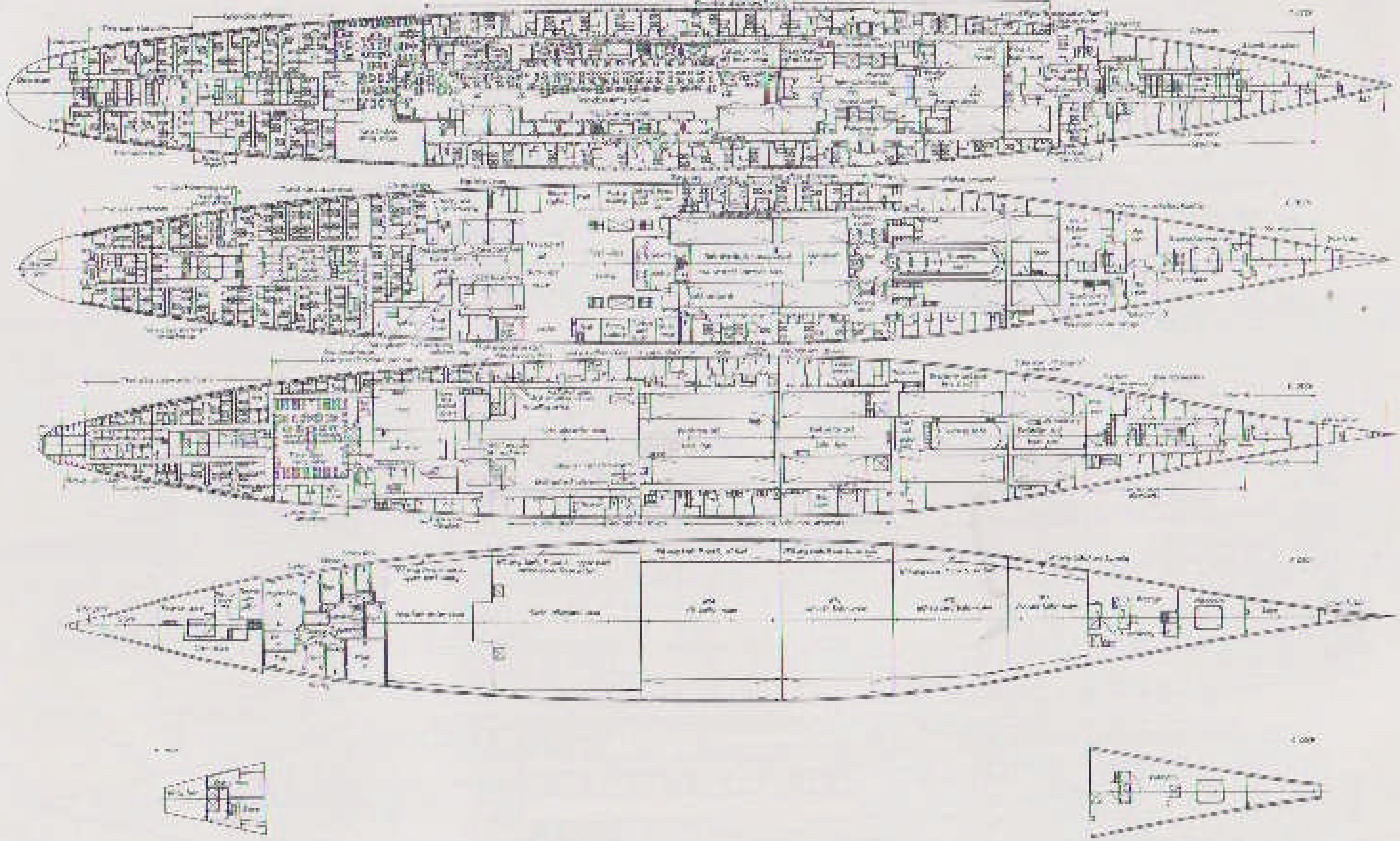
RE: Yourkevitch spoke little French thus communication was difficult. Even more difficult was overcoming French pride and honor which demanded that a Frenchman design the great French ship, not a foreigner. However, the efficiency of Yourkevitch's design could not be denied (it required 90% of the horsepower of the *Queen Mary* and/or *Queen Elizabeth* (its main rivals) to achieve the same speed. The design included fifty-four water-tight sections and eleven decks; two in the superstructure and nine within the hull.



<u>Top to Bottom</u>: Elevation/Longitudinal Section/Sun Deck Plan



<u>Top to Bottom</u>: Boat Deck Plan / Promenade Deck Plan / Main Deck Plan A-Deck Plan / B-Deck Plan



<u>Top to Bottom</u>: C-Deck Plan/D-Deck Plan/E-Deck Plan/F-Deck Plan/G-Deck Plan

Model testing of Yourkevitch's design began in *Paris* and continued in the *Hamburg Testing Basin* (considered the best in Europe) under the direction of Dr. Kemper – well known for his unbiased conclusions. Twenty-five models were tested, mostly of French design, along with Yourkevitch's (at left). The hull design fascinated all participants (including Dr. Kemper) and the results of the testing proved the design to be a winner. Vladimir Yourkevitch had gone from unloading ships in Turkey to designing the largest ship ever built by man in the space of just a few years and his design for the new super-liner would open up a new era in shipbuilding. Vladimir Ivanovich Yourkevitch had earned the respect and admiration of his peers. However, the "Russian Father" of the great French ship would remain anonymous in the French press.

"…Two principles, two palms of human genius - the Russian and the French - interlaced in a symbolic way."

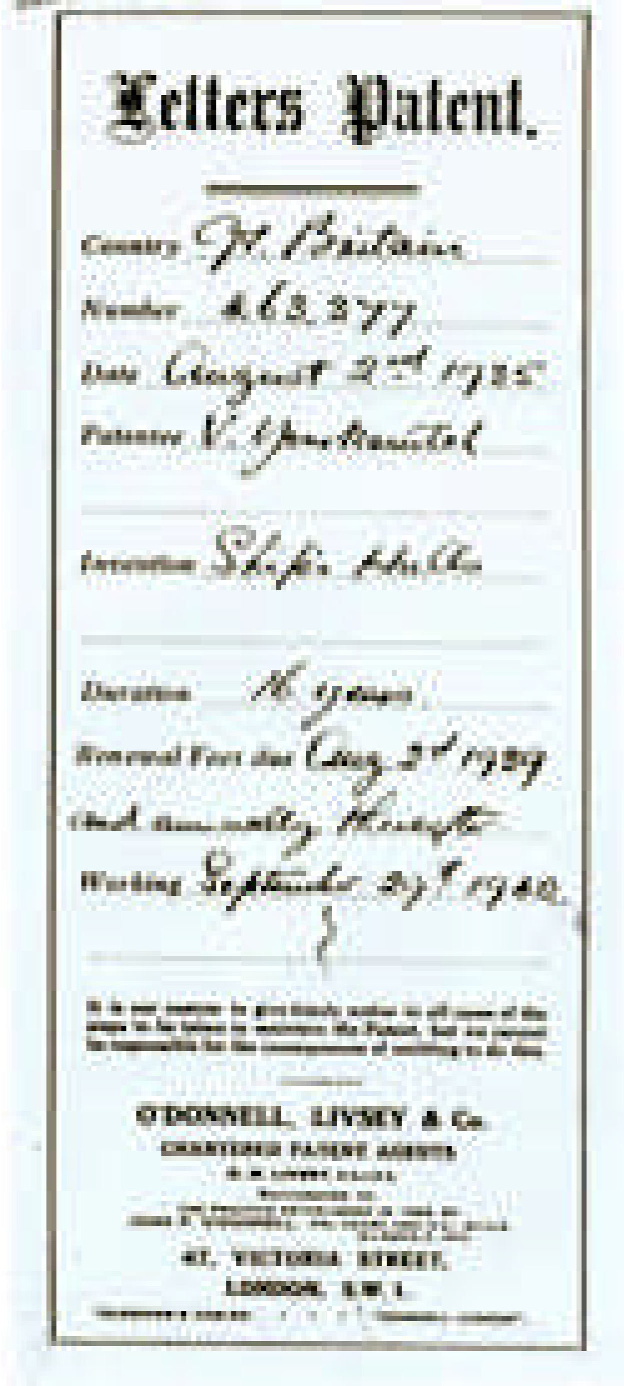
A.A. Lukin

RE: excerpt from his article: *The Triumph of the Russian Genius*

"If the French have full right to be proud of the victory of the Normandy because the Normandy is a French ship, we Russians may be twice as proud, because it was our Russian engineer who gave the French this victory…Russian emigres have full right to be proud because it is from their ranks that a person appeared who brought Russia's old and loyal ally… the fruits of his ideas and many years of work, which has secured France with the 'blue ribbon' of superiority. This has always been the goal of the two greatest Sea Powers."

The *Rossia* newspaper, Paris

Ignored by the Soviet press because he was considered a “counter revolutionary” (White Russian) in exile, the Russian press in Paris published an interview with Vladimir Yourkevitch in 1935, under the title: *Russia overseas keeps on creating, because the people of Russia are still alive and their genius hasn't died.* Yourkevitch set up his own design bureau: *BAKNI*, in France and then opened several branches throughout Europe which served their regular customers with ship designs that were fast, efficient and economical (they also retrofitted existing ships).



Letters Patent.

Country Gt. Britain

Number 463,277

Date August 2nd 1935

Patentee V. Yourkevitch

Invention Ship's Hulls

Duration 16 years

Renewal Fees due Aug 2nd 1939

and annually thereafter

Working September 2?th 1940

O'DONNELL, LIVSEY & Co.

CHARTERED PATENT AGENTS

47, VICTORIA STREET,

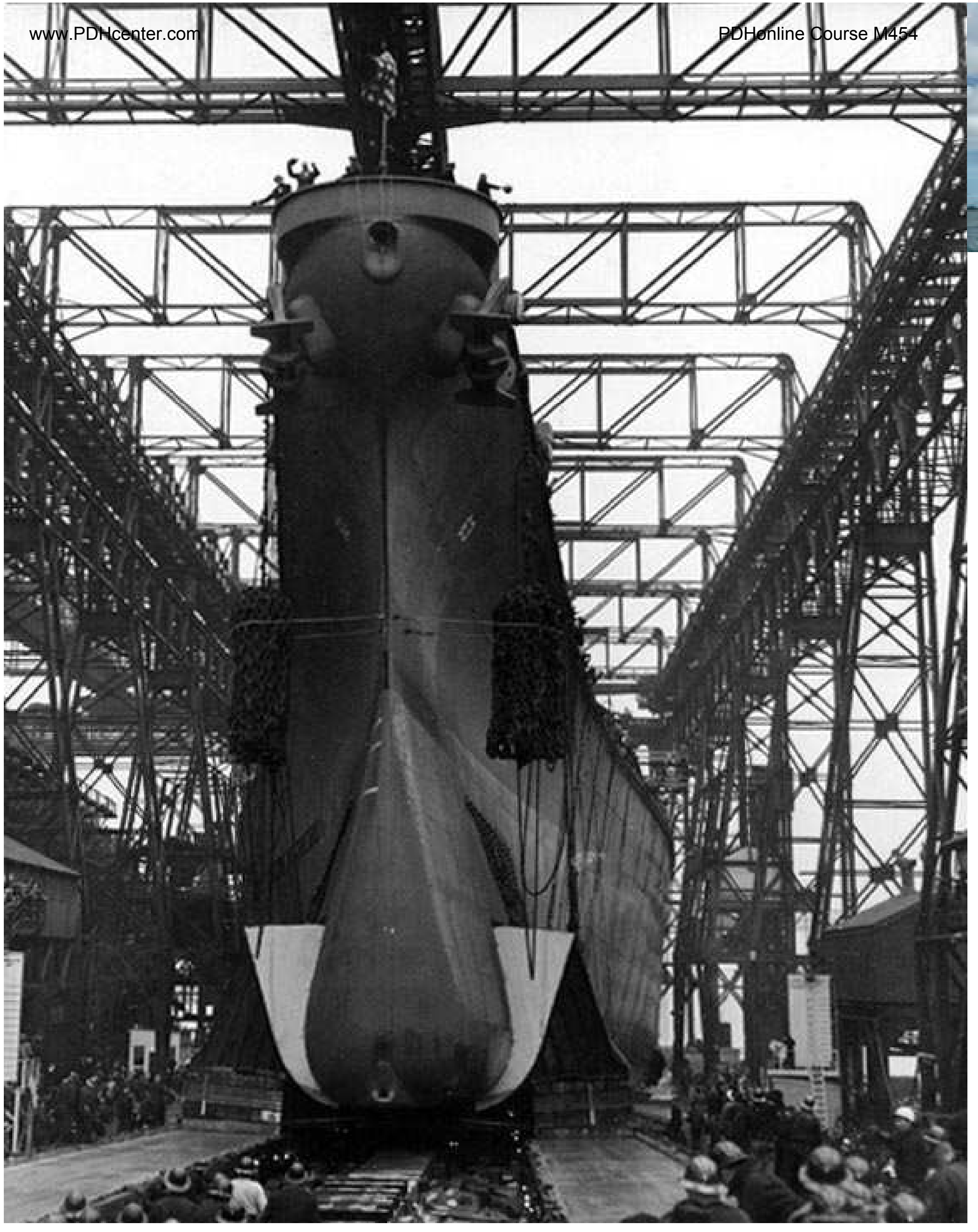
LONDON, S.W.1

Yourkevitch patented his hydrodynamic hull design for the *Normandie* in eighteen countries including; *France, Belgium, Great Britain* (at left)*, Germany, Spain, Italy, Japan* and the *United States.* In July 1936, he traveled to New York (for the second time) receiving a commission for four new American ships. Intending to close down BAKNI's offices in Europe and return to America as a legal immigrant in November 1936 (to set up shop permanently), he was delayed due to an abundance of orders requiring his personal attention. On his return to NY in March 1937, Yourkevitch founded a ship design firm in NY: *Yourkevitch Ship Designs, Inc.*

"We, Russian-Americans, are very proud of the success of our talented compatriot and consider it our sacred duty to support his new enterprise in America… We view the cause of V. I. Yurkevich as the National Cause of Russia…"

A.N. Vlasov - fellow St. Petersburg Polytechnic graduate and ship owner

RE: promising large profits due to efficient design, Yourkevitch began negotiating with representatives of commercial fleets, the U.S. Navy and private shipping firms after establishing himself in New York. Fellow alumni and owner of forty ocean liners, A.N. Vlasov was of great assistance to Yourkevitch, financially and otherwise. At the testing basin in Washington, models of Yourkevitch's designs were tested exceeding the results of American engineer's models. By 1938, forty-two ships had been built from the keel up or reconstructed based on Yourkevitch's designs. The worldwide shipping industry considered him without peer as a naval engineer. In 1940, Yourkevitch began work as a technical consultant for the *Department of the Navy* and is believed to have been involved with the design of capital ships such as the *Missouri* class battleship.



Launching of the Battleship *U.S.S. Missouri* January 29th 1944 (left)

Note the "Bulbous Forefoot" bow design (below the waterline) and the slanting, clipper-like bow (above) – akin to Yourkevitch's bow design for the *Normandie*.

From 1939 to 1945, Yourkevitch published several articles concerning the problems of upgrading hull form, speed and stability and what the future held for ocean liners. He also lectured on the history of ship design at the *Shipbuilding Department* of the *Massachusetts Institute of Technology* (MIT) and at the *University of Michigan*. Yourkevitch had long dreamed of designing a ship that would carry large numbers of transatlantic passengers at an affordable price. To this end, between 1954 and 1957, he designed a super-ship that could carry six-thousand passengers (at a cost of only fifty-dollars per passenger) and would make the crossing from New York to Le Havre in only three days. Two ships were planned but never realized due to the financial difficulties of the client and resistance from other steamship companies and the burgeoning transatlantic airline business who feared losing too many customers. At the end of this project, Yourkevitch correctly foresaw the decline of the super-liner in favor of smaller vessels. Until his death in December 1964, Vladimir Ivanovich Yourkevitch worked as a consultant to North American and British shipbuilding companies. After his many international patents expired, they became public domain and his designs are now universally applied around the world to ship designs.

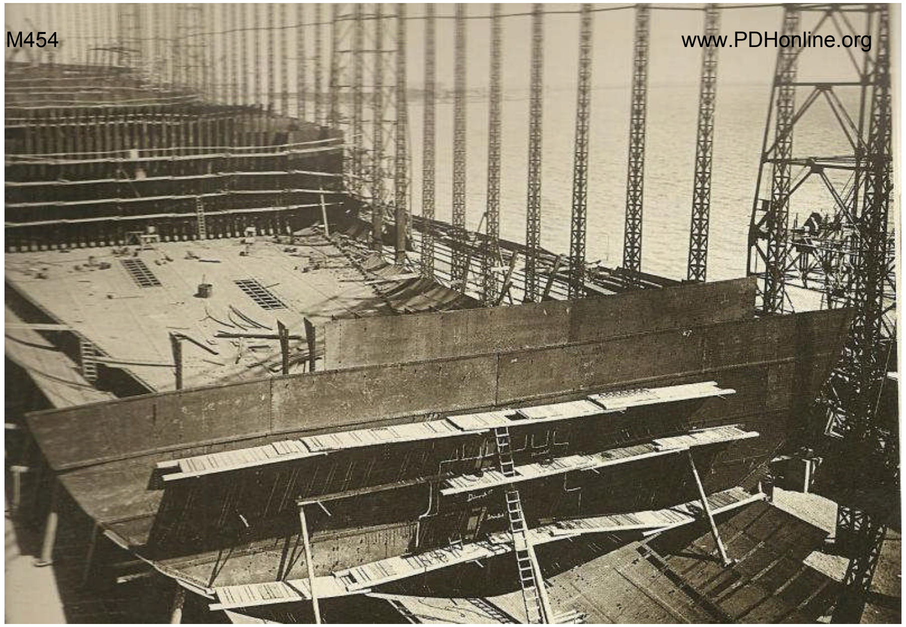
"Yurkevich's cause didn't die with him: his ideas and formulas have become an essential part of modern shipbuilding and they will remain as such until a new genius appears. But geniuses aren't born often!"

***Novoye Russkoye Slovo* (Newspaper)**

Part 3

T-6

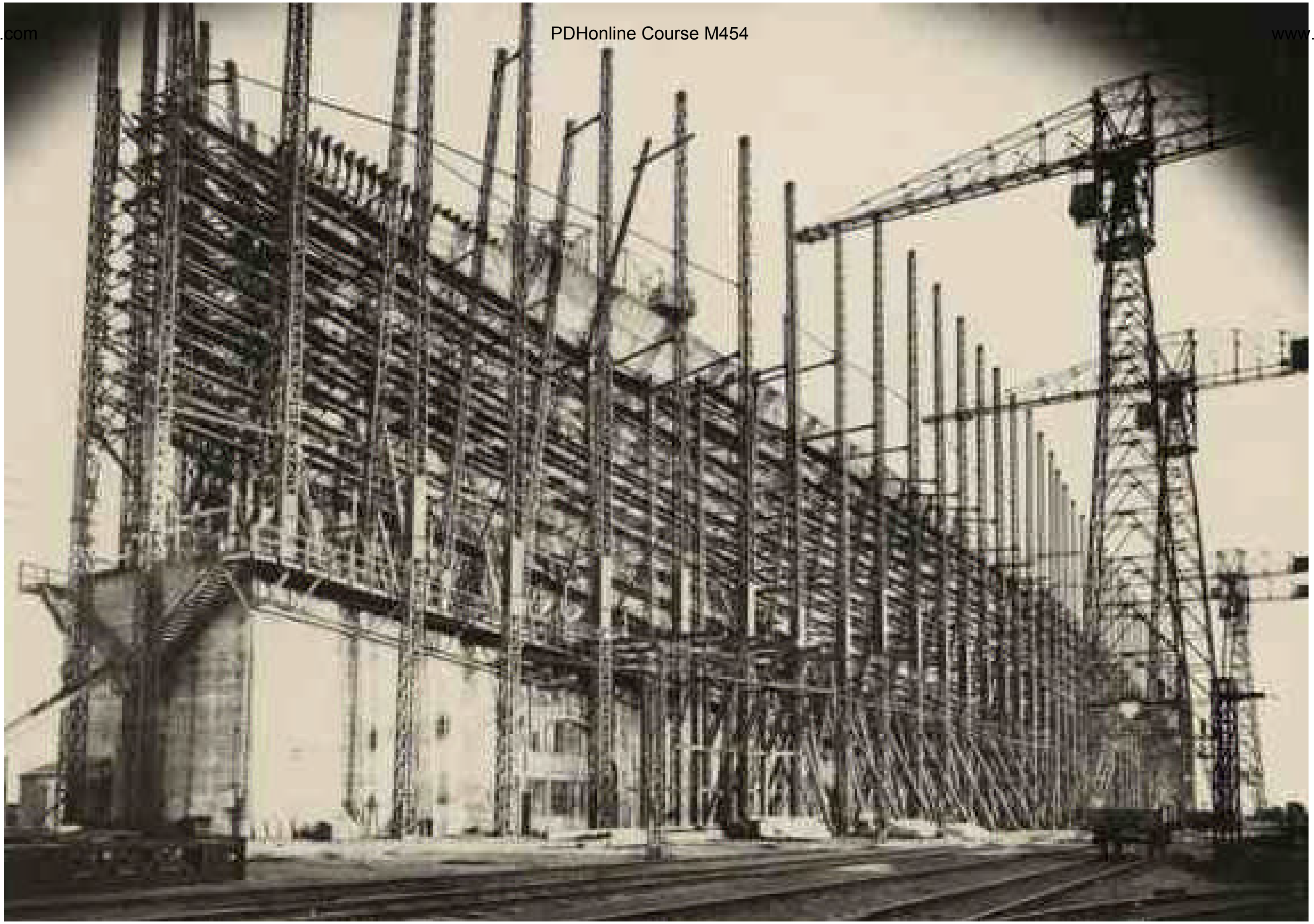
April 1931



June 1931

Work began on "T-6" (her contract name: "T" for "Transat" – short for CGT, and "6" for "6th") in January 1931, but soon the lingering effects of the 1929 crash reached French shores and CGT was forced to go hat-in-hand to the French government seeking subsidies to continue the construction of T-6. Despite public criticism, the government granted the subsidies with the condition that directorship of the company be handed over to government officials. Fortunately, they were all capable men and there were no negative consequences. National interest was deep and the creation of the ship was followed carefully in the press (which called the ship "The Super Ile de France"). After all, the honor of the French nation was at stake since the great ship would represent France in the nation-state contest of ocean liners and would be to the world wholly a product of French industry, innovation, art and culture.

September 1931



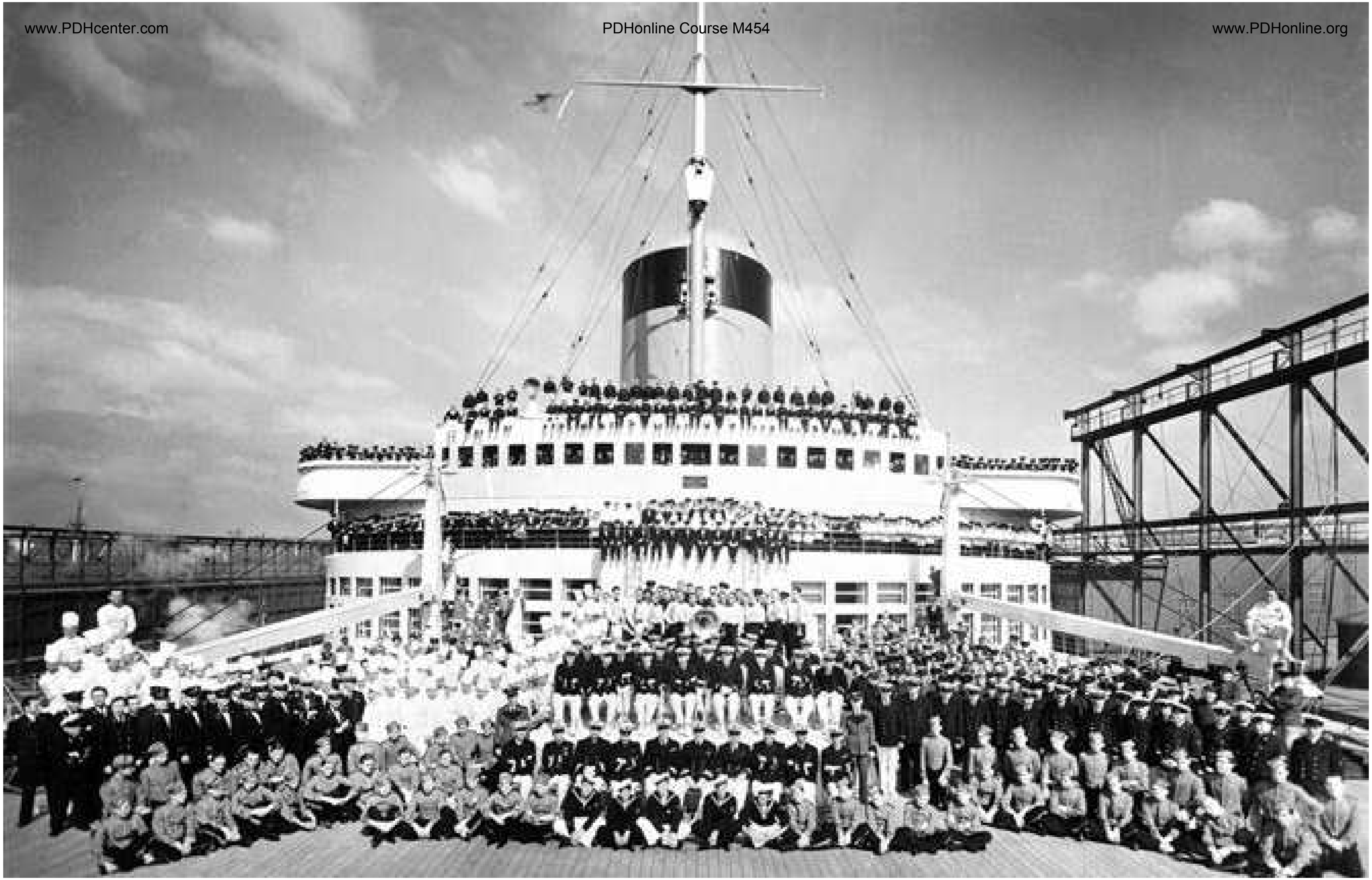
November 1931

"…Without the least crowding, the T-6 could transport a city of 125K people across the Atlantic in fifty weeks. If stood on her end, she would soar above the Chrysler tower and dwarf the Woolworth building. The T-6 will carry enough oil and water in her double bottom to float a large Mississippi River passenger steamer. The main dining room will accommodate one-thousand people at one sitting; the combined capacity of all her dining rooms is 2,300 people for one sitting. The kitchens will be equipped to serve ten-thousand meals per day and 40K to 50K meals on the average crossing. Four hundred waiters will operate out of the main kitchen at one time, and 165 chefs will prepare food for the 2,200 odd passengers. The crew of one-thousand will be served from a separate kitchen…"

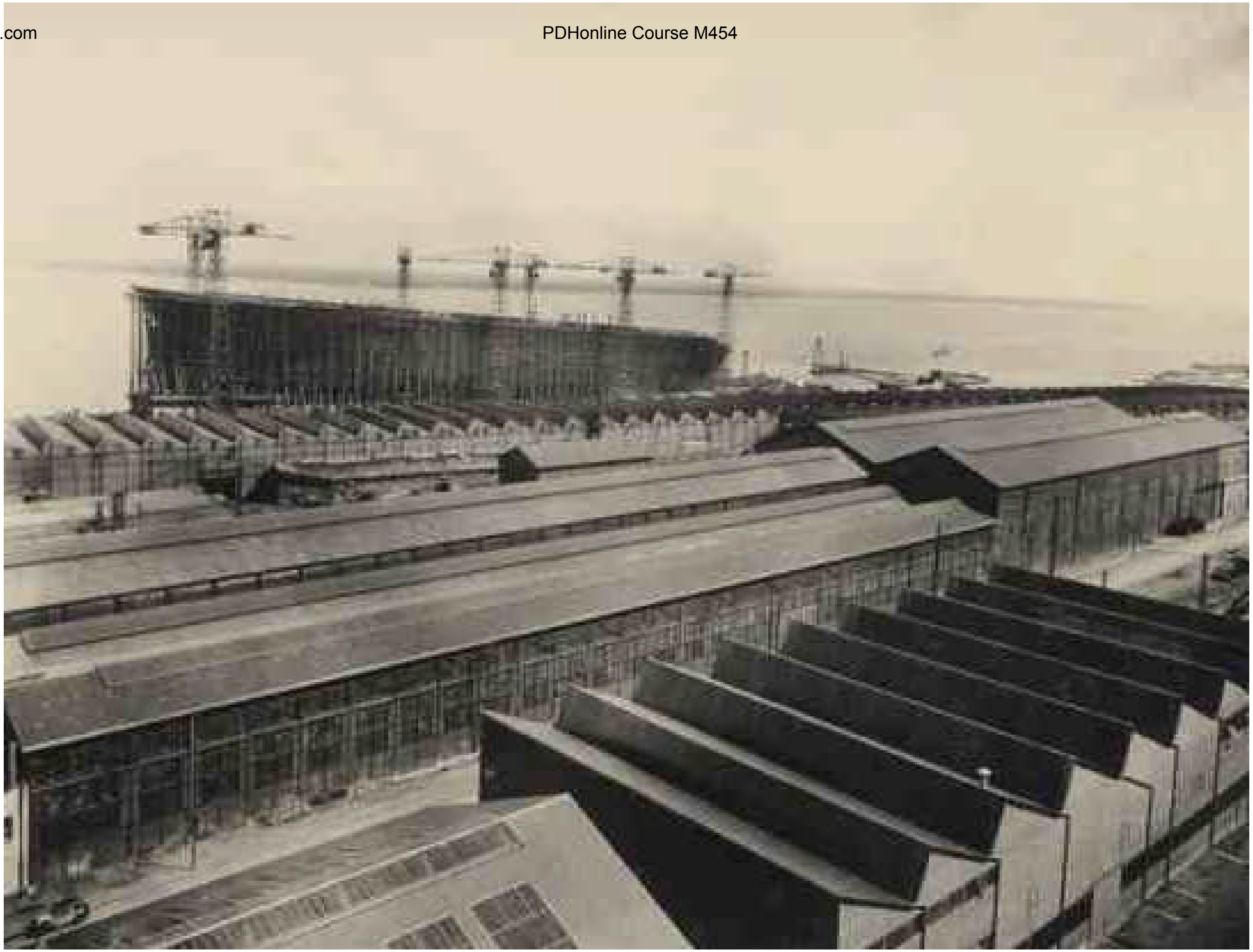
Popular Mechanics, **December 1932**

Main (First-Class) Dining Room

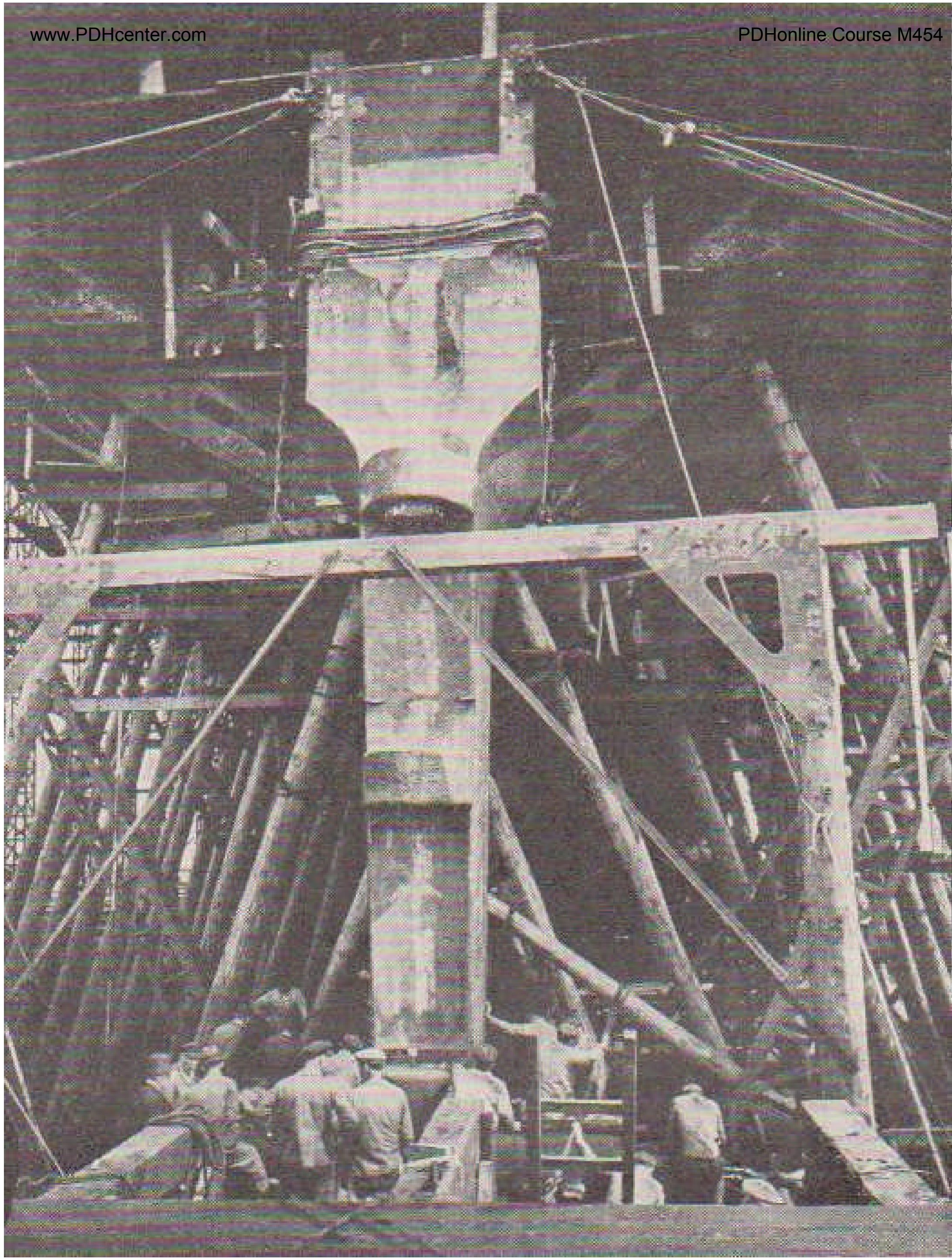
To serve the 157 tables seating 583 diners in the *First-Class Dining Room,* the *Main Kitchen* (left) was located directly below (on D-Deck). It featured thirty-two ovens, one double-oven (which could bake 1,500 loaves of bread per day), one six-foot high pantry oven, eight stoves and six grills. Over 14K meals were prepared each day by fourteen head chefs and over two-hundred helpers and assistants. Three elevators and a separate telephone system served the main kitchen as well. There were three other kitchens including a *Kosher Kitchen*, a kitchen serving the aft *Grill Room* and a *Crew Kitchen* serving the *Crew's Dining Room* (right). A crew of 1,339 looked after the ship and her well cared-for passengers.



Crew of the *S.S. Normandie*



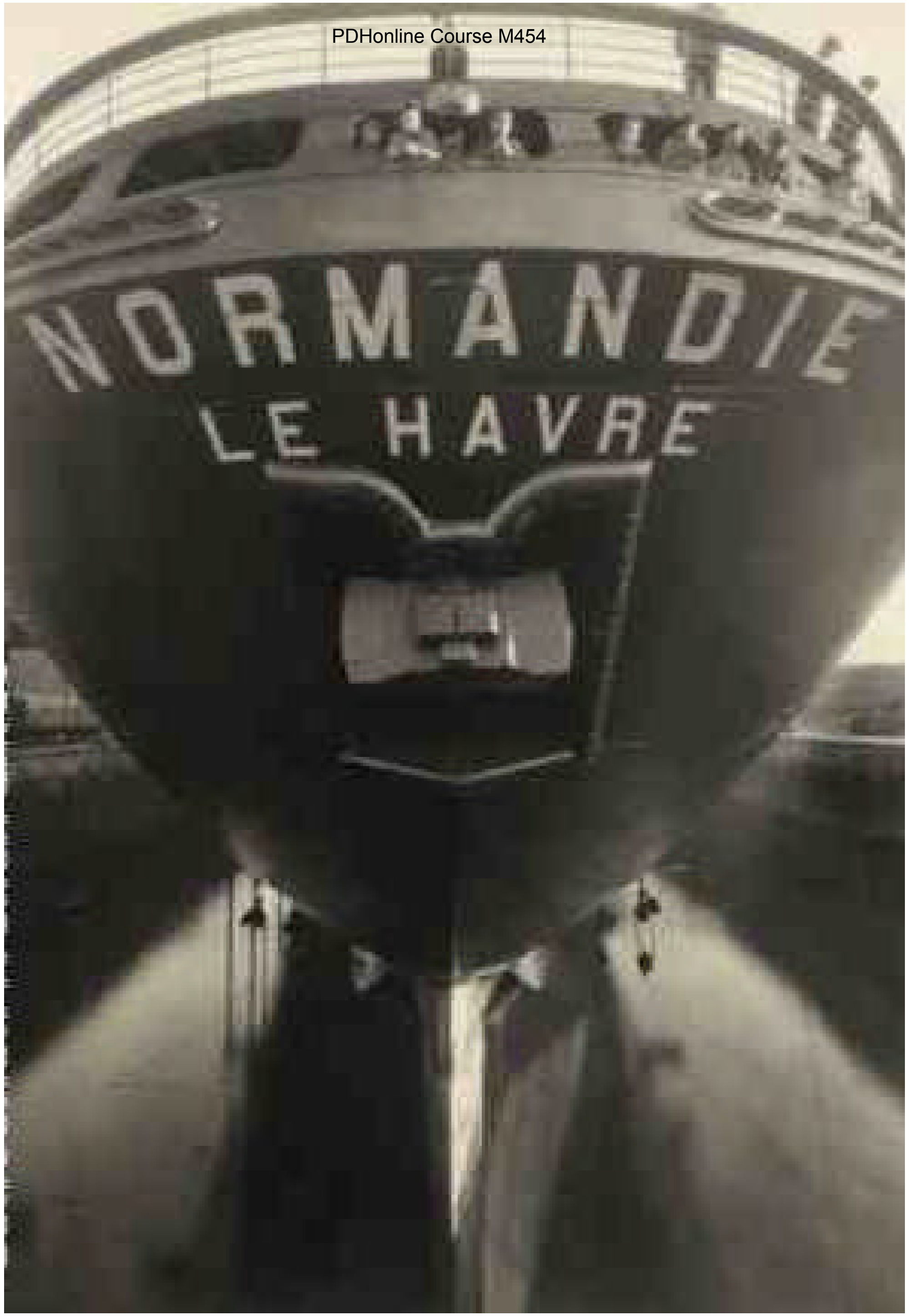
May 1932



Rudder Post

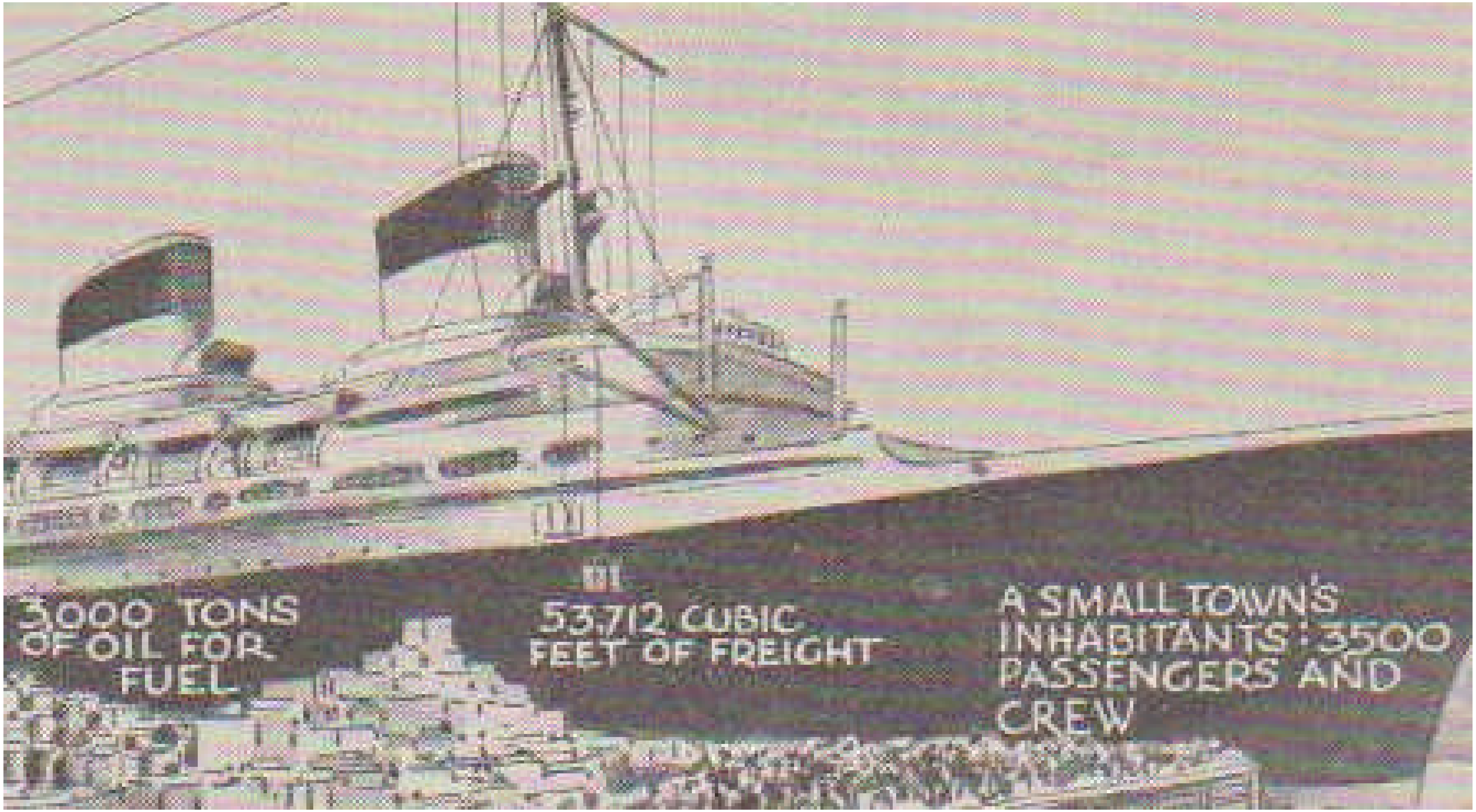
October 1932

Many names were suggested for T-6 including *La Belle France, Doumer* (after the recently assassinated French President *Paul Doumer*), *Maurice Chevalier, General Pershing, Pax Napoleon, Jeanne d'Arc, Neptune, Benjamin Franklin* and *Lindbergh*. In the end, the northern French province of *Normandy* was chosen. In French, ships are referred to in the masculine thus the guardians of French language and culture; *Academie Francaise,* insisted the ship be named properly: *Le Paquebot Normandie* or, at the very least *La Normandie.* Ultimately, *Le* (masculine) and *La* (feminine) (French for "The") was left out of the name to avoid any confusion concerning the ships gender among the target passenger clientele who were, primarily, wealthy Americans who spoke English (English-speaking people refer to ships in the feminine). T-6 became, simply *Normandie*.


NORMANDIE
LE HAVRE

"…The T-6 does not represent an attempt to build a ship in order to establish or beat a record. The economics of shipbuilding demand, first, that the ship pay back the $28 million cost of construction as well as provide for maintenance and a reasonable profit. A careful analysis of shipping data and public habits proves the practicability of a 75K-ton ship…The T-6 could circumnavigate the globe at the equator in thirty days of running time. In a race around the equator between the 20th Century Limited and the T-6, the famous train would beat the ship back to the home plate by only ten days…"

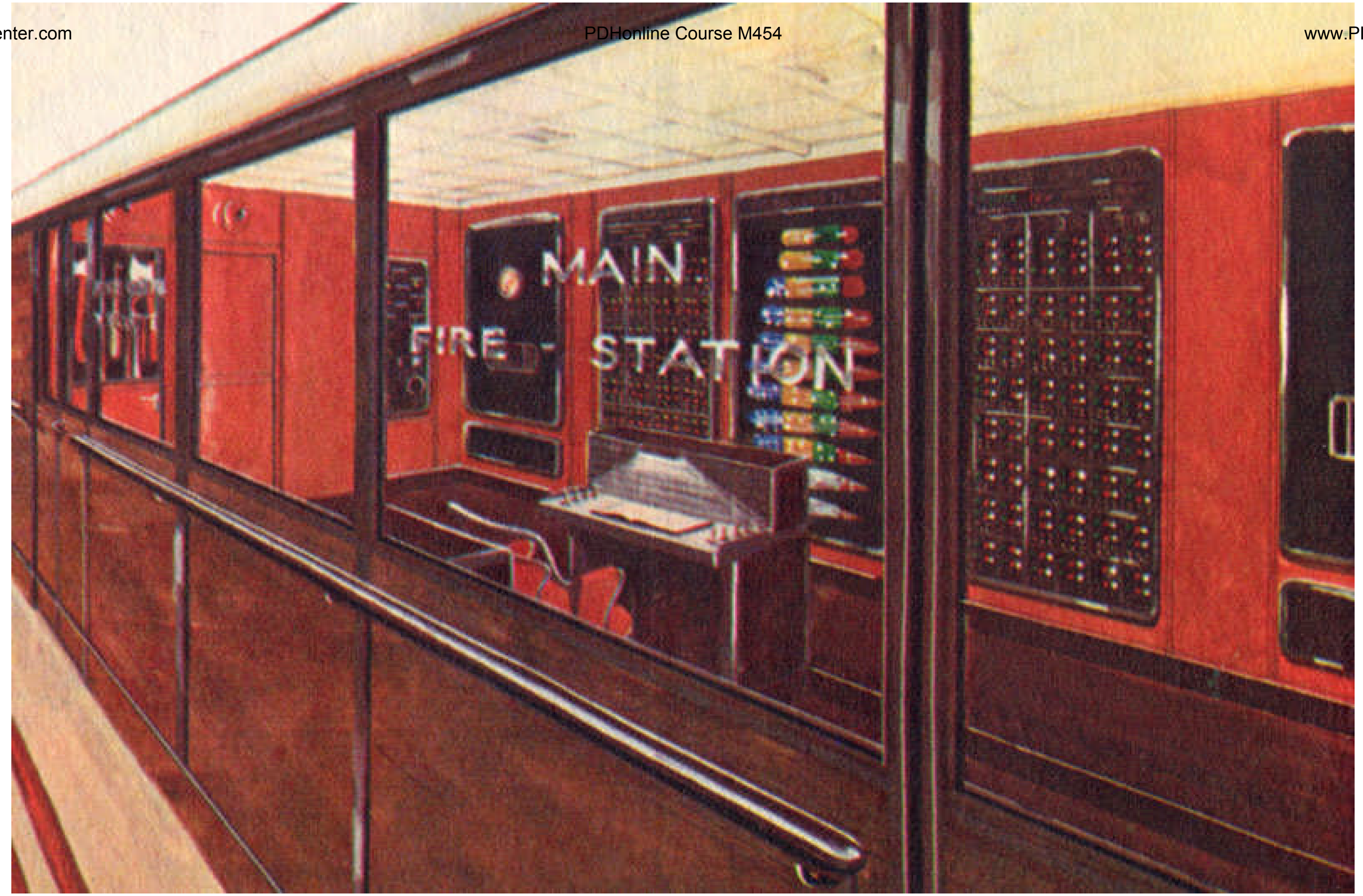
***Popular Mechanics,* Dec. 1932**


3000 TONS OF OIL FOR FUEL
53,712 CUBIC FEET OF FREIGHT
A SMALL TOWN'S INHABITANTS: 3500 PASSENGERS AND CREW

A Constant Vigil Against Fire

"…With automatic alarms and fire-fighting equipment, the Normandie will carry a special squad of professional firemen. The security officer who commands the firemen, has nothing to do but maintain a constant vigil against fire. All walls and cabin partitions are rendered fire-resisting by a sheet of duralumin between layers of asbestos. Placed between the outside wall covering, this metal sheet and asbestos act as a fire wall. Each cabin has a fire detector which, when the temperature of the room reaches an abnormal degree, rings an alarm in the central fire station, and automatically closes all ventilators in that section of the ship. The electric circuit in most of the cabins is independent of the others; and in the ceiling of each cabin is a hole, accessible to firemen in an emergency. If the power fails, the passengers will see their way with the aid of phosphorescent signs…Squeaking and creaking have been virtually banished by the use of fireproof flannel between the uprights and in the partitions. The flannel not only eliminates squeaks, but insulates cabins against noise…"

***Popular Mechanics,* June 1935**

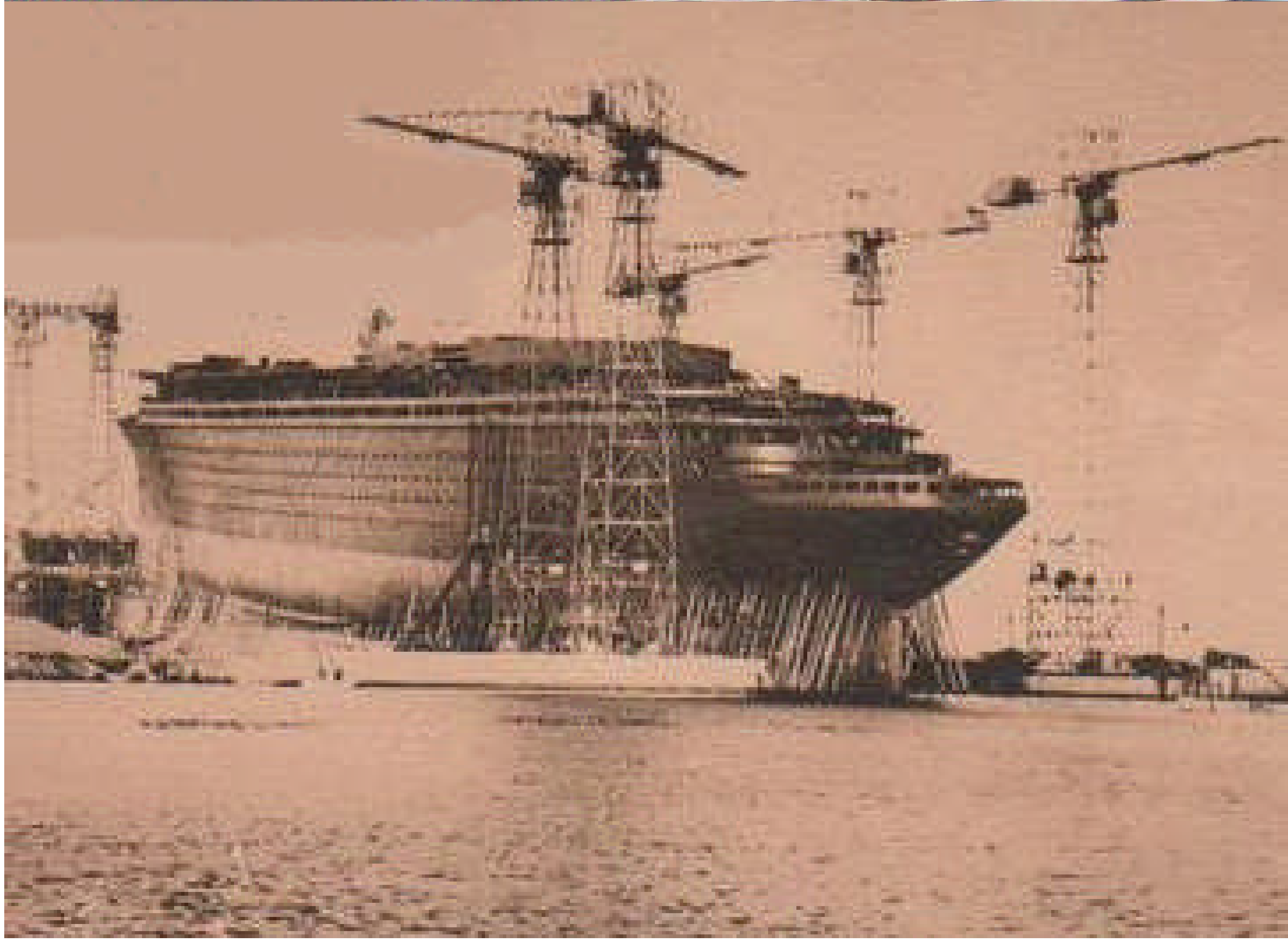


From the *Main Fire Station* (located in the middle of the ship), a display board showing all eleven decks was wired directly to 224 smoke/fire alarms plus 1K heat detectors and was carefully monitored 24/7. To supplement this sophisticated fire-protection system, a *Fire Department* with forty-six well trained fire-fighters stood at the ready.


CHAUFFERIES
CONTROLEURS DE RONDES

Down to the Sea

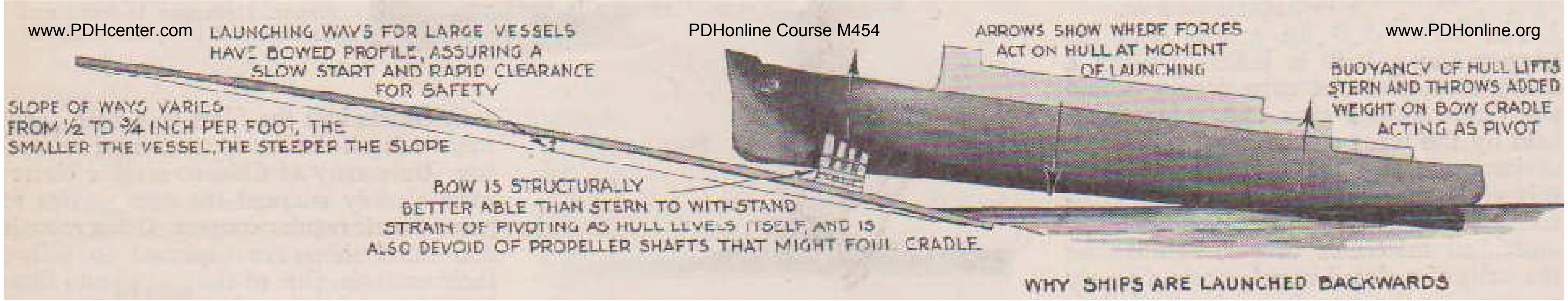
On October 29th 1932, (the third anniversary of *Black Thursday;* the October 1929 stock market crash) launch day for the hull arrived. Over 200K spectators lined the banks of the *River Loire* eager to watch the launch of the greatest ship in the world and the pride of the French nation. At launching, the hull weighed an estimated 26,657-tons; the heaviest hull ever launched. French President *Albert Lebrun* was present as was his wife; *Madame Lebrun*, who was chosen to Christen the ship. The slipways had been extended 328-feet underwater and greased with 43-tons of soap and 2.5-tons of lard. Madame Lebrun struck the bow (with a six-quart bottle of Champagne) and *Normandie* rushed down the slipway faster than expected (about 30mph). When she hit the water, a large wave was created washing over one-hundred spectators (who were lining the shore) into the river. Luckily, there were no serious injuries. *Normandie* was then moved (by tugboats) to the *Outfitting Basin* (fitting-out berth) at the Penhoet Shipyard in Saint Nazaire.



Prior to launching, *Normandie's* hull was temporarily supported by extensive shoring, and *cribs* (at the keel).

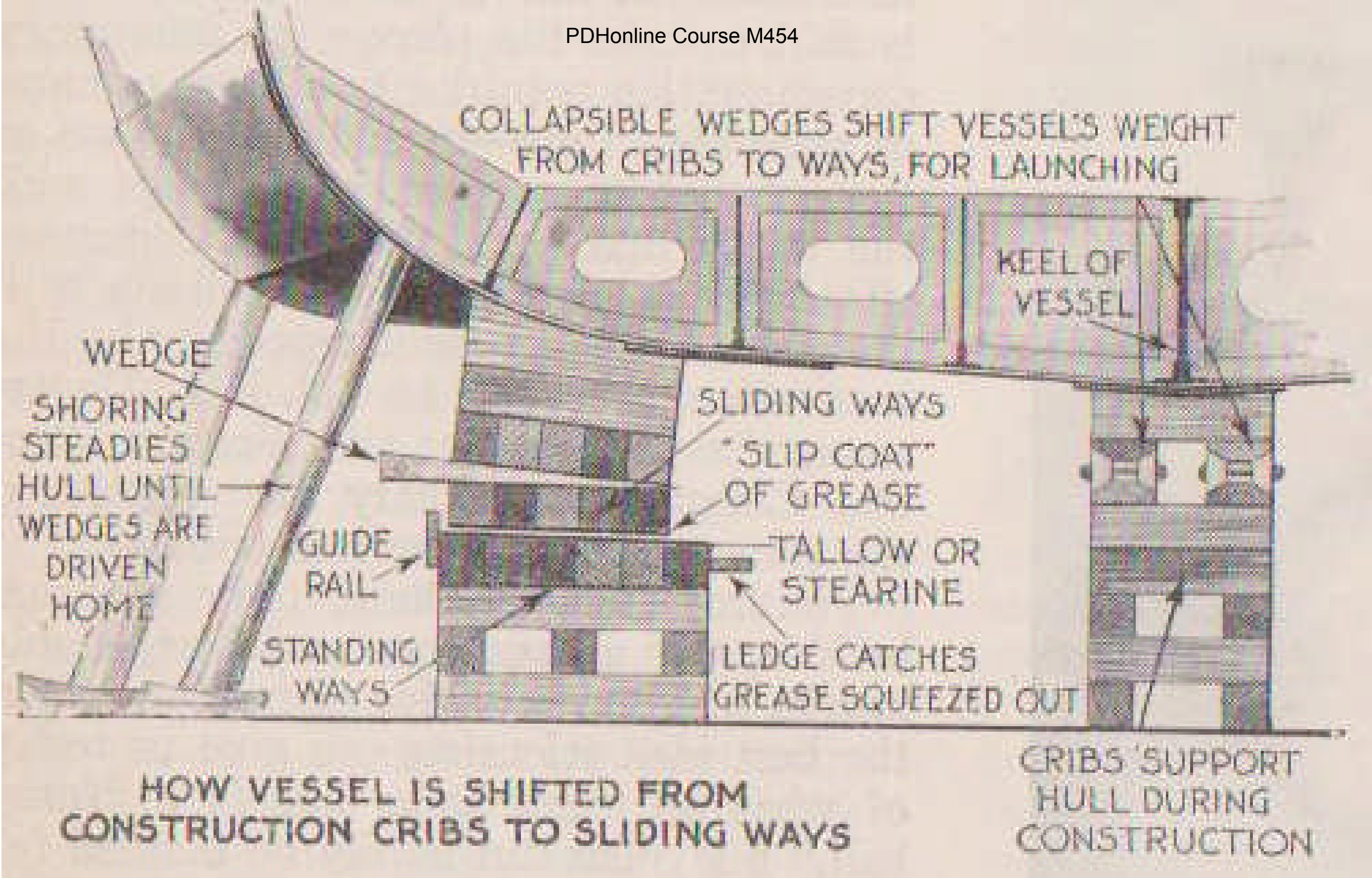
"By setting afloat the 75K-ton Normandie – almost a fifth of a mile long and the largest liner ever built – at St. Nazaire, France, a few weeks ago, shipbuilders enacted on a record-breaking scale a drama that is repeated every time a new merchantman goes down to the sea…"

***Popular Science,* Feb. 1933**



"…Planning the launching way is the first step in building a vessel. A double track of wood, leading to the water's edge and extending a short distance beneath the surface – called the 'standing ways' – serves as a runway for a pair of cradles known with their platforms as 'sliding ways.' These support the vessel's bow and stern during launching…"
Popular Science, **February 1933**

Left: greasing the "Standing Ways"

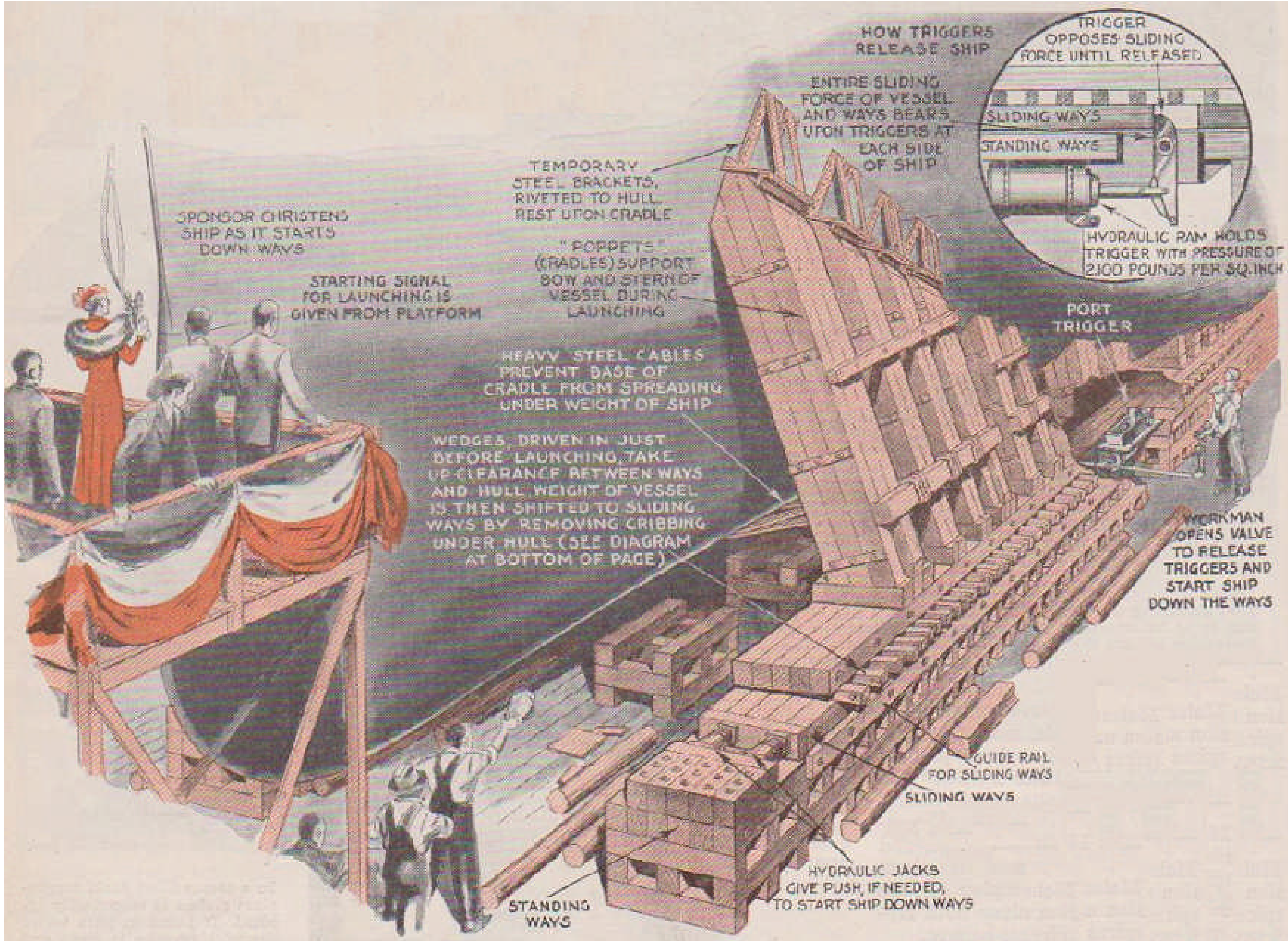


"…During construction, the ship has rested on temporary cribs. On the day of the launching, workmen transfer it to the ways. Oak wedges are first driven into the sliding platforms. This does <u>not</u> lift the hull bodily to the ways – a common popular error – but simply takes up all slack between sliding ways and hull. When temporary cribs and shoring are now removed, the vessel's entire weight settles downward upon the ways, which have been lubricated copiously with tallow and grease…"

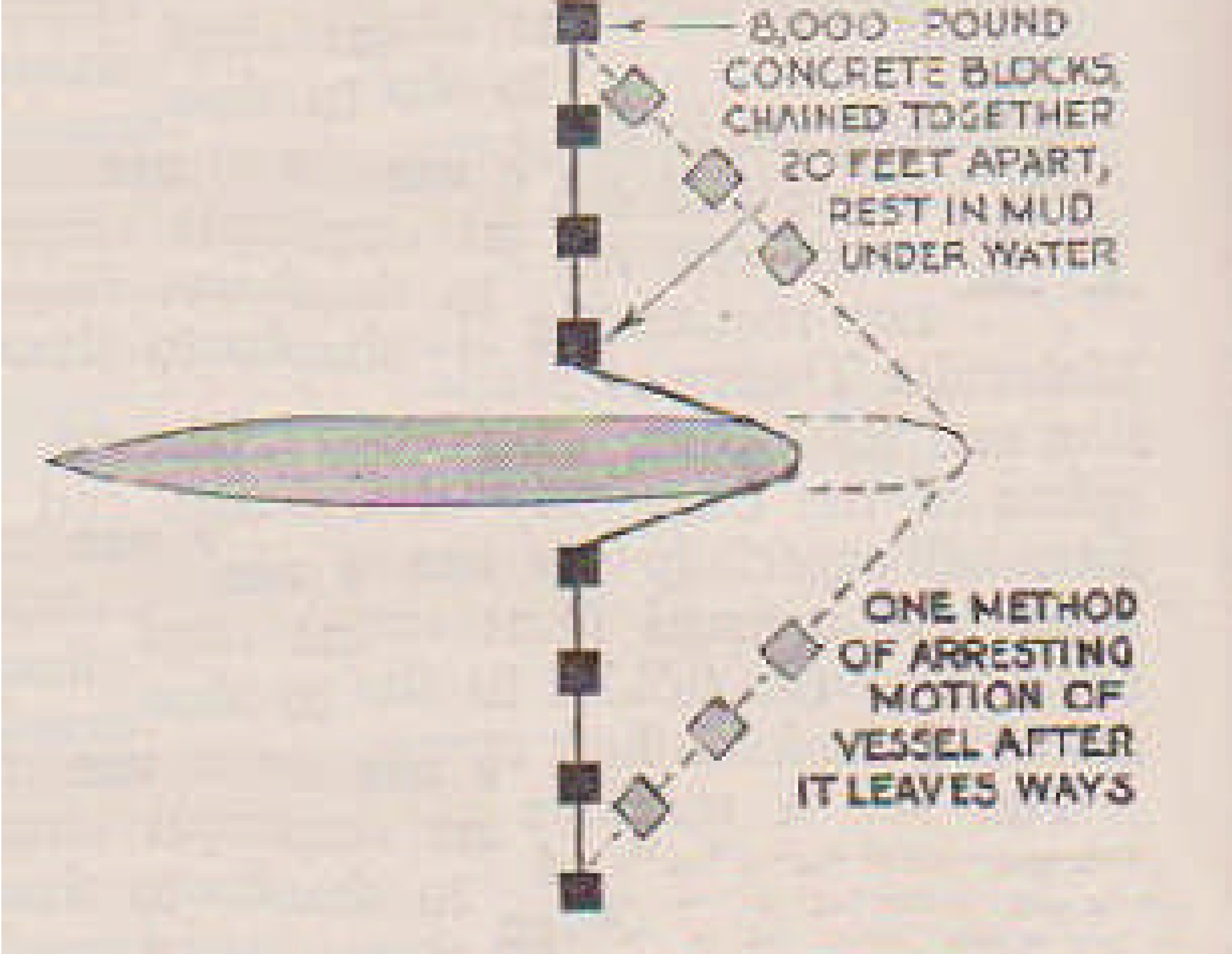
Popular Science, **February 1933**

"…Hydraulic triggers or other apparatus hold the sliding ways until a signal shows all is ready. Then the triggers are released and the vessel slides down to the sea at a speed of nine to twelve miles an hour – a brisk running gait. To minimize the crushing weight on the launching ways, heavy machinery and fittings, including the massive engines, are not installed until the vessel is safely afloat."

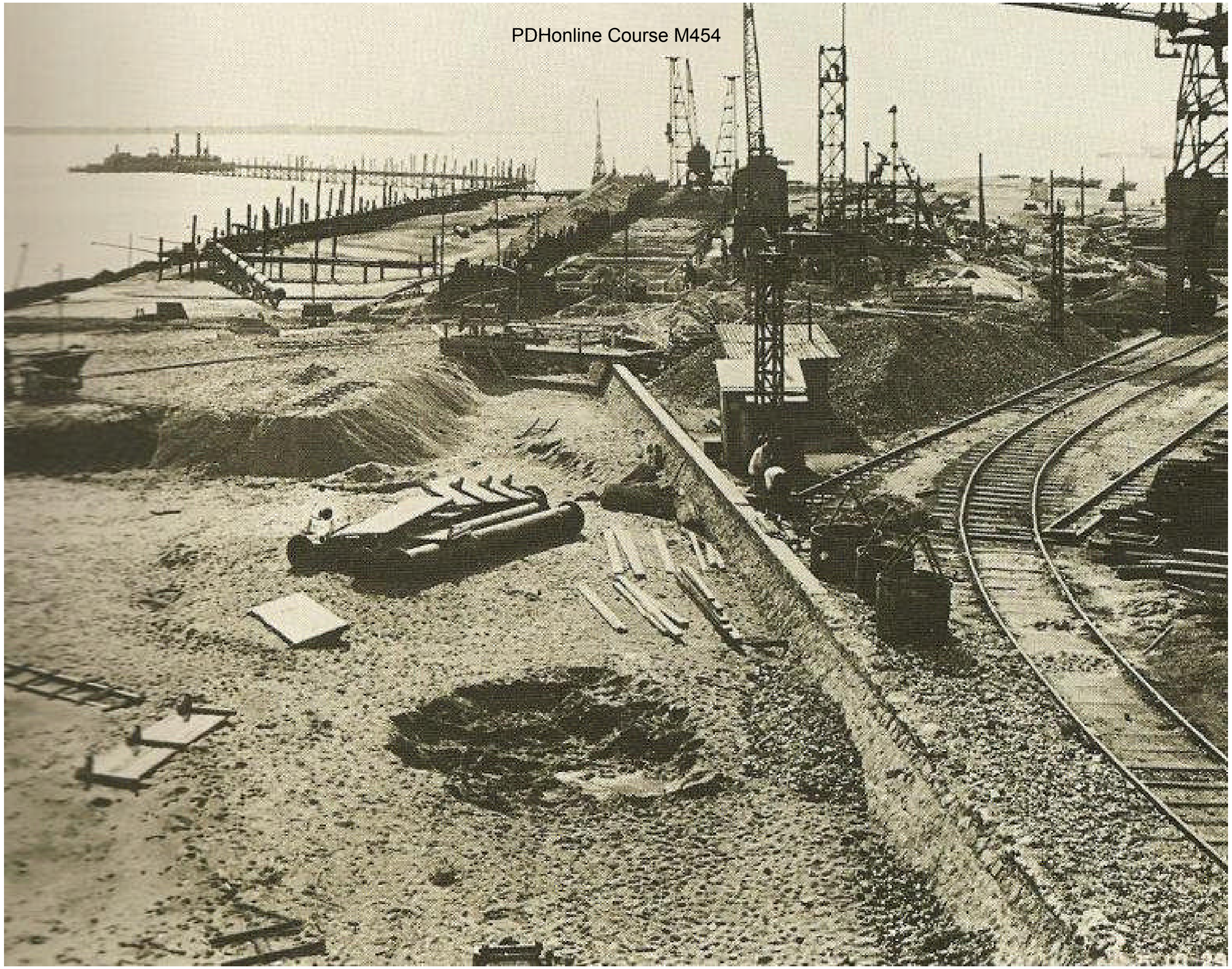
***Popular Science,* February 1933**


HOW TRIGGERS RELEASE SHIP
TRIGGER OPPOSES SLIDING FORCE UNTIL RELEASED
SLIDING WAYS
STANDING WAYS
HYDRAULIC RAM HOLDS TRIGGER WITH PRESSURE OF 2100 POUNDS PER SQ. INCH
ENTIRE SLIDING FORCE OF VESSEL AND WAYS BEARS UPON TRIGGERS AT EACH SIDE OF SHIP
TEMPORARY STEEL BRACKETS, RIVETED TO HULL, REST UPON CRADLE
SPONSOR CHRISTENS SHIP AS IT STARTS DOWN WAYS
STARTING SIGNAL FOR LAUNCHING IS GIVEN FROM PLATFORM
"POPPETS" (CRADLES) SUPPORT BOW AND STERN OF VESSEL DURING LAUNCHING
PORT TRIGGER
HEAVY STEEL CABLES PREVENT BASE OF CRADLE FROM SPREADING UNDER WEIGHT OF SHIP
WEDGES, DRIVEN IN JUST BEFORE LAUNCHING, TAKE UP CLEARANCE BETWEEN WAYS AND HULL. WEIGHT OF VESSEL IS THEN SHIFTED TO SLIDING WAYS BY REMOVING CRIBBING UNDER HULL (SEE DIAGRAM AT BOTTOM OF PAGE)
WORKMAN OPENS VALVE TO RELEASE TRIGGERS AND START SHIP DOWN THE WAYS
GUIDE RAIL FOR SLIDING WAYS
SLIDING WAYS
HYDRAULIC JACKS GIVE PUSH, IF NEEDED, TO START SHIP DOWN WAYS
STANDING WAYS

<u>Left</u>: bow clearing the *Standing Ways*
<u>Above</u>: stern entering the *River Loire*

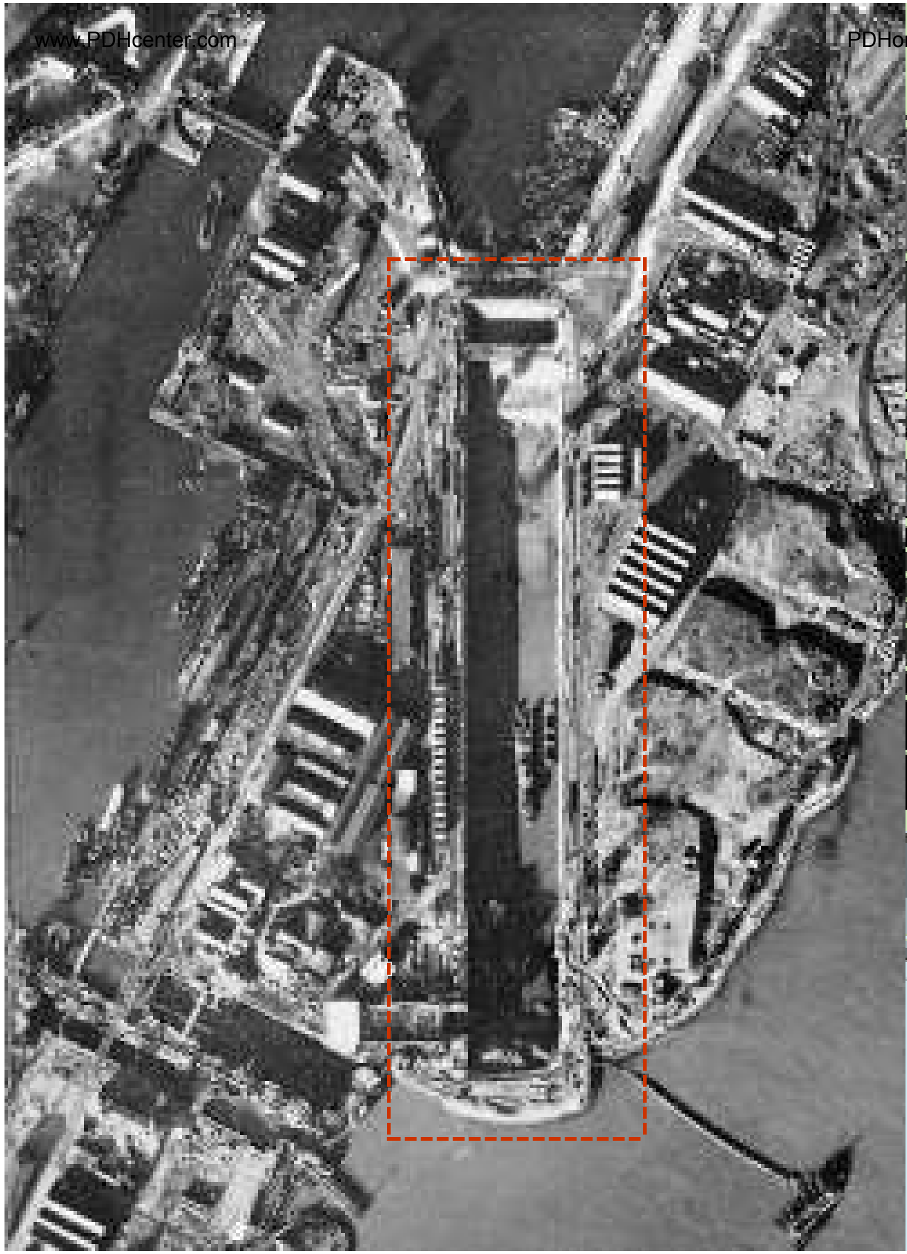


Alternate Arresting Method (after launching)
(not used)

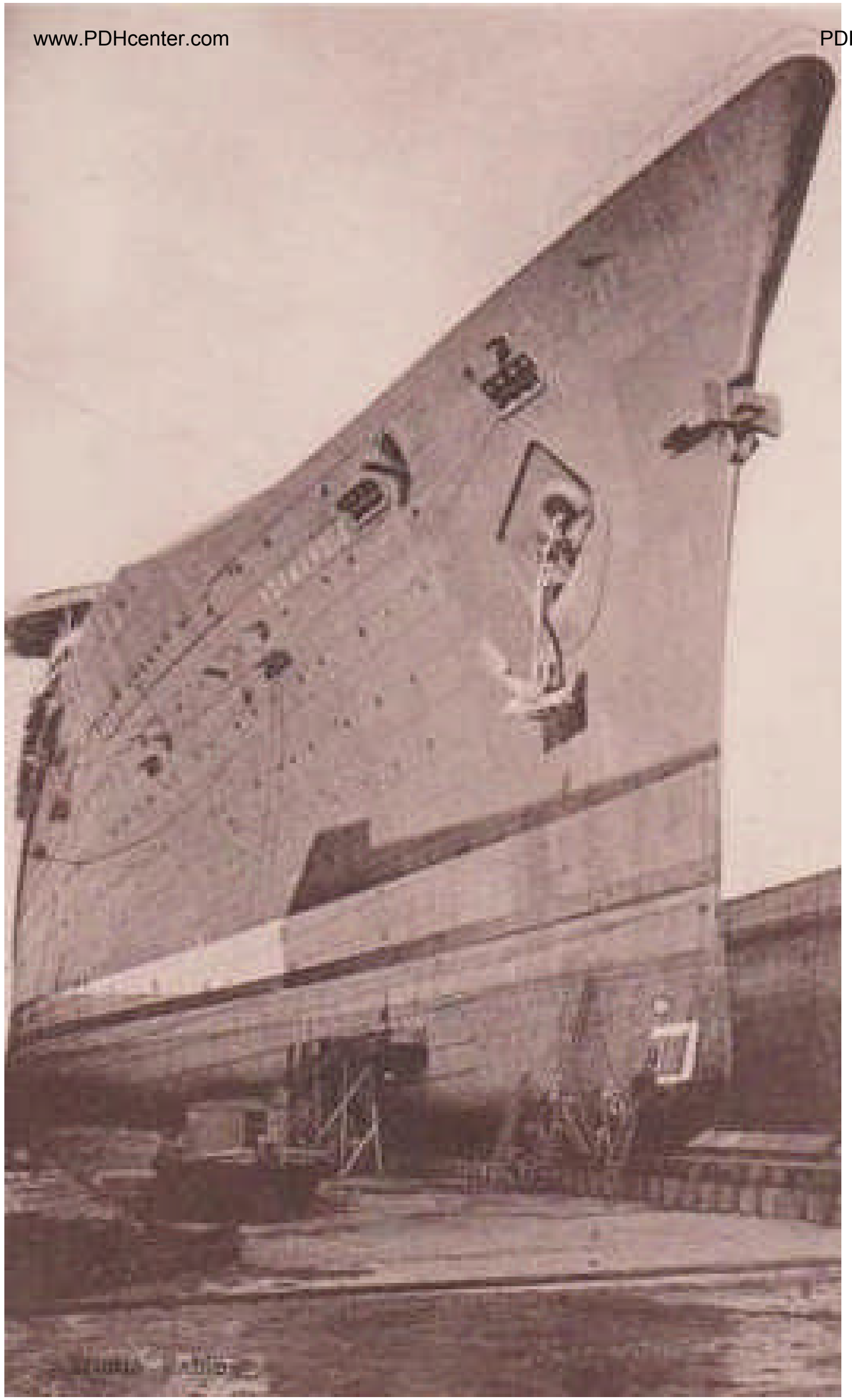


New dry dock "Number One" under construction at the Penhoet shipyard in St. Nazaire – built specifically for *Normandie*. The work began in October 1929 and was completed a few weeks before *Normandie's* launch in October 1932.

After her successful launching on October 29th 1932 into the River Loire, Normandie was backed through the specially built locks and dry dock to her outfitting basin. Originally, *Normandie* was to have entered transatlantic service in 1934. However, with declining numbers of passengers due to the worldwide depression, CGT decided to wait until the spring of 1935 to put their new flagship into service. This gave the workmen and artisans extra time to give *Normandie* their special attention. On March 27th 1935, *Normandie* was moved into her dry dock for installation of her propeller set and rudder, examination of her underwater parts and a final paint job before her maiden voyage (May 1935).



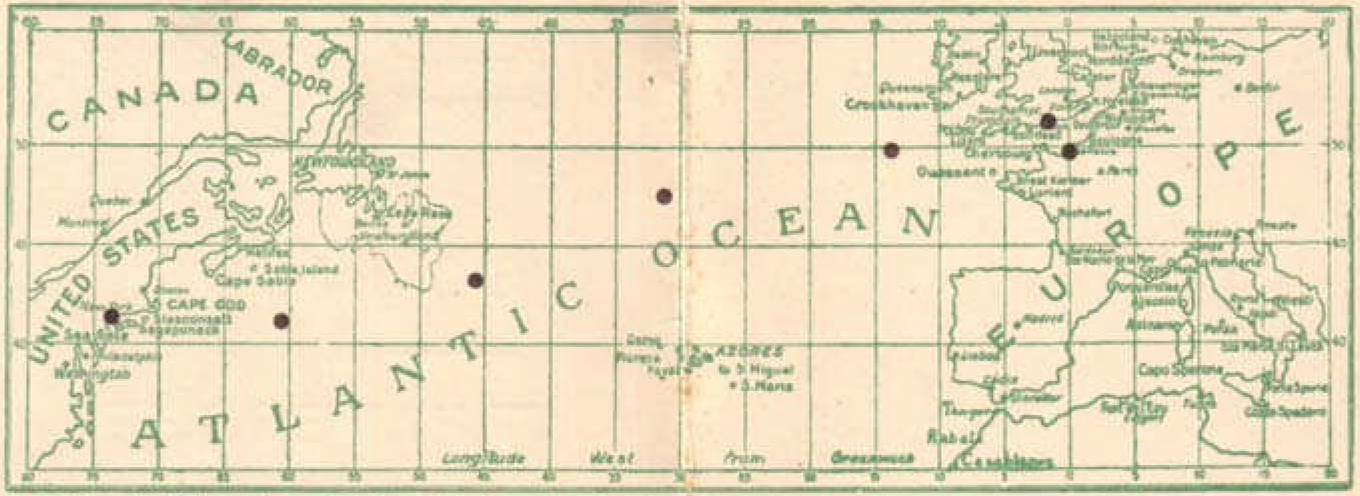
Left: aerial view of Dry Dock Number One
<u>Right</u>: map of the Penhoet shipyard, Saint Nazaire



"The largest moving object on this planet has been launched into the sea. It bursts with strength, but responds to a man's touch; it looks colossal, but moves with the grace of a greyhound. It is a ship. This ship is the answer to the demand for more speed, endurance, safety and comfort on the transatlantic boulevards. Her activities will be confined to one ocean, where she will swim between two ports like a whale within a tank. To the west, the Panama Canal shuts her out of the Pacific, and to the east, the Suez Canal bars her from the Indian Ocean. No such colossus was ever imagined by the engineers who designed these important sea links. In order to visit the far east this new ship, tentatively called the T-6, will have to go via the Artic or Antartic seas. And only New York and Havre will accommodate her with a berth and provisions…"

***Popular Mechanics*, December 1932**

Départ du 14 Octobre 1936 - **NEW-YORK - SOUTHAMPTON - LE HAVRE** - Departure of October 14th 1936



Les points noirs indiquent la position du navire chaque jour à midi.— The black points indicate the position of the ship at noon every day.

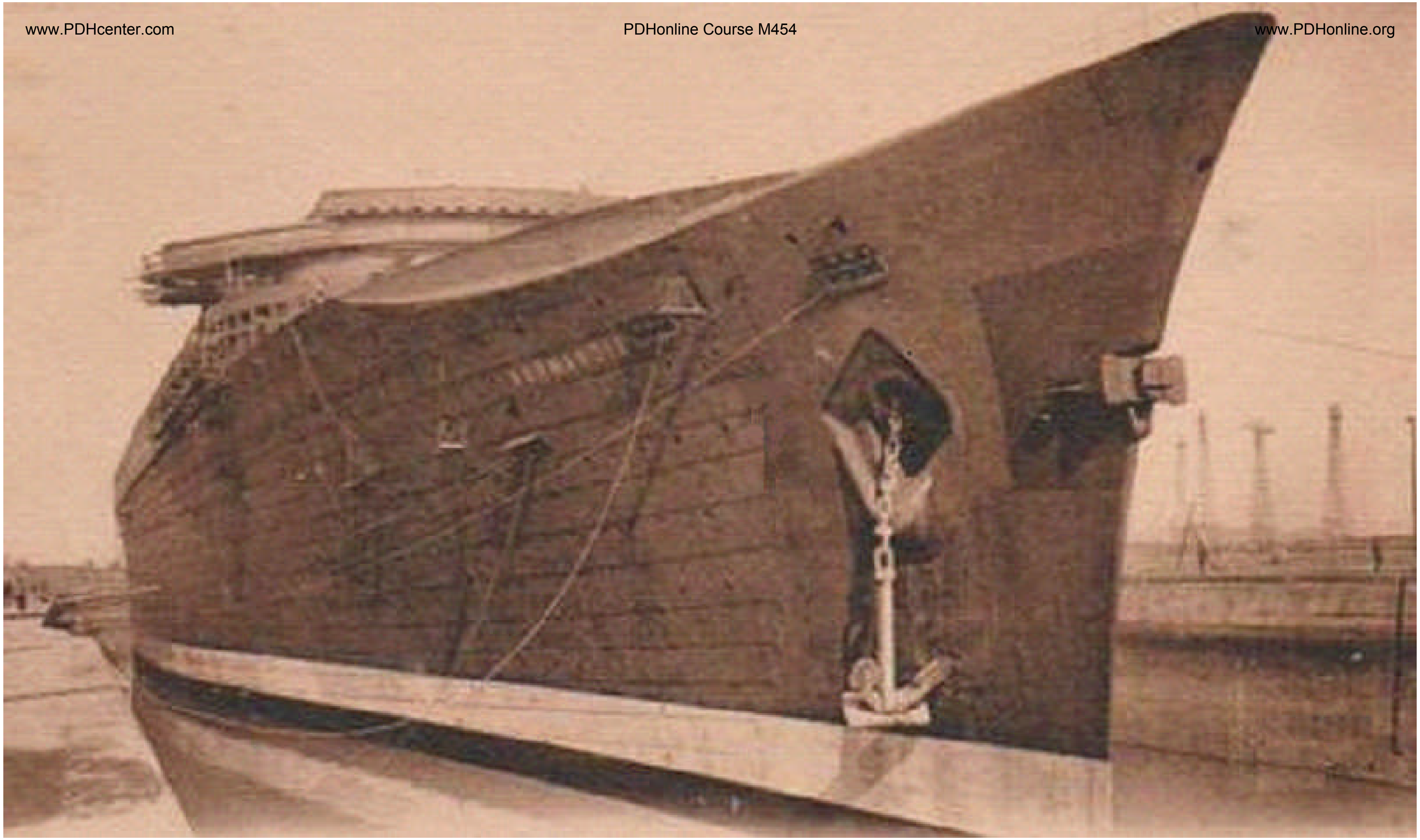
DATES	LATIT. N.	LONGIT. W.	MILLES MILES	INTERVALLI INTERVAL	VITESSE SPEED	VENTS et TEMPS WEATHER
Jeudi 15 Octobre..... Thursday Oct. 15th..	41°04	60°19	625	22 h. 20	28 n. 00	Très beau temps. - Mer belle. Very nice weather. - Calm sea.
Vendredi 16 Oct..... Friday October 16th.	43°40	45°42	681	23 h.	29 n. 61	Petite brise du Nord. - Mer belle. Moderate breeze from N. - Calm sea.
Samedi 17 Octobre.. Saturday Oct. 17th..	47°56	30°43	676	23 h.	29 n. 40	Mer assez grosse du N. O. - Beau temps clair. Heavy swells from N. W. - Fair weather.
Dimanche 18 Octobre Sunday October 18th.	49°48	13°41	680	23 h.	29 n. 56	Très grosse houle du N. O. - Ciel couvert. Very heavy sea from N. W. - Cloudy weather.

Dimanche à Midi reste à parcourir pour SOUTHAMPTON : 521 Milles — Sunday at noon : distance to SOUTHAMPTON 521 miles

Départ d'AMBROSE : Mercredi 14 Octobre, à 12 h. 40
Arrivée à SOUTHAMPTON : Lundi 19 Octobre, à 7 h. 10
Durée de la traversée AMBROSE-SOUTHAMPTON : 109 h. 30
Distance parcourue : 3.183 Milles
Vitesse Moyenne : 29 nœuds 07
Arrivée au HAVRE : Lundi 19 Octobre à 14 h. 00

Left AMBROSE : Wednesday October 14th at 12.40
Arrived at SOUTHAMPTON : Monday October 19th, at 7.10 a.m.
Crossing AMBROSE-SOUTHAMPTON : 109 h. 30
Distance : 3.183 Miles
Average speed : 29 knots 07
Arrived at HAVRE : Monday October 19th at 2 p.m.

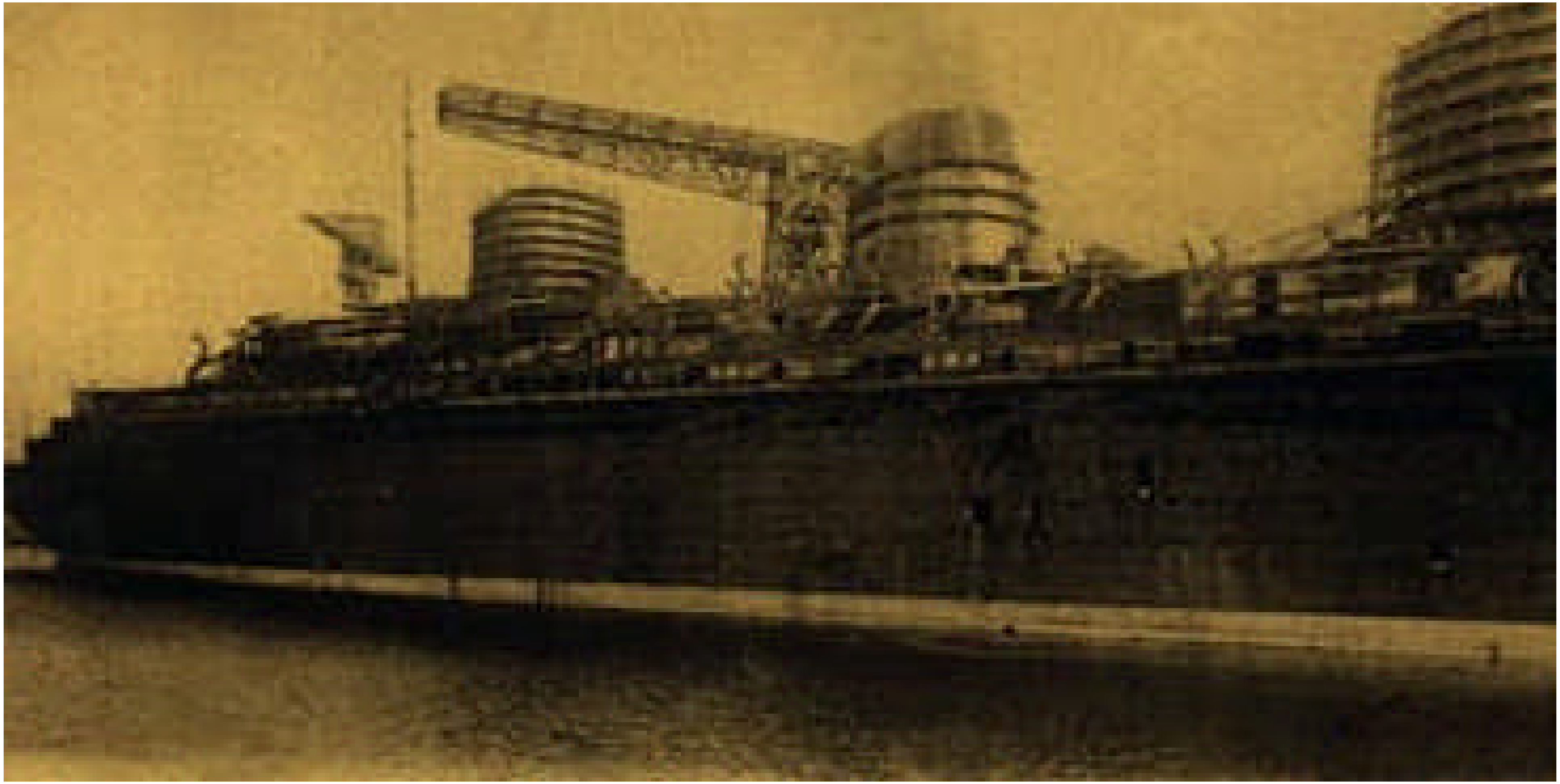
PASSENGERS : Cabin Class 193, Tourist Class 171, 3rd Class 108. Total : 472

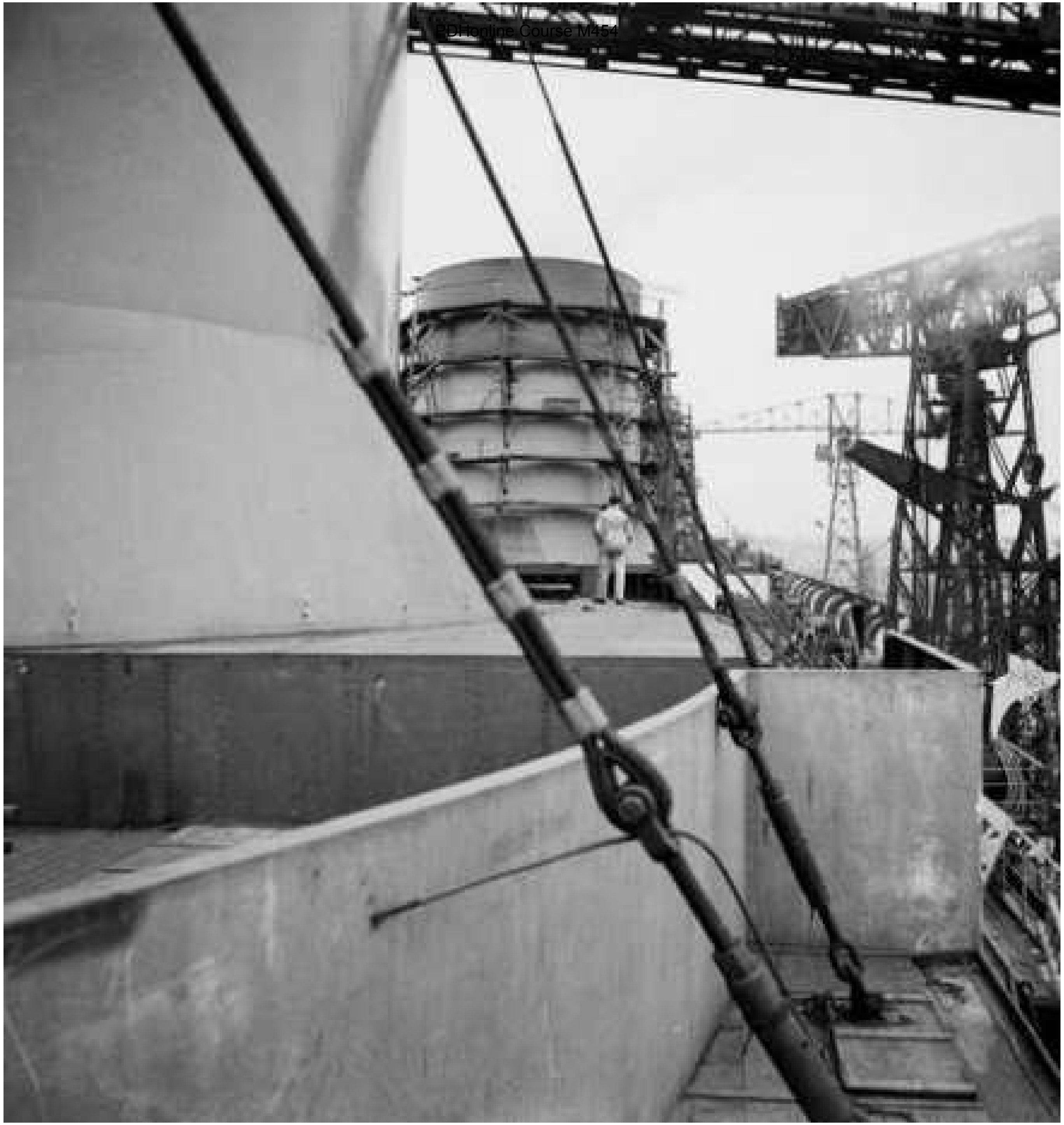


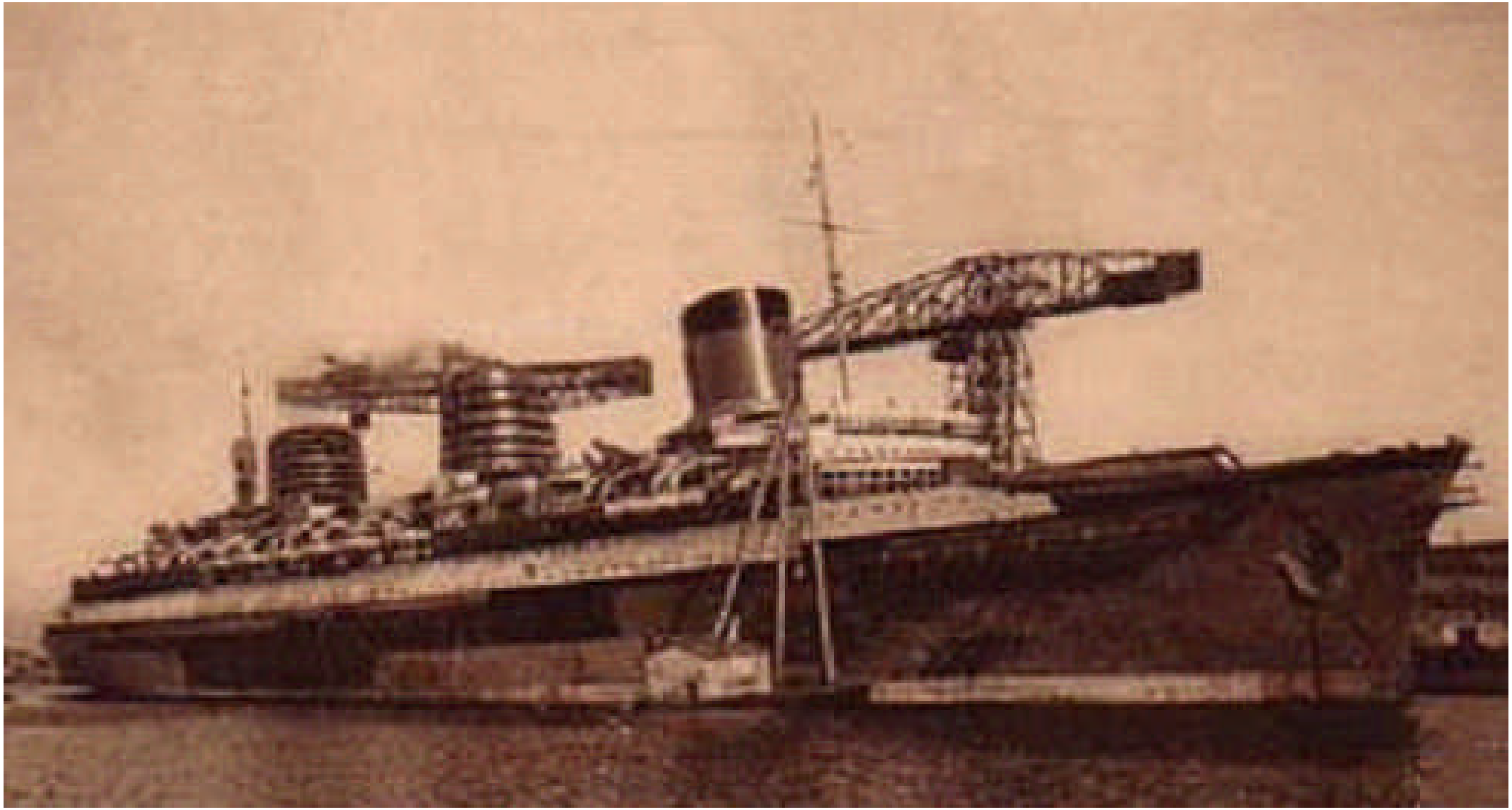
After launching, *Normandie* passed through Dry Dock Number One (stern-first) on her way to the outfitting basin

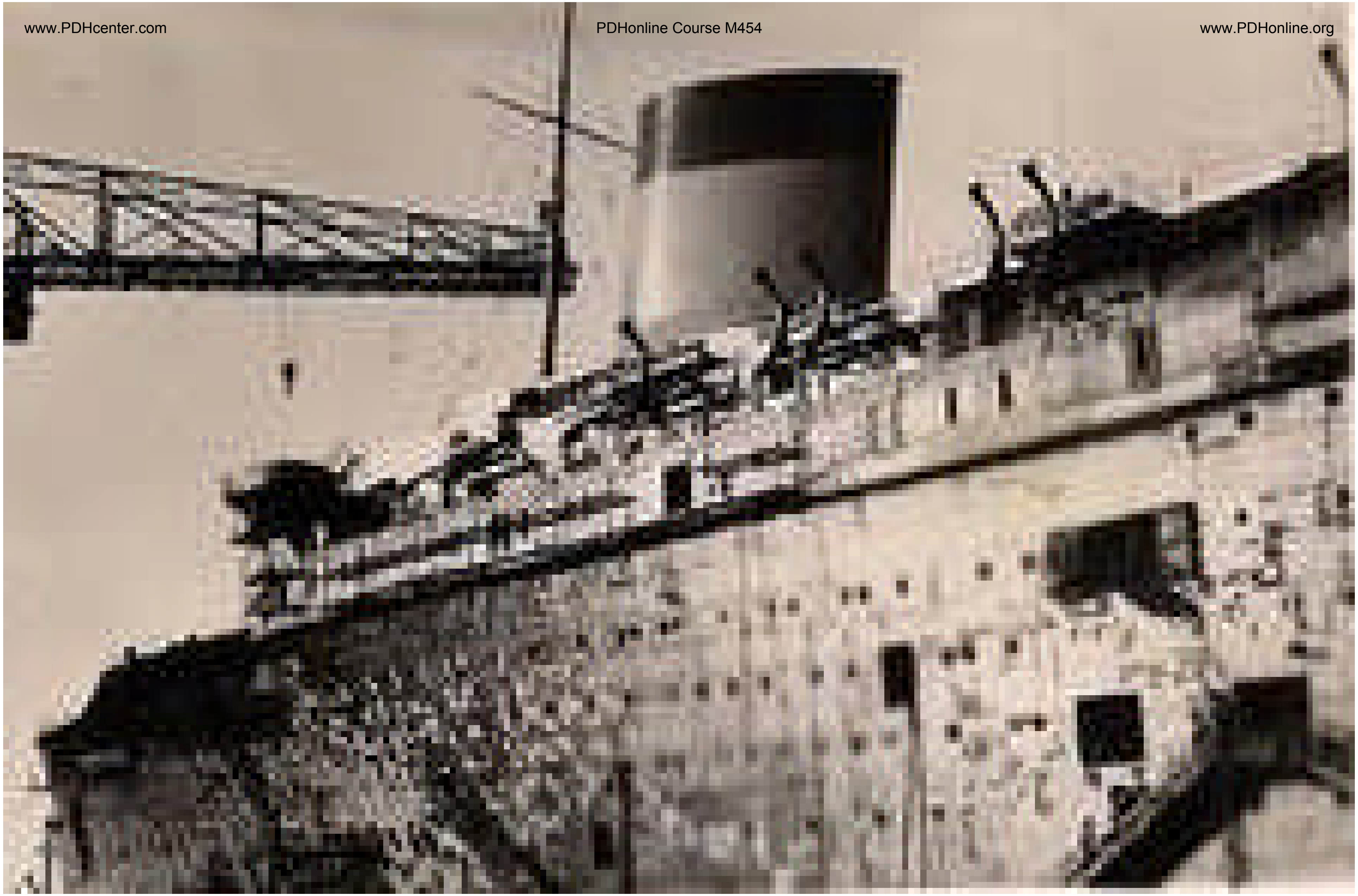
Fitting Out


NORMANDIE



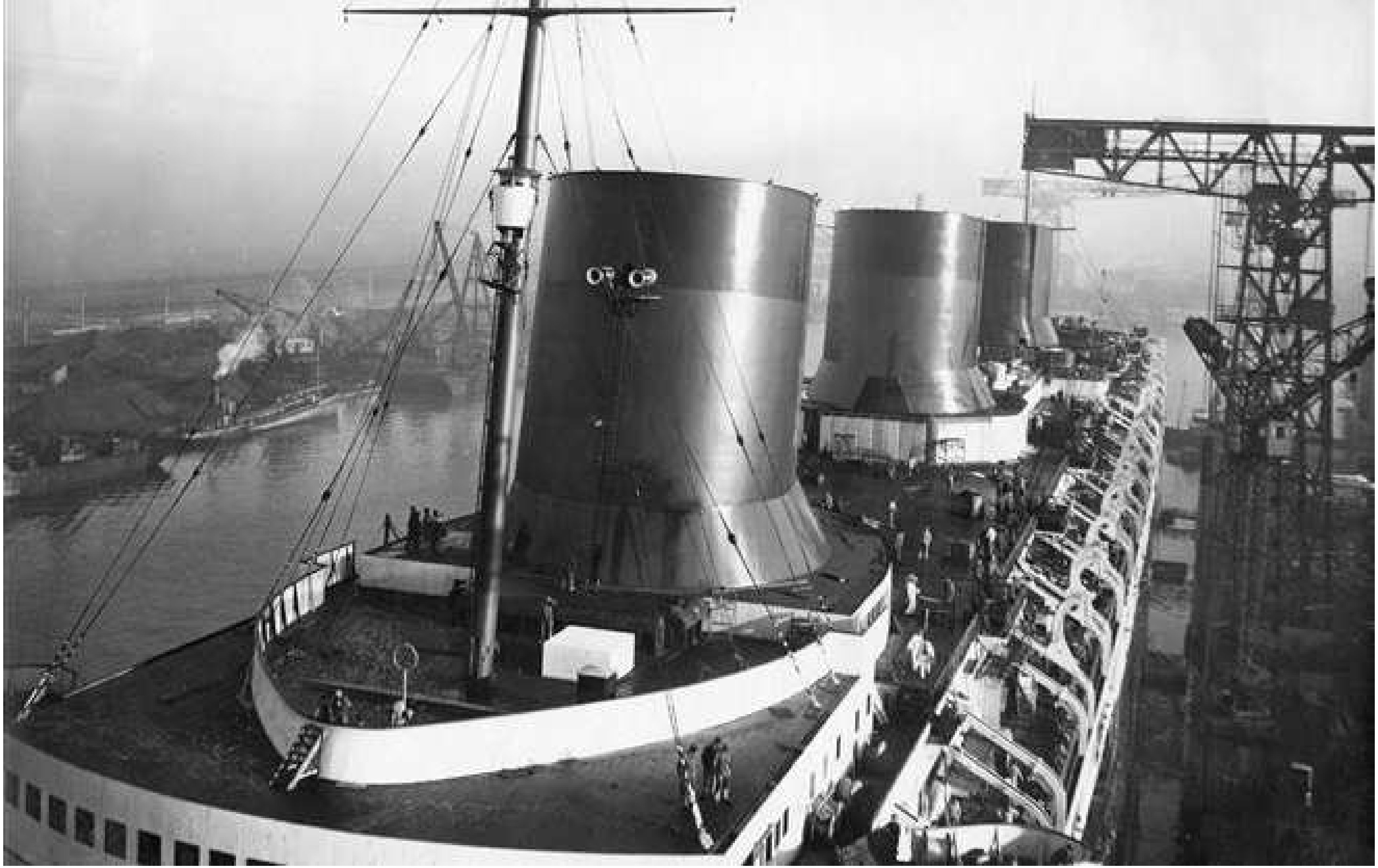






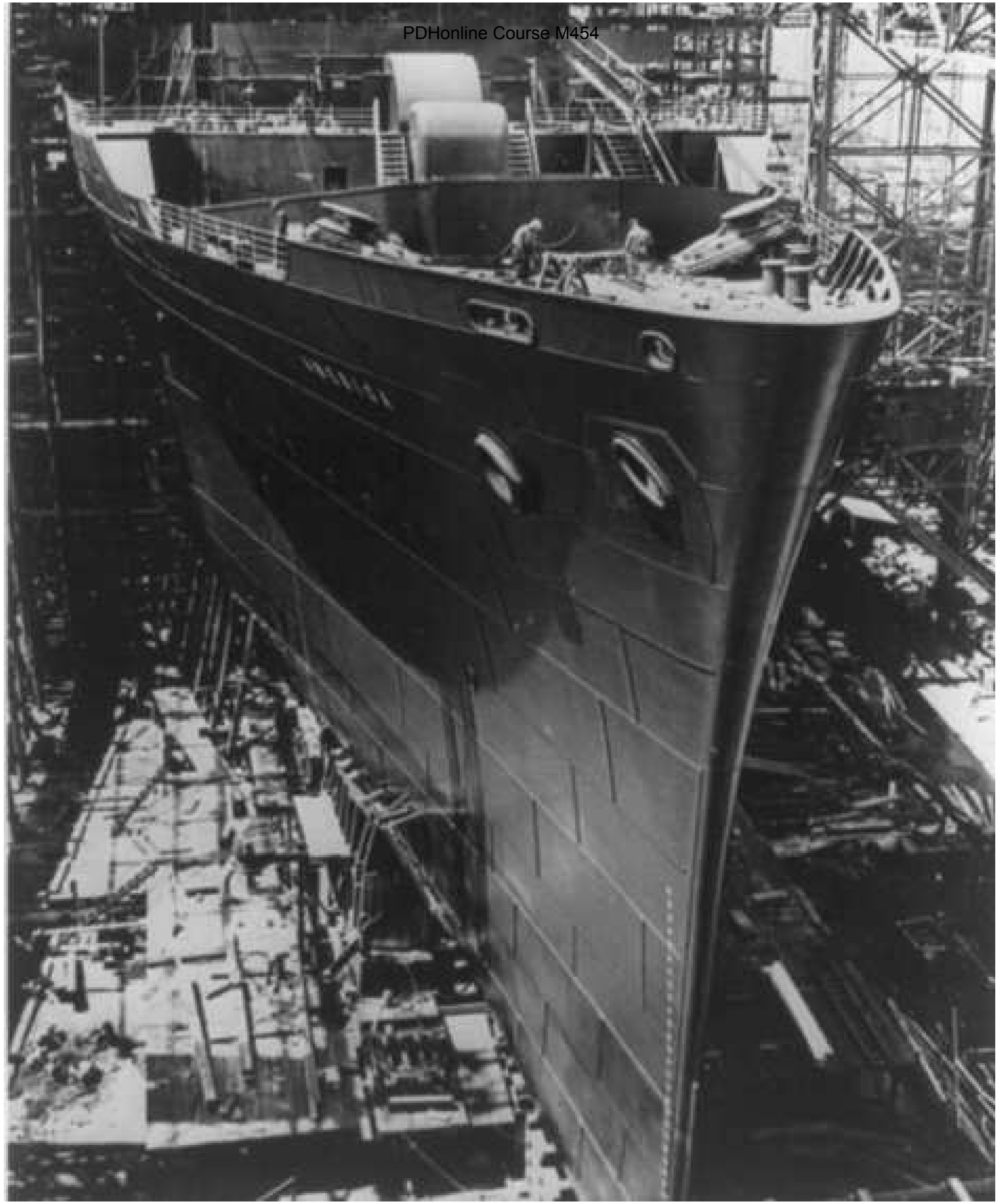
Rudder Installation
November 1933

“Self-propelled” (oars) Lifeboats
(awaiting installation)



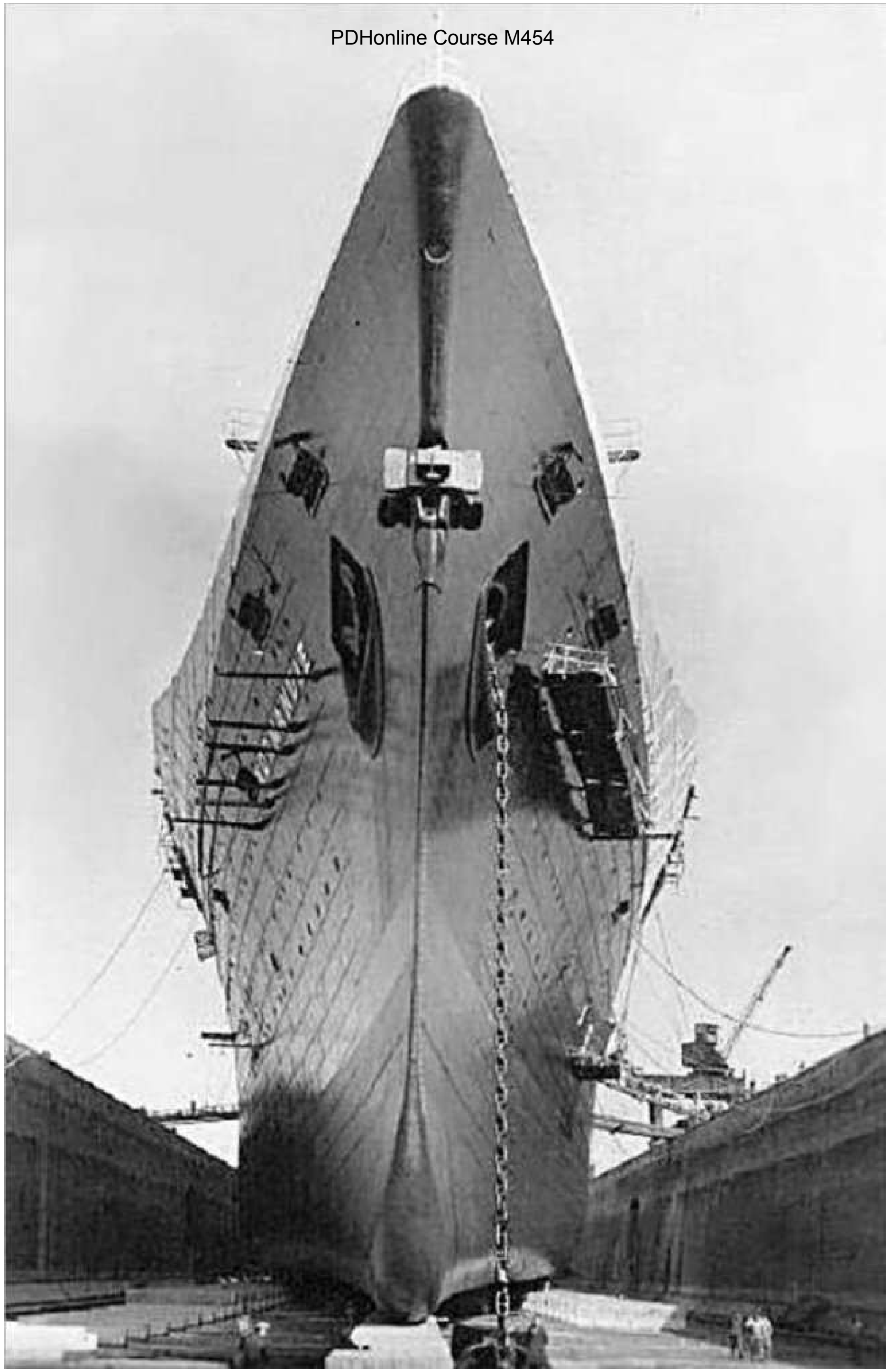
March 1935

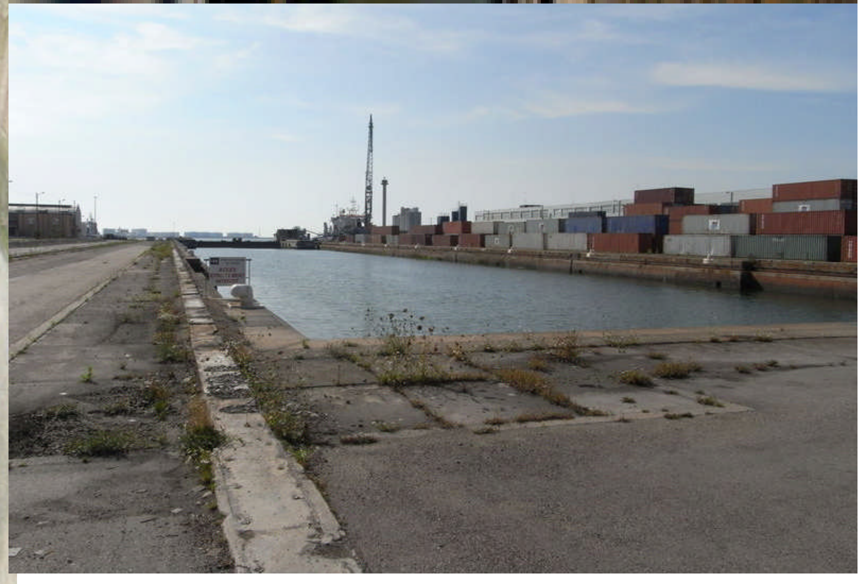
Dry Dock Number One



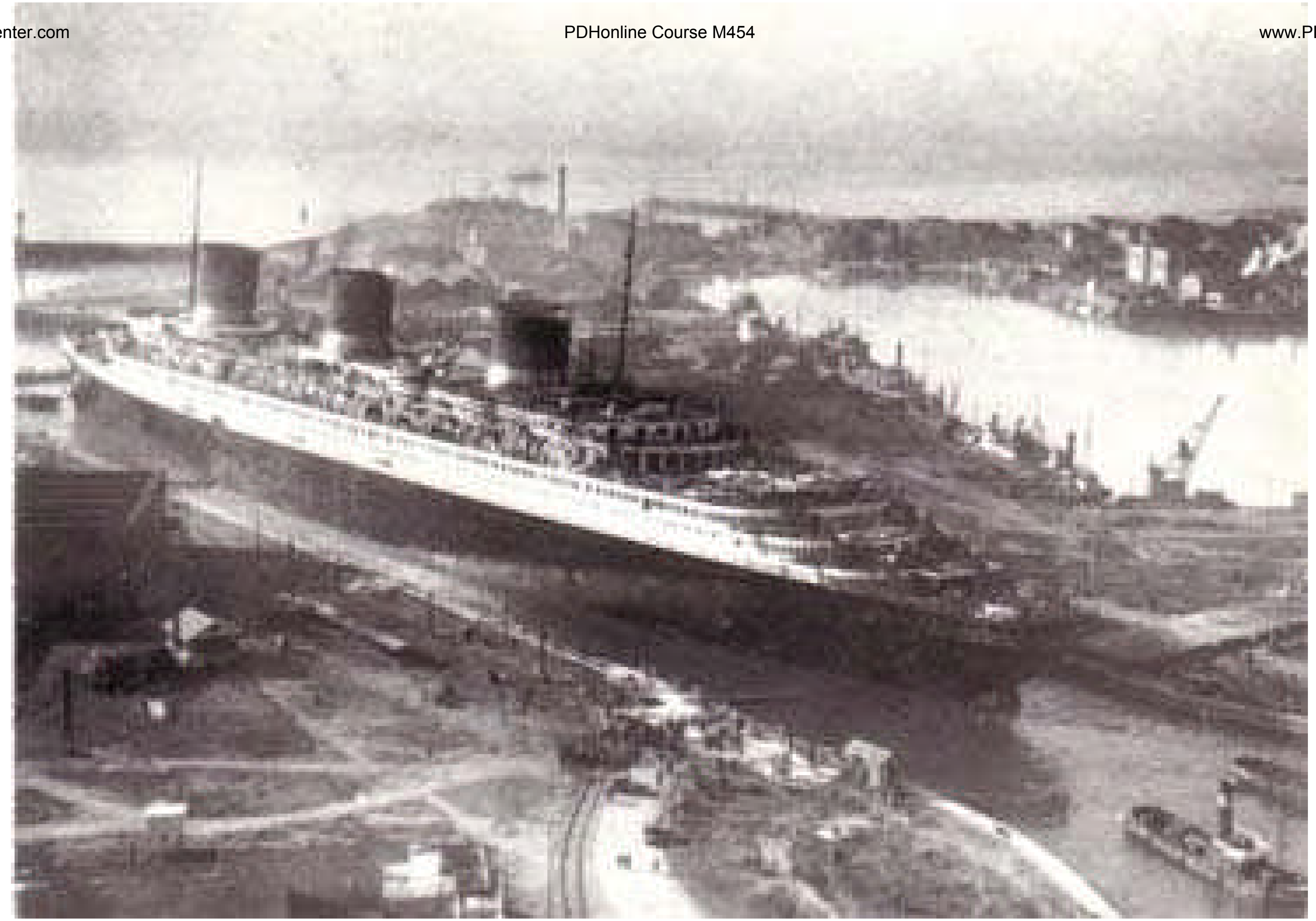
Normandie in Dry Dock Number One (ca. 1935)

Penhoet Shipyard, Saint Nazaire

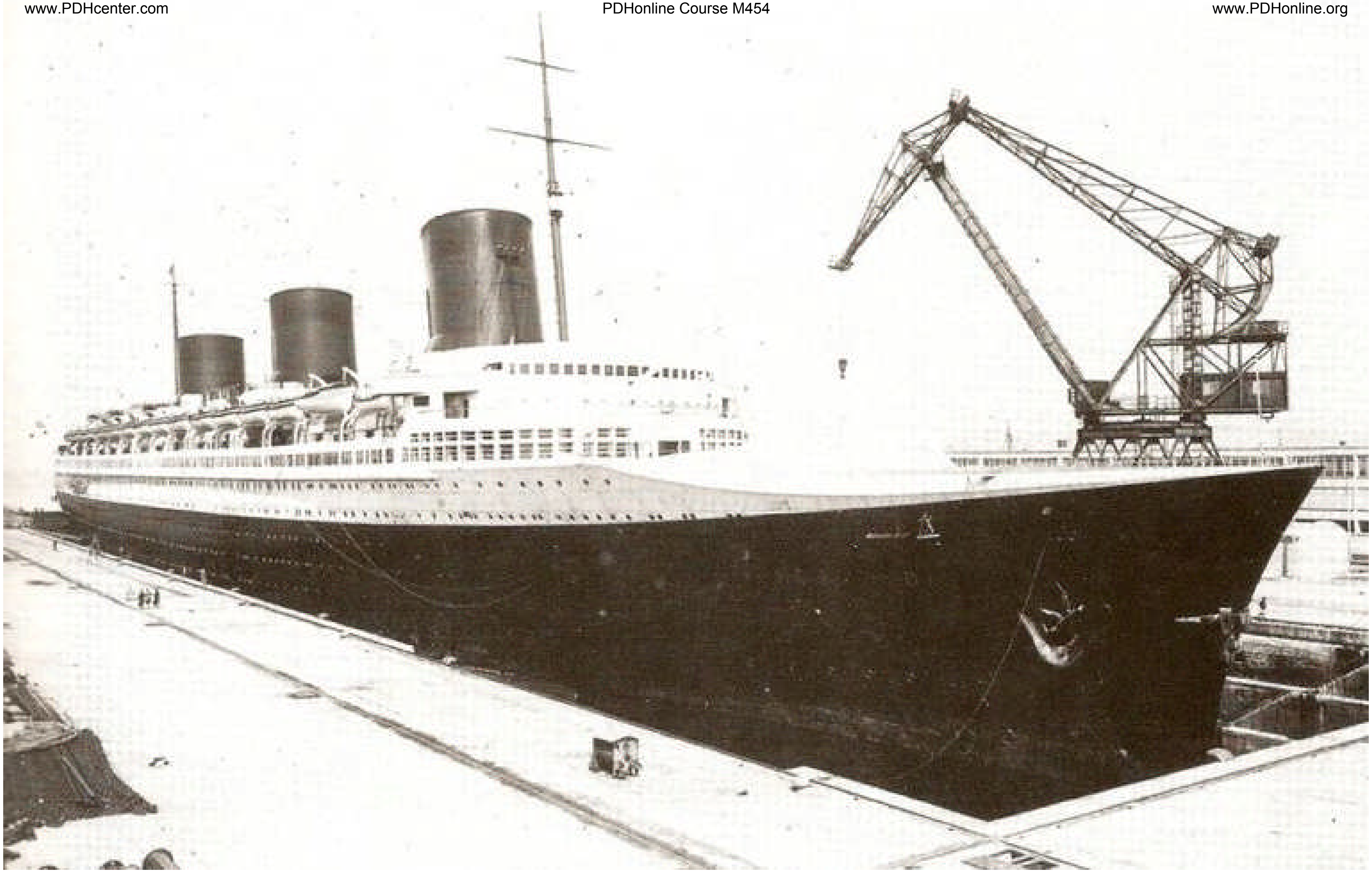




Penhoet's Dry Dock No.1
(present day)



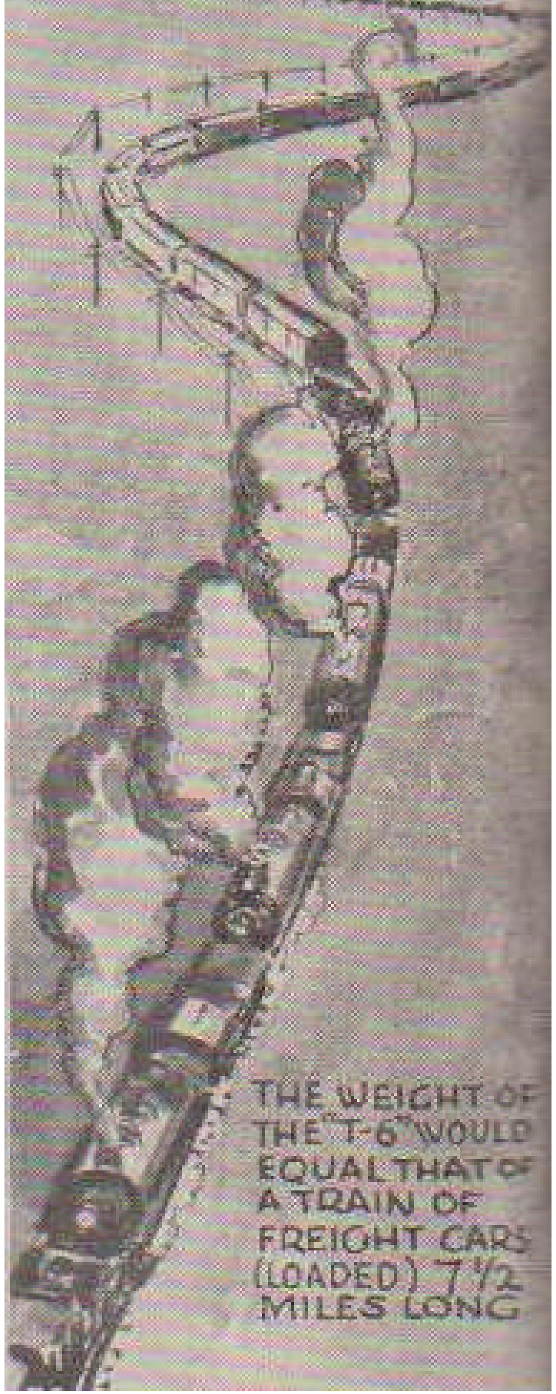
Normandie in Dry Dock Number One
(1935)



Penhoet shipyard workers
(*Normandie* behind shops)

Part 4

160K Horsepower



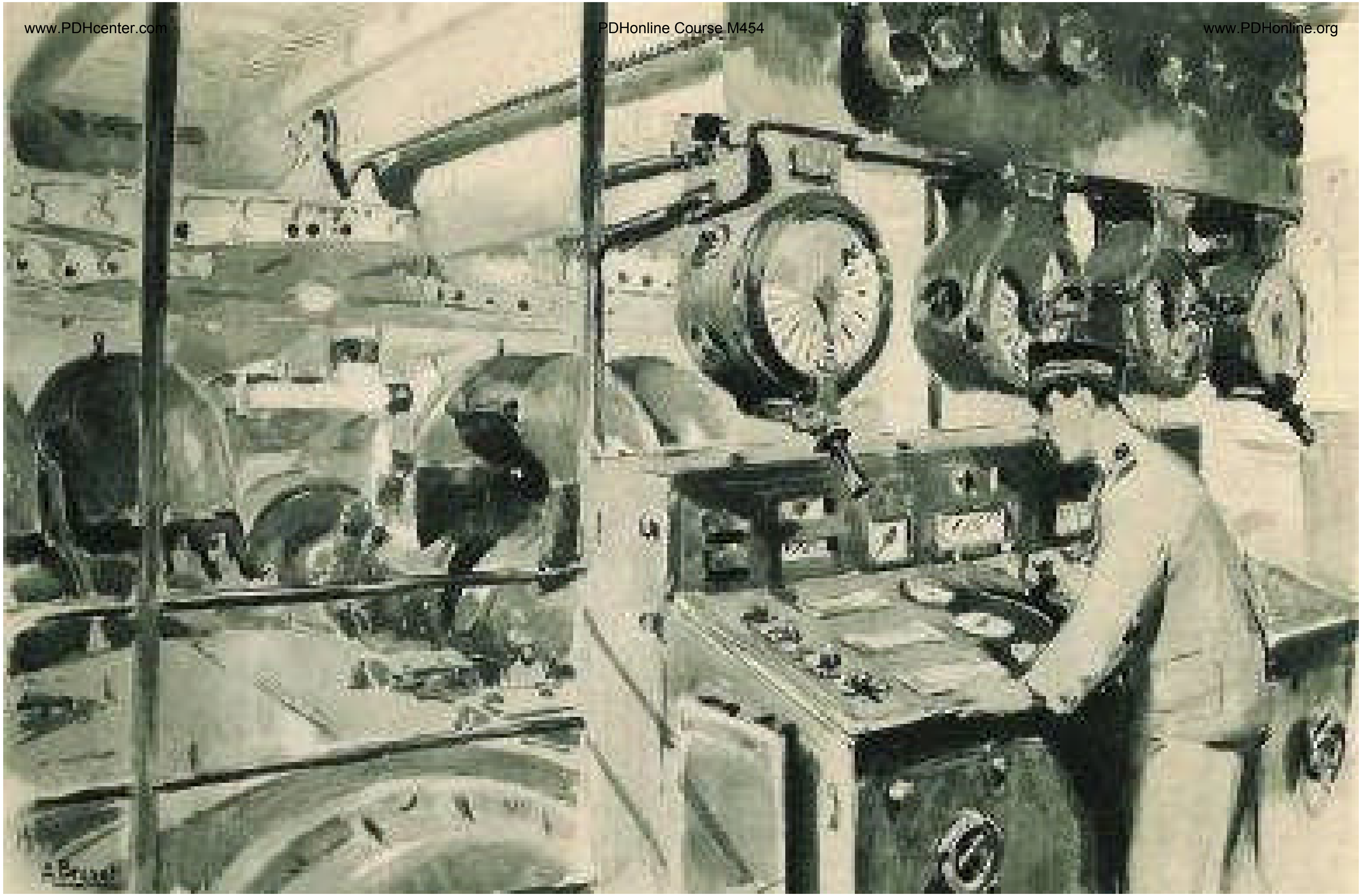
"…The great T-6, which will require about five years to build, is sponsored by the French Line and the French Government. Dimensions alone do not make her a ship for history. But it is her size which allows the multiple wonders which form the T-6. Her length overall is 1,016.6-feet; her beam, 117.81-feet. The ten decks between the engine room and sun deck are served by ten elevators, each with a capacity of thirty passengers. The four turbines will develop 160K horsepower, capable of driving forward the T-6's 75K-tons at a speed of 34.54 mph. Not a piece of coal will be found on board. The power plant consists of four steam turbines coupled directly to generators which will supply electricity to four motors. Each turbine runs independently. All the ship's accessory machinery is electrified. The T-6's staggering dimensions are made possible by an intensive application of the most modern practices in science and marine architecture…"

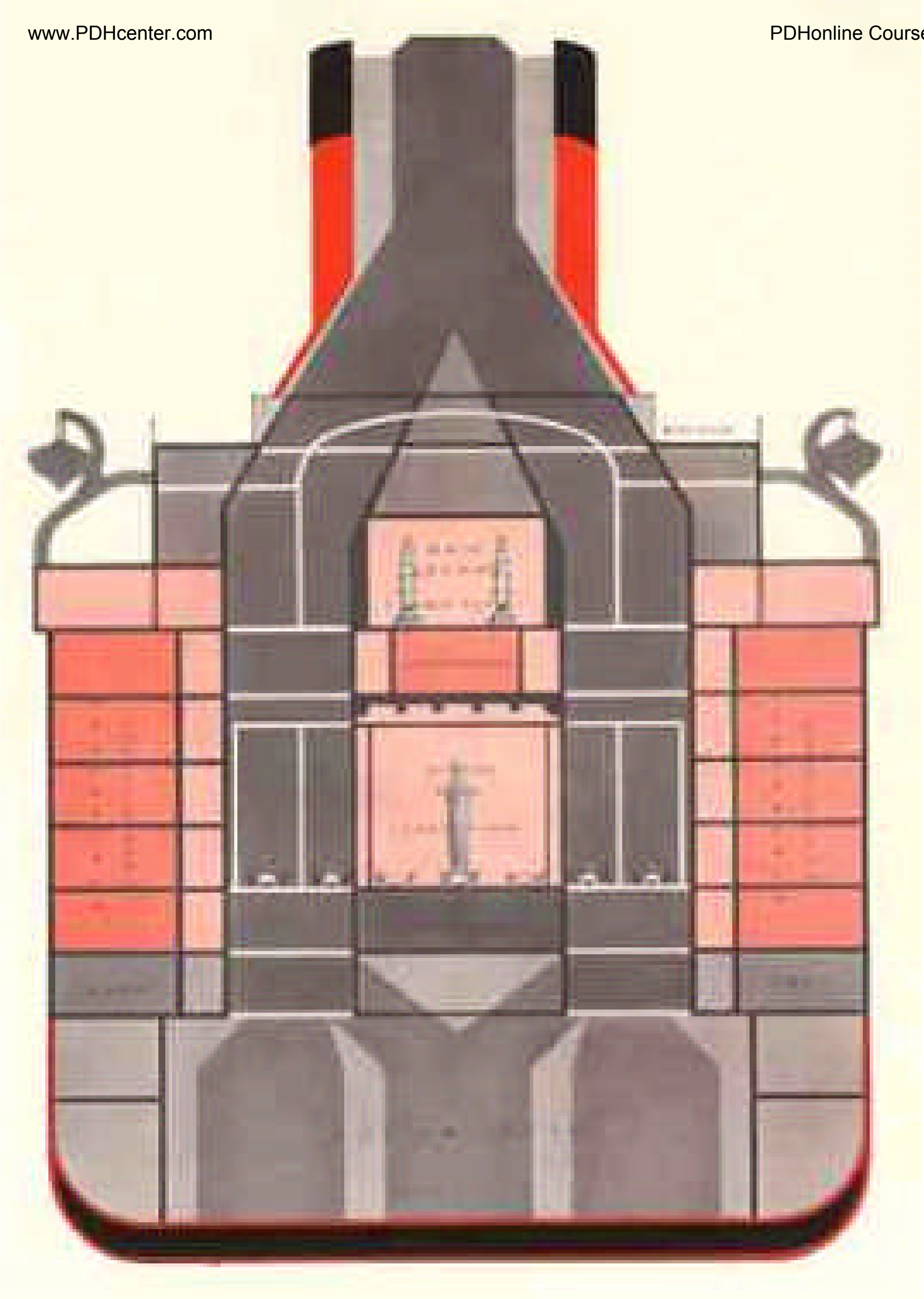
***Popular Mechanics*, December 1932**

Power Plant

"… What makes all this possible? To find out you must take the longest elevator ride possible on any ship. You are carried down a 110-foot shaft and deposited in the midst of a wonderland, the Normandie's engine room. It is like a vast cave. Below, you have the ship's double bottom, filled with fuel and fresh water. The level of the Atlantic Ocean is twenty-feet over your head. Outside that thin protective shell of steel, there is an ocean of water waiting to seize you. Water on three sides. You walk below the water level, but the air is sweet. The engine room is the last place you would expect to find it cool, for haven't we been taught that energy and heat are inseparable? The atmosphere is saturated with the hum of new-born energy but the heat escapes by some miracle. You learn later that twenty-four giant fans make possible sixty complete changes of air every hour! You stand under a forced draft of air coming from the ceiling and it almost blows you over. The ship's 'hot-spot' is naturally the boiler room. The burning oil generates a temperature of 1,350 degrees Centigrade, but you find that the room is by no means uncomfortable…"

***Popular Mechanics,* October 1935**





"…in planning the interior, her designers realized that no dining room worthy of such a ship could be built unless the funnels between decks were removed from their traditional place. In order to have sweeping, unobstructed interiors, it was necessary to run the funnels up near the port and starboard sides of the ship, instead of through the ship's centerline. By such ingenious planning, they achieved the largest room afloat, and what is probably one of the world's largest dining halls…"

***Popular Mechanics,* December 1932**

"…It is three stories high from end to end and commands a clear view for 400-feet…"

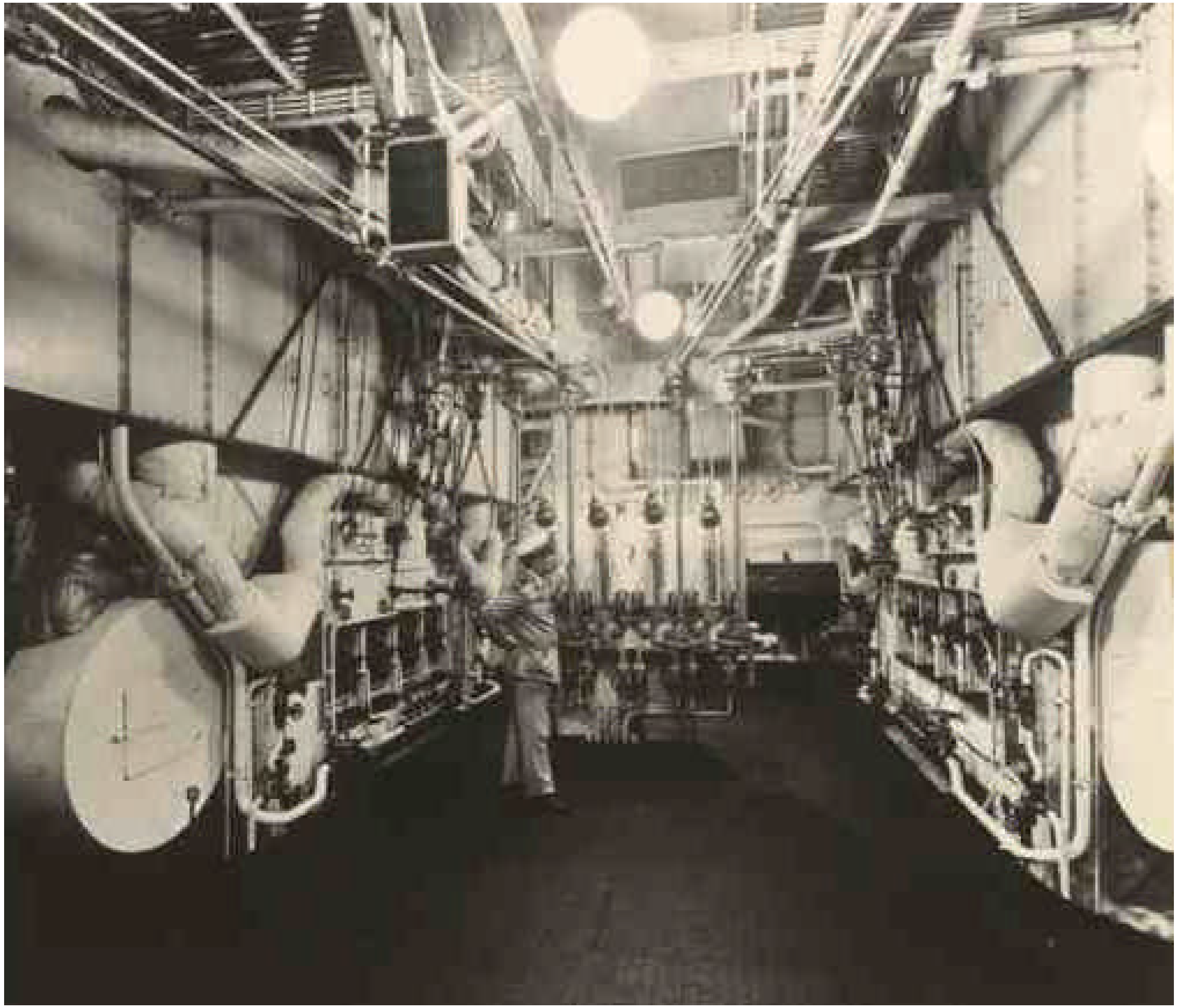
***Popular Mechanics*, Dec. 1932**

"…Cool as cucumbers adequately describes the engines. Any one of the Normandie's four motors can develop 40K horsepower, but you can lay your hand on the motor hood without fear of burning. Jean Hazard, the chief engineer, gives you the three golden rules for keeping an engine room cool: First, near perfect combustion; second, good insulation; third, efficient ventilation. After touring the engine room you understand why the Normandie's chief engineer studied the machinery for three years before he assumed the responsibility he now holds…For three years, the chief and his staff drew maps of wires, pipes turbines and ventilating ducts, until he could visualize each one in its place…"

***Popular Mechanics*, October 1935**

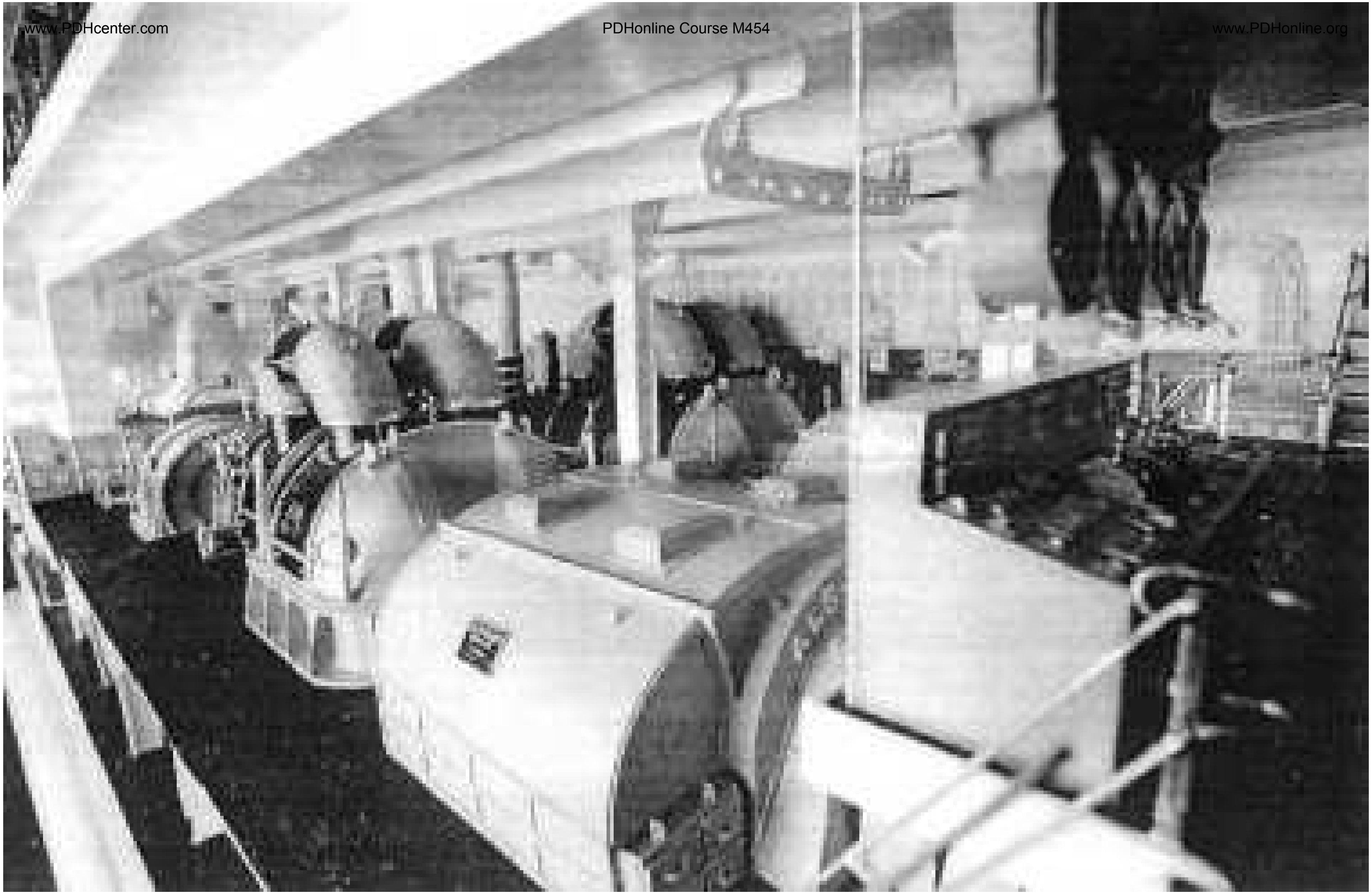
"…The Normandie's power plant extends three-fourths of the length of the ship and one-third its height. This is small when you consider that this floating unit not only develops 160K horsepower in her propelling engines, but also 12K horsepower in the auxiliary engines, which are used for the passenger services. To maintain a constant supply of energy it is necessary to burn fifty tons of fuel per hour when the ship is traveling at thirty-one knots; actually, the shaft horsepower at this speed runs up to 165K. The fifty tons include the oil consumption of the auxiliary engines, making in all 177K horsepower on fifty tons per hour…."

***Popular Mechanics,* October 1935**



"…In oil consumption, it is the last few knots which count most. For instance, at twenty-nine knots the Normandie consumes thirty-eight tons per hour and develops 118K shaft horsepower; while at twenty-four knots she burns only twenty-four tons per hour. Hence, the last seven knots cost as much as the first twenty-four. To realize the Normandie's extraordinary fuel economy, let us compare her with the Ile de France, a 43K-ton vessel. At twenty-nine knots the Normandie burns as much oil as the Ile de France burns at twenty-three and one-half knots, although the Normandie's tonnage is 37K greater than the Ile de France's…"

***Popular Mechanics,* October 1935**

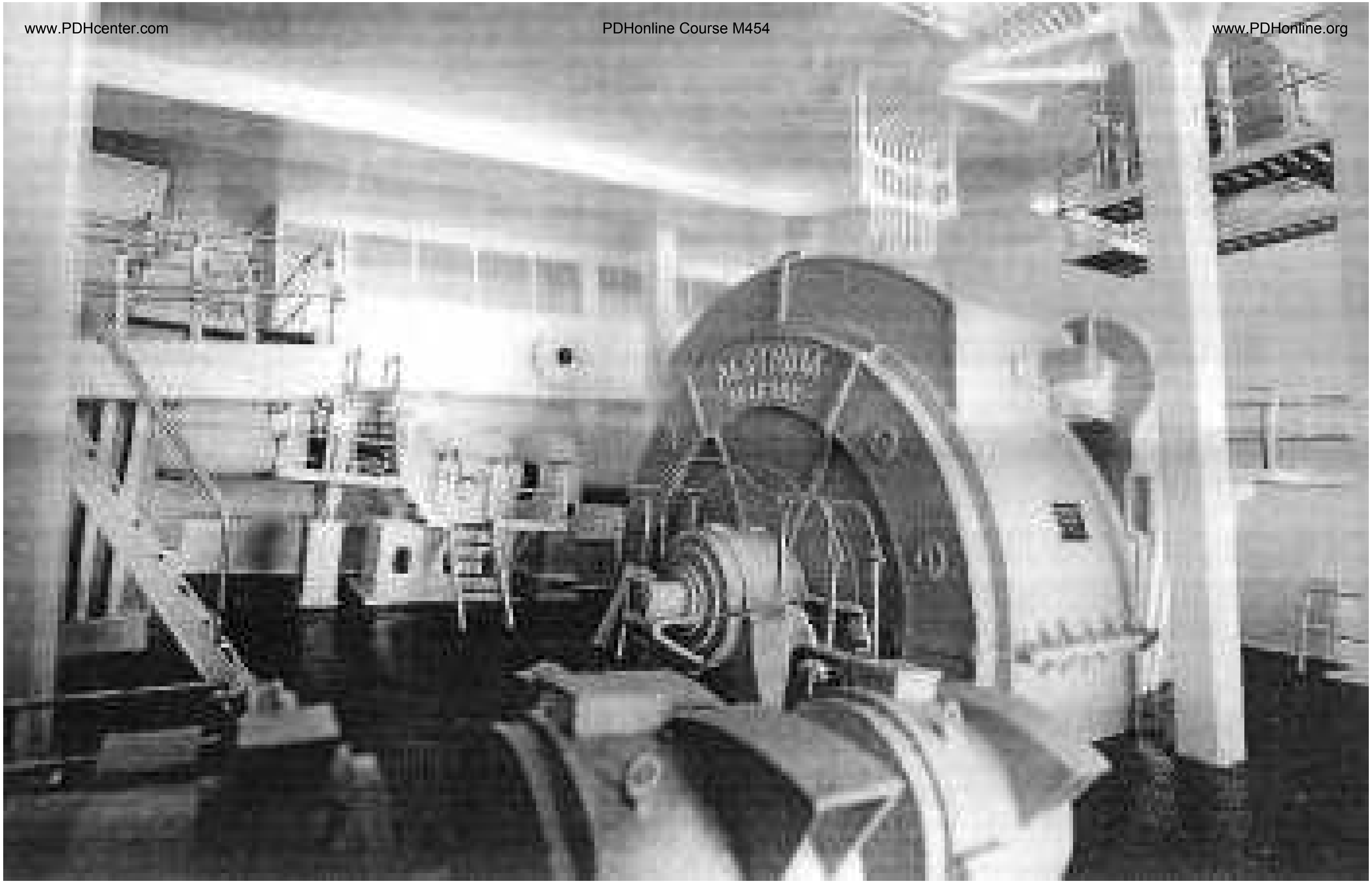


View (looking forward) - Turbo Alternator Room

End of the Brass Age

"…For the average man, as well as for the ship engineer, the Normandie's engine room means, in the simplest terms, the end of the 'brass age' in ship machinery. There is scarcely any brass left to polish in the Normandie's engine room. Everything is either under a painted hood or encased with rust-less alloy. That is why the Normandie's power plant does not resemble the ordinary ship engine room in the least. It is primarily an electric power station afloat, a builder or generator of electrical energy – nothing else. With this same energy you could light a great metropolitan city, run street cars, factories or railroad trains. The success of the Normandie means that the all-electric ship has come to stay."

***Popular Mechanics,* October 1935**

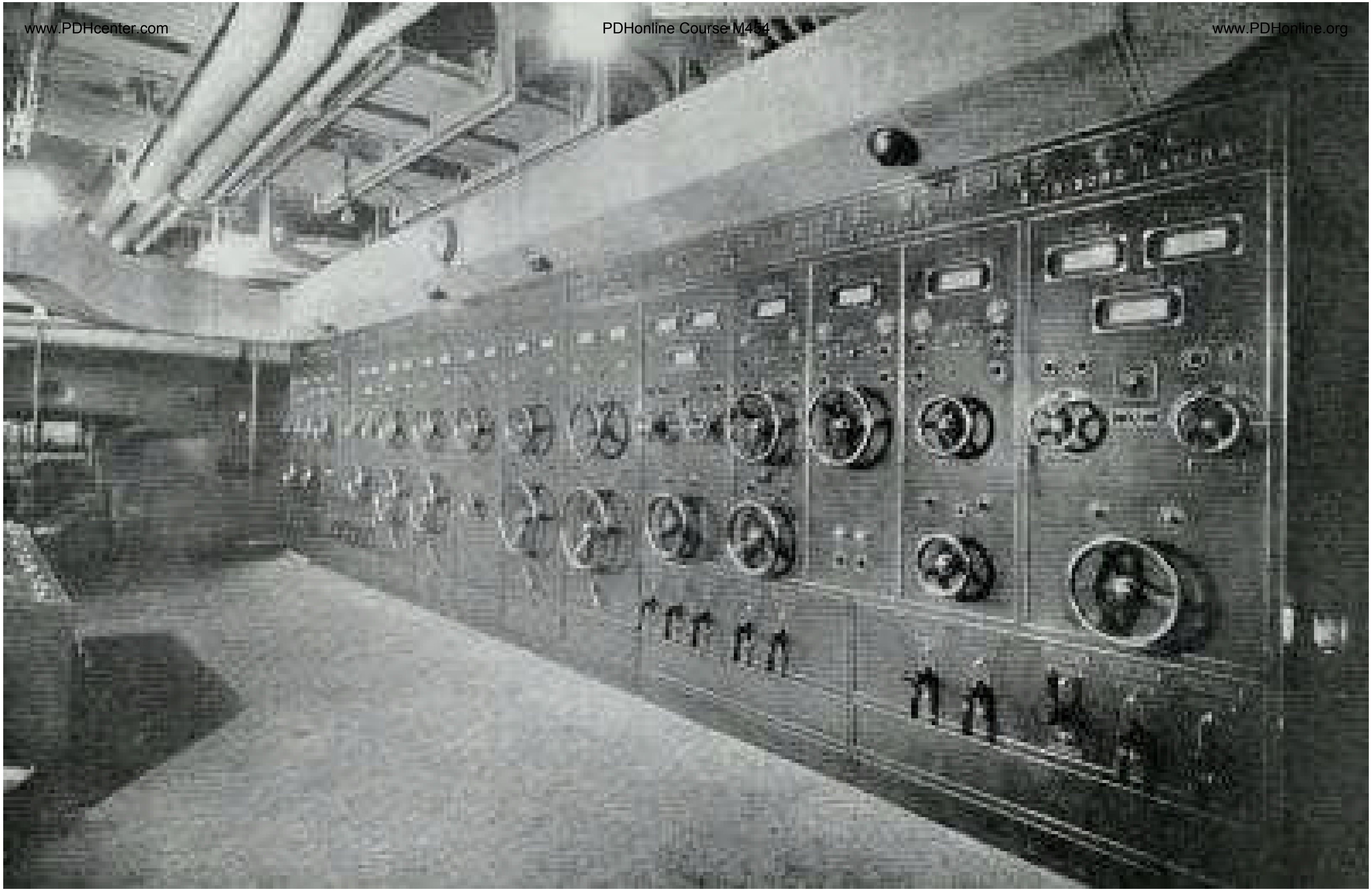


(View looking aft) - Electric Propulsion Room

Turbo-Electric Drive

"…electrical power equivalent to the combined steam powers of the Leviathan, the Majestic and the Ile de France, will whirl her giant propellers…Not only will the Normandie be the most completely electrified ship in the world, but she will be the first electrically-driven ship to pit her might against the directly steam-driven ship in the race for transatlantic supremacy…"

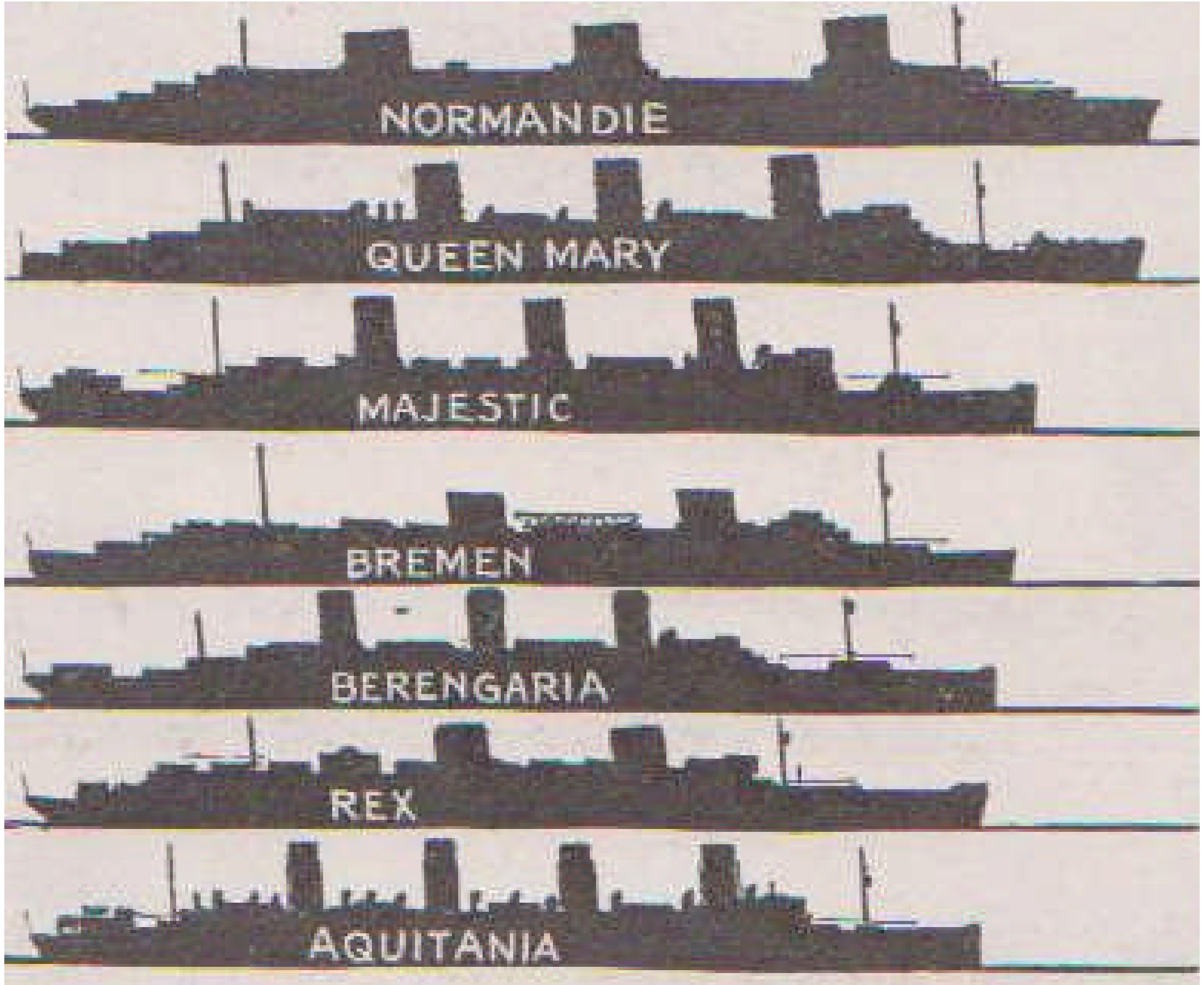
***Popular Science*, November 1933**



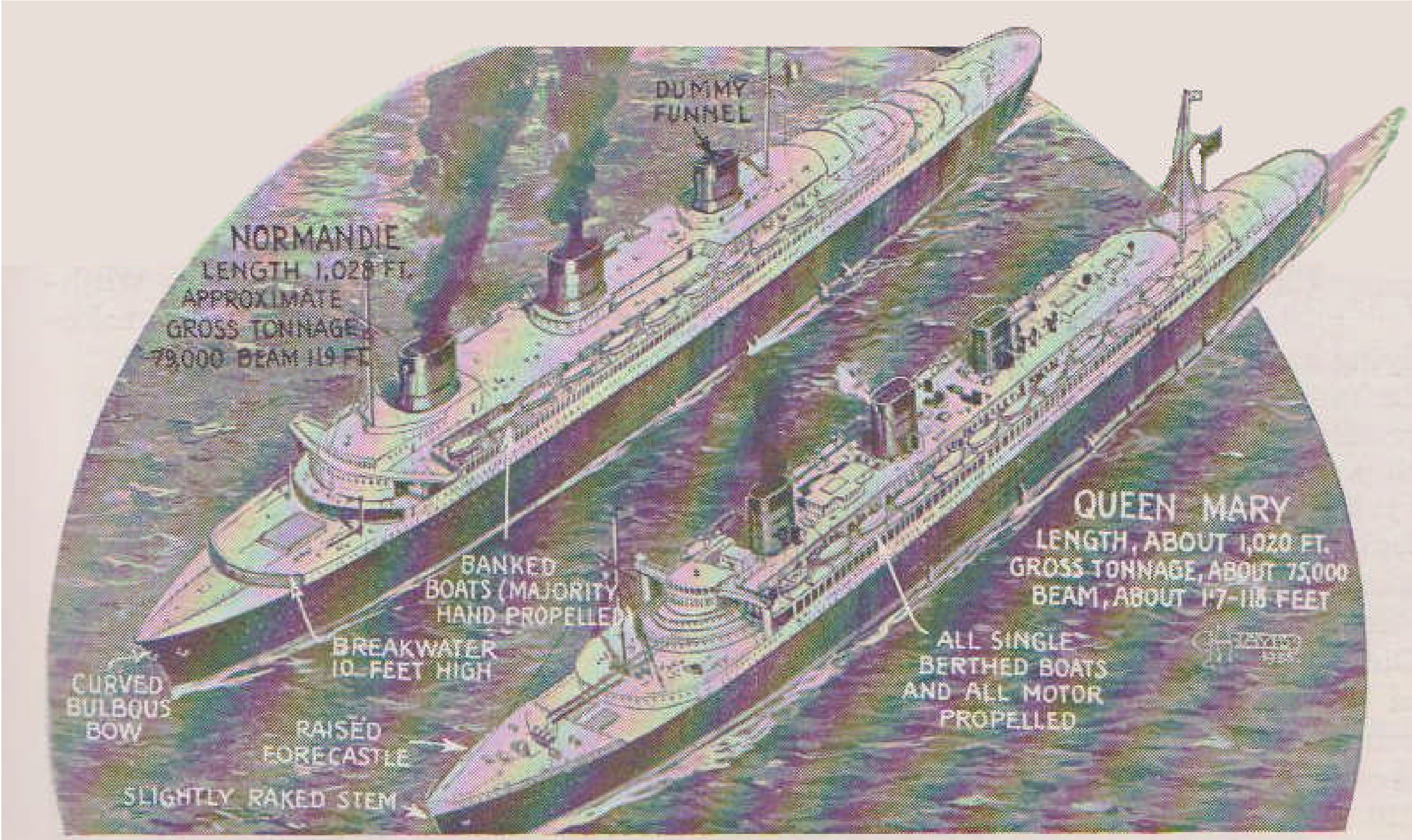
To effectively compete with the planned British super-liners, CGT called for a ship weighing 80K-tons, +1K-feet in length and able to maintain an average speed of 30-knots. Because of Vladimir Yourkevitch's hydrodynamically efficient hull design, the new ship would not require as much horsepower as first thought. Still, to meet the design-speed requirement the ship needed powerful and fuel-efficient engines. Since the early part of the century, fast liners such as the *Mauretania* had used steam turbines for propulsion. Powerful and economic, they had a major flaw; they could turn in only one direction. To go backwards (astern), auxiliary turbines were installed (to turn the propellers in the opposite direction). The CGT engineers found a solution that would prove very successful. Rather than have the steam turbines turn the propeller shaft/s directly instead, they would power electrical generators which would, in turn, power electric motors (reversible) which would turn the propeller shaft/s in either direction.

"…From the earliest days of the steamship, until about 1907, the race was waged with the help of the constantly developing reciprocating engine. Edged on by the demand for larger and faster vessels, the simple steam engine of a few hundred horsepower grew into a double and triple-expansion engine of thousands of HP, until the maximum was reached in the 40K-HP engines that drove the Kaiser Wilhelm II. Then came the famous Mauretania with steam turbines, aggregating nearly 70K-HP, coupled directly to her propeller shafts. Dashing across the ocean at better than 27-knots, her example revolutionized shipbuilding, and turbines became thenceforth the rule for the big ships. The 110K-HP turbines of the record-breaking Bremen and Europa, and the 120K-HP turbines of the Rex, all of which are connected to the propellers through massive reduction gears, represent the most advanced and most powerful propelling machinery entered into the race as it stands today…"

***Popular Science*, November 1933**


NORMANDIE
QUEEN MARY
MAJESTIC
BREMEN
BERENGARIA
REX
AQUITANIA

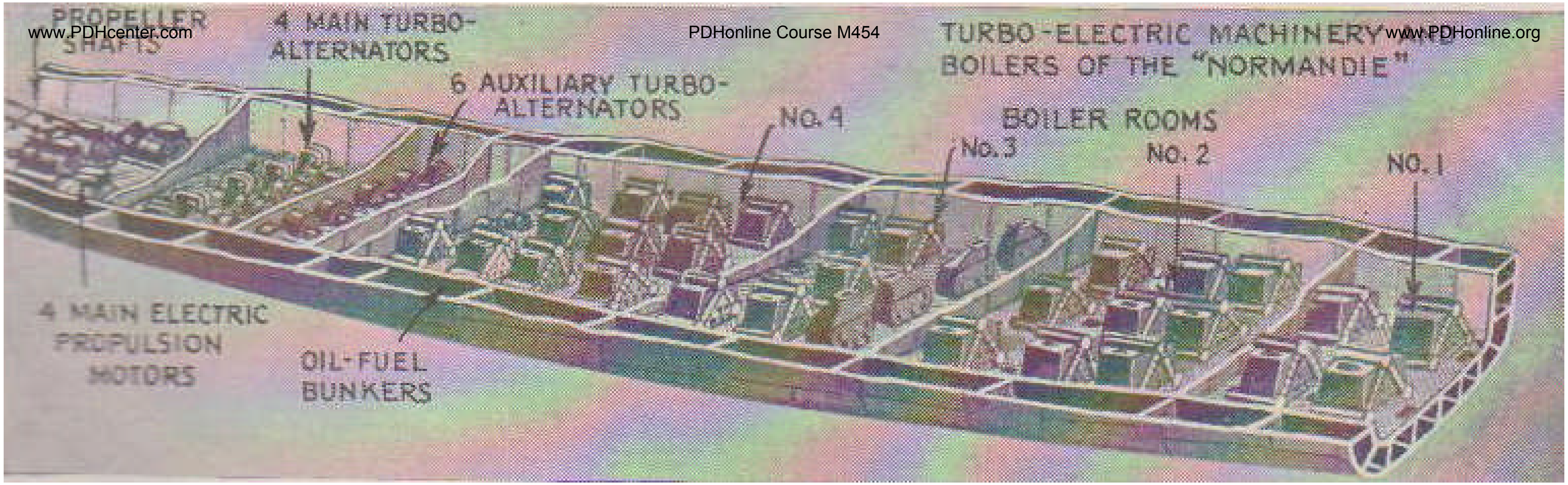
S.S. Rex (1931)
(Italian Line)



Top, Right, Comparative Sizes of Ocean Liners, with "Normandie" Largest, 1,028 Feet Long; Bottom, Sketch Comparing "Normandie" with "Queen Mary," British Liner Being Groomed for Her Maiden Voyage; Note That "Queen Mary" Is Only Eight Feet Shorter Than "Normandie"; the British Ship Boasts Single-Berthed Lifeboats, All Propelled by Motor, While "Normandie's" Lifeboats Are Banked and Mostly Hand Propelled; an Advantage for "Normandie" Is Claimed in Curved Bulbous Bow, Compared with Slightly Raked Stem of "Queen Mary"; the Ships Are Latest Entries in the Atlantic Speed Race


R.M.S. QUEEN MARY
TO AMERICA

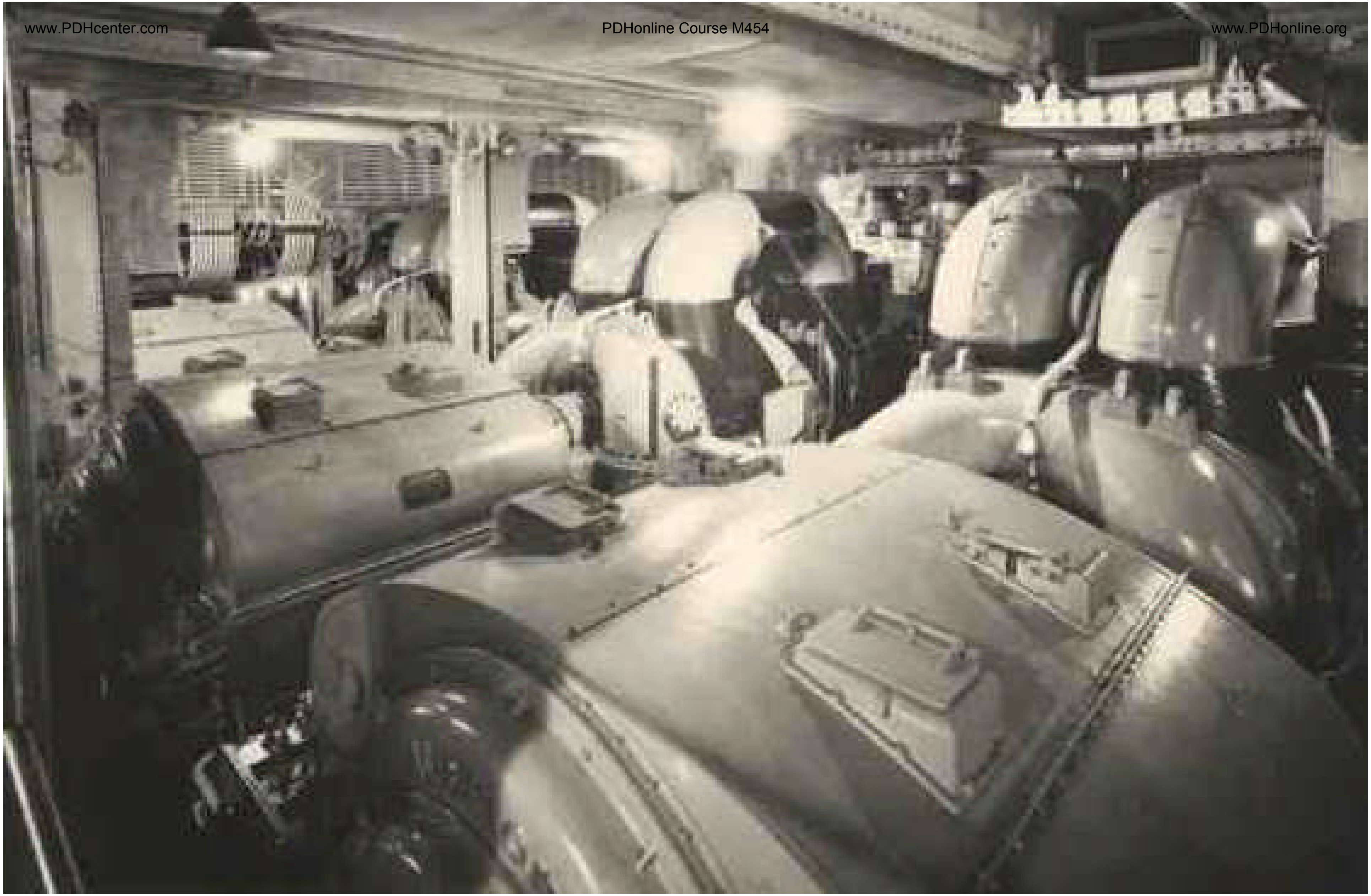

***Normandie's* "Banked and Mostly Hand-Propelled" lifeboats**

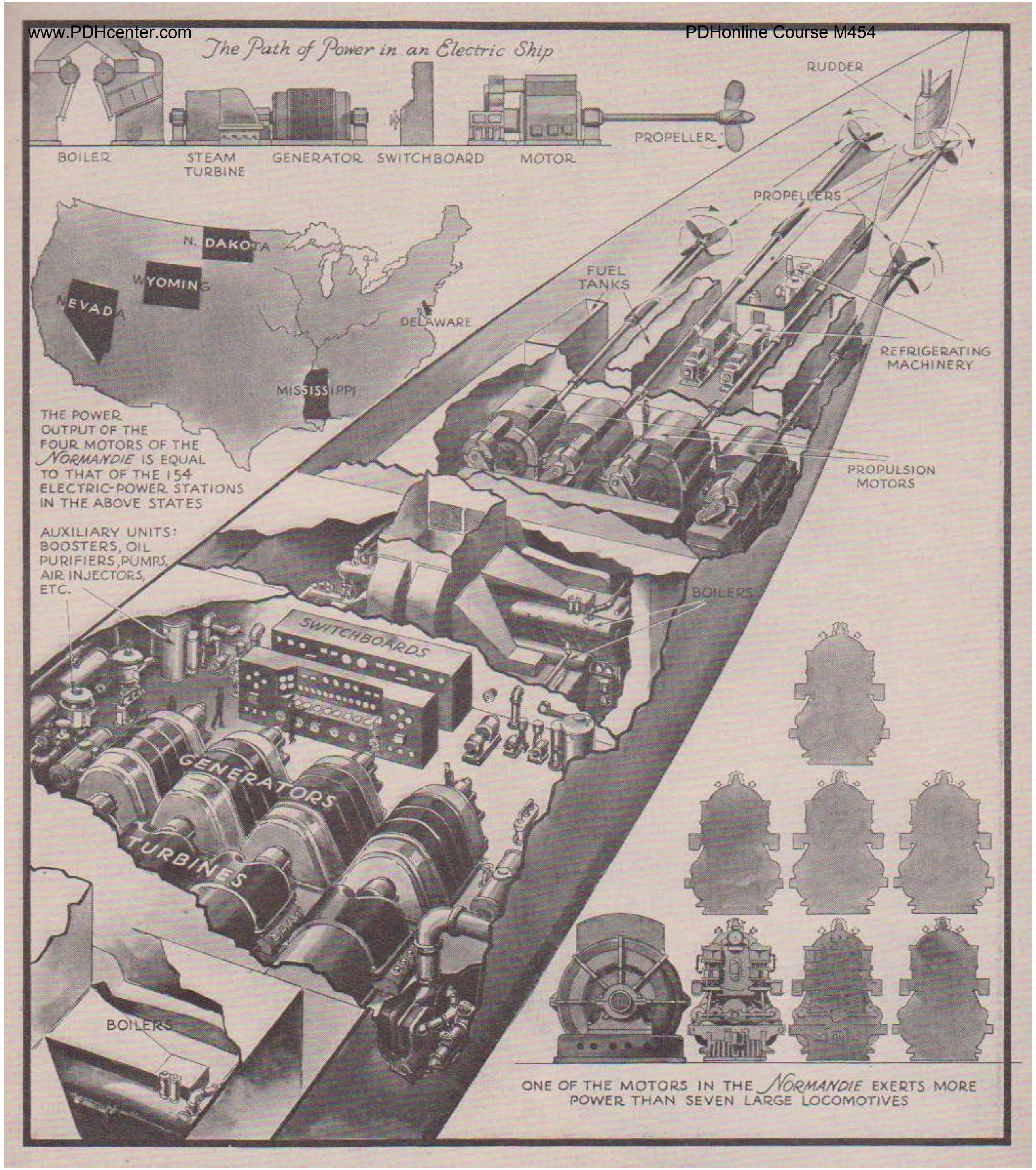


"...Normandie is the first liner of the North Atlantic to challenge this long tradition. Instead of spinning her propellers directly, or through gearing, her four mammoth turbines will drive great electric generators. The electricity from these, in turn, will drive four huge motors coupled to her propeller shafts. With from 160K to 200K electrical horsepower, this largest ship ever built is expected to make the crossing between Havre and New York faster than any other merchant ship that ever sailed the seas. Engineers of the Altshom Company, Belfort, France, in collaboration with the American General Electric Company, have been laboring for several years over the design and construction…"

***Popular Science*, November 1933**

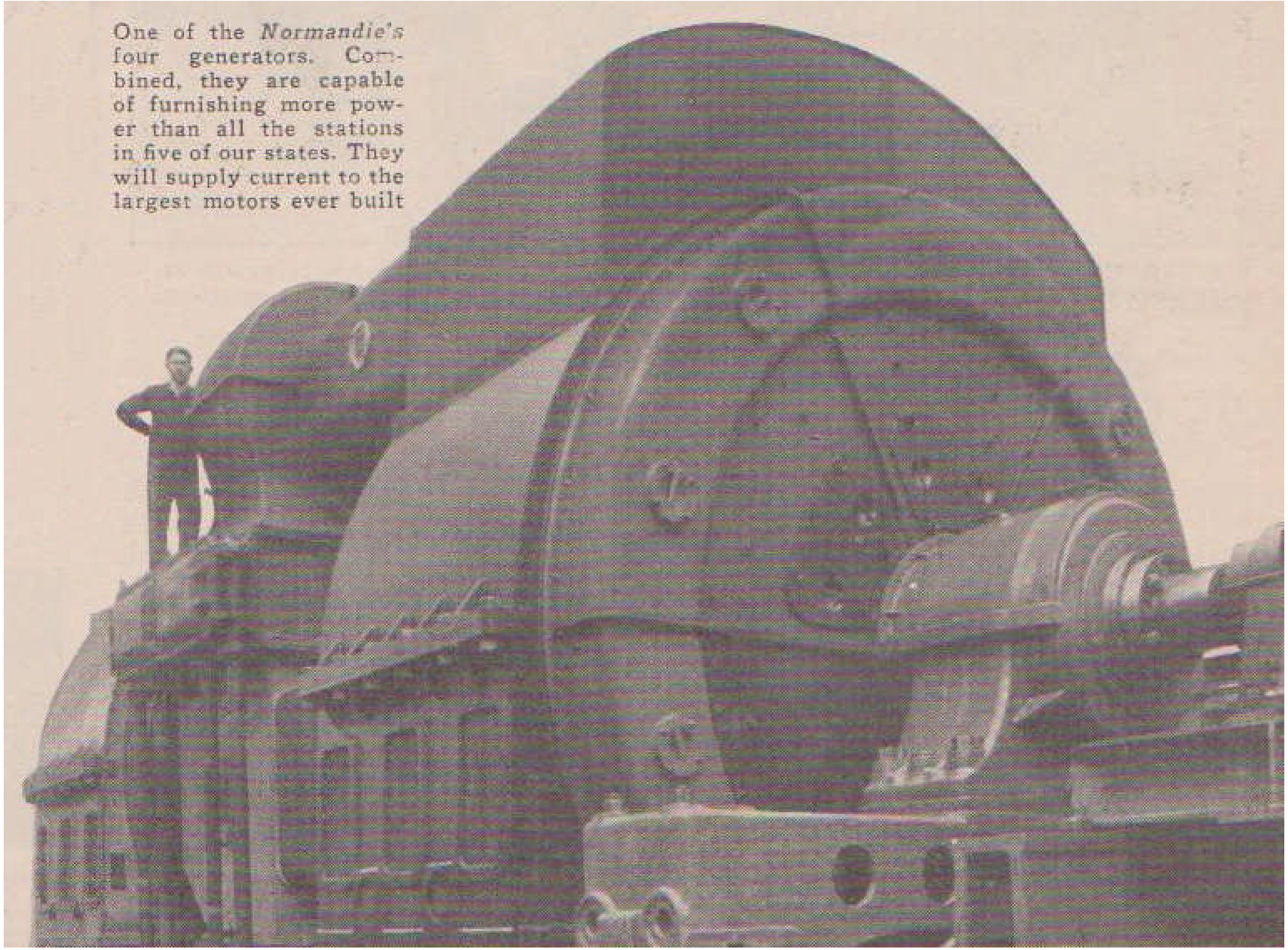
RE: *Normandie's* 33 steam boilers could light modern-day San Francisco



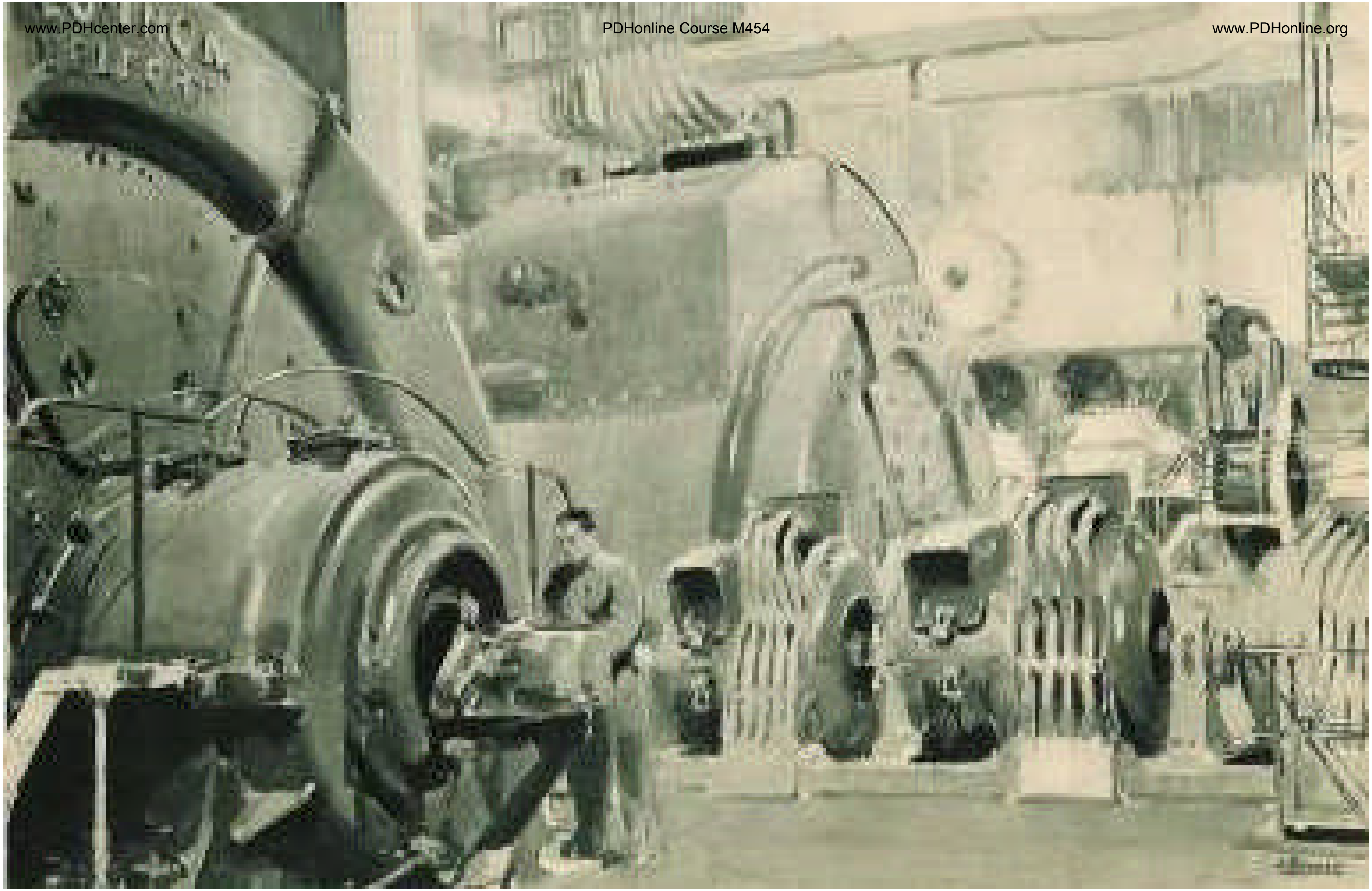


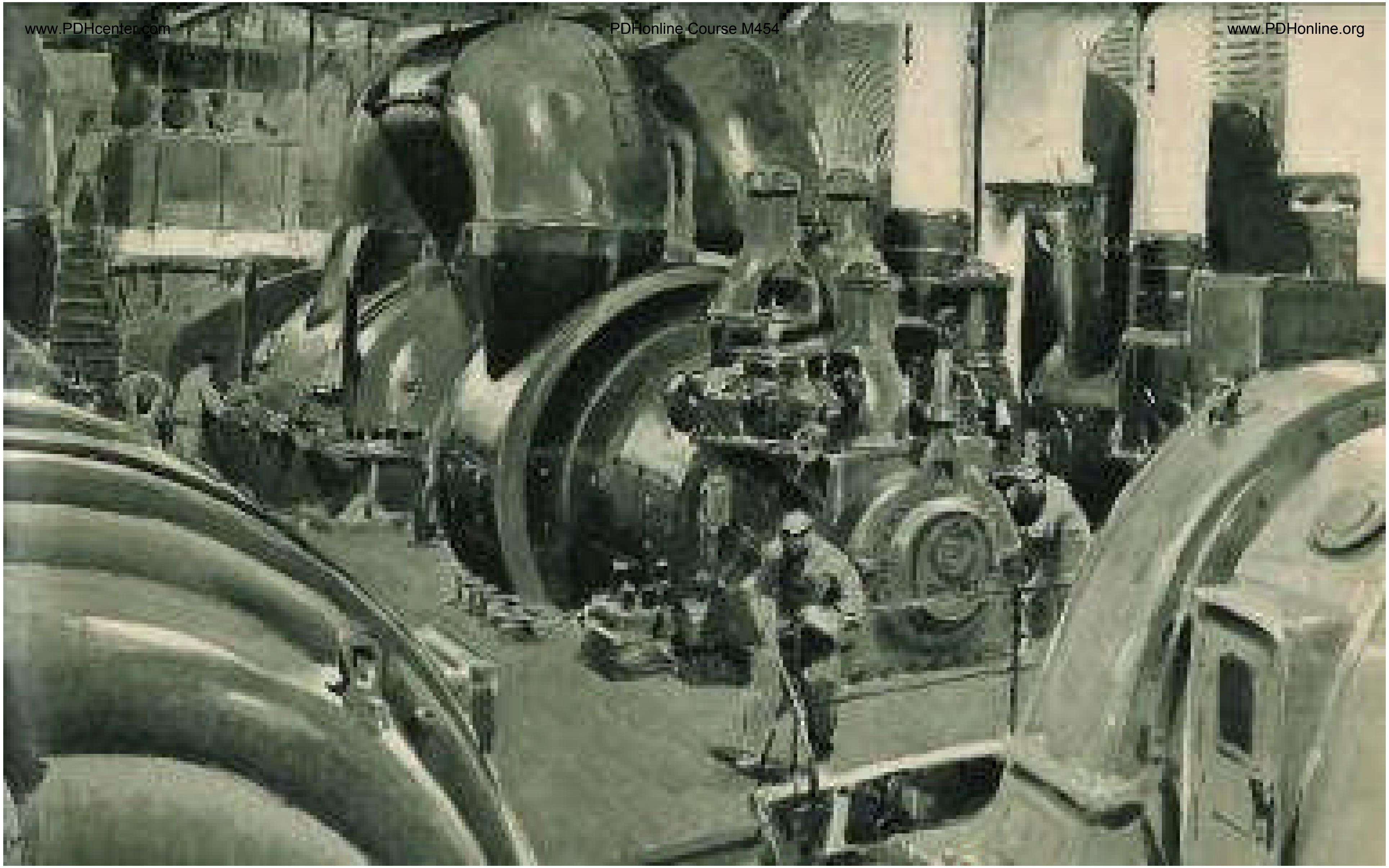
"…To drive this monster ship, four motors had to be built, each more than twice as powerful as any motor used for any purpose on land, and more than seven times as powerful as the most powerful steam locomotive that was ever built. To supply these giant motors with current required still greater a feat of engineering. Running at highest speed, they necessitated a generating plant capable of producing more electricity than the combined generating capacity of the 154 power stations in the entire states of North Dakota,, Wyoming, Nevada, Mississippi and Delaware. Four huge turbo-generators, with a maximum capacity of 42,750 KW each, were finally constructed to meet this demand…"

***Popular Science*, Nov. 1933**



One of the *Normandie's* four generators. Combined, they are capable of furnishing more power than all the stations in five of our states. They will supply current to the largest motors ever built





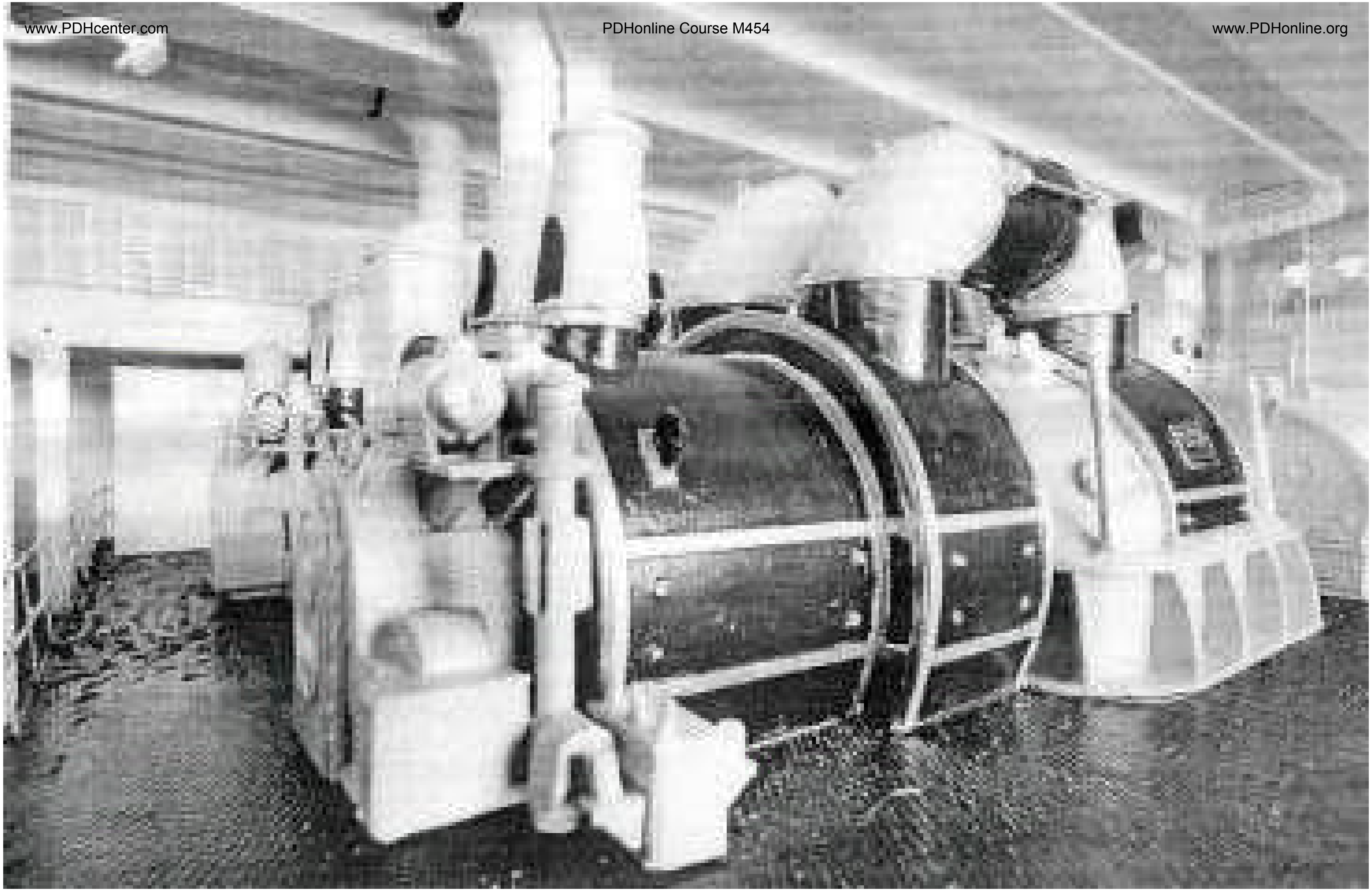
Turbo Alternator Room

"…Then came the problems of lighting, heating, cooling, ventilating, cooking, running elevators, operating winches and capstans, of providing current for hundreds of miscellaneous electrical devices needed for the safety and comfort of a great super-liner. No modern hotel on land, no community, could boast such extensive electrification as had been planned for this ship. Merely to supply these auxiliaries, six additional turbo-generators, totaling 18K electrical horsepower, had to be included in the plans…"

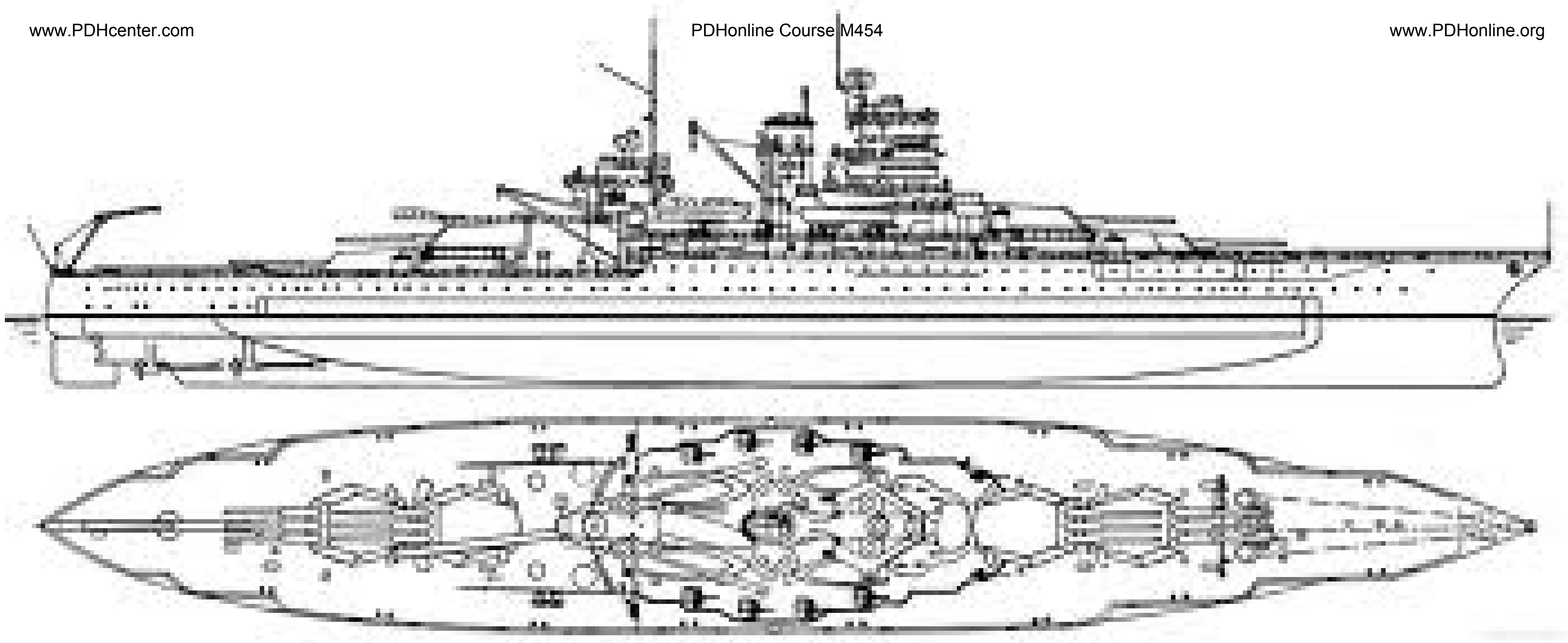
***Popular Science*, November 1933**

"…For highest efficiency, turbines had to be designed for speeds ranging from 1k to 3K rpm. Propellers, on the other hand, wasted power extravagantly when whirling at more than, say, 300 revolutions. By coupling the ship's turbines to electric generators, and then conducting this power through copper wires to motors connected to propeller shafts, any speed ratio desired could be easily attained, and both propellers and turbines could be operated at maximum efficiency…Mechanical gearing had already been developed which performed this service with less weight and at less initial cost. Electric drive…possessed a number of other advantages which could not be matched by any other type of ship propelling equipment in existence. One was rapid reversing of the propellers, at the mere throw of a switch. With ordinary turbine drive, reversing was a complicated feat requiring a transfer of steam from the ahead turbines to special astern turbines. Another advantage was the possibility of cruising at slow speeds, when desirable, with merely half or a quarter of the turbo-generating plant in operation, reserving the entire plant for extreme bursts of speed. A factor of economy in ordinary runs, this advantage might prove vital in case of a turbine breakdown at sea. Instead of dragging a dead propeller through the water, the disabled turbine could be completely shut down and all the propeller motors operated from the remaining turbines…"

***Popular Science*, November 1933**



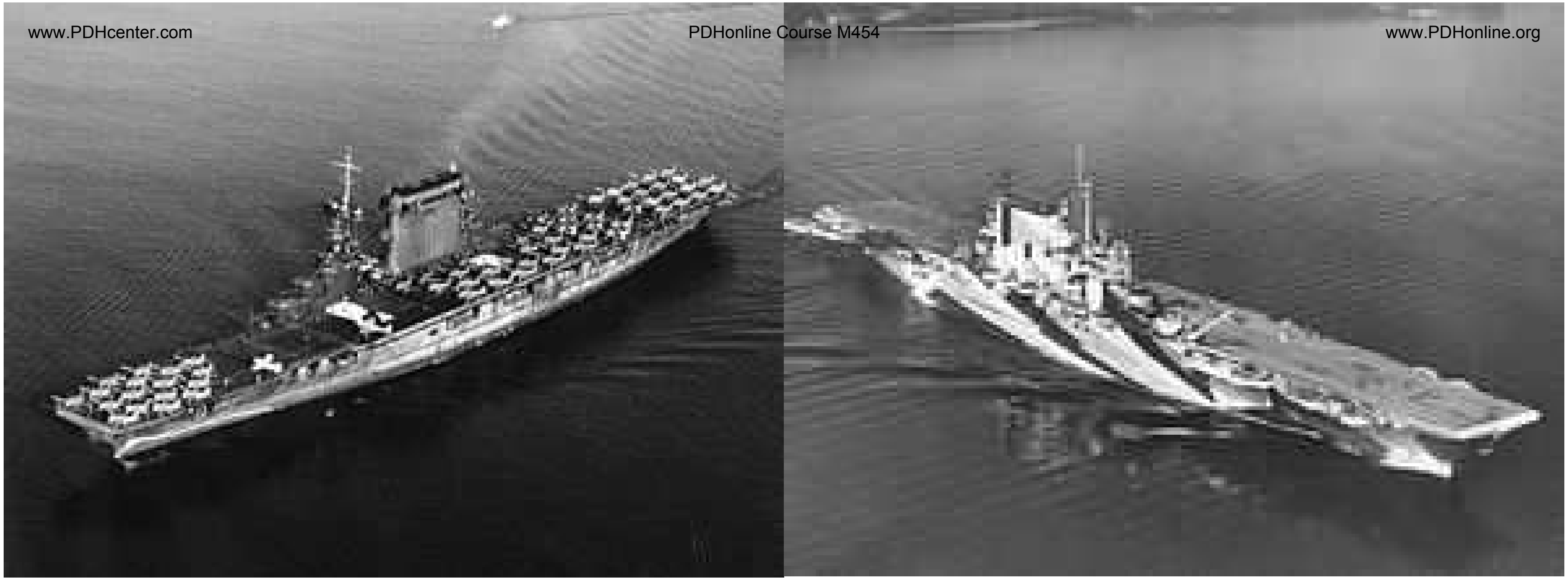
Main Turbo-Alternators
(for propulsion drive)



U.S.S. New Mexico
(Commissioned 1918)

"…Despite the theoretical advantages, this type of propulsion was persistently turned down by merchant and naval shipbuilders until 1913, in which year the U.S. naval collier Jupiter was equipped with a 6,600-HP plant as an experiment. The Jupiter proved so economical and trouble-free in her trials that five years later electric drive was chosen for the great dreadnought New Mexico, and subsequently for every first line battleship of the United States that has been constructed since..."

***Popular Science*, November 1933**

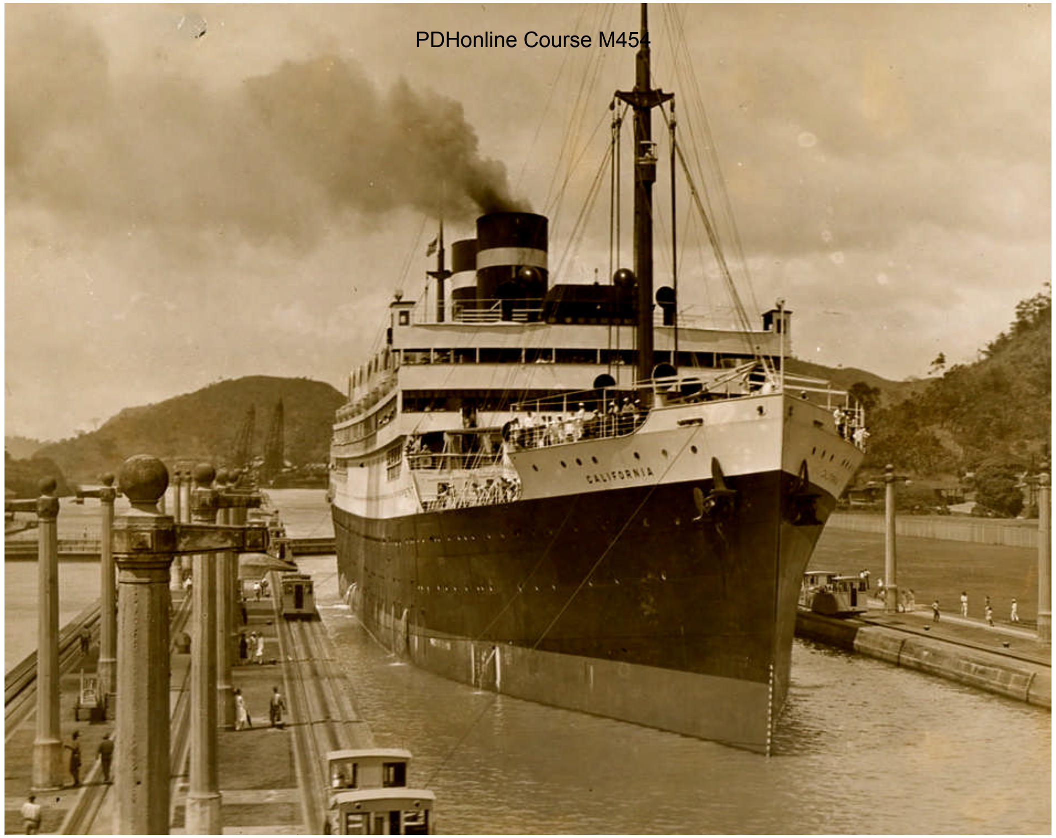


U.S.S. Lexington (left) / _U.S.S. Saratoga_ (right)

"…By 1927, with the commissioning of the giant aircraft carriers Saratoga and Lexington, the United states Navy could boast electrically-driven ships faster and more powerful than any other large ships in the world…"
***Popular Science*, November 1933**

"…Adding to the remarkable experience of the Navy that electric ships were unusually rugged, easily handled and could be built to stupendous powers, the Coast Guard introduced an innovation which was to revolutionize the whole trend in design…confident that properly designed synchronous motors could spin the propellers more efficiently than the induction motors used by the navy. Synchronous motors were lighter and cheaper for a given horsepower…installed in the little cutters Tampa, Haida, Mojave and Madoc, which were put into service in 1921, set an example which has been followed by the present fleet of electric merchant ships…"

***Popular Science*, November 1933**

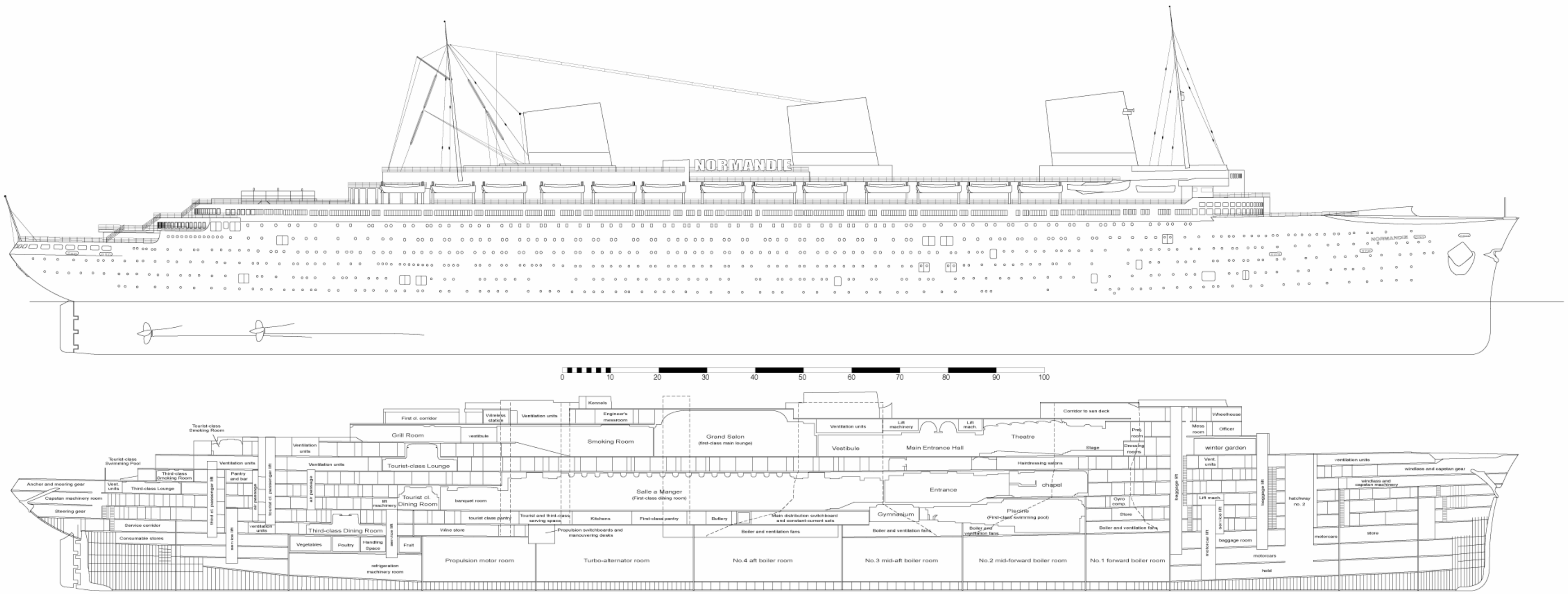


***S.S. California* (1928)**
(transiting the Panama Canal)

"…The first important vessel of this fleet was the palatial, 20K-ton California, of the Panama Pacific Line, put into service in January, 1928. By the beginning of the next year, two sister ships, the Virginia and the Pennsylvania were operating on the same run and also electrically powered…"
***Popular Science*, November 1933**

"…Inspired by the success of these ships, Great Britain built the Viceroy of India which introduced electric service to the long run between England, India and Australia…At the present writing, the electric ship total has climbed to more than 1,200,000 horsepower…"

***Popular Science*, November 1933**



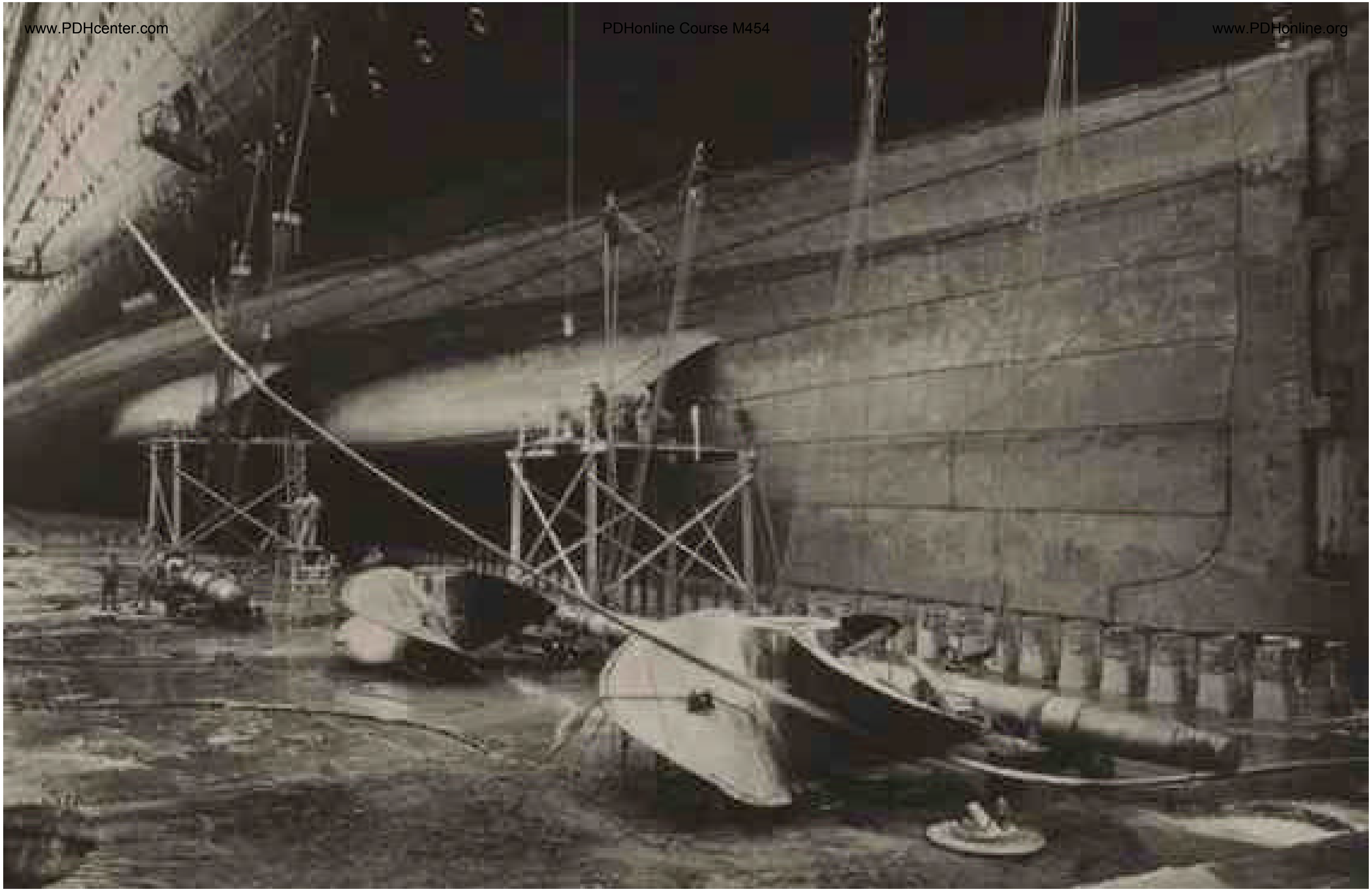
"…The electrification of the Normandie comes as a climax to a meteoric development. Electric drive was chosen for most of the present ships because of some peculiarity of their runs, such as the necessity for long periods of slow speed cruising, or tortuous channels through which extreme maneuvering qualities are essential. The fact that the largest ship in the world has chosen this means of propulsion merely for achieving greater speed, comfort and reliability across the Atlantic may signify the beginning of a major revolution in shipbuilding."

***Popular Science*, November 1933**

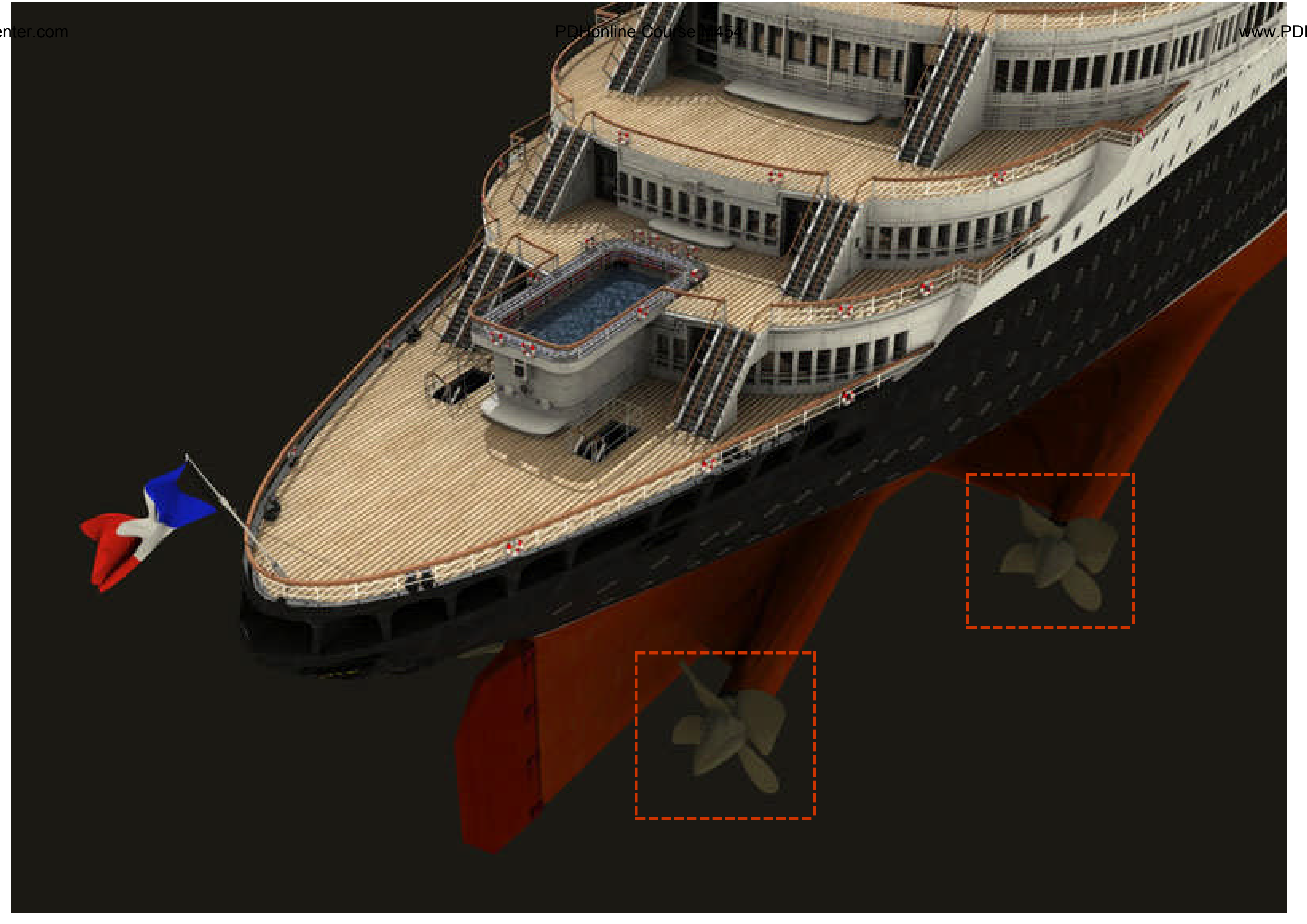
Bad Vibrations

Originally, each of *Normandie's* four propellers had three blades. However, this configuration caused excessive vibrations throughout the ship when traveling at high-speed; so much so that waiters filled water glasses only half-way lest the water spill over from the vibrations caused by the propellers. Tourist-class passengers (in the stern) were worst off. Latched cabin doors shook so violently from the vibrations that it sounded like the *rat-a-tat-tat* of a machine gun. Some even sued CGT claiming medical distress from the excessive shaking. In the winter of 1935/36, *Normandie* was taken out of service for retrofitting. To correct the problem, a new set of four-bladed propellers were installed and additional internal supports including extra frames and stanchions, welded in strategic places, were added. Also, tons of pig-iron and concrete were added to her bow. This solved the vibration problem and made *Normandie* larger than her rival; *Queen Mary*, which also vibrated at high-speed. CGT planned to add a new set of propellers to *Normandie* in 1939 in order to take back the Blue Riband from *Queen Mary* (which had regained it from *Normandie* in 1938), but the outbreak of WWII in September 1939 interfered with these plans.

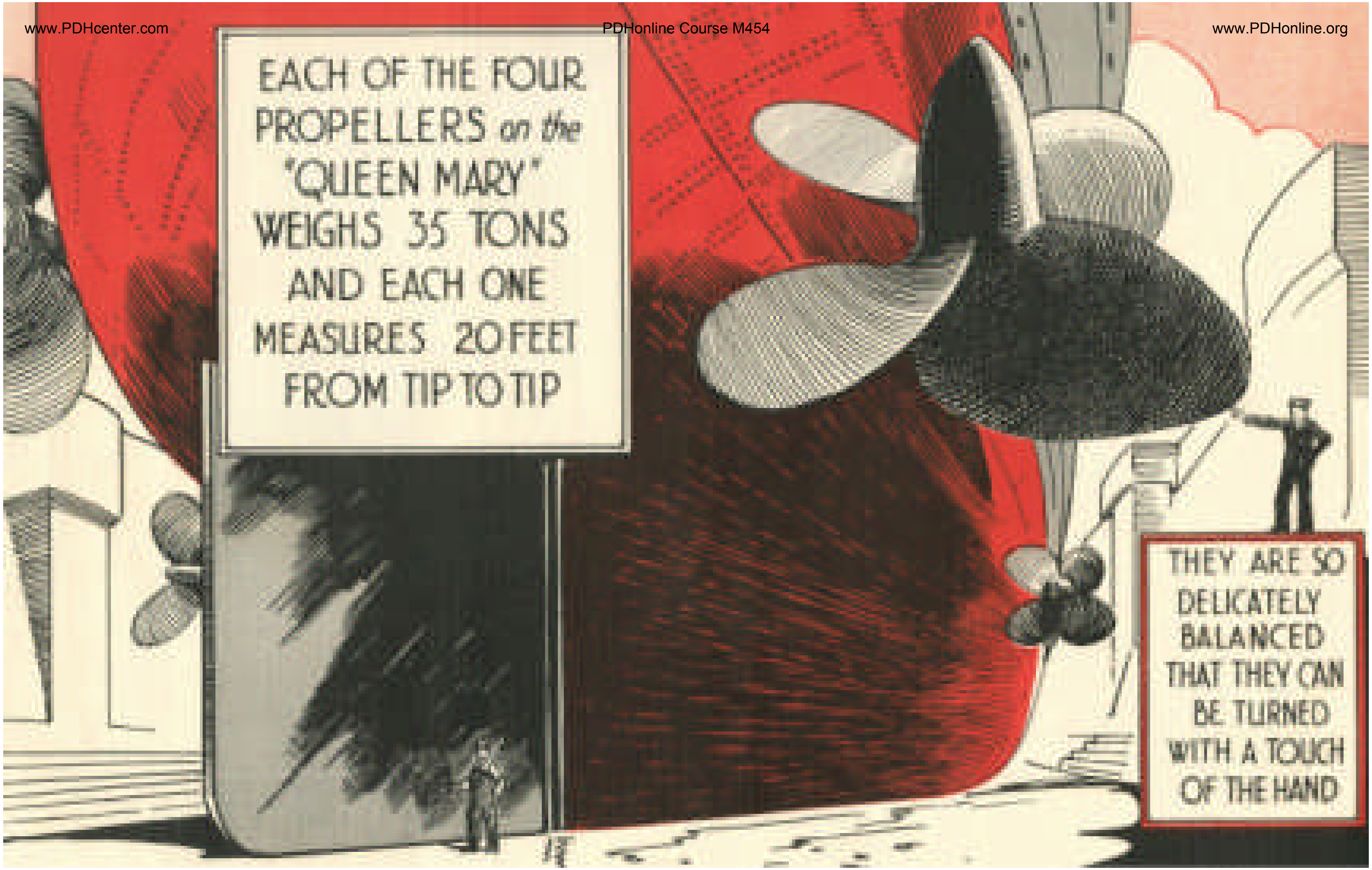
Model of *Normandie* with original three-bladed propeller set



Three-bladed propeller/s (port side)
(removed for replacement - March 1935



Model of *Normandie* with four-bladed propeller/s
(starboard set shown)


EACH OF THE FOUR PROPELLERS on the "QUEEN MARY" WEIGHS 35 TONS AND EACH ONE MEASURES 20 FEET FROM TIP TO TIP
THEY ARE SO DELICATELY BALANCED THAT THEY CAN BE TURNED WITH A TOUCH OF THE HAND

"…Frankly, we have never given her 'full gun.' It has not been necessary. But just in case it becomes necessary to give her the works, we have only to place our reserve boilers in active service and take four plugs out of each of the four main turbines. We have power, tremendous power in reserve, but we don't dare put it all into the propellers. The tremendous pressure of water might damage her hull…"

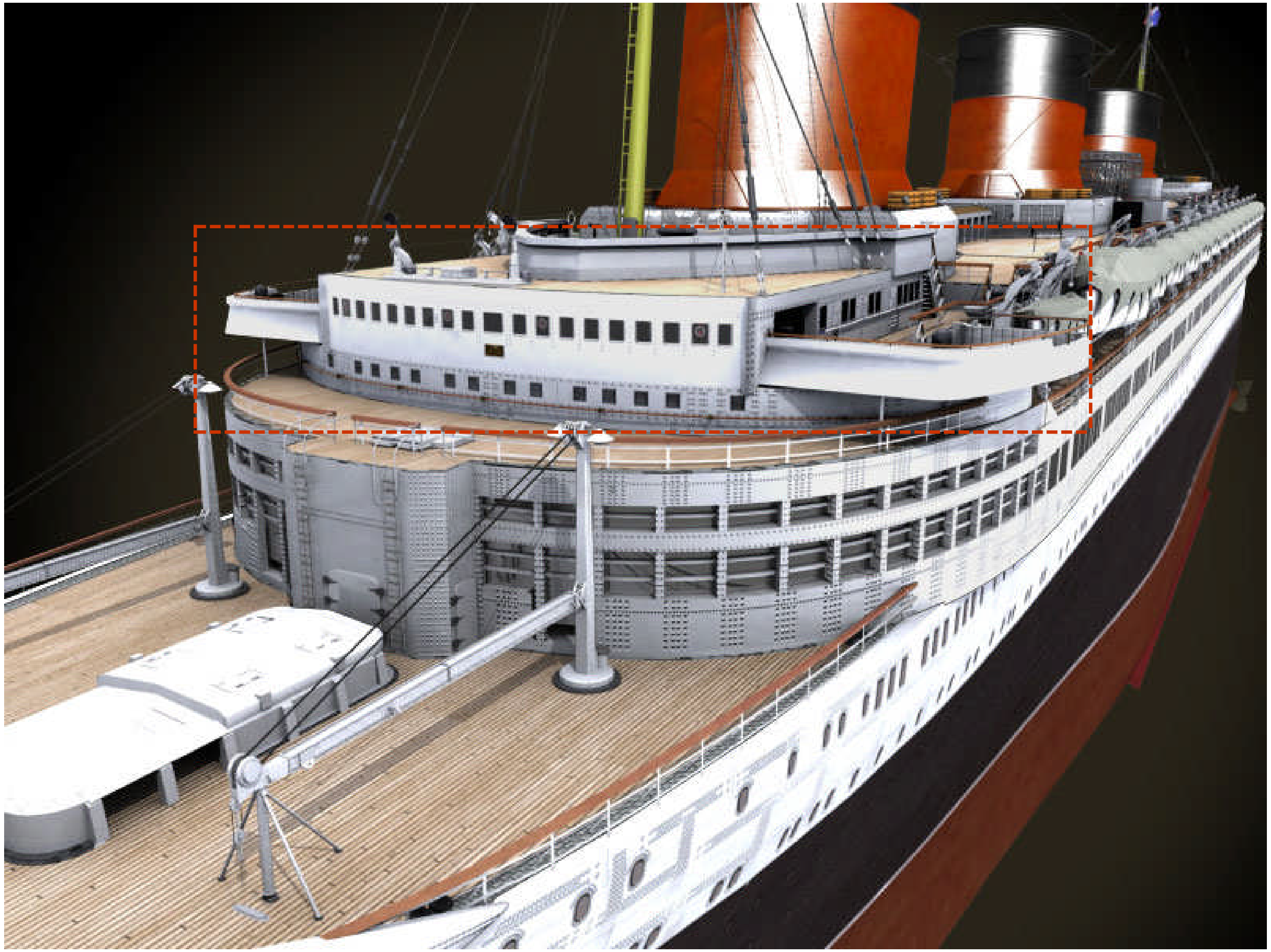
Chief Engineer Jean Hazard, *S.S. Normandie*
***Popular Mechanics,* October 1935**

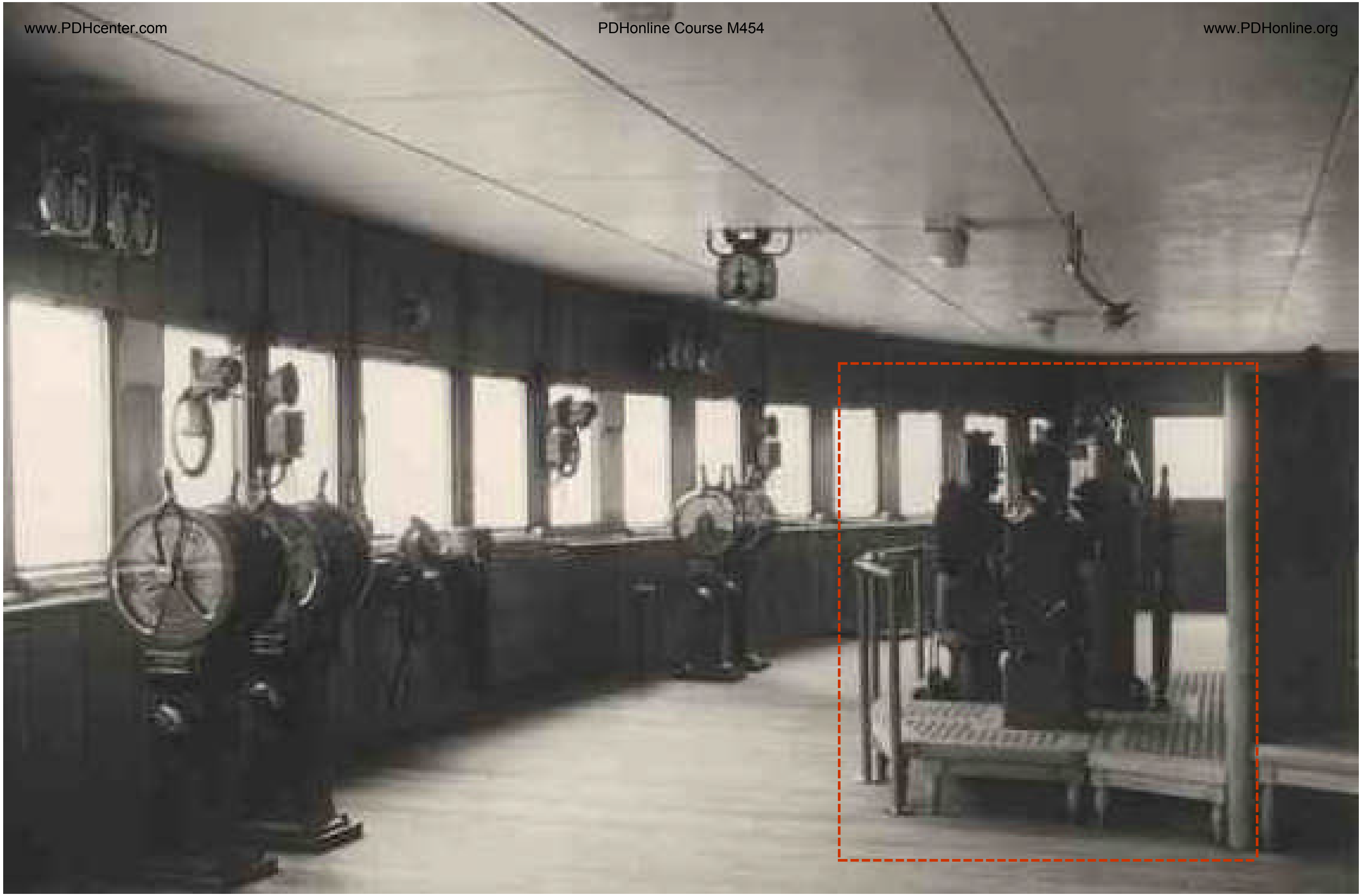
The Brains of the Normandie

"…The amazing thing about this vessel is that so few men are required to operate it. Actually, only 400 men are needed to keep her running continuously. The other members of the crew are for the service of passengers. But if human hands were required to do the work performed by the instruments on the captain's bridge, a small army would have to be enlisted. The bridge has telephone and telegraph equipment, gyroscopic compass repeaters for the watch officers and helmsman, an automatic gyro-pilot **(left)** *, which keeps the ship on her chartered course, and hydraulic telemotor apparatus. In the chart room are the sonic depth finder, speed-indicator logs, radio direction finder, indicator for the closing of bulkheads, indicator for the closing of portholes and numerous other devices. All these constitute the 'Brains' of the Normandie. The officers and crew merely direct the brains…Several radio transmitter's operate independently of the ship's power plant…"*

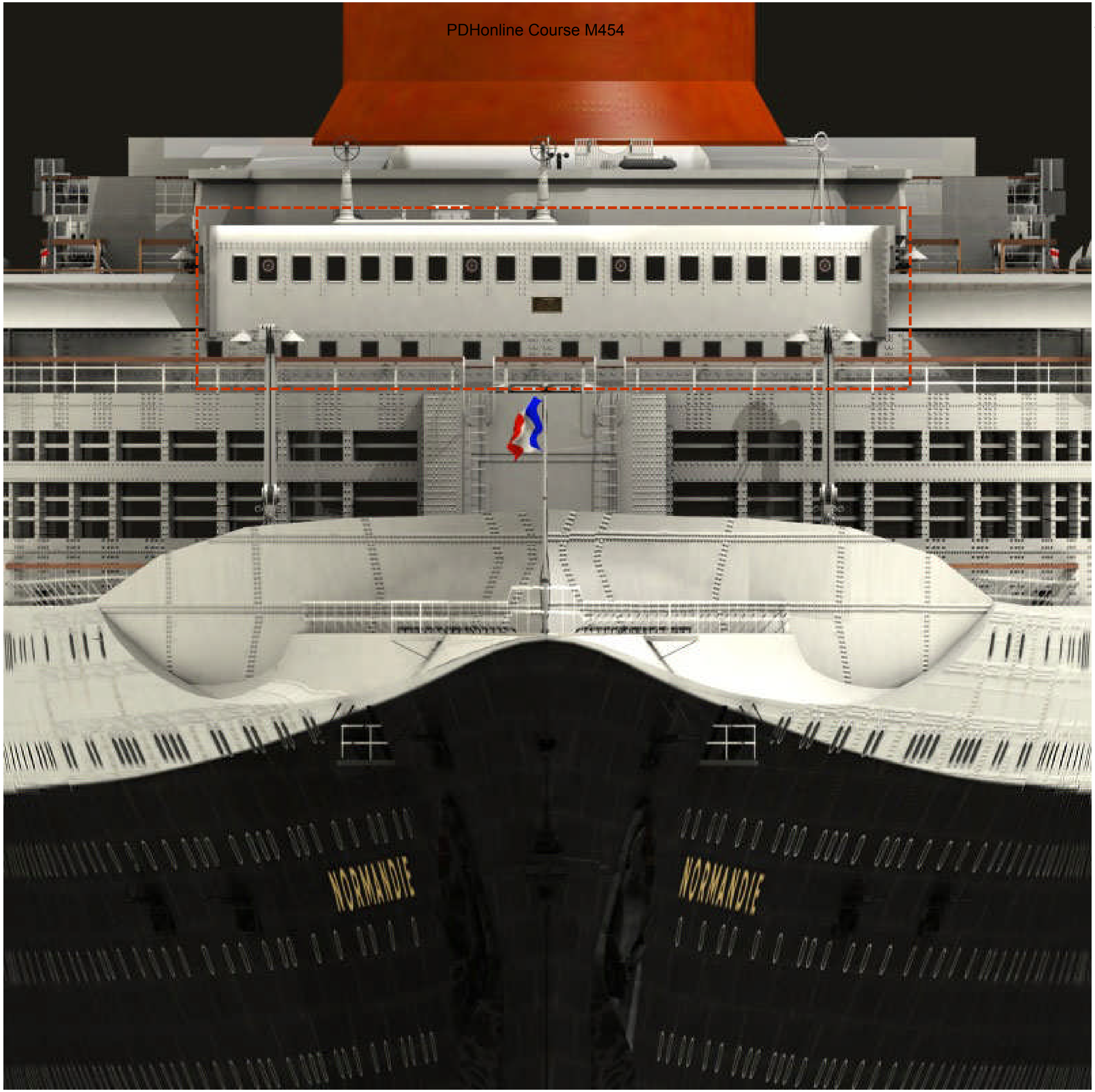
Popular Mechanics, **June 1935**

The Bridge



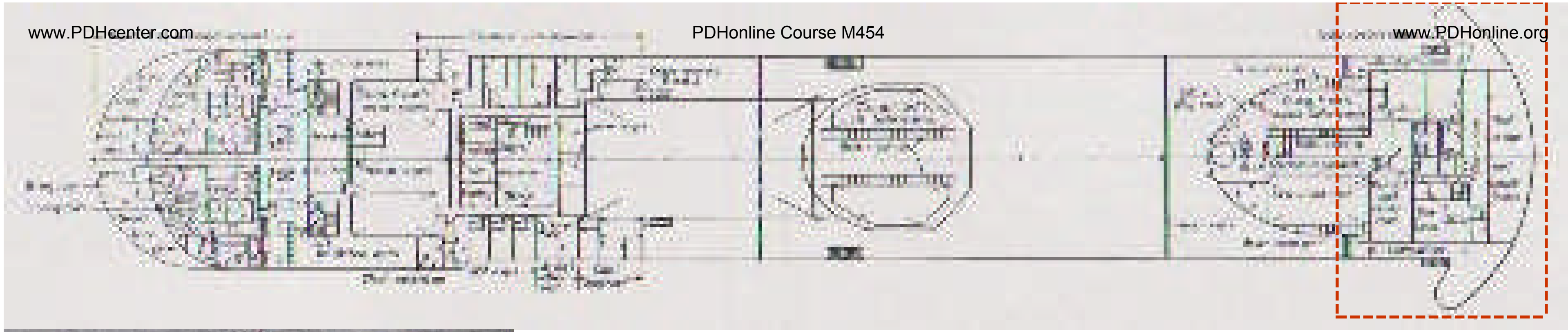


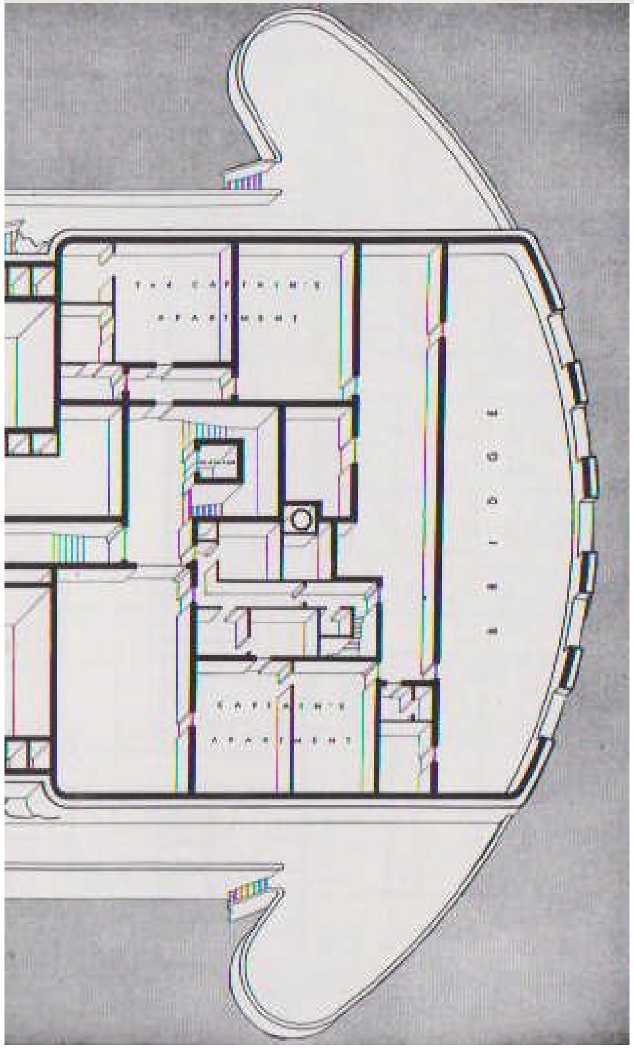
Bridge Helm


NORMANDIE
NORMANDIE

"…Captain Rene Pugnet himself is on the bridge. The staff captain and navigation officers are at his side. The lookouts scan the sea. The engine room telephone and telegraph are buzzing…Captain Pugnet orders full speed ahead. Without a sign of effort, the colossus gains her stride like a thoroughbred. When she travels thirty-five land miles per hour, it feels as if she is going no more than fifteen…"

***Popular Mechanics,* October 1935**



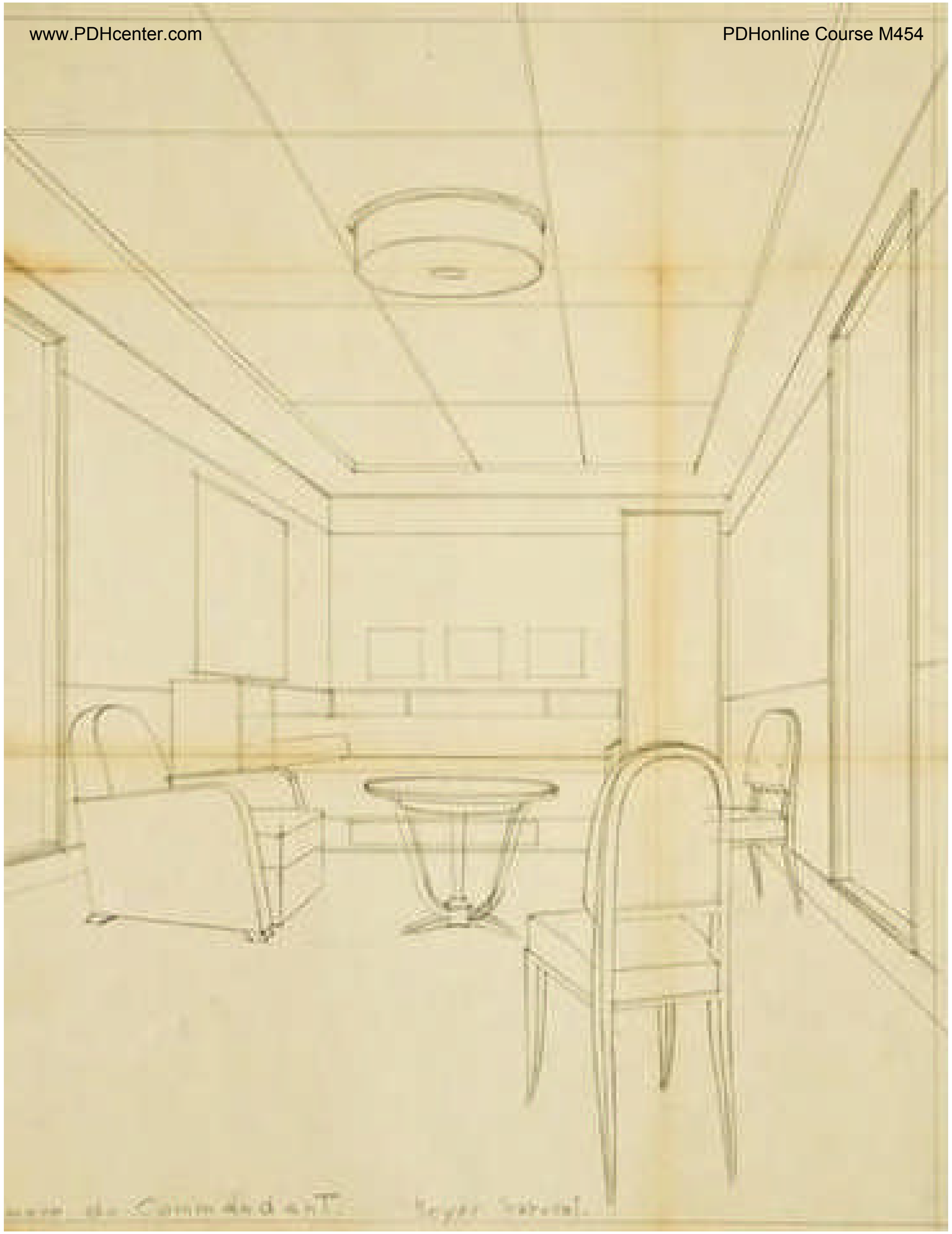


Sun Deck Plan

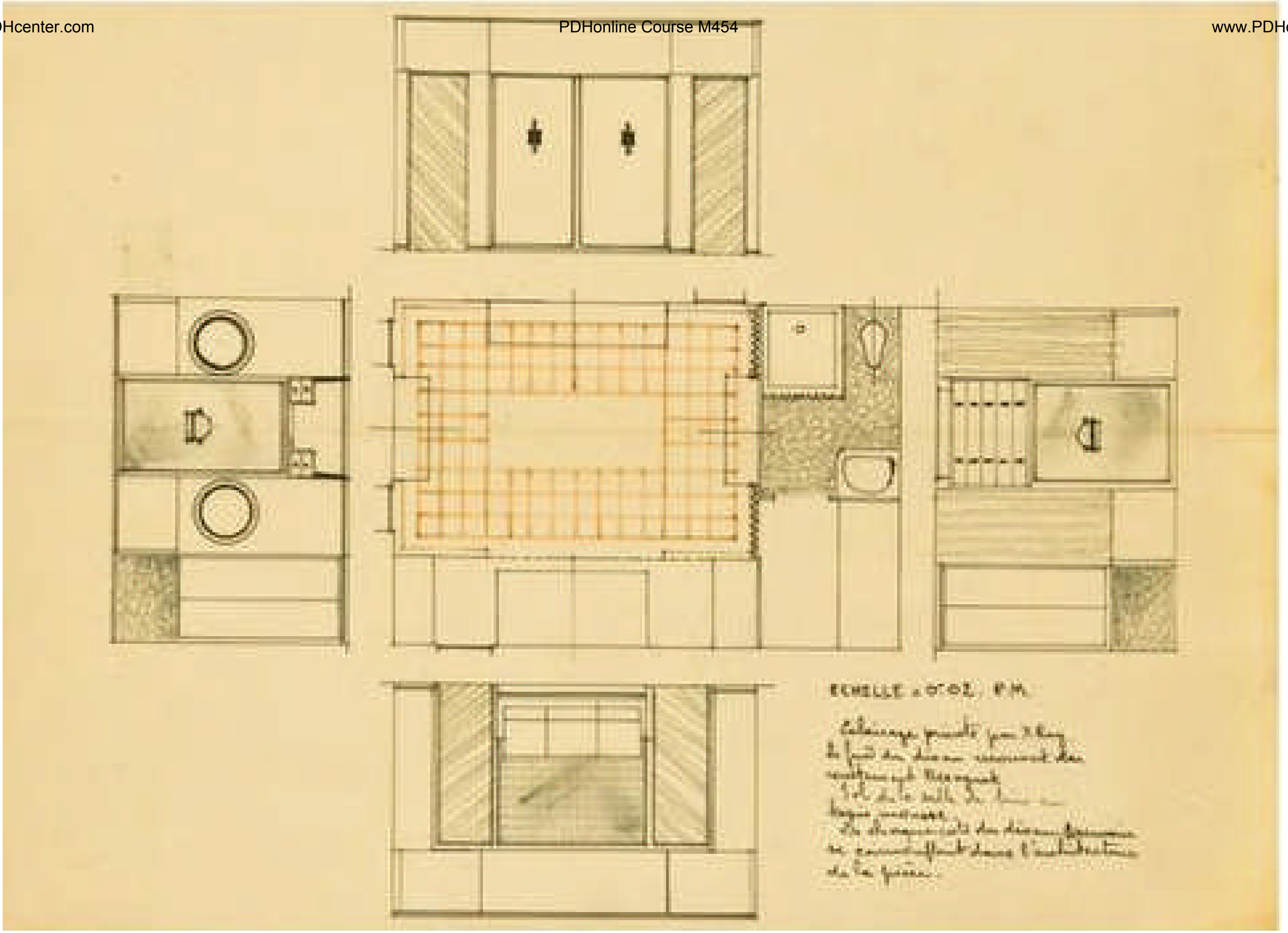
The Captain's apartment was located directly behind the bridge and was equal in luxury to the best first-class cabins. It featured a private dining room, reception room (with a grand piano) and a private terrace. The top echelon of ship's officers including the *Second* and *Staff Captain/s, Chief Purser, Head of Security* and *Chief Wireless Officer* were also provided with comfortable and well appointed accomodations. They were given access to one (of two) smoking rooms and could take their meals in the first-class dining room.

Reception Room
(Captain's Apartment)

The famous passenger ship interior decorator *Georges Remon* (1889-1963) designed the Captain's Apartment (Reception Room above) as well as forty-eight first class cabins.

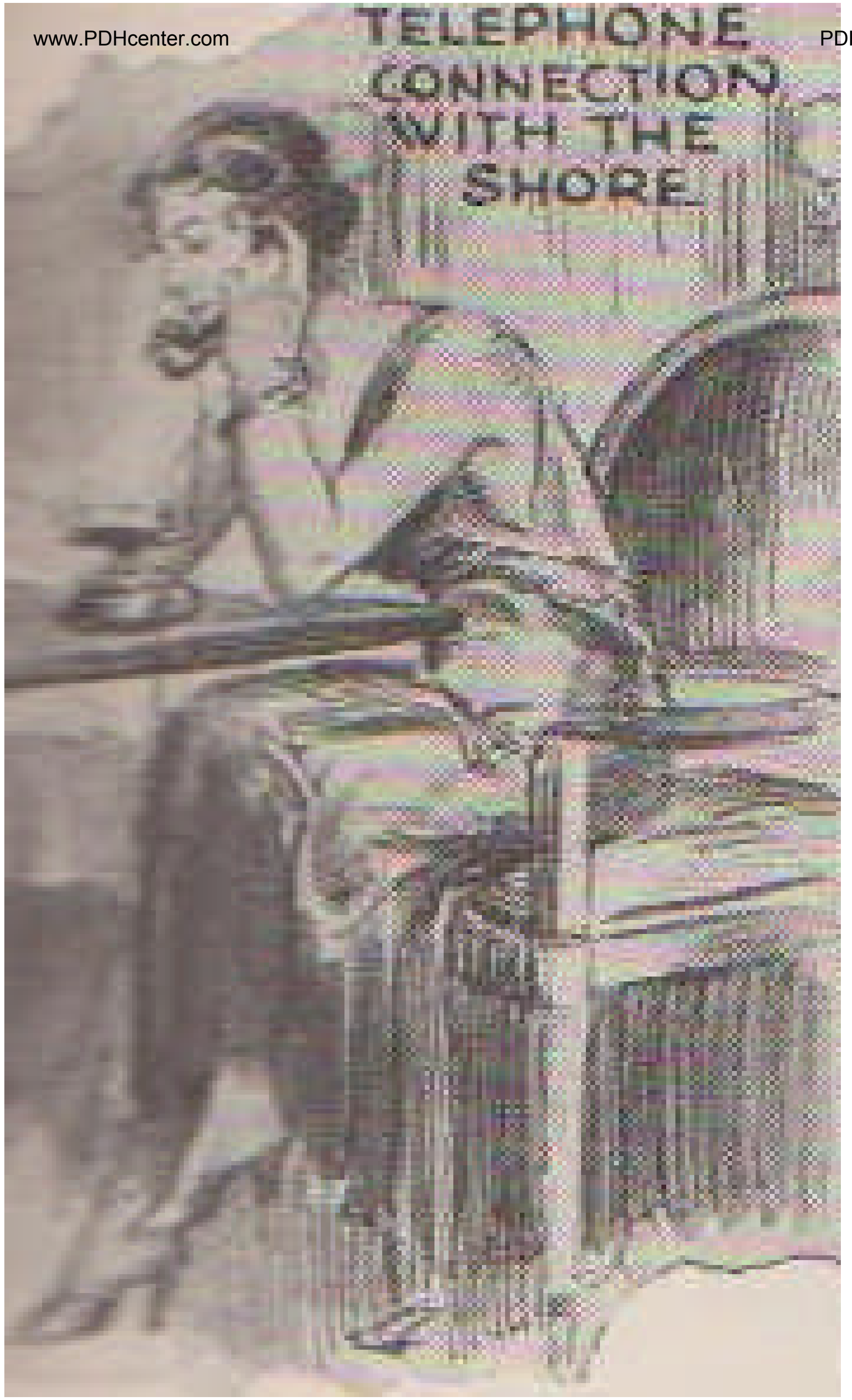


“Layout of furniture in the Bureau and Chambre du Commandant”



Officer’s Cabin Plan/Elevations

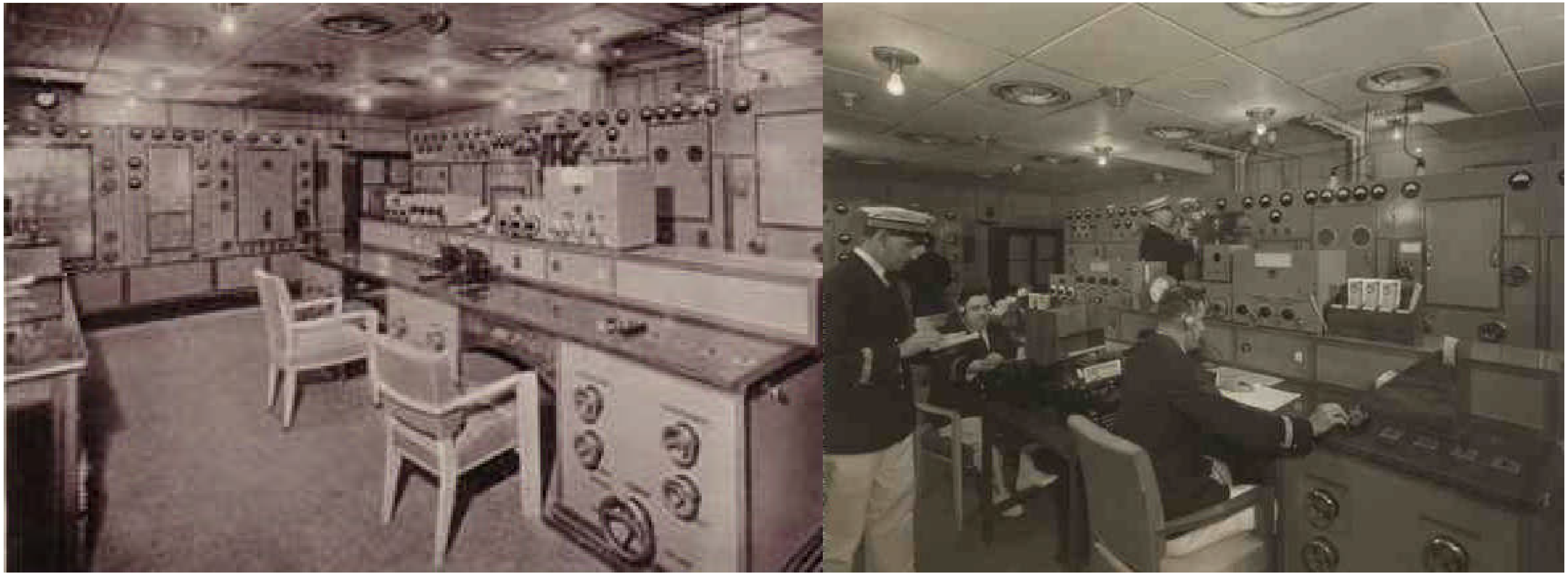
Ship to Shore



"…The ship's interior is alive with activity. Behind the navigating bridge, as big as a ballroom, the Normandie's radio station is establishing telephonic communication between a woman passenger and her husband in Newark, New Jersey while a gentleman in the next cabin is putting in a call to Paris…"

***Popular Mechanics,* October 1935**

RE: off of the first-class lounge (*Grand Salon*), a *radio-telephone* was available (in the first-class waiting room) for passengers wishing to make calls to Europe and/or North America



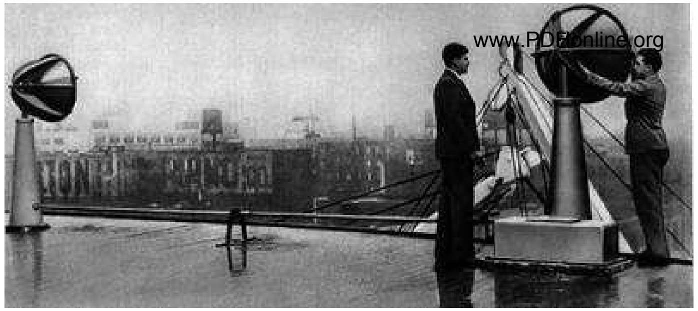
Wireless Room

First-Class Waiting Room
(radio-telephone on table)

"…A new method of addressing audiences at sea will be found on T-6. By talking into a microphone in his cabin, the captain, or any other person, will be heard in all the public rooms. Concerts and radio talks picked out of the air can be broadcast likewise. In emergencies, the captain can talk directly into the ear of every person on board, even though the T-6 is almost one-fifth of a mile long. Passengers may speak with friends through an inter-cabin telephone system such as prevails in hotels on land. They will also carry on two-way phone conversations with phone subscribers in Europe or America – without leaving the confines of their respective cabins"

***Popular Mechanics*, December 1932**

RADio Detection And Ranging

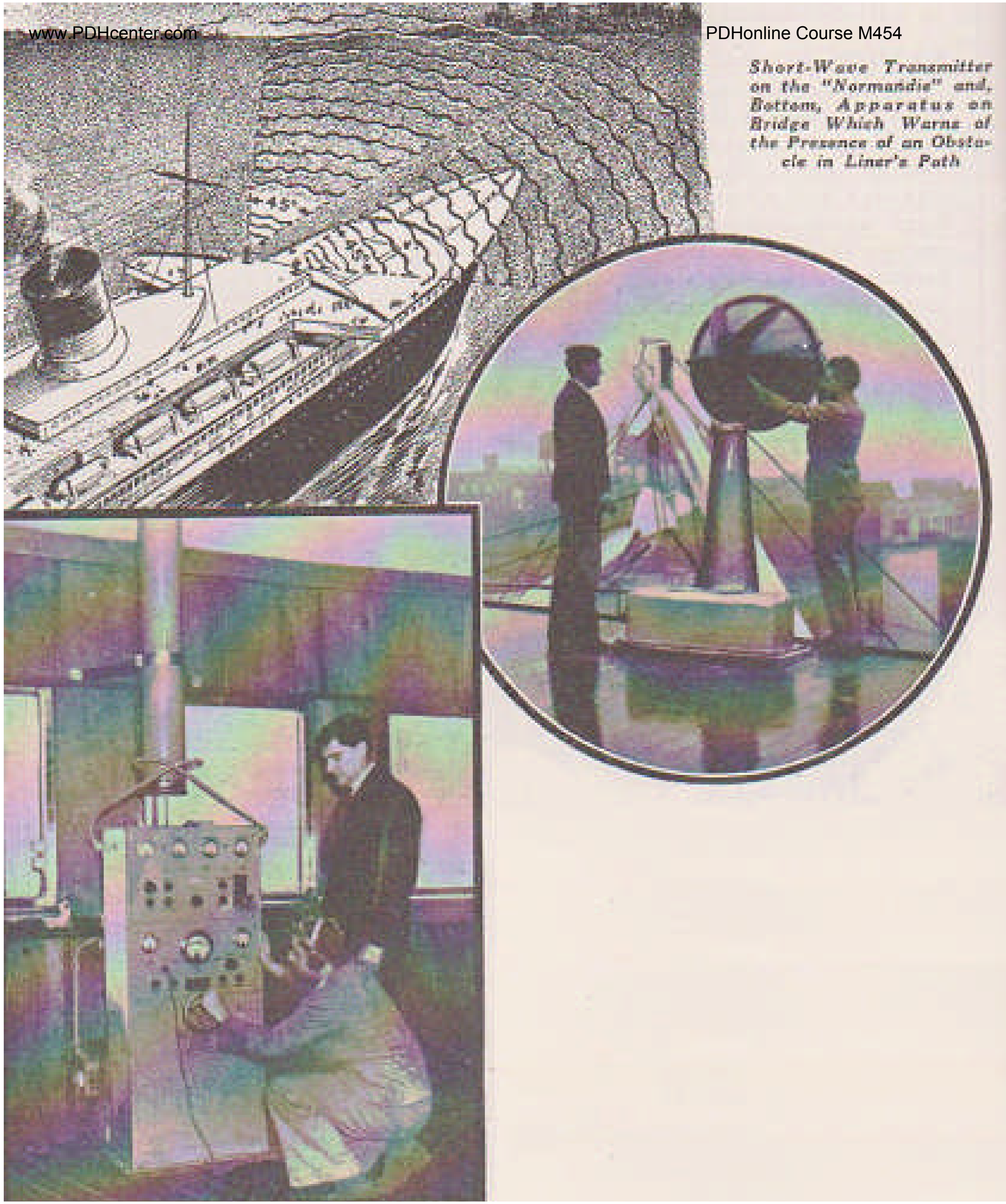


In 1934, *Henri Guitton* and his assistant *Maurice Ponte*, experimenting with *centimetric waves*, perfected the *Magnetron* by introducing resonant anode segments. On July 20th 1934, Guitton filed a patent *"for a device for detecting moving objects such as aircraft, ships, icebergs etc. using ultra-short-wave radio waves produced by a Magnetron." Compagnie Generale de Telegraphie* set up an experimental station in the *Bay of Siene* and in Decemeber 1934, placed two parabolic dish transmitters (with 16 and 80cm wavelength/s) on their cargo ship *Oregon.* It was able to detect ships and coastlines from 10 to 12 miles distant. After additional proving out, in 1935 it was decided to use two, 16cm Magnetrons for the *Normandie.*

"Obstacles in the path of the French liner, Normandie, are detected by an ultra-short wave radio transmitter and receiver which sounds a warning long before an object can be seen in fog. The apparatus, on the bridge, includes a transmitter sending a beam of six inch waves which sweep the horizon at an arc of forty-five degrees on the port and starboard course of the ship. When the waves encounter an obstacle, they are reflected in a delicate receiver used by the officer on the bridge. The waves are not affected by fog or rain or, generally speaking, by adverse weather conditions. The effective range varies with the size of the object encountered. An average ship can be detected at a distance of four miles and a channel buoy at two miles."

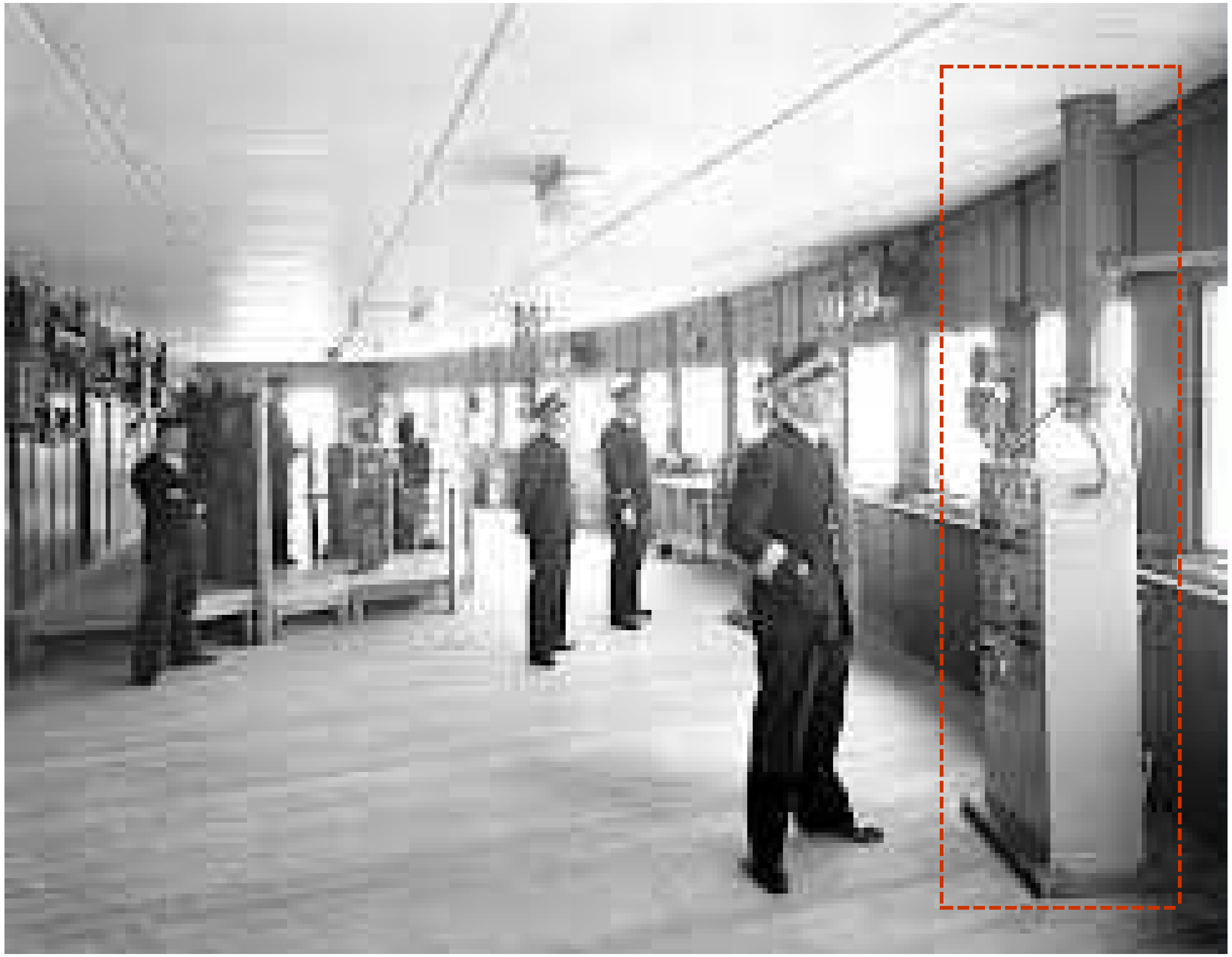
***Popular Mechanics,* December 1935**

RE: not only did the Normandie feature an early form of *RADAR*, she had several other advanced technologies of the day including *Ultrasound* (for giving the ships draft while maneuvering in harbor) and a *Wireless Direction Finder* which provided the ship's exact position at sea



"...by their standing electromagnetic waves use we may produce at will, from a sending station, an electrical effect in any particular region of the globe; with which we may determine the relative position or course of a moving object, such as a vessel at sea, the distance traversed by the same, or its speed."

Nikola Tesla, August 1917

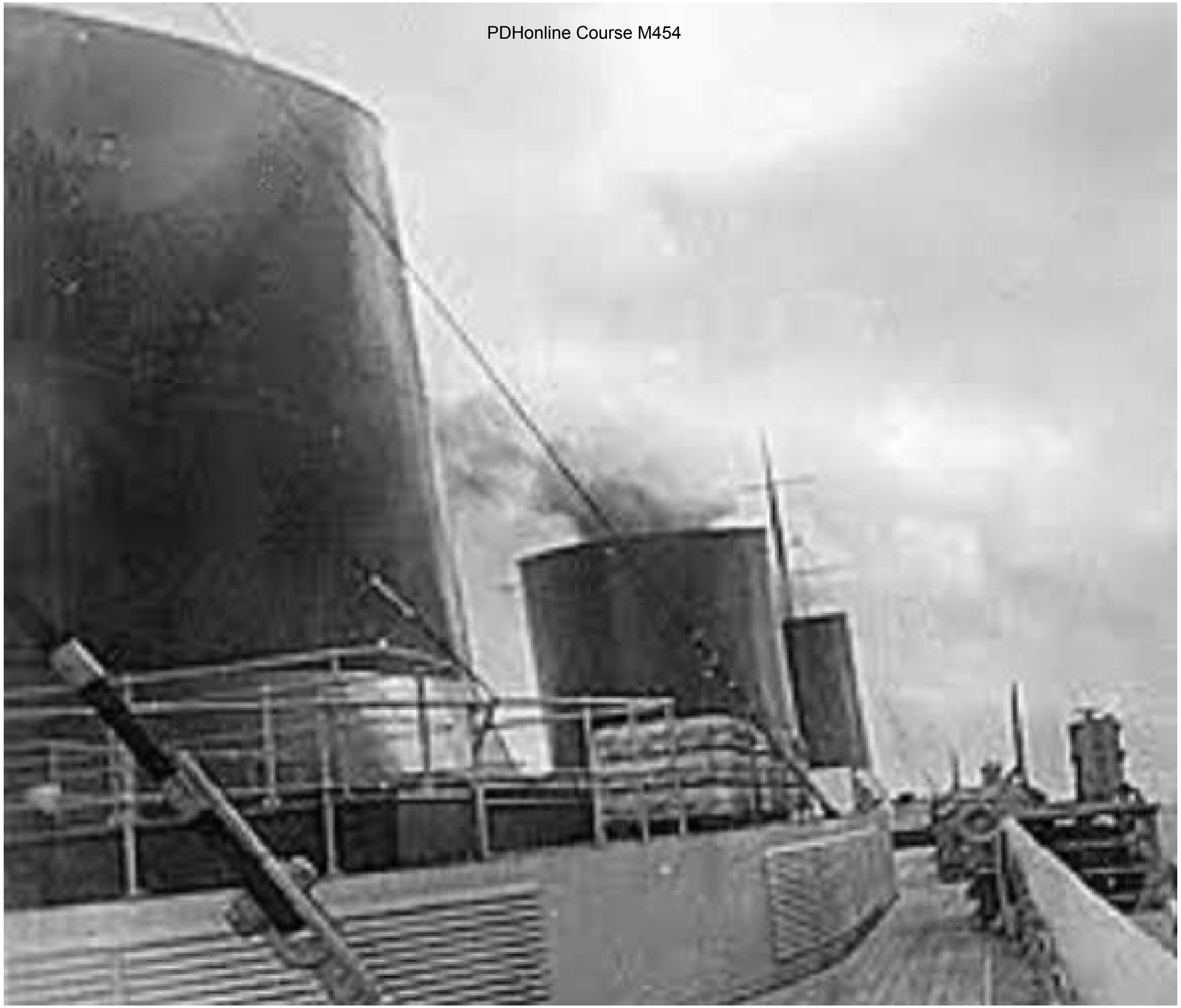


(model)

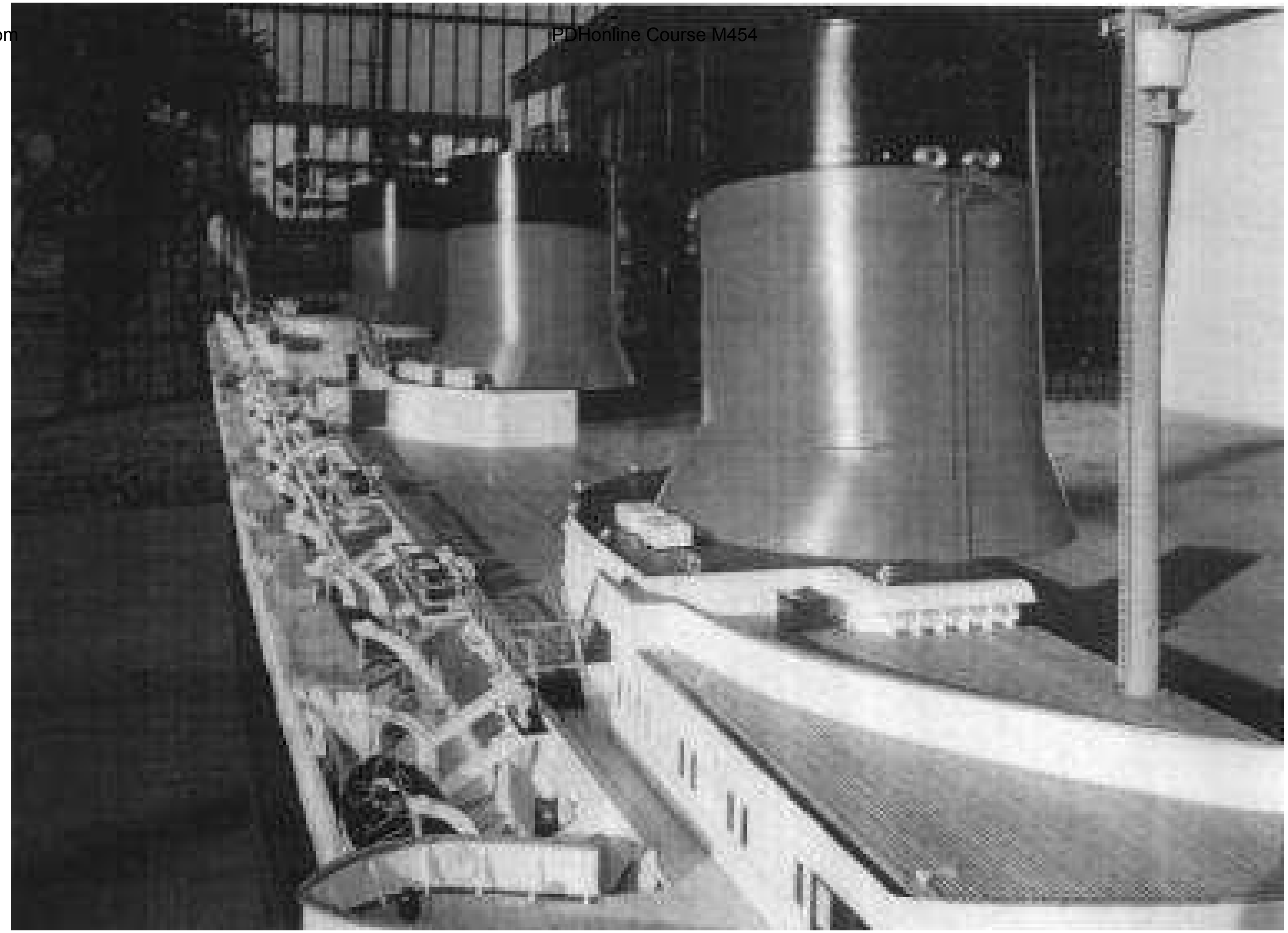
Blowing Smoke

"…When she comes across the ocean on her maiden trip, the Normandie's funnels will discharge 150-tons of smoke! But thanks to wind tunnel tests and careful designing, this smoke will be wafted into the air and not into the faces of the passengers."

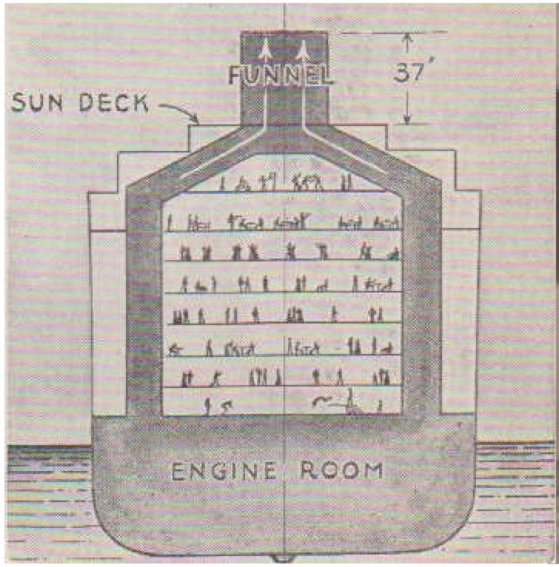
***Popular Mechanics,* June 1935**

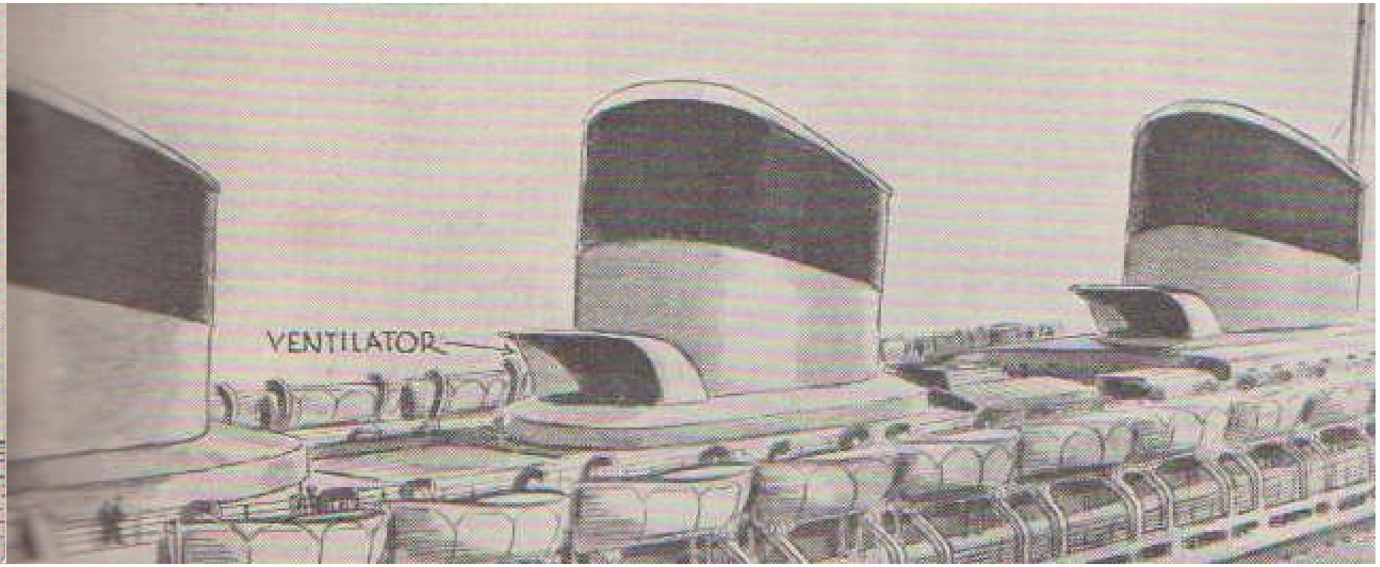


View of funnels from Sun Deck
(looking forward)

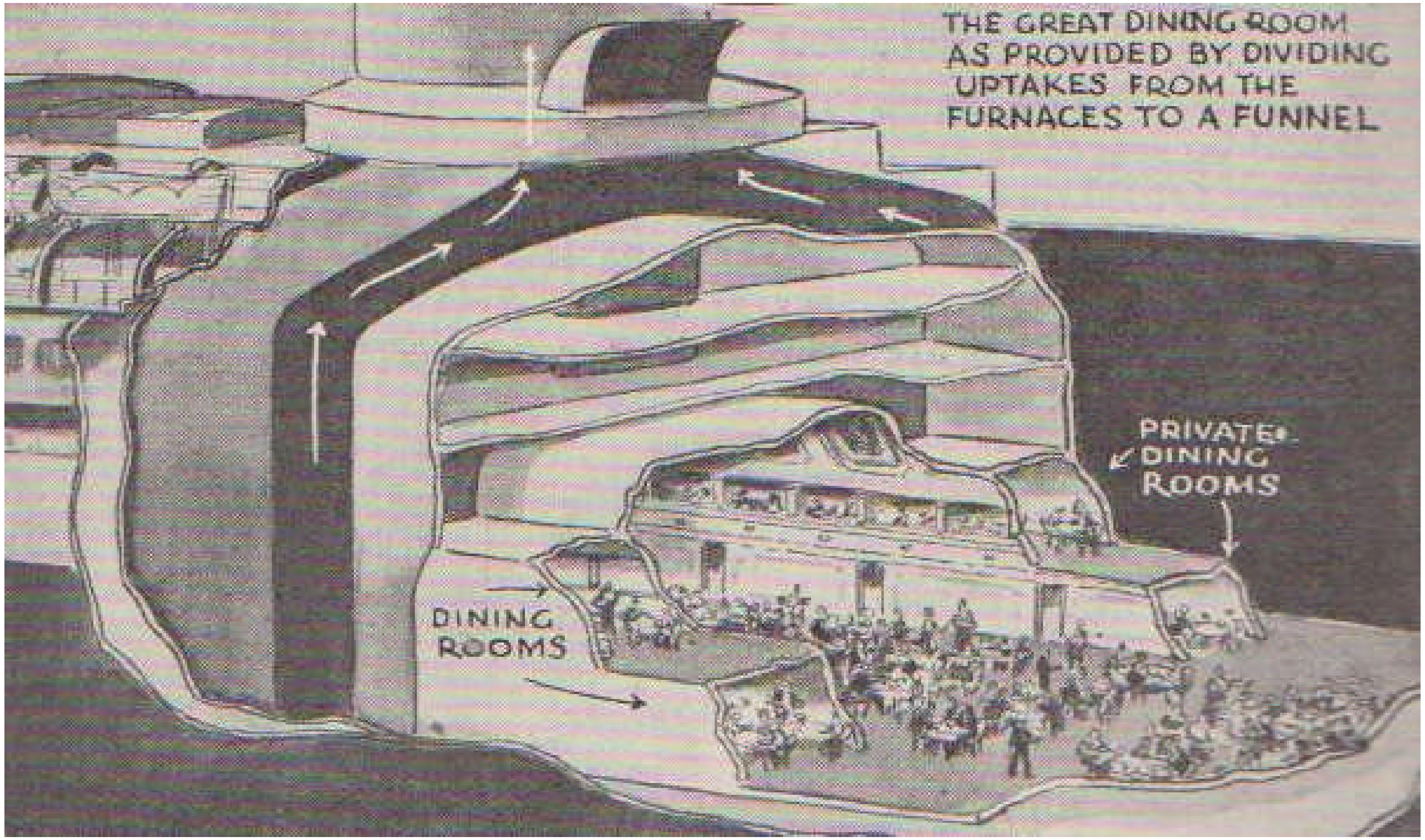


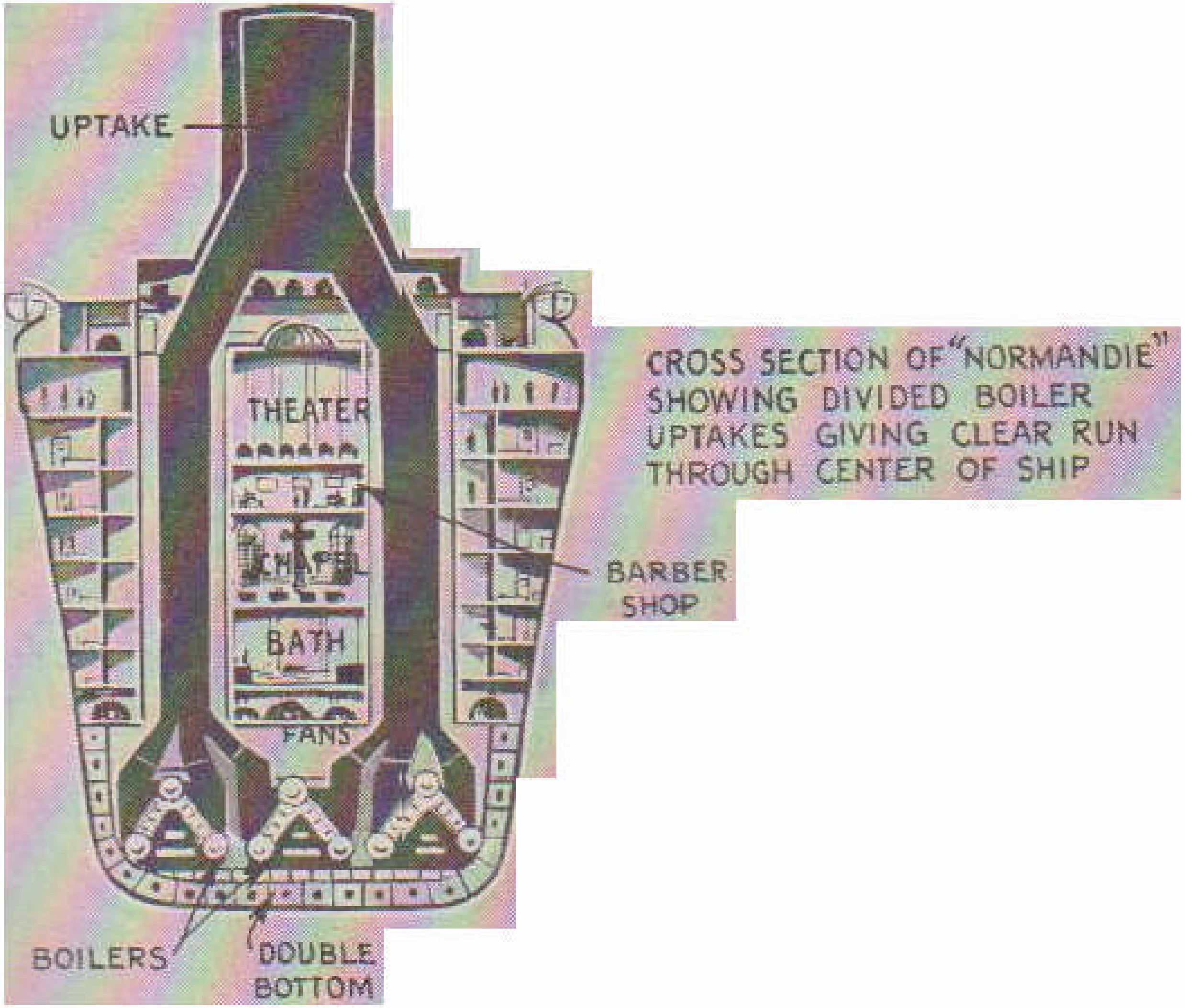
View of funnels looking aft
(model)





The funnel uptakes of the *Normandie* were split in two at the engine outtakes and run up each side of the ship (to allow for large interior spaces) and rejoined at the base of the funnel/s. The funnel design was adapted from the pre-WWI German liners *Vaterland* and *Bismarck.*


THE GREAT DINING ROOM
AS PROVIDED BY DIVIDING
UPTAKES FROM THE
FURNACES TO A FUNNEL
PRIVATE
DINING
ROOMS
DINING
ROOMS



CROSS SECTION OF "NORMANDIE" SHOWING DIVIDED BOILER UPTAKES GIVING CLEAR RUN THROUGH CENTER OF SHIP

For aerodynamic efficiency and styling, each of the three funnels grew progressively shorter (from fore to aft).

Faux Funnel

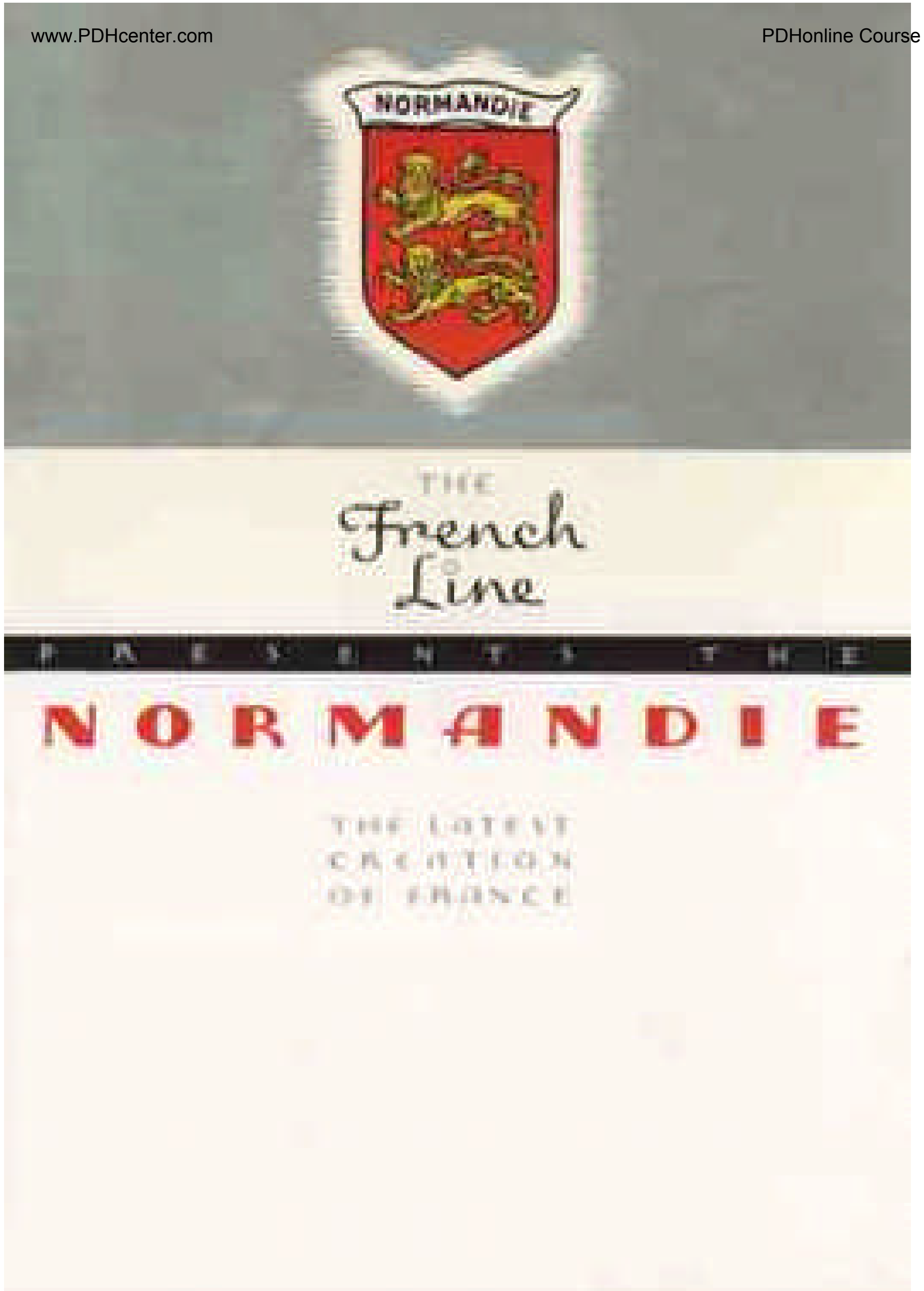
The rear funnel was a dummy that was included for aesthetic balance. However, it did serve a utilitarian function as a dog kennel and housing for the air conditioning units (below).

This postcard photo of the *S.S. Normandie* was touched-up to simulate real smoke rising from the aft (third) funnel.

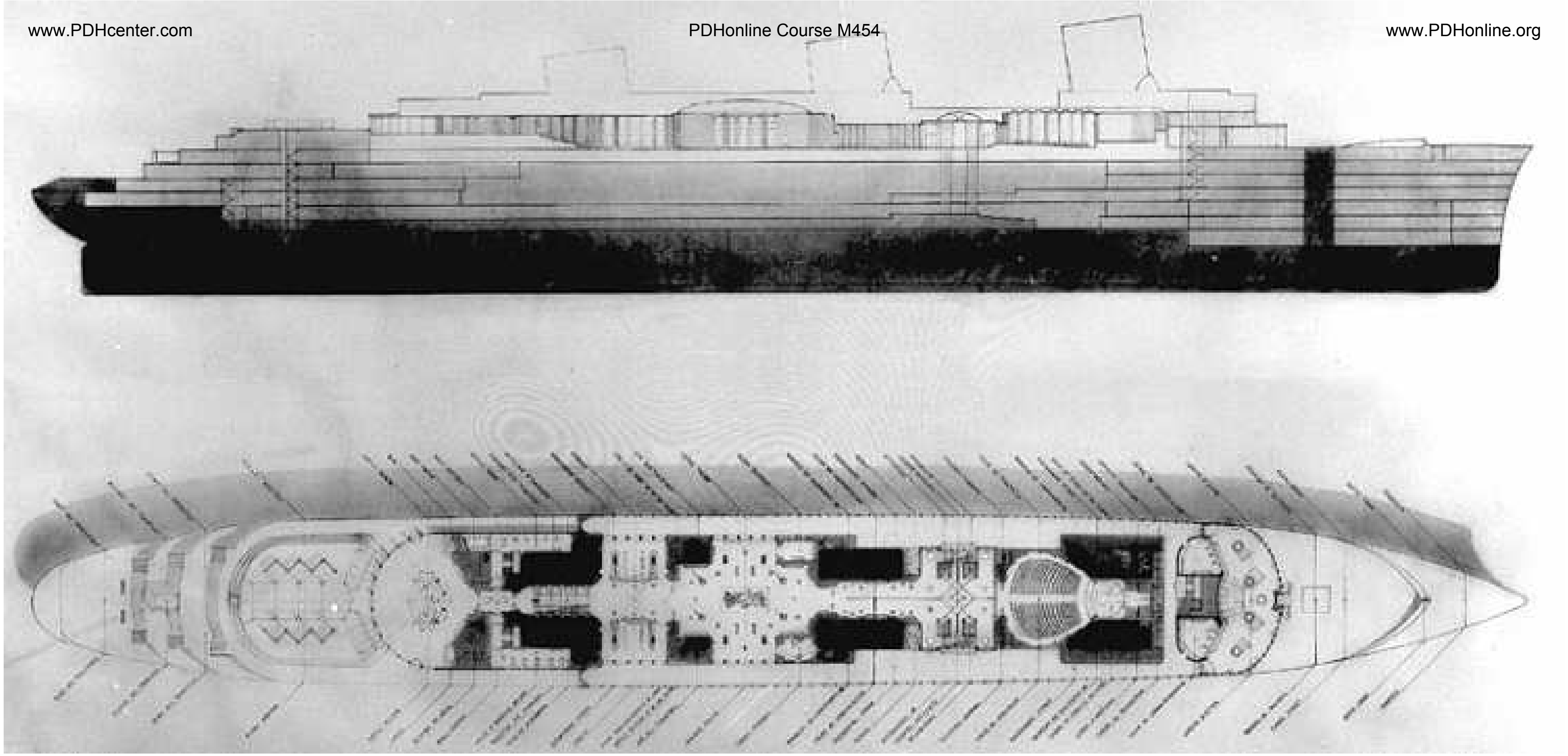
Part 5

Floating Palace

"No man will be a sailor who has contrivance enough to get himself into jail; for being in a ship is being in a jail, with the chance of being drowned."
Samuel Johnson (1709-1784), English Author

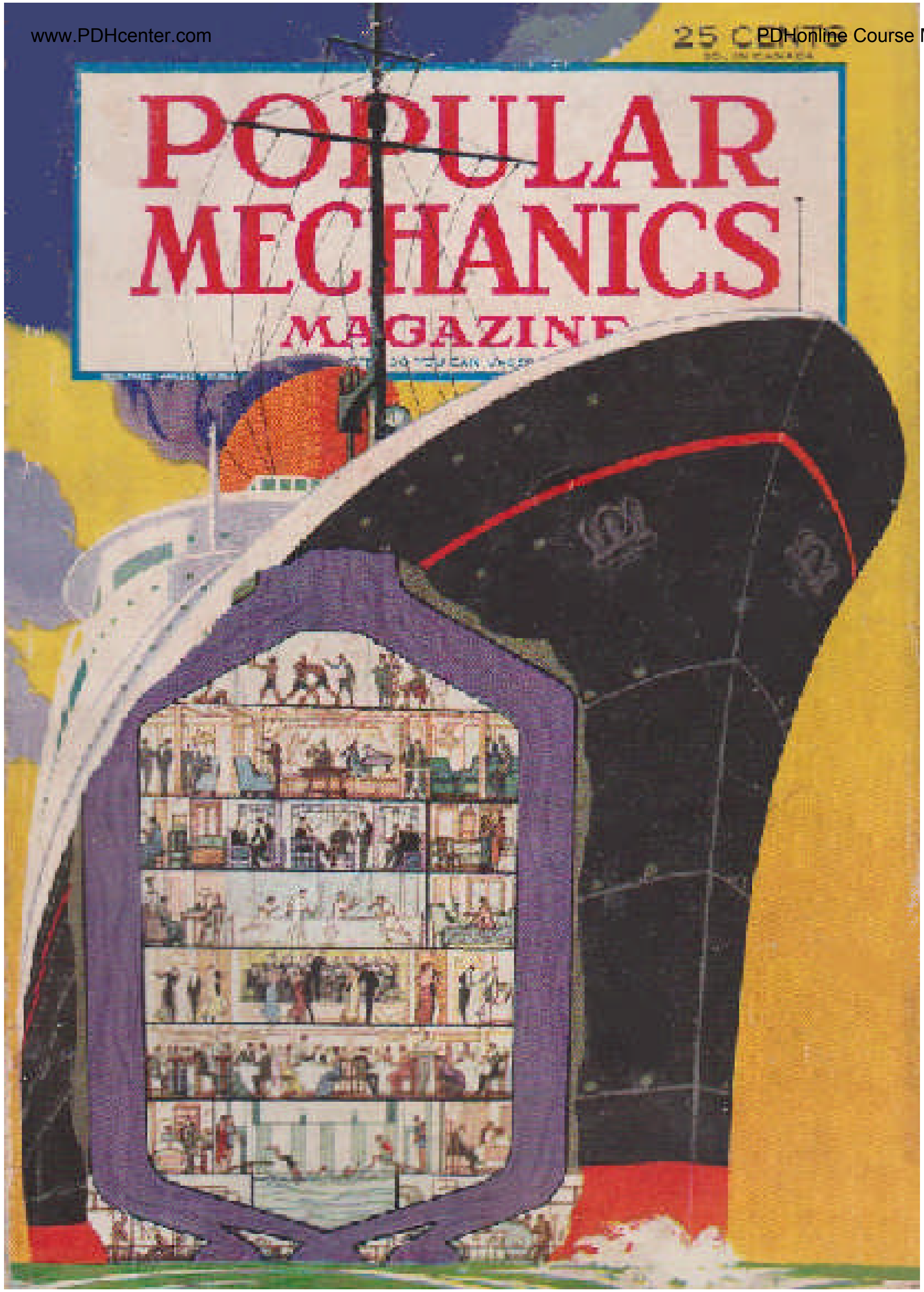


To create a true French masterpiece, CGT called upon many of the craftsmen and artisans responsible for interior finishes including; carpets, paneling, artwork, furniture etc. of previous CGT liners. For the *Ile de France*, *Pierre Patout* became famous for his marble dining saloon and *Richard Bouwens van der Boijen* was the creator of the grand three-deck foyer. Now their assignment was to surpass even themselves for the greatest French ships ever: *Normandie.* The accomplished French architect *Roger-Henri Expert* (1882-1955) was placed in charge of the overall decorative scheme for the design of the ship's interiors.



Section (top) and plan (bottom) by *Roger-Henri Expert*
(overall interior design scheme for *Normandie*)

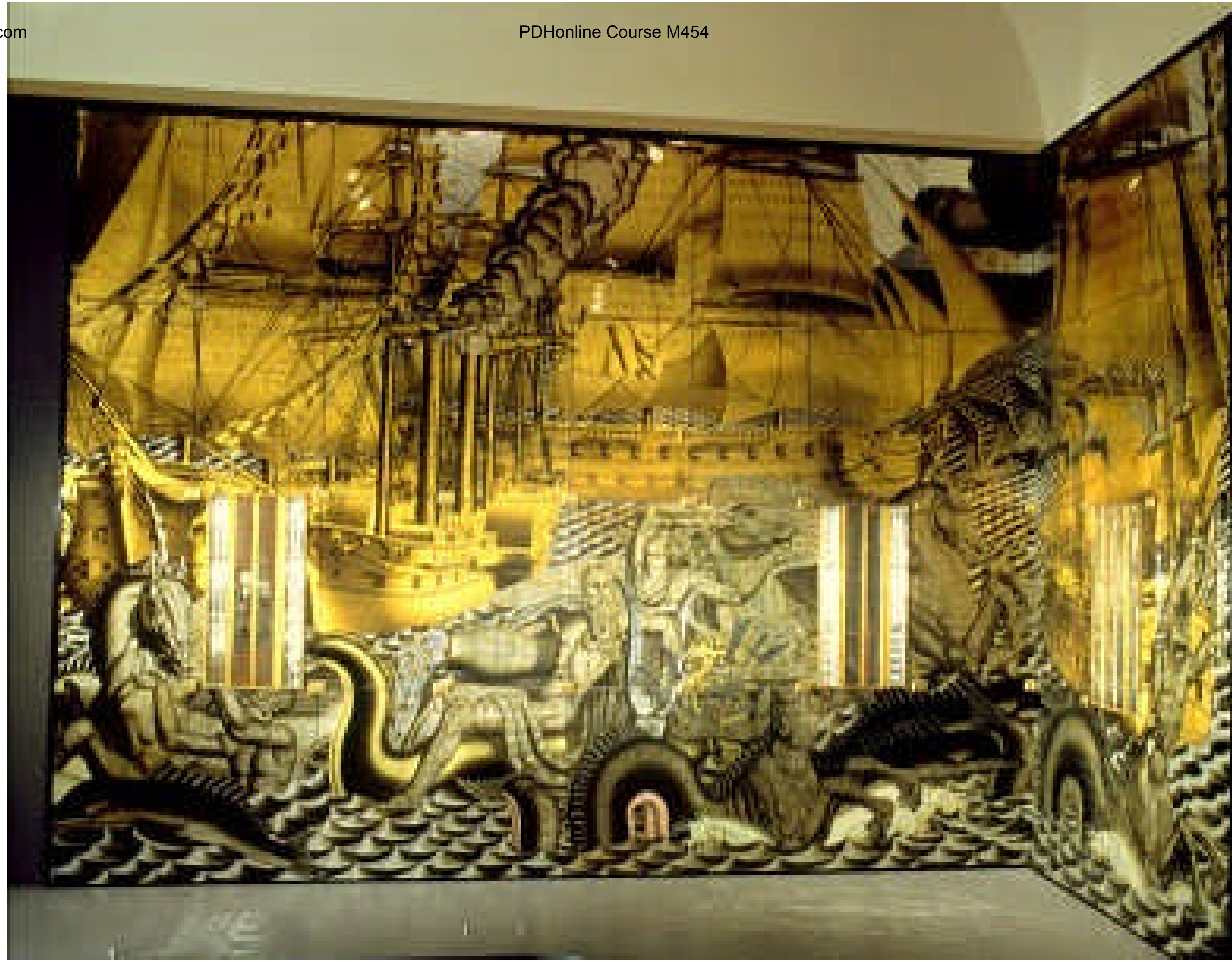
High-Water Mark



"…the vessel sets a standard difficult to equal. Her plan and decoration reach a high-water mark in maritime history. No such ultra-modern interiors have ever been seen on an ocean vessel. The outside strikes a complete harmony with the inside…Next to her size, the most startling thing about the Normandie is her interior design and decoration. In addition to lighting and color harmony, the combination and fabrication of materials appear fresh and new to the eye. Rare and common woods from all parts of the world; soft and cunningly woven fabrics; works of art that give atmosphere and refinement to the surroundings; furniture that is not only comfortable, but pleasant to behold – everything leads one to believe that in this ship man displays the best proof of his attainments in the last century…"

***Popular Mechanics,* June 1935**

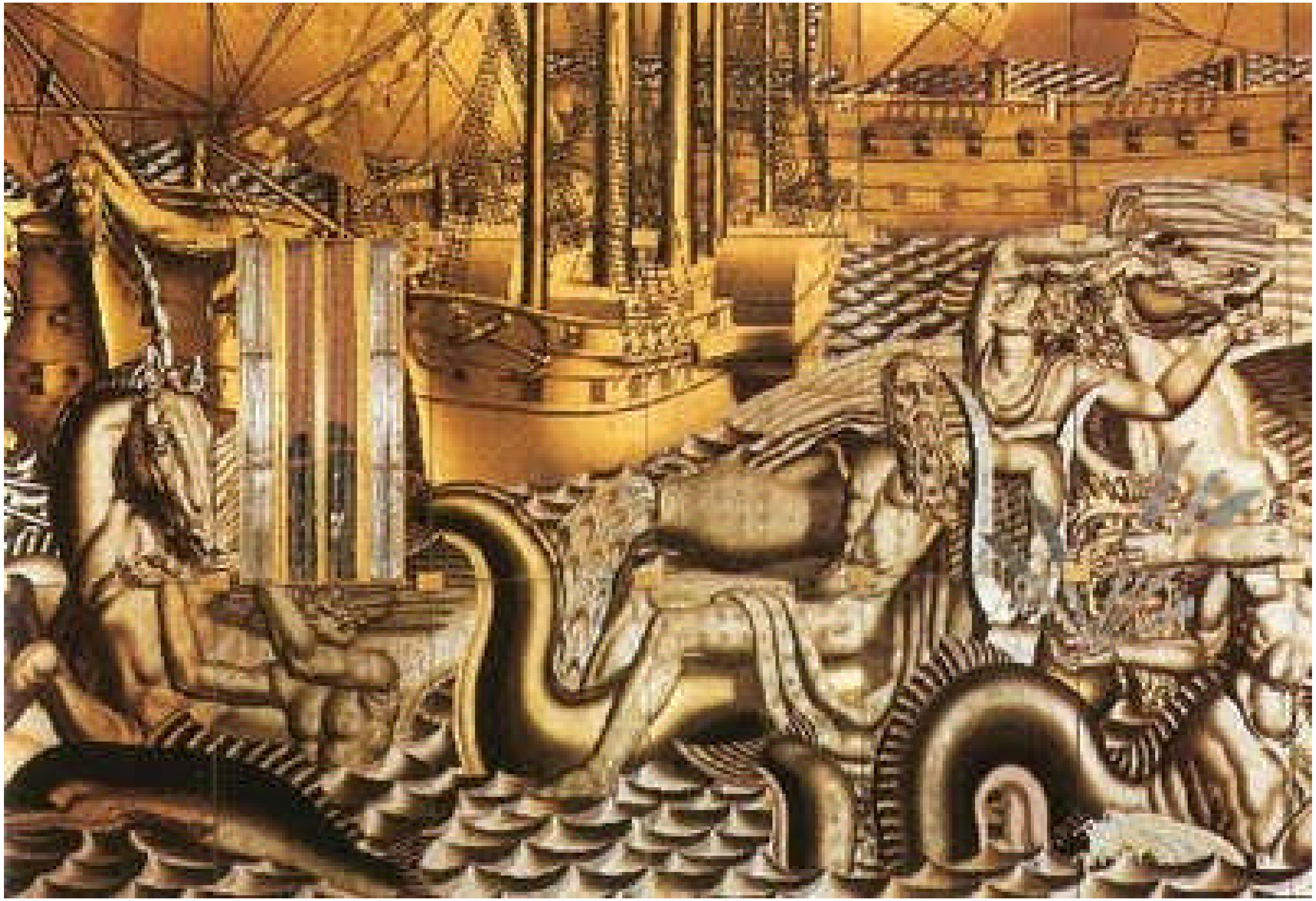
Lalique **glass clock designed especially for** ***Normandie*** **by** ***Leon Hatot*** **(note the word "NORMANDIE" around the perimeter)**



The History of Navigation Mural, **1934**

Made for the *S.S. Normandie* by *Jean Dupas* (1882-1964)

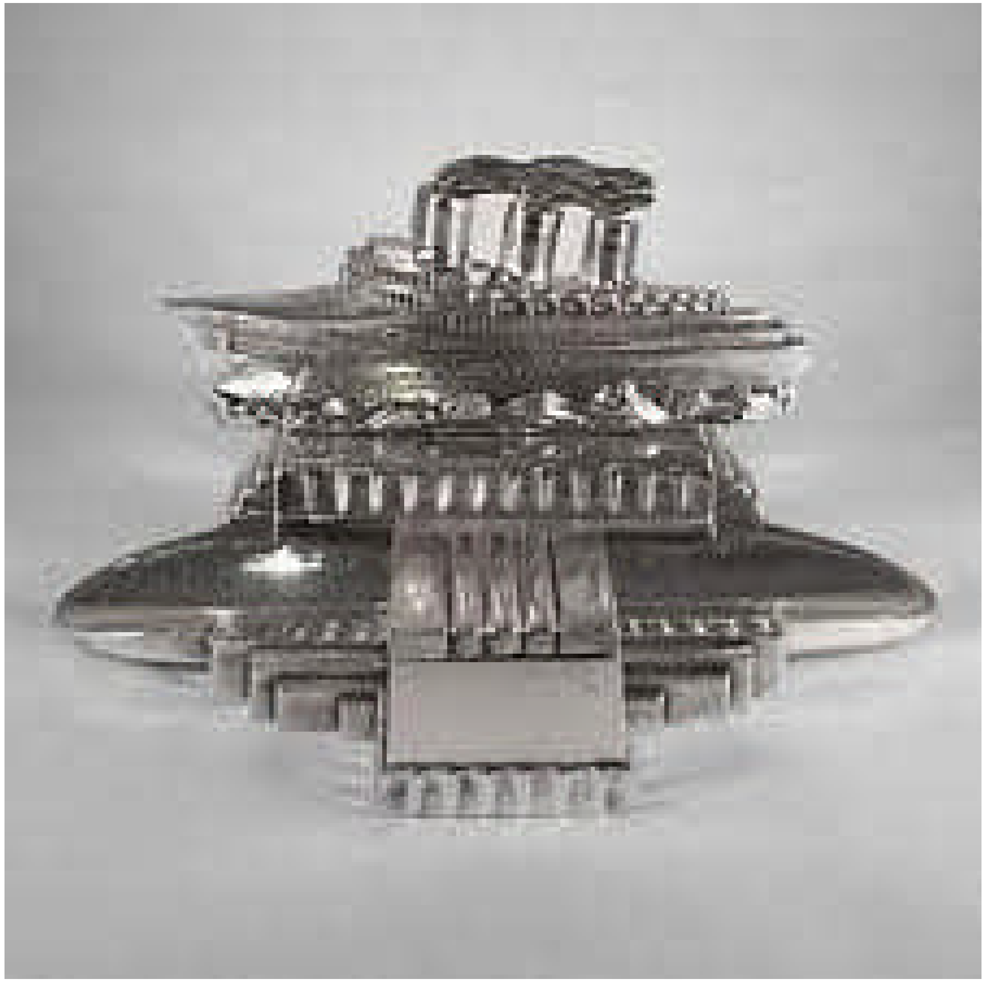
Metropolitan Museum of Art, New York

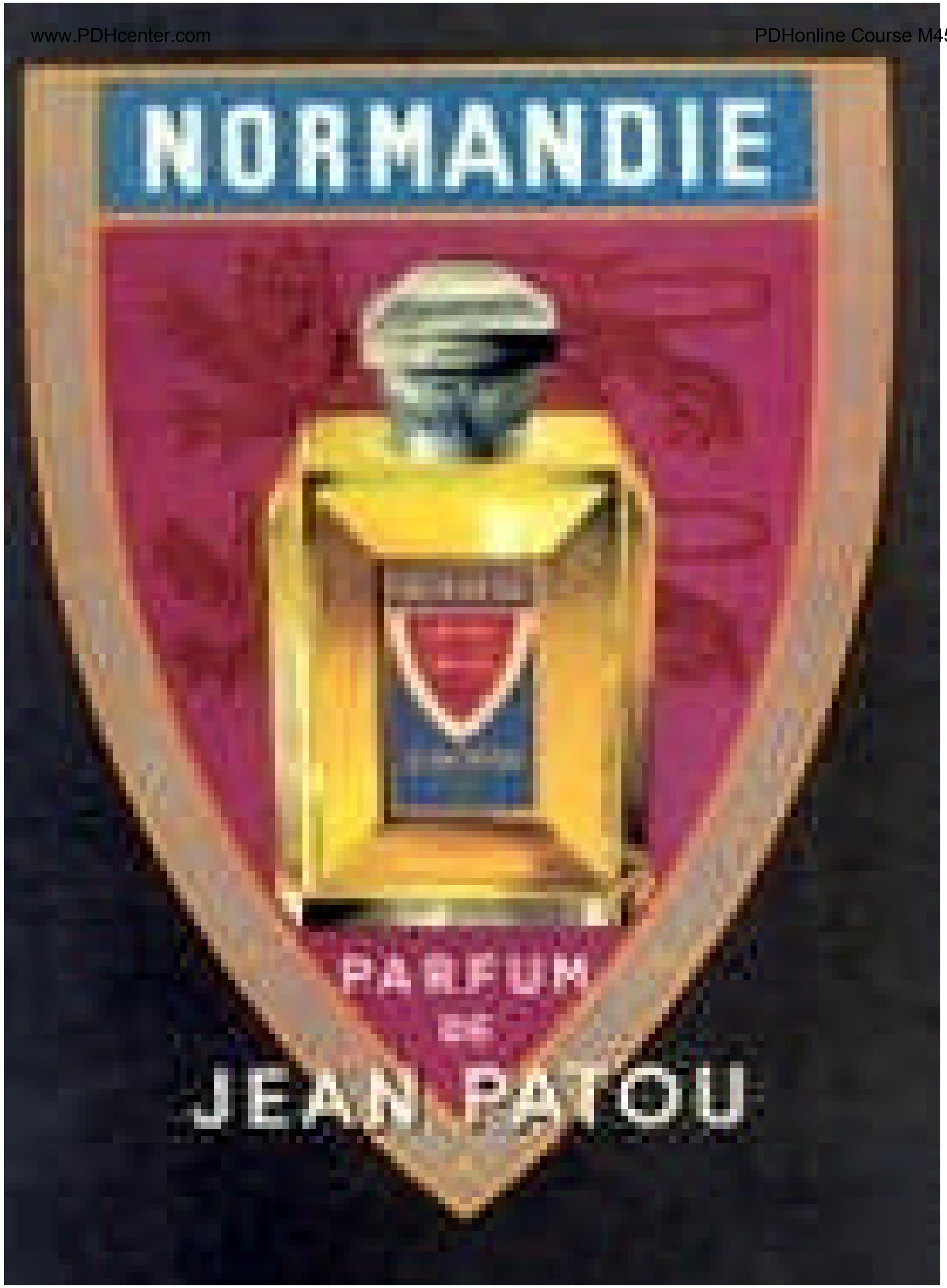


"Hunt"

by *Jean Dunand*

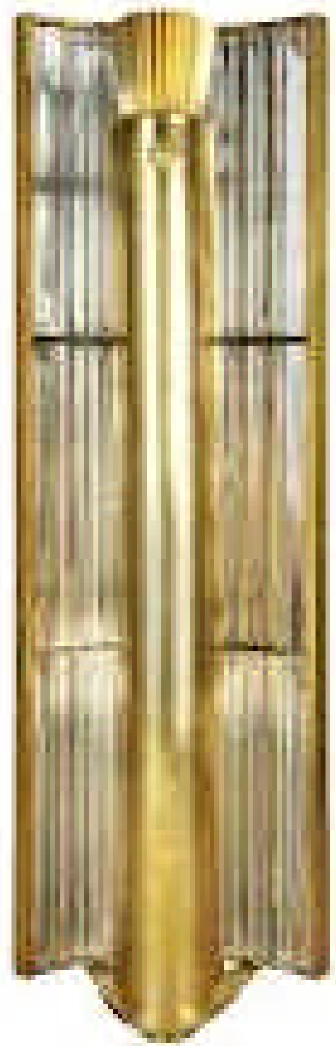
Adorned the Smoking-Room side of the sliding panels
(between the Smoking Room and Grand Salon)





Jean Patou **fragrance in** ***Lalique*** **crystal bottle.**

***Patou* and *Lalique* created special perfumes and unique bottle designs for Normandie's First Class passengers.**



(wall sconce)

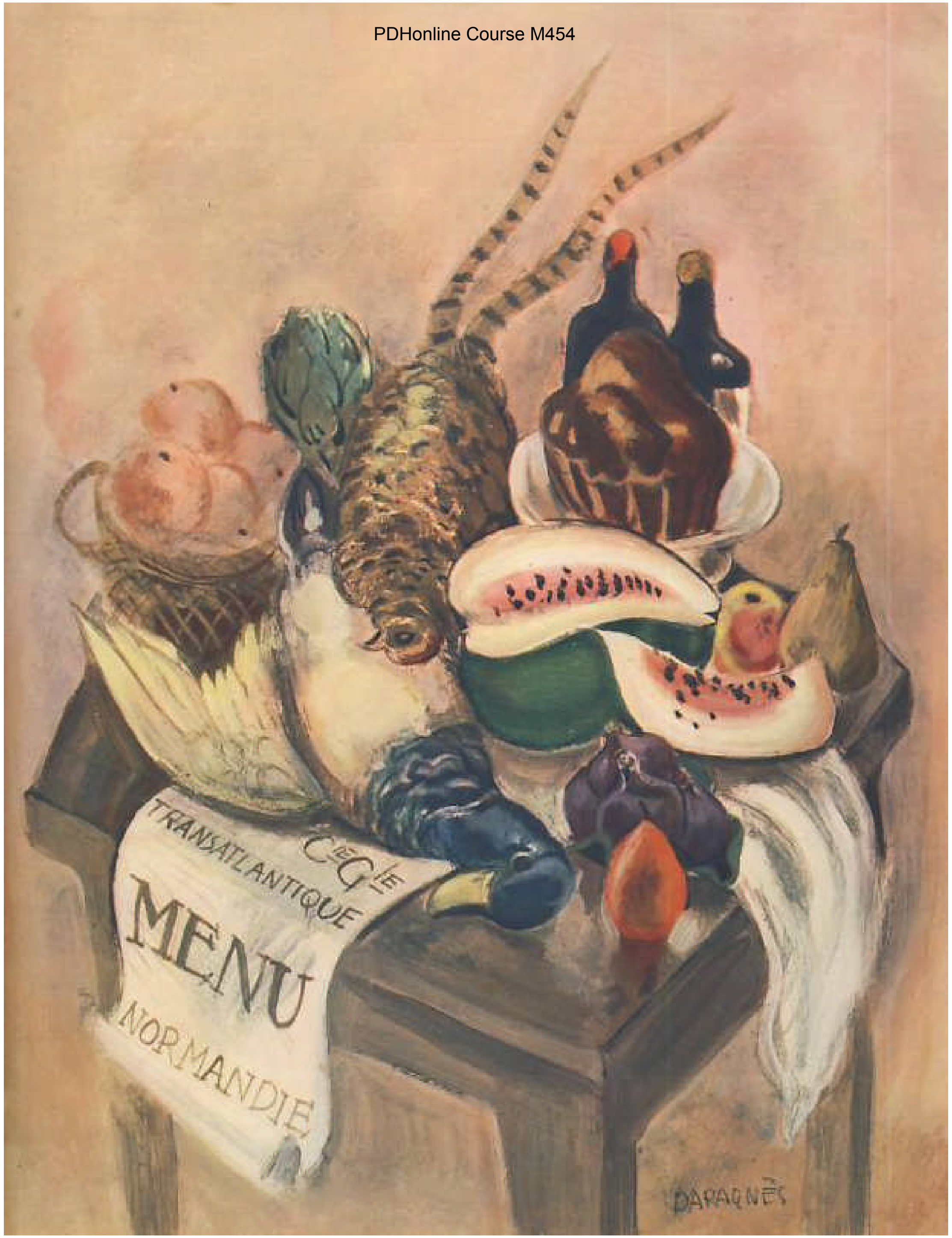
Hermes Boat-Shaped Clutch

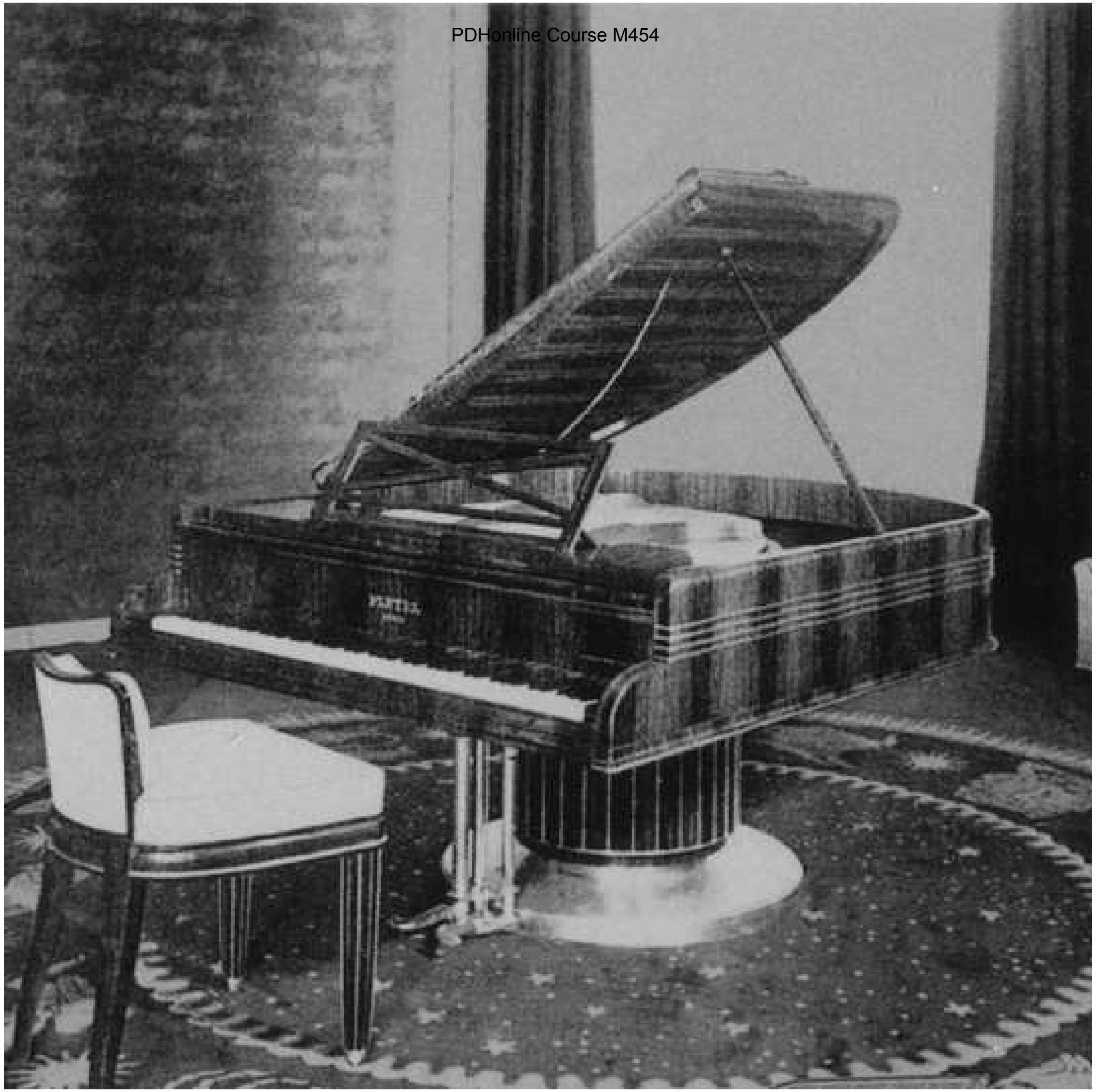
(given to first-class female passengers)

Many French Art-Deco luminaries such as _Hermes, Lalique Raymond Subes, Emile-Jacques Ruhlman, Jean Dupas, Luc Lanel, Louis Sue, Dominique, Monyagnac, Duarat etc._ contributed to the decoration and/or promotion of the Normandie.

Chrome plated vase for the *Normandie* (CGT stamp at base)
by *Edgar Brandt* and *George Bastard* ca. 1935

Aluminum panel coated with a burnt orange lacquer
(etched and tooled by *Jean-Maurice Rothschild*)
(from a first class cabin)

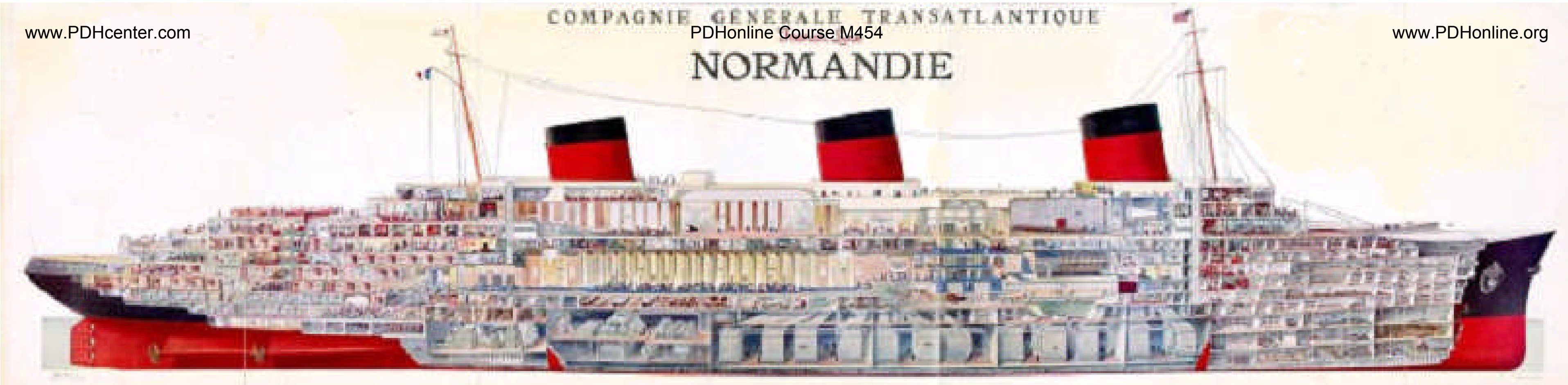

C
TRANSATLANTIQUE
MENU
NORMANDIE
DARAGNÈS

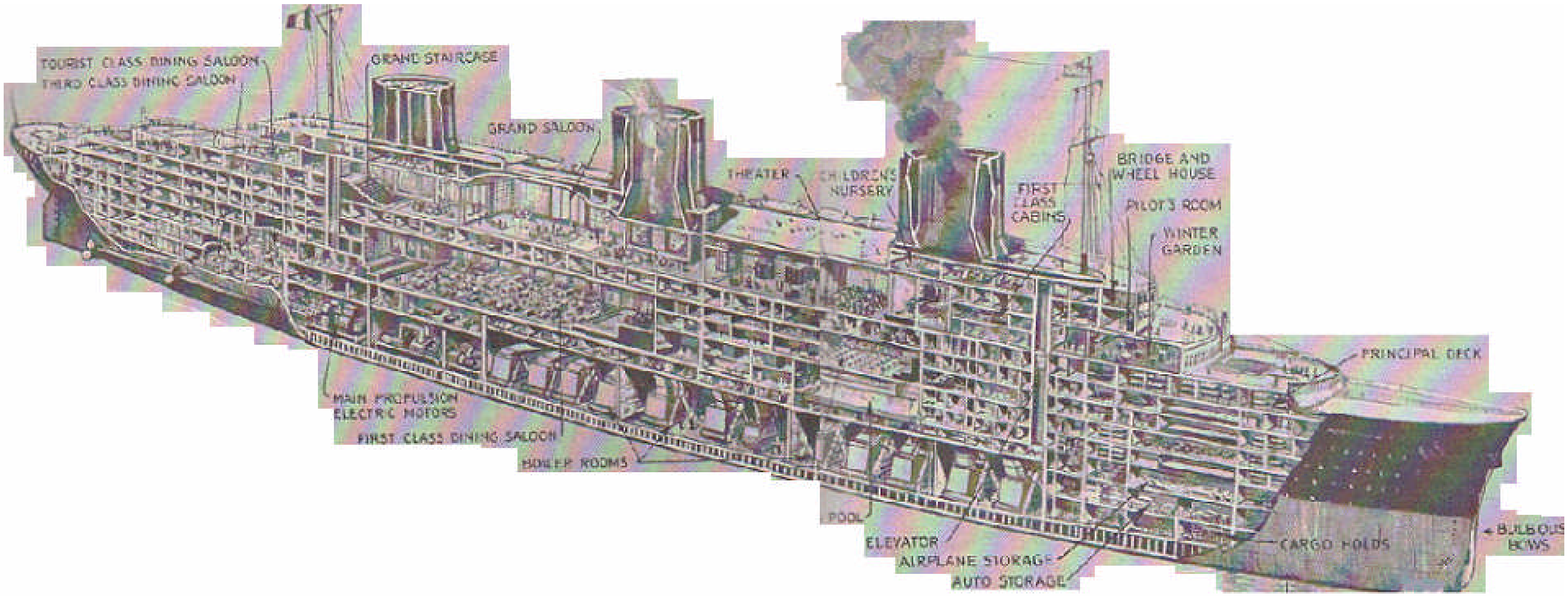


Rosewood piano created for *Normandie*
(presented at the 1937 *Exposition Universelle* in Paris)

"…If you were 'stranded' on this floating island, there is scarcely a thing you would miss, for this ship provides food, shelter, medical care, libraries, theaters, gymnasiums, swimming pools, newspapers, radio reception, barber shop, hairdresser, tailors, art galleries and dozens of amusements. You could purchase a complete wardrobe in the Normandie's shopping center…Passenger accommodations set new standards of luxury in travel. The Normandie boasts two suites, each with it's own private deck thirty by eighteen-feet, and twelve suites with private verandas. There are children's play rooms, card rooms, a shooting gallery, a massage salon, three hospitals, florist shop, photographic studio, therapeutic, electric vapor and steam baths, a garage for 100 autos, dog kennels, dog washing pool and a dog promenade…"

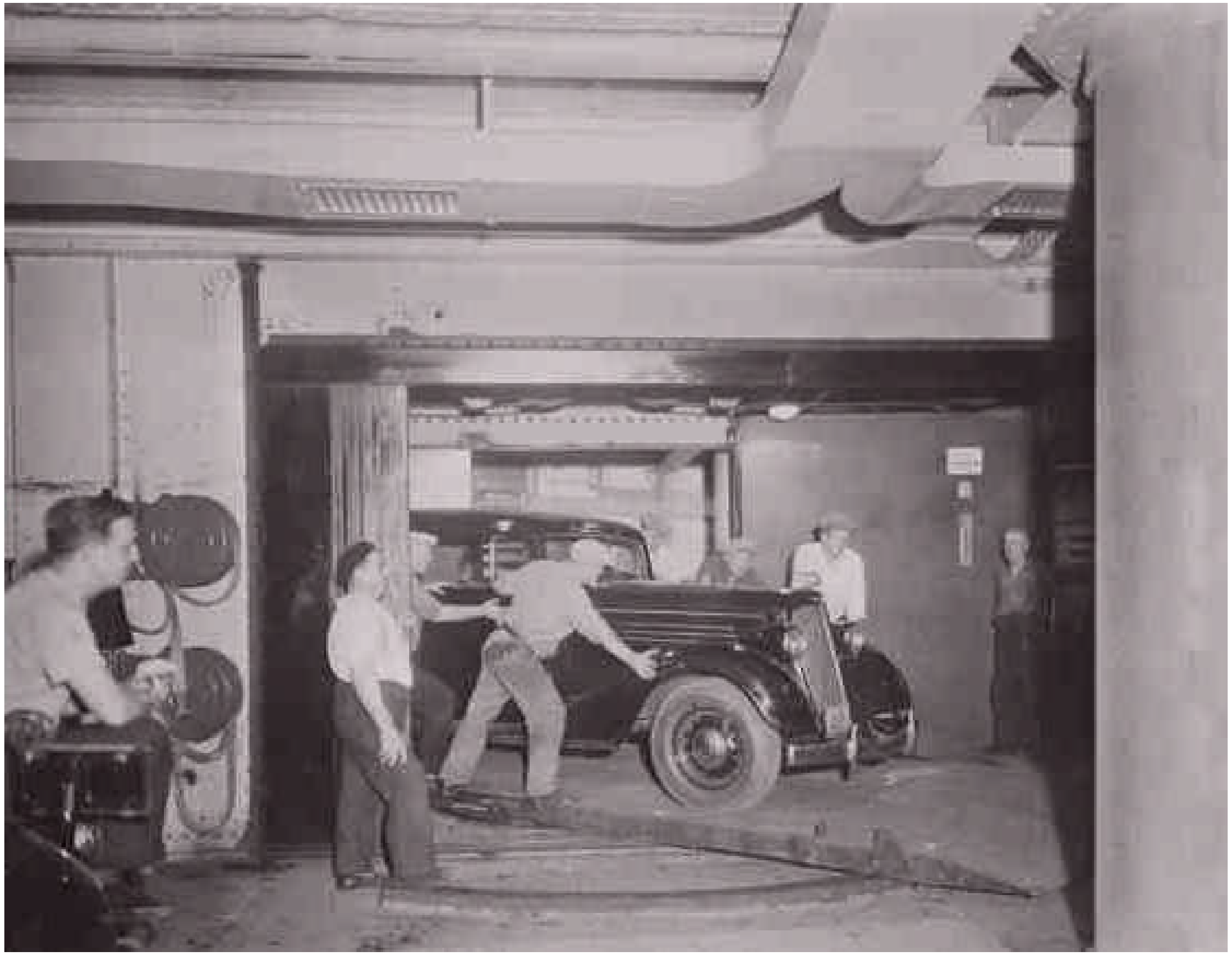
***Popular Mechanics,* June 1935**


COMPAGNIE GÉNÉRALE TRANSATLANTIQUE
NORMANDIE


TOURIST CLASS DINING SALOON
THIRD CLASS DINING SALOON
GRAND STAIRCASE
GRAND SALOON
THEATER
CHILDRENS NURSERY
FIRST CLASS CABINS
BRIDGE AND WHEEL HOUSE
PILOT'S ROOM
WINTER GARDEN
PRINCIPAL DECK
MAIN PROPULSION ELECTRIC MOTORS
FIRST CLASS DINING SALOON
BOILER ROOMS
POOL
ELEVATOR
AIRPLANE STORAGE
AUTO STORAGE
CARGO HOLDS
BULBOUS BOWS

Hospital

Operating Room



Automobile Garage

Mail Room

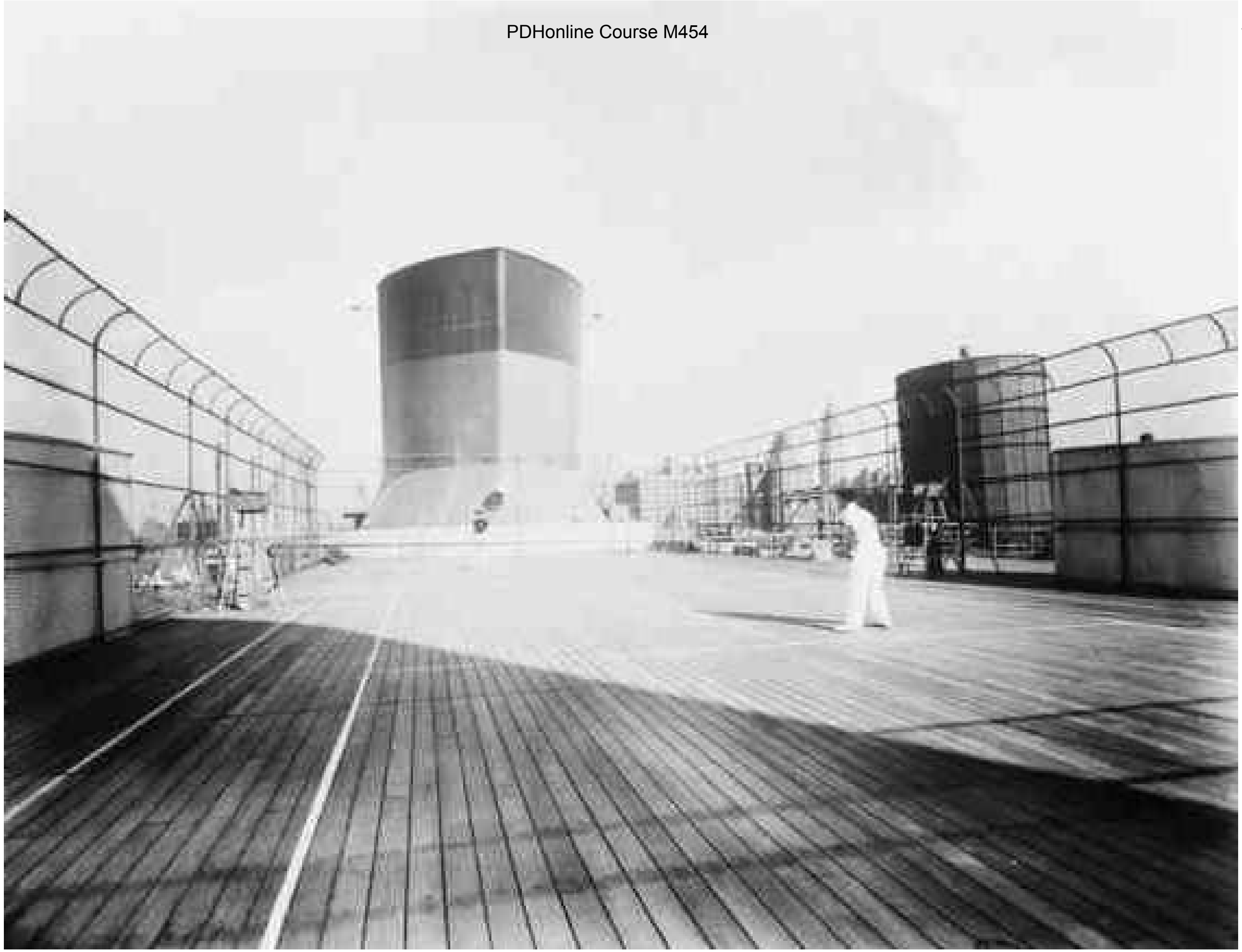
Barber Shop

Recreation

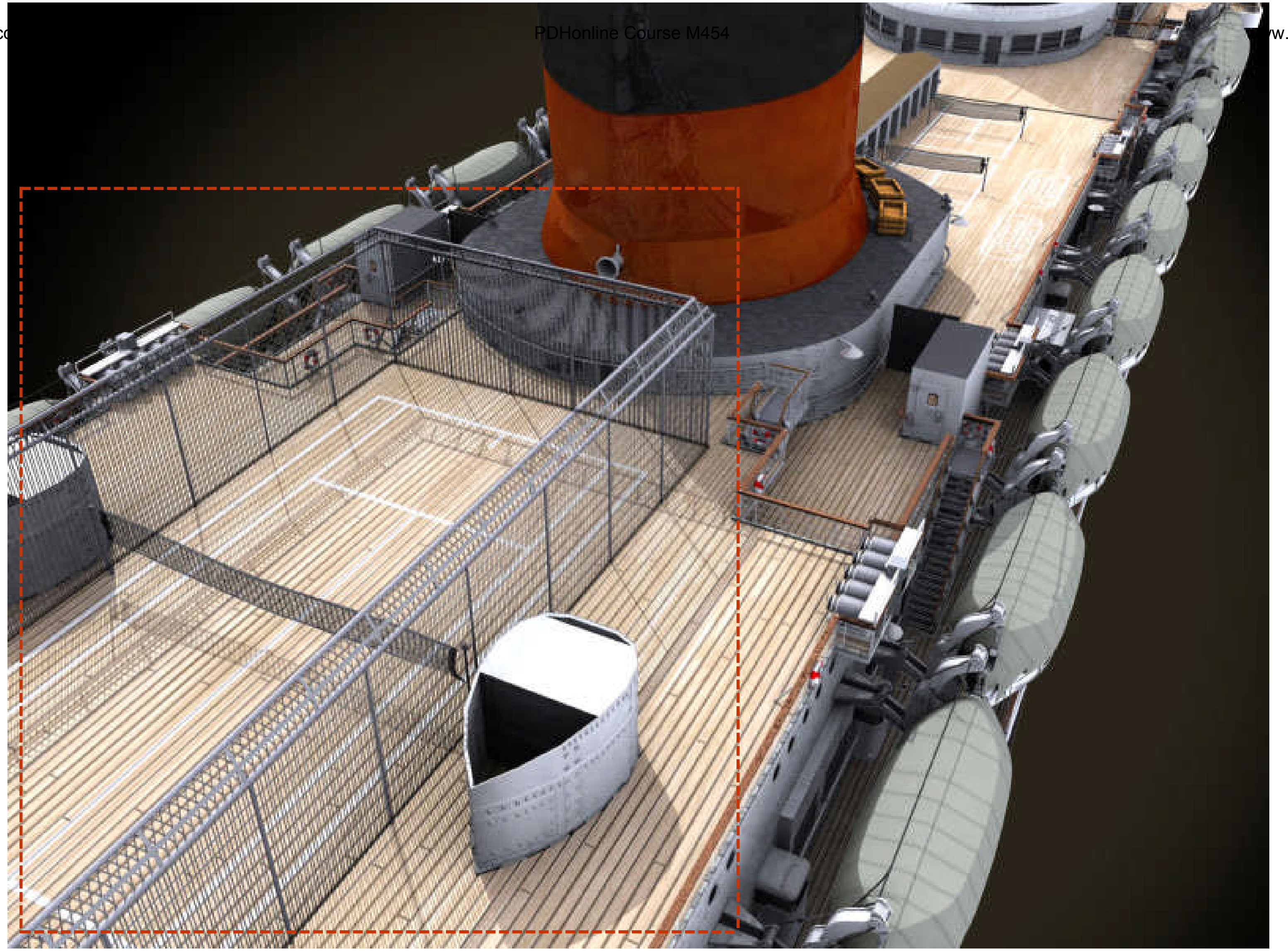
"…Passenger recreation is provided for by numerous deck sports such as tennis, clay-pigeon shooting and squash. Besides, there is a large swimming pool, a first-class gymnasium, a Punch and Judy show and the first fixed theatre ever built into an ocean vessel. This theater will have permanent seats accommodating 400 persons. The stage will be large enough for the production of full-length plays, musical revues, operettas and tableaux…"

***Popular Mechanics,* December 1932**

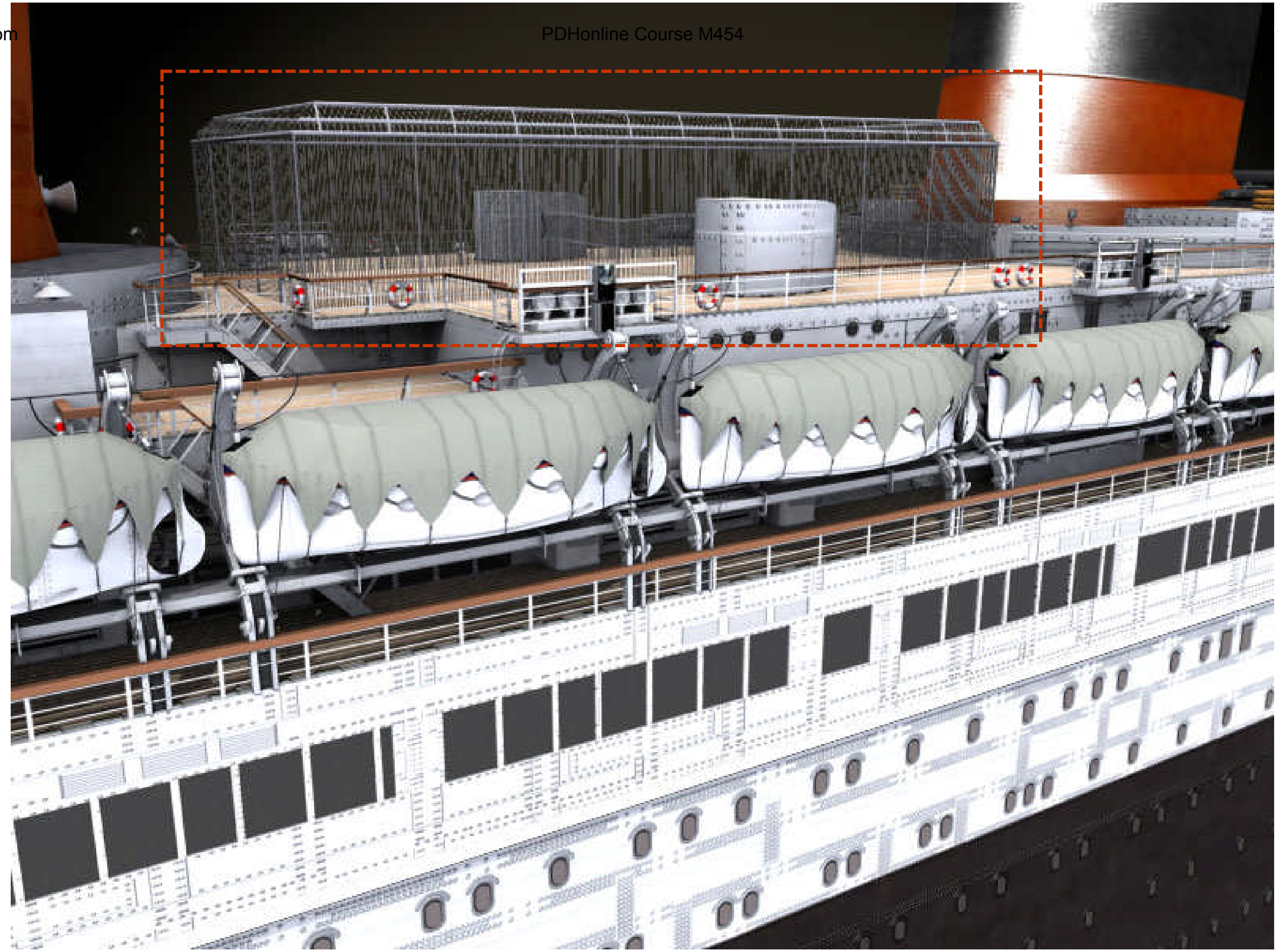
RE: *Normandie* would be the first transatlantic liner to feature a full-size tennis court thanks to cleaver concealment of deck fittings/equipment. The children's playroom featured a merry-go-round and a *Punch and Judy* show; popular with children and adults alike. The *Normandie Theatre* was the first fully equipped theatre for movies, plays, ballet etc. on a transatlantic liner with a capacity of 380 persons. It featured props, stage lighting and dressing rooms. In the morning, children's films and cartoons were shown and feature movies in the afternoon. At night, live productions such as stage plays, ballet etc. were performed.



Tennis Court
(full size)



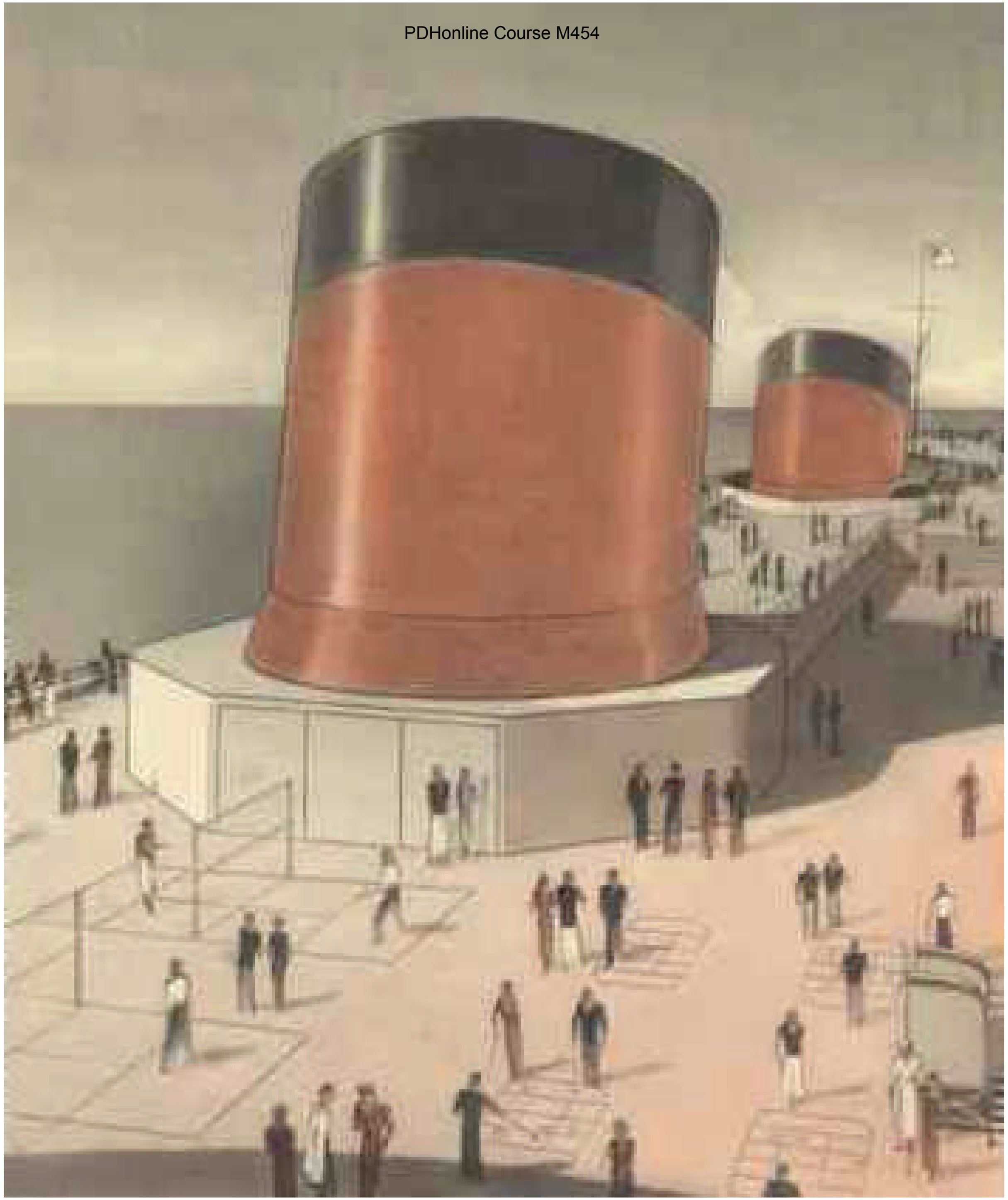
(model)



(model)

Skeet Shooting

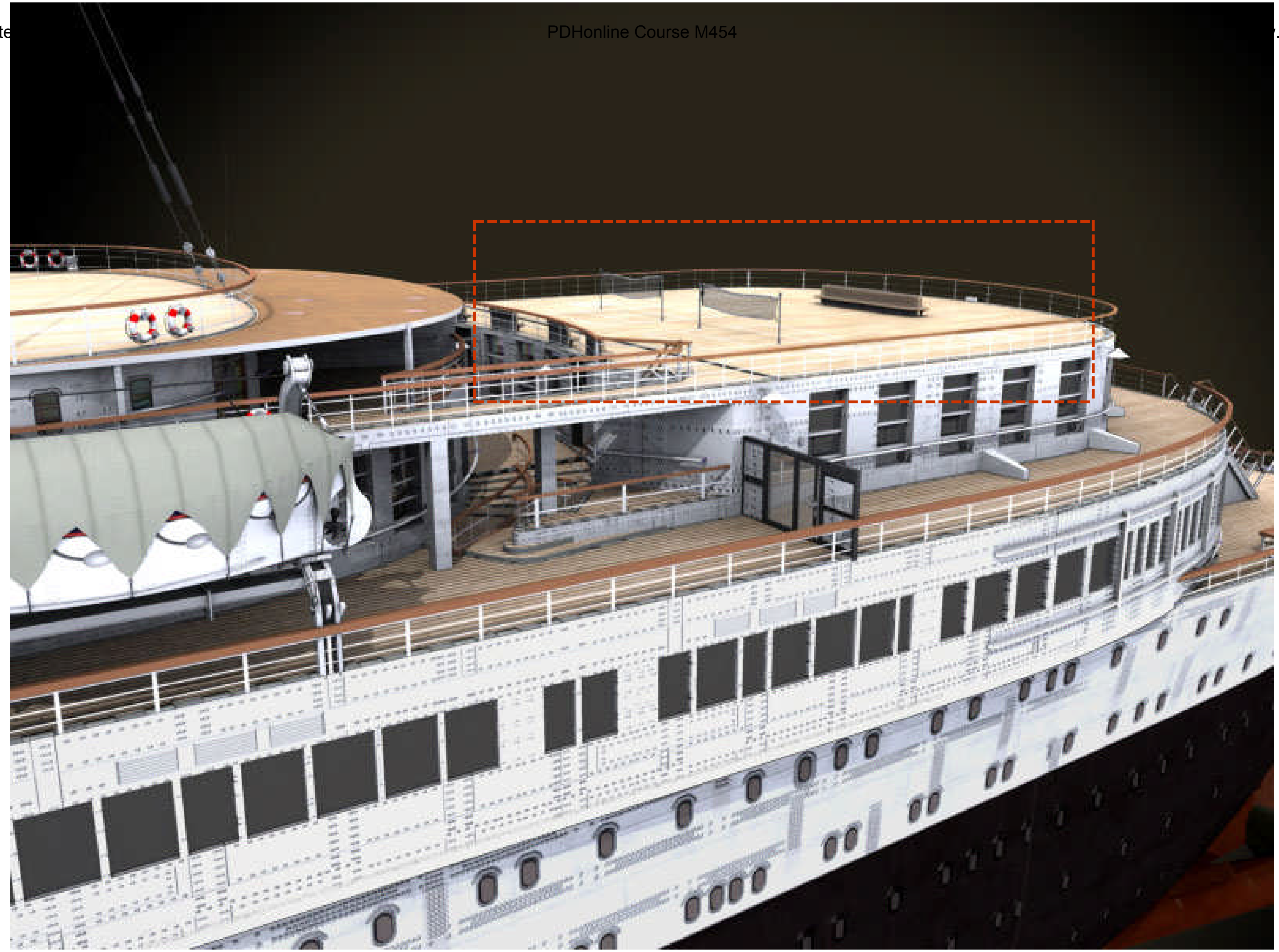
Deck Sports



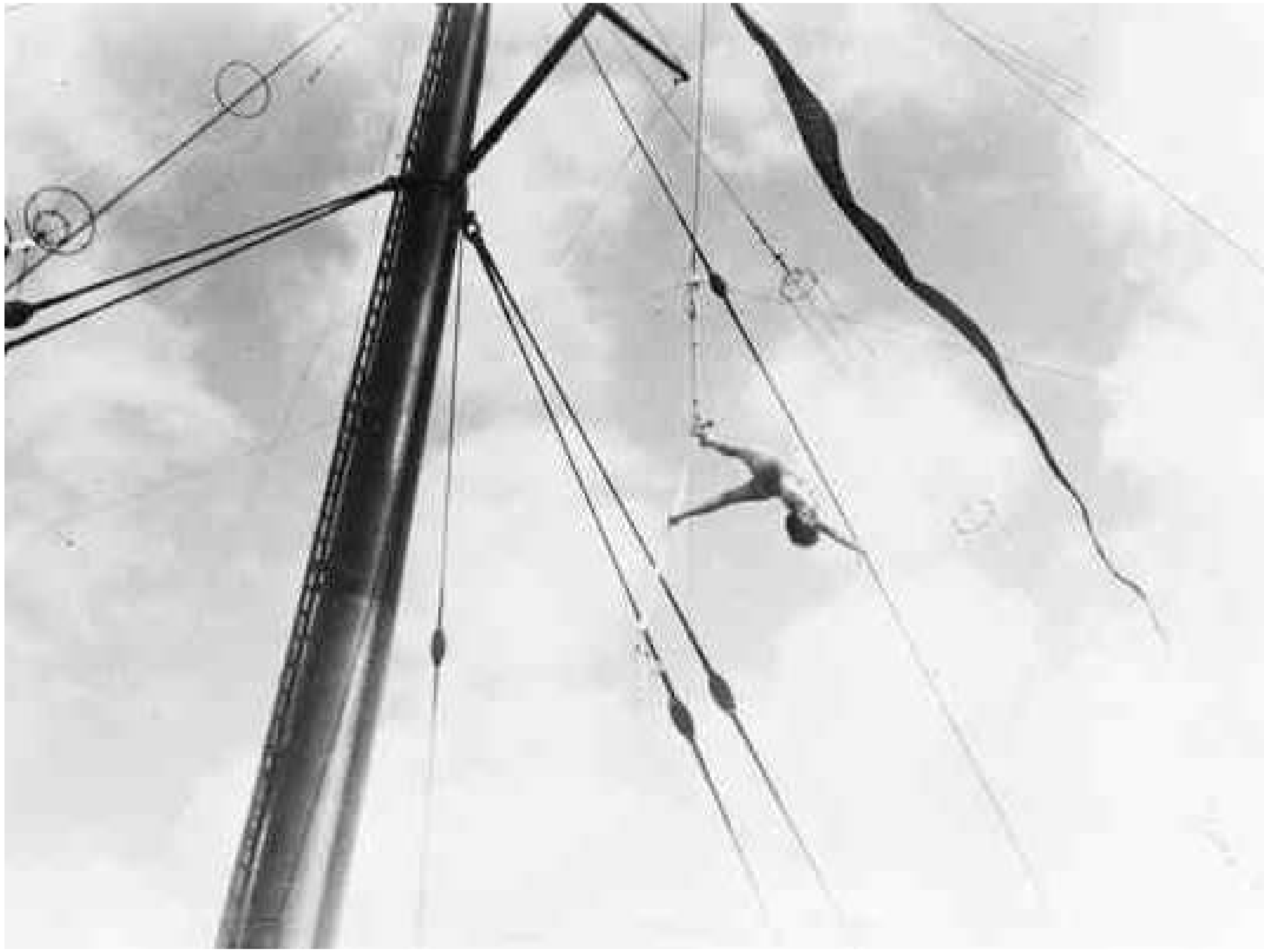
Deck Tennis

Shuffleboard
(note the flat wake)

(model)



(model)



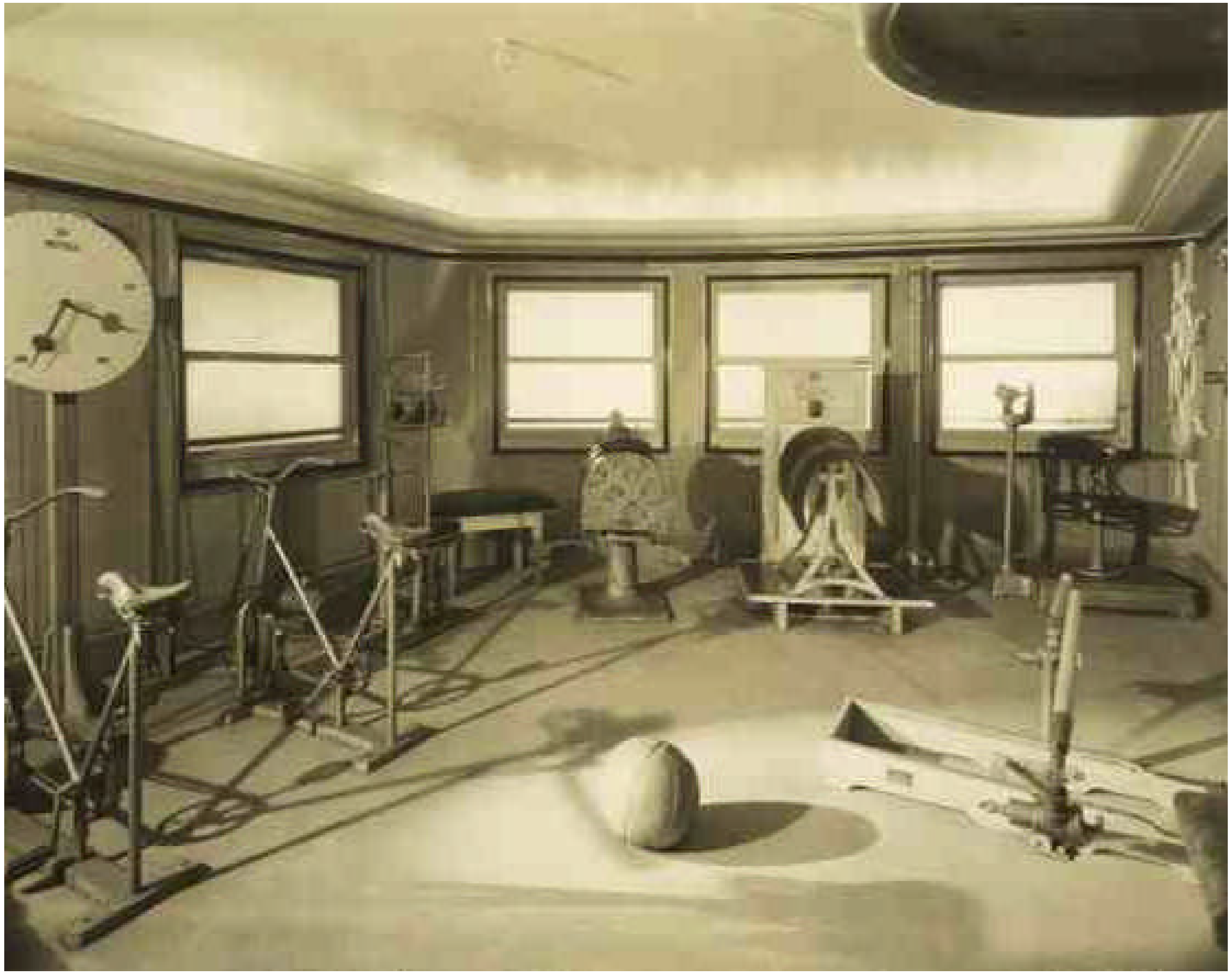
Normandie's **outdoor pool (provided for Tourist/Second Class passengers) was unique among transatlantic liners of her era. Such amenities were typically reserved for first-class passengers only.**

Though small as compared to the indoor (first-class) swimming pool, the outdoor swimming pool (at the stern) proved more popular with passengers.

(model)

(model)

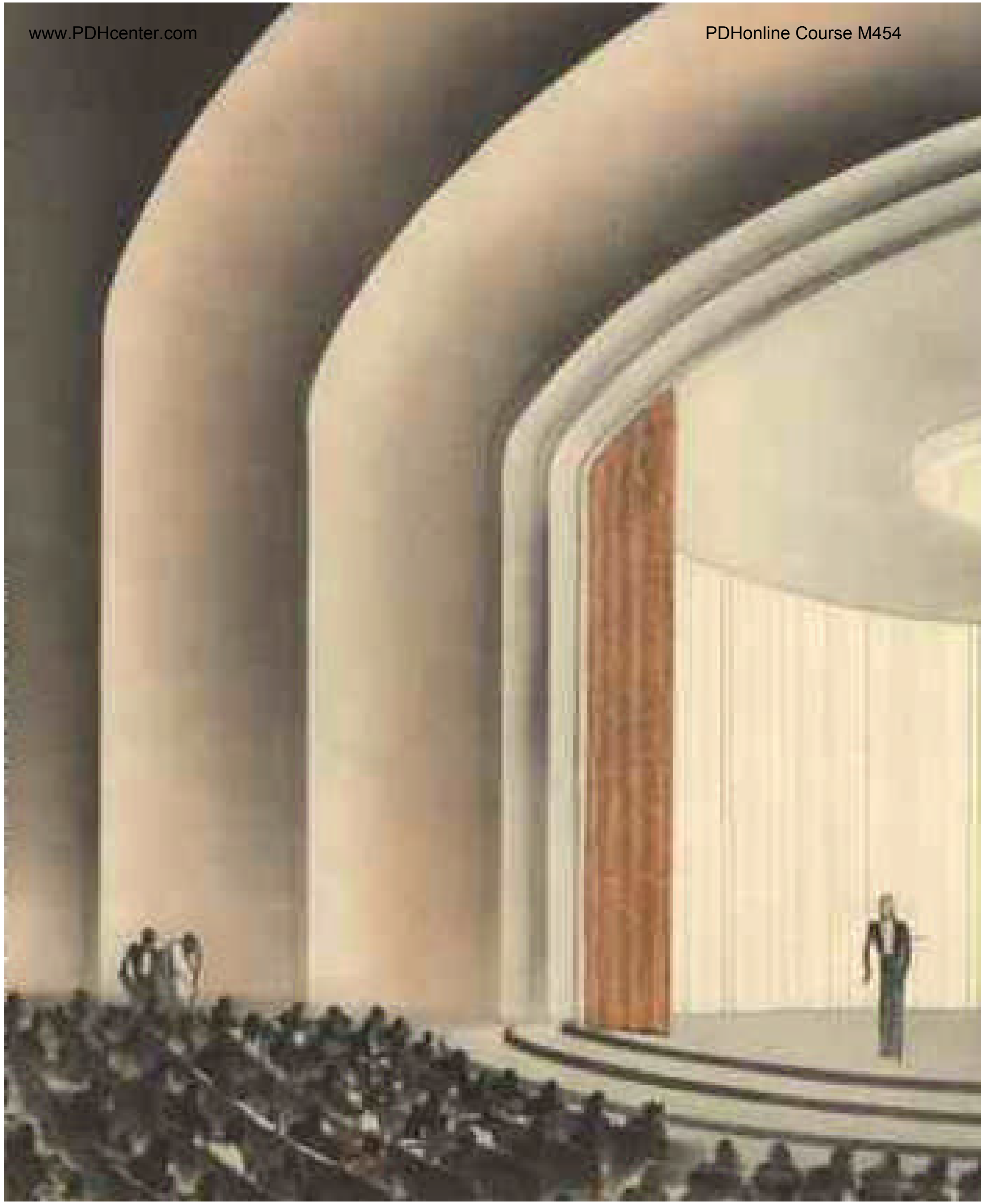
Gymnasium



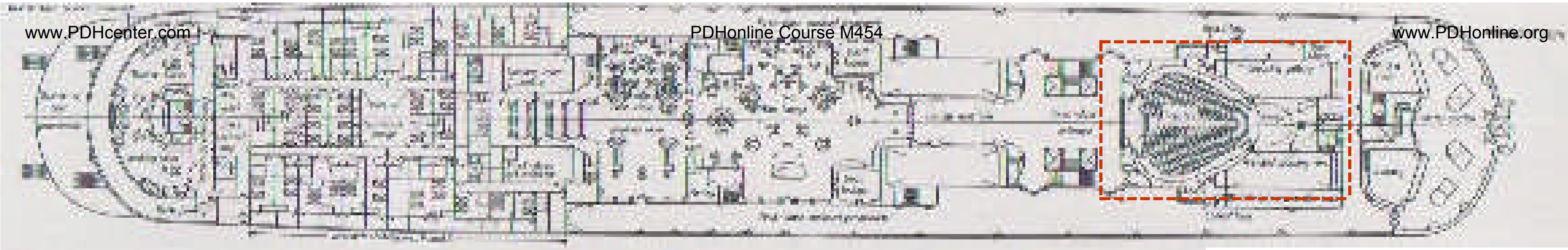
First Class Children's Theatre


Dear Jean
This is a beaut-
iful ship. We
are having lots of
fun all the time
French Line

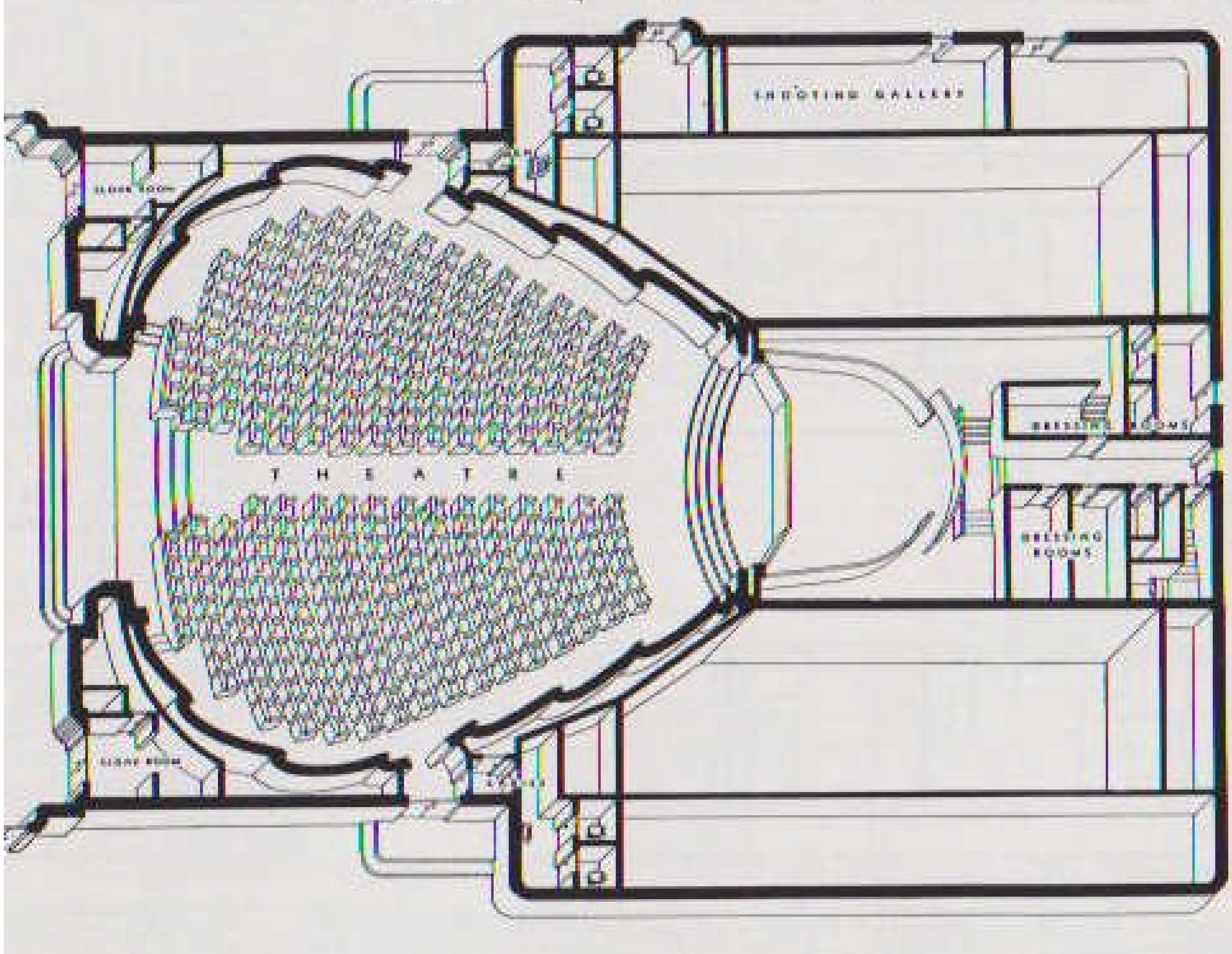
***Punch and Judy* Show**

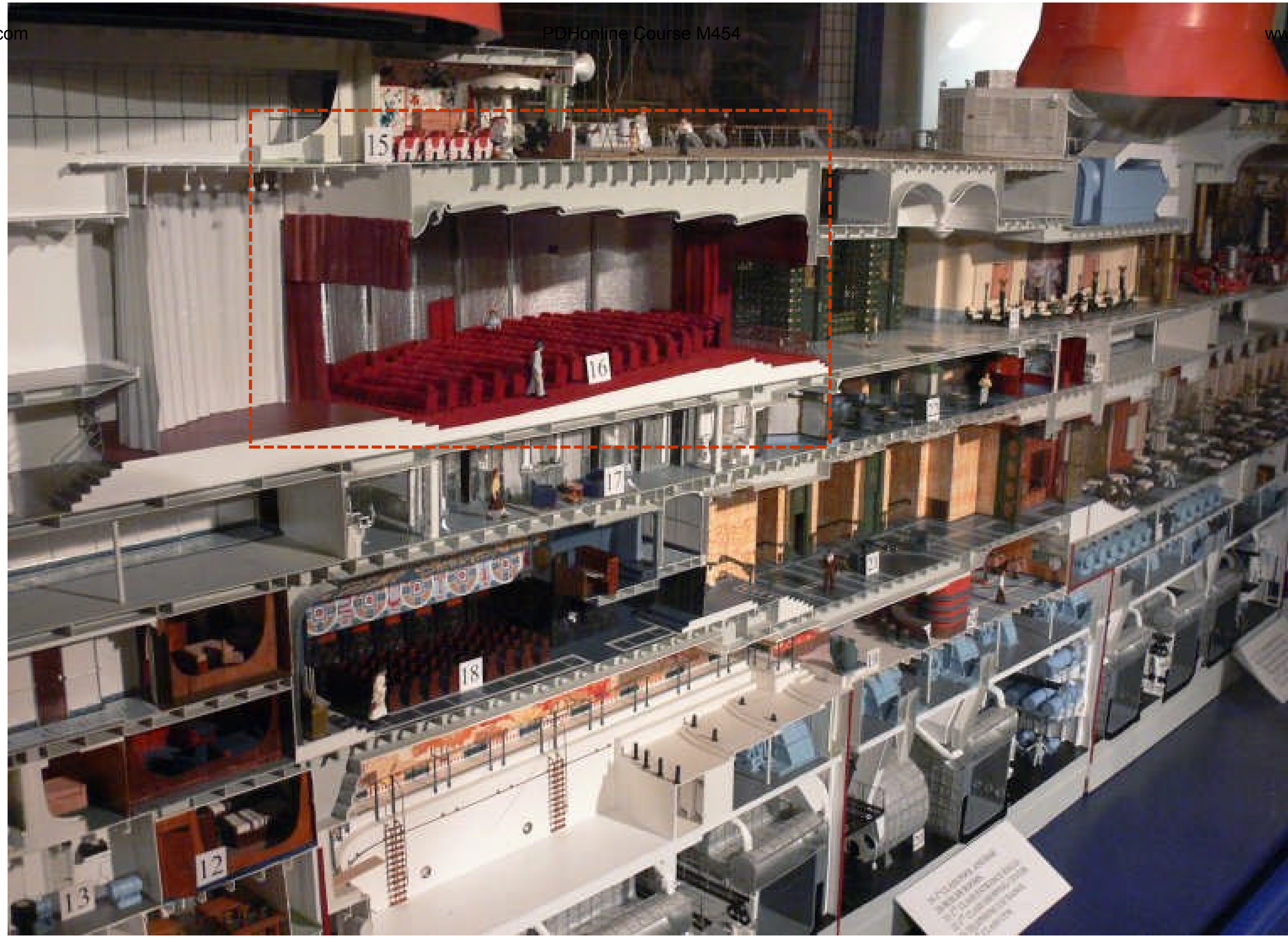


Normandie Theatre



Promenade Deck

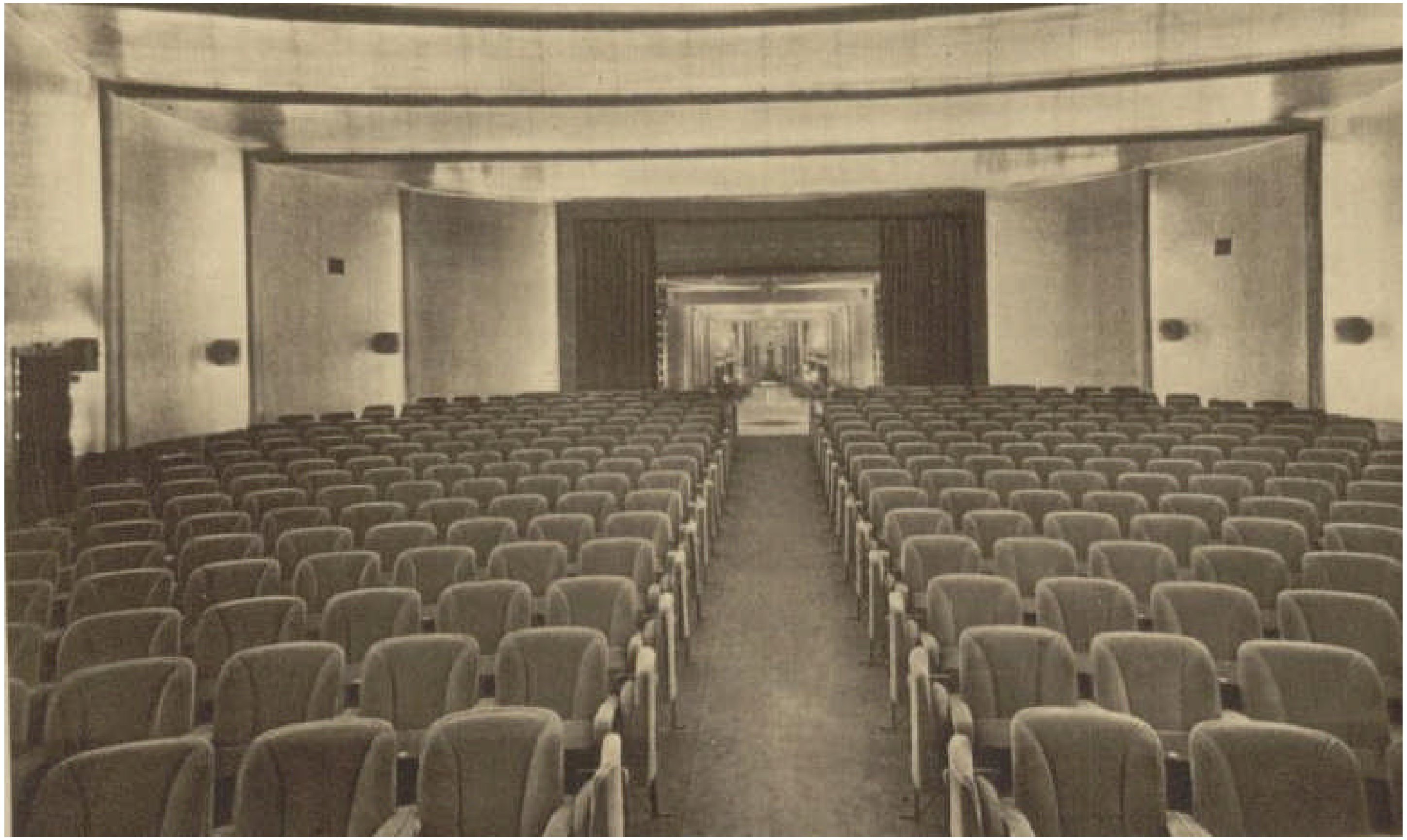


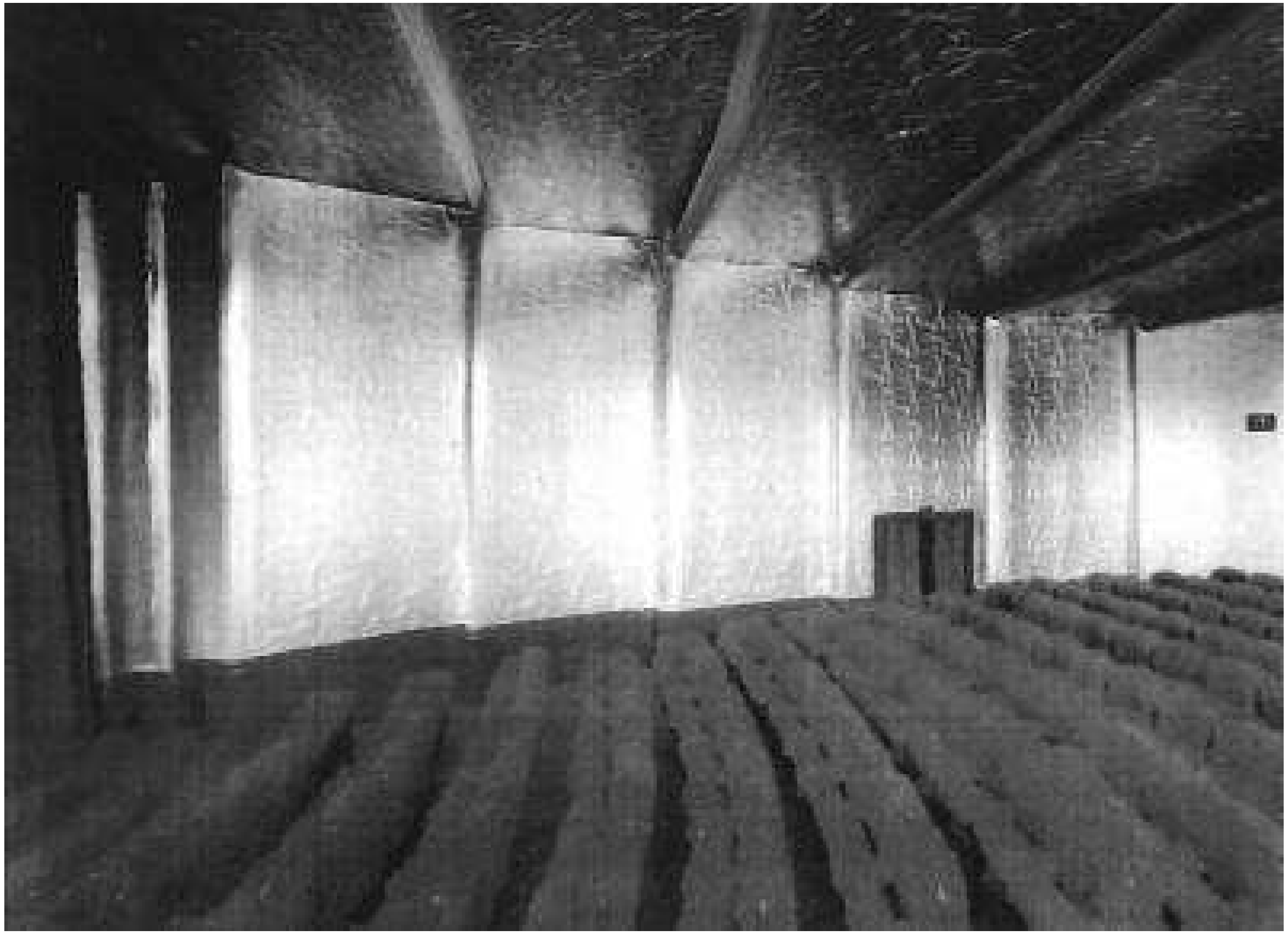


Sectional View of the *Normandie Theatre*
(model)

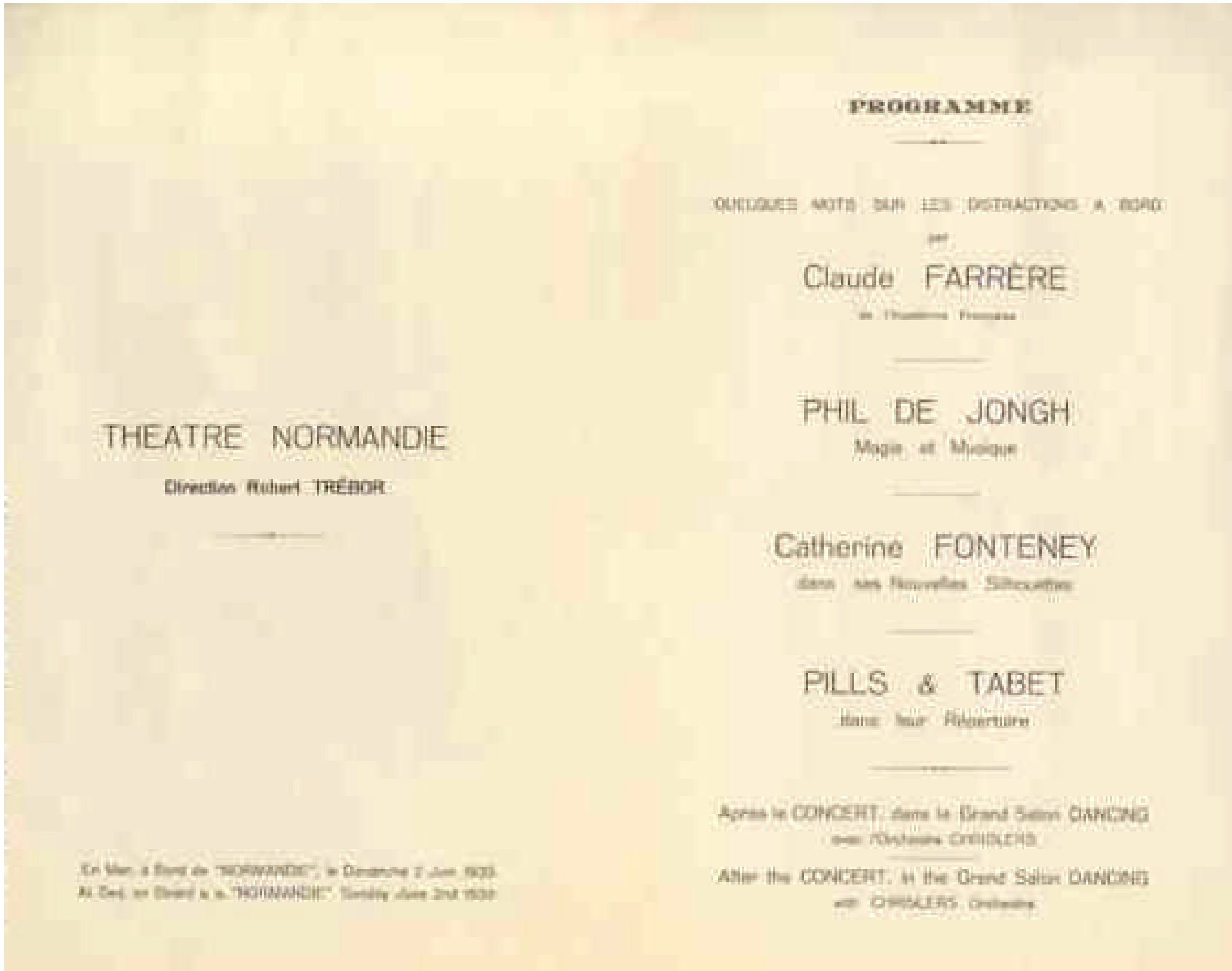
Sectional View of the *Normandie Theatre*
(model)

With its excellent acoustics, seating for nearly 400, well-equipped stage and lighting, the theatre was ideal for staging lectures, live plays, concerts and viewing films. It was the first of its kind on an ocean liner and set the standard for on-board entertainment still followed today.





Normandie Theatre
(model)



THEATRE NORMANDIE

Direction Robert TRÉBOR

PROGRAMME

QUELQUES MOTS SUR LES DISTRACTIONS A BORD

par

Claude FARRÈRE

de l'Académie Française

PHIL DE JONGH

Magie et Musique

Catherine FONTENEY

dans ses Nouvelles Silhouettes

PILLS & TABET

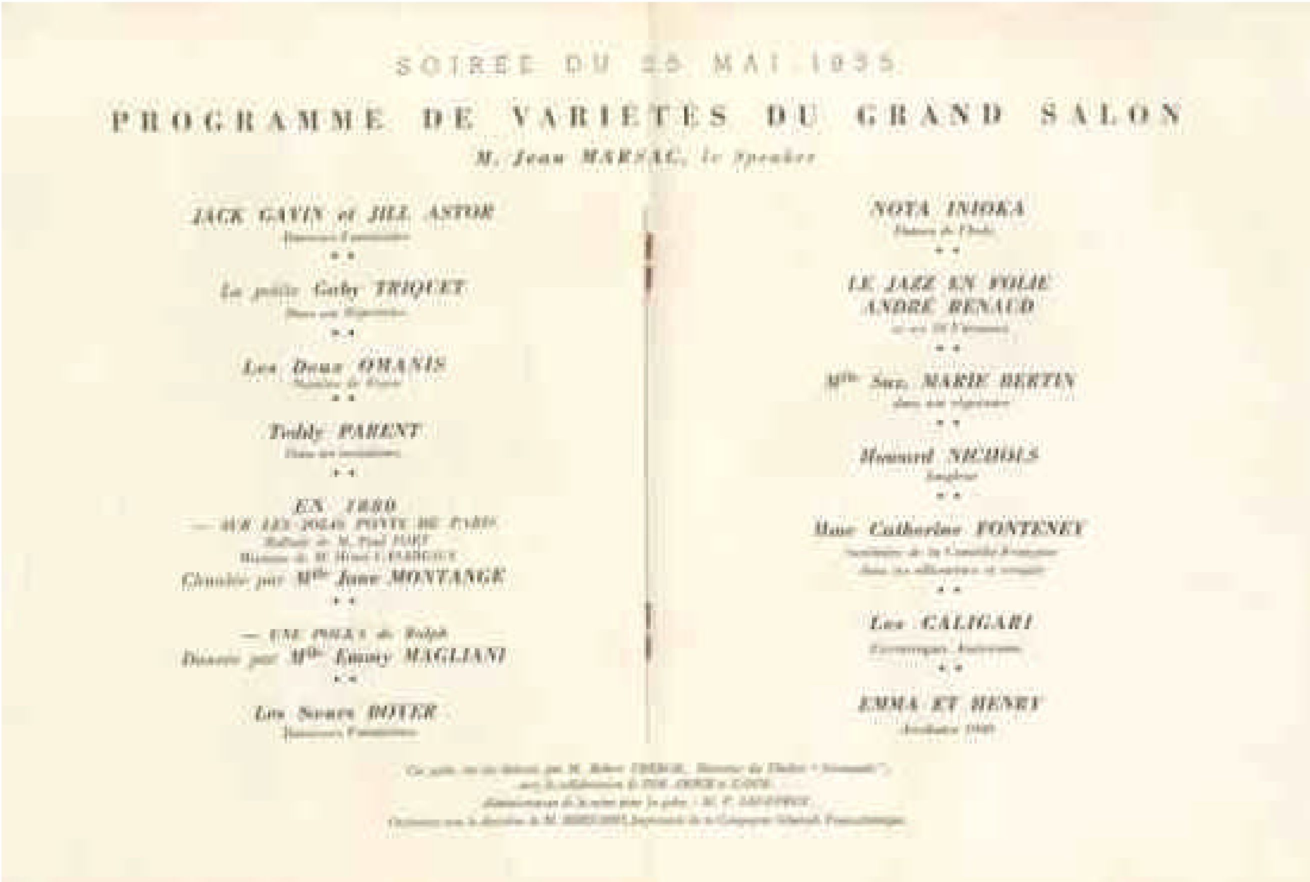
dans leur Répertoire

Après le CONCERT, dans le Grand Salon DANCING

avec l'Orchestre CHRISLERS

After the CONCERT, in the Grand Salon DANCING

with CHRISLERS Orchestra



SOIRÉE DU 25 MAI 1935

PROGRAMME DE VARIÉTÉS DU GRAND SALON

M. Jean MARSAC, le Speaker

JACK GAVIN et JILL ASTOR

La petite Gaby TRIQUET

Les Deux OMANIS

Teddy PARENT

EN 1880

Les Sœurs BOYER

NOTA INIOKA

LE JAZZ EN FOLIE
ANDRÉ RENAUD

Mlle Suz. MARIE BERTIN

Howard NICHOLS

Mme Catherine FONTENEY

Les CALIGARI

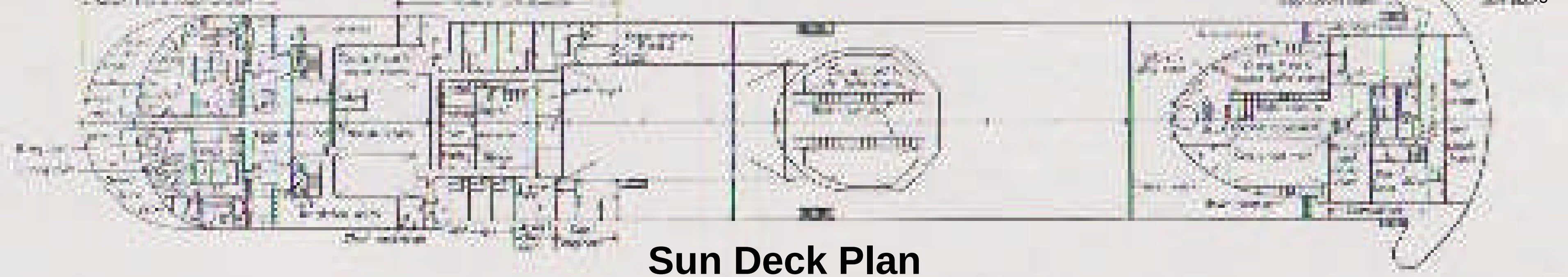
EMMA ET HENRY

Leisure

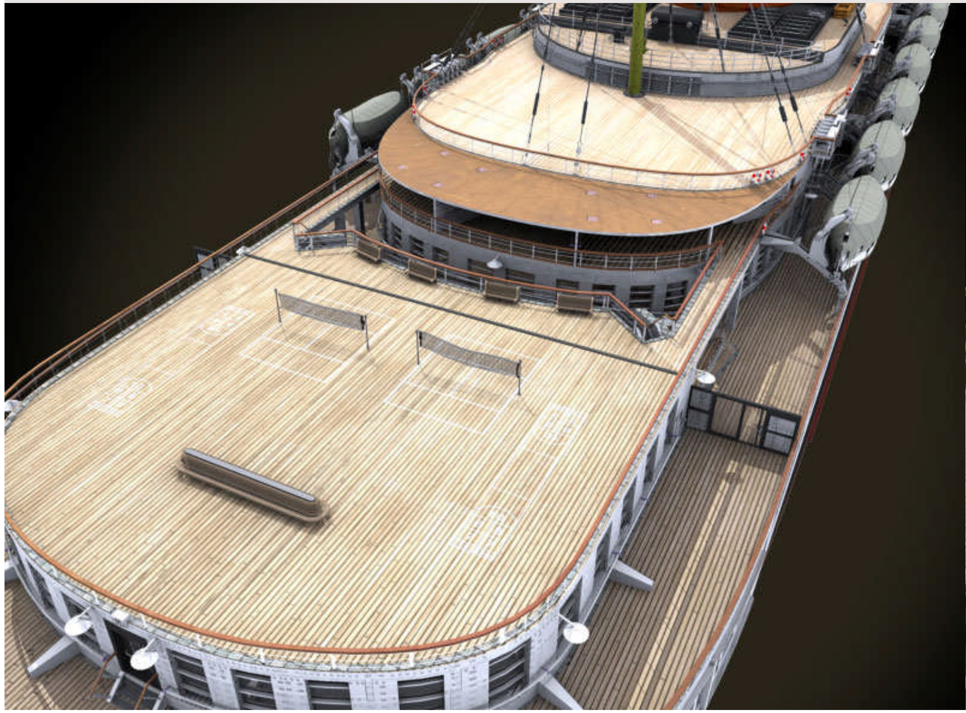
Promenade Deck

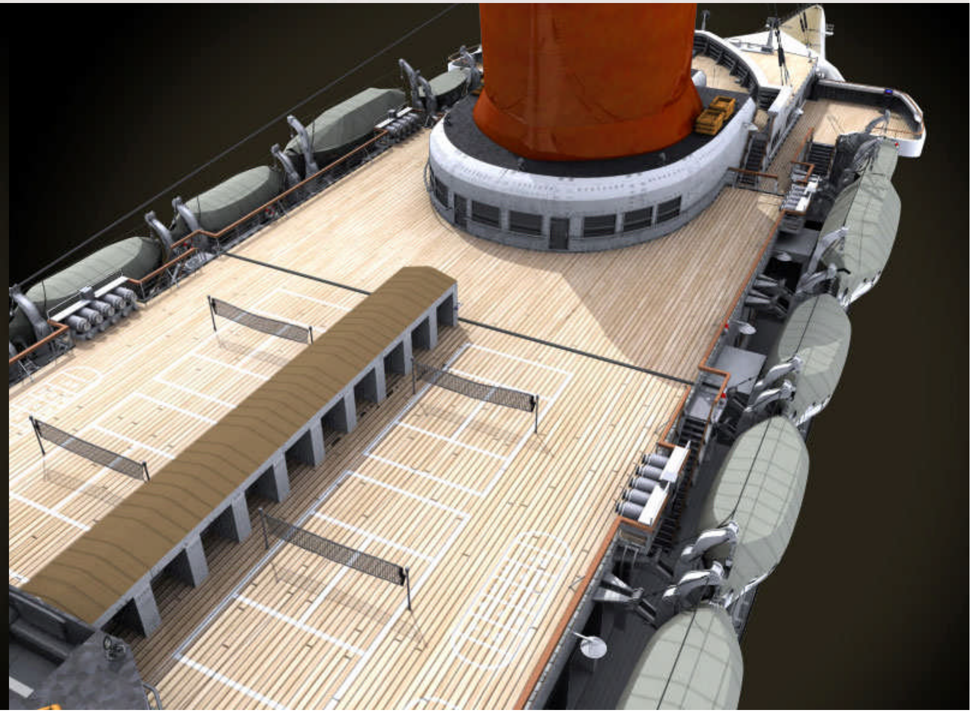

6-8

Sun Deck



Sun Deck Plan





"…the sun deck is large enough to be used as an airplane landing field, measuring 300-feet in length and seventy-five feet in width. It is unobstructed by ship gear and offers sufficient room for almost any outdoor sport…"

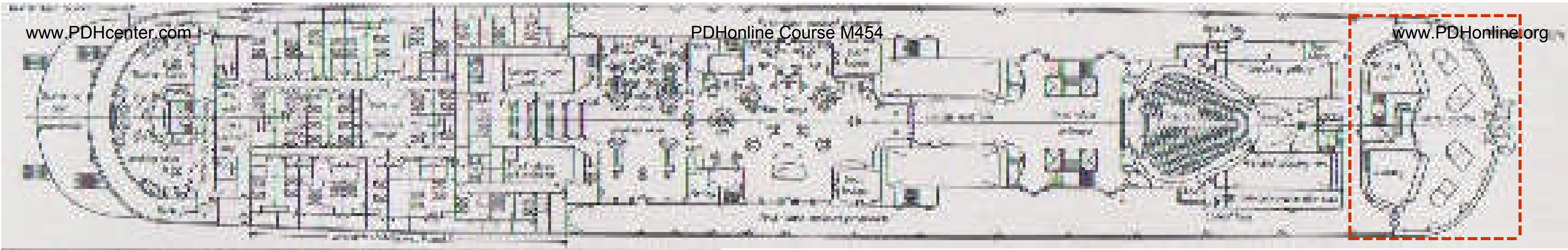
Popular Mechanics, **June 1935**

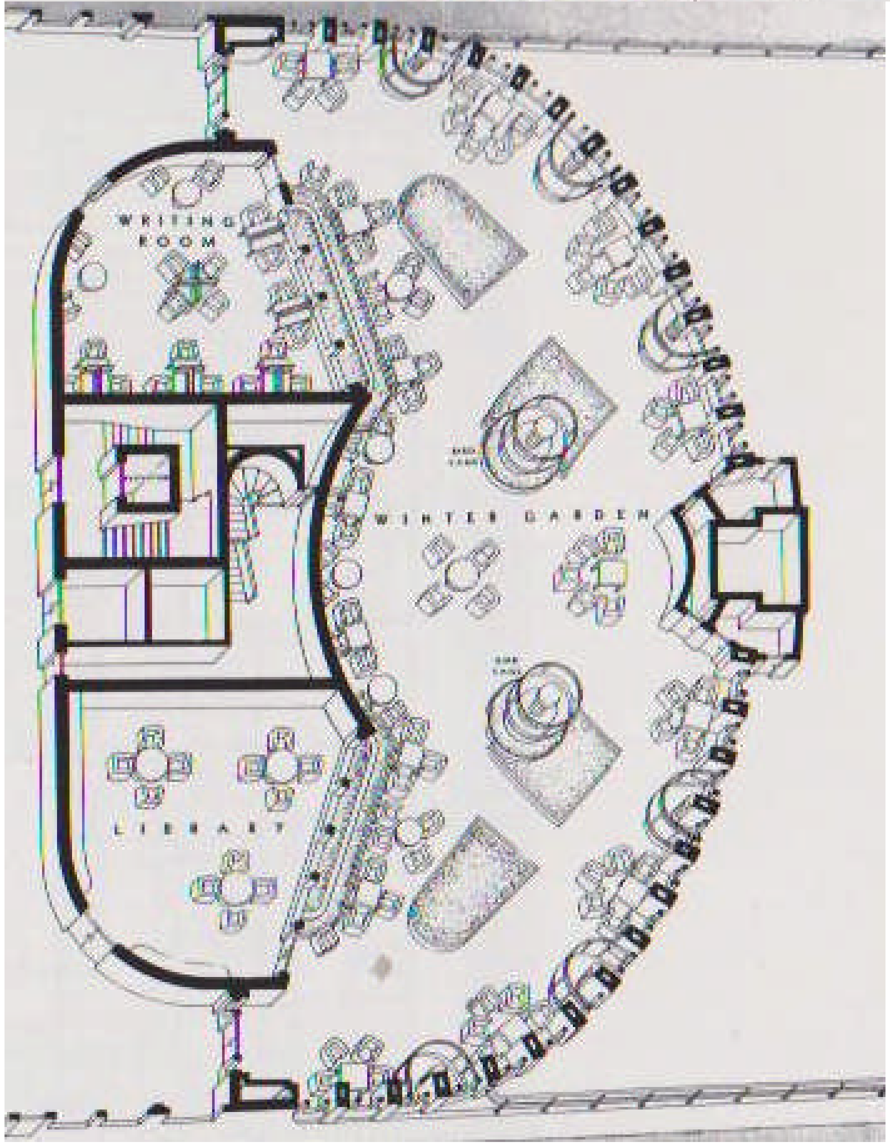
Part 6

Public Spaces

FIRST CLASS

Winter Garden

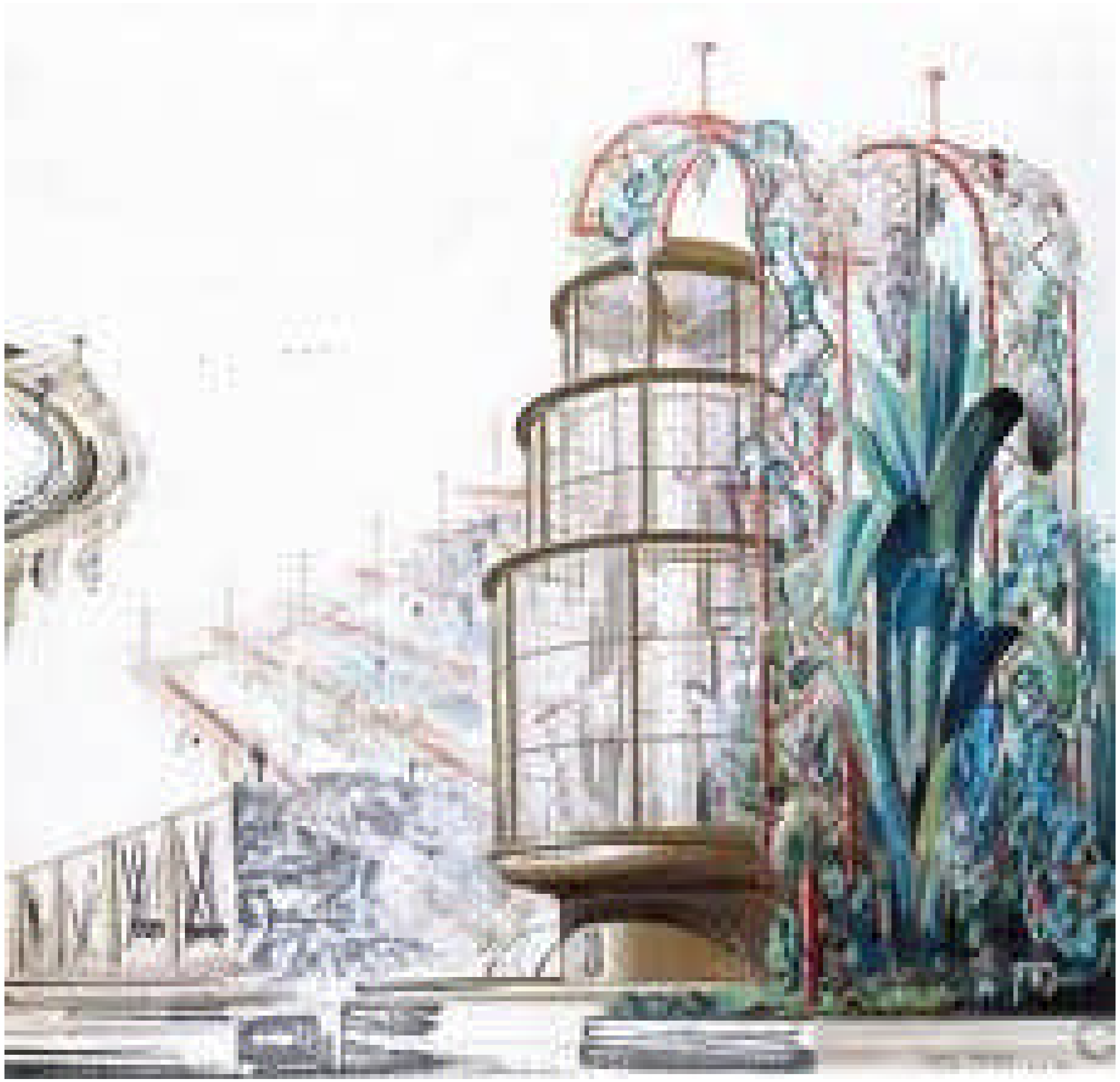


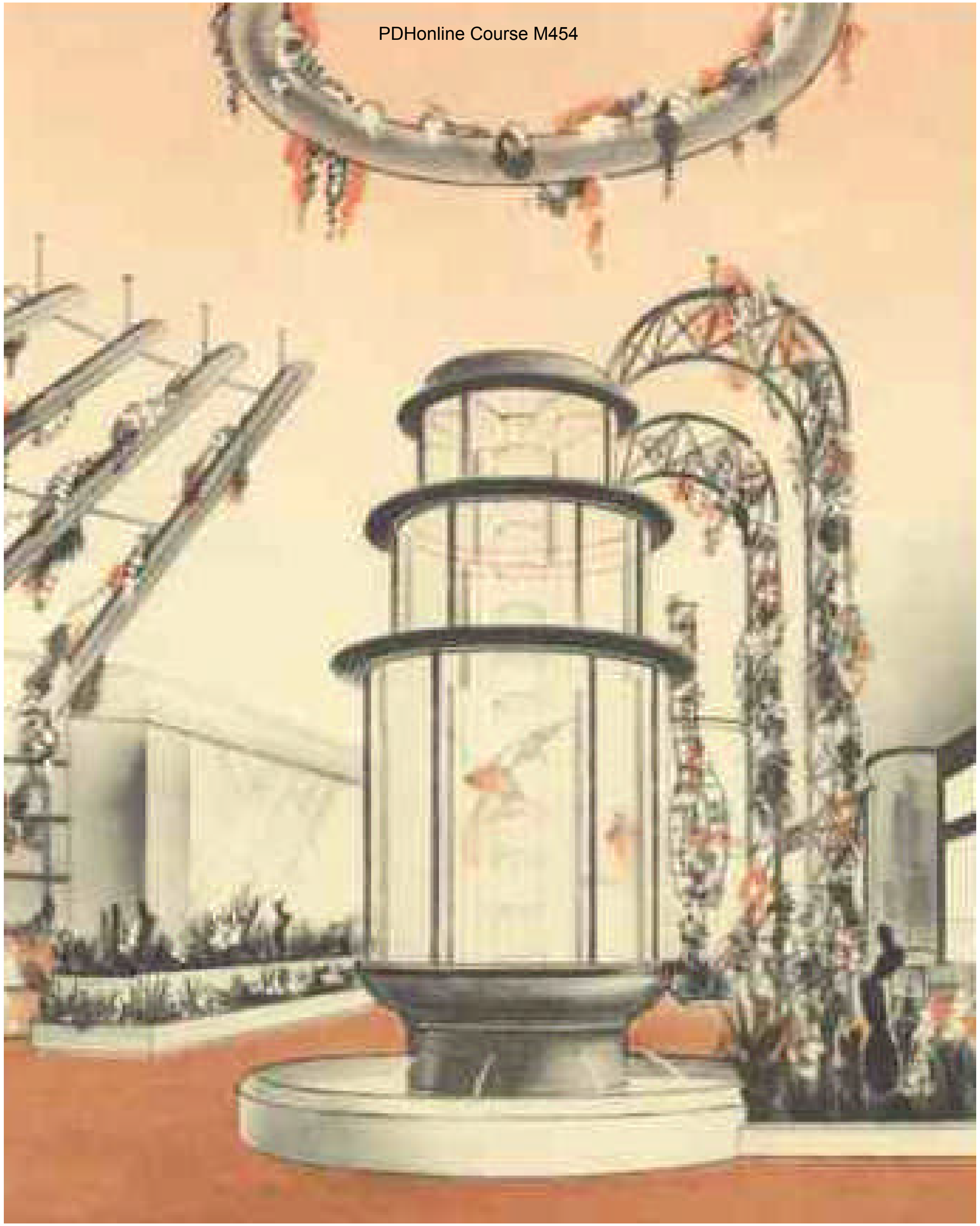


Promenade Deck

At the front of the Promenade Deck was located the *Winter Garden*. At 119-feet wide, it extended the full width of the ship. It featured running fountains, tropical plants, flowers and dozens of exotic birds in crystal and/or bronze cages designed by *Emille Jacques Ruhlman* – the leading French art-deco designer of the era.

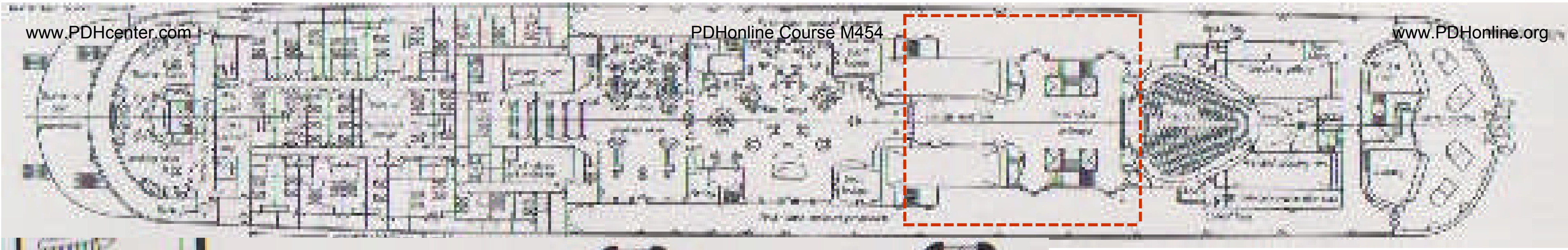
(model)

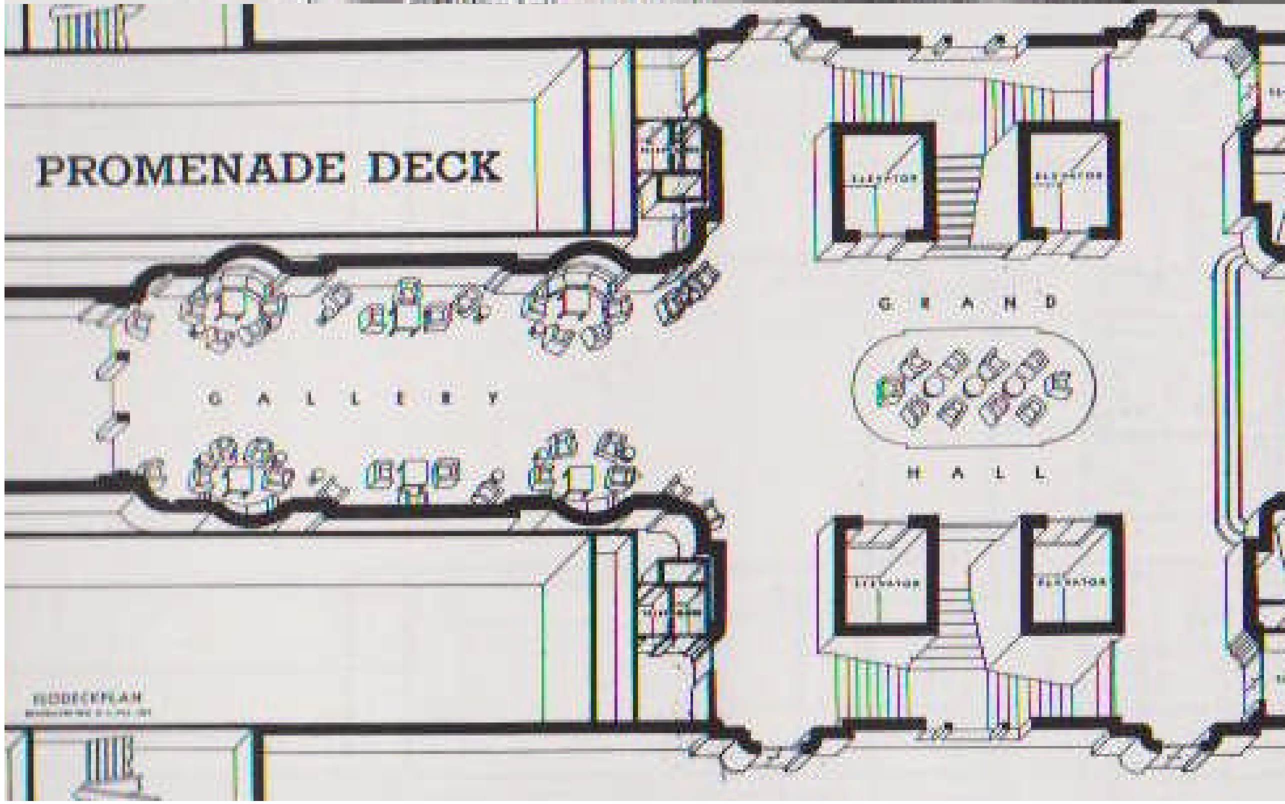




Winter Garden
(model)

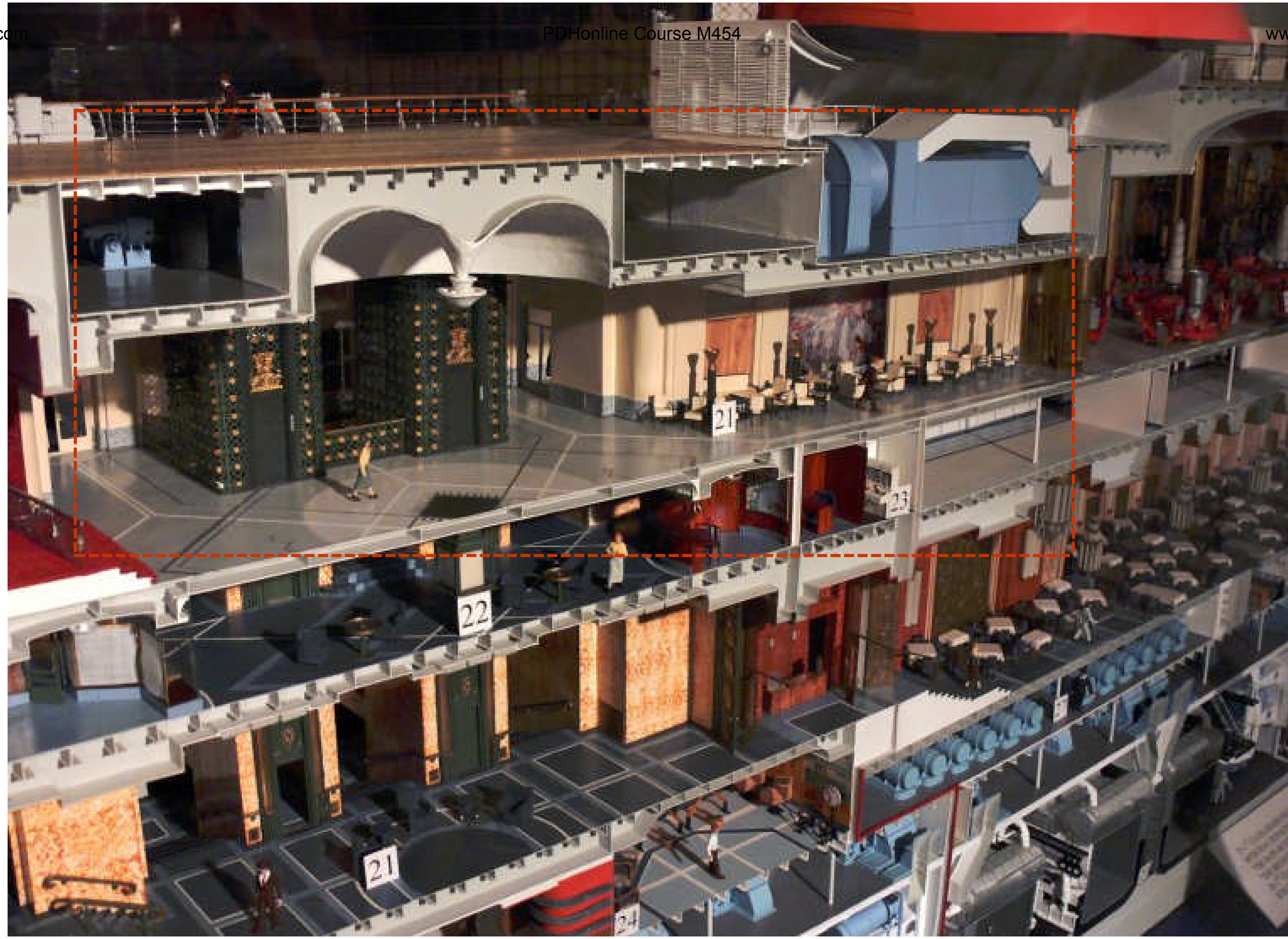
Grand Hall/Foyer & Gallery





Promenade Deck Plan

"…The Grand Foyer is ninety-five feet long and three stories high and from it, elevators will carry passengers to any one of the ship's eleven decks…"
***Popular Mechanics,* June 1935**



Sectional View of the Grand Hall/Foyer & Gallery
(model)

Sectional View of Grand Hall/Foyer
(model)

Sectional View of Grand Hall/Foyer & Gallery
(model)

View towards the *Normandie Theatre* entry
(from the Grand Hall/Foyer)

View from Grand Hall/Foyer looking aft
(through Gallery to Grand Salon beyond)

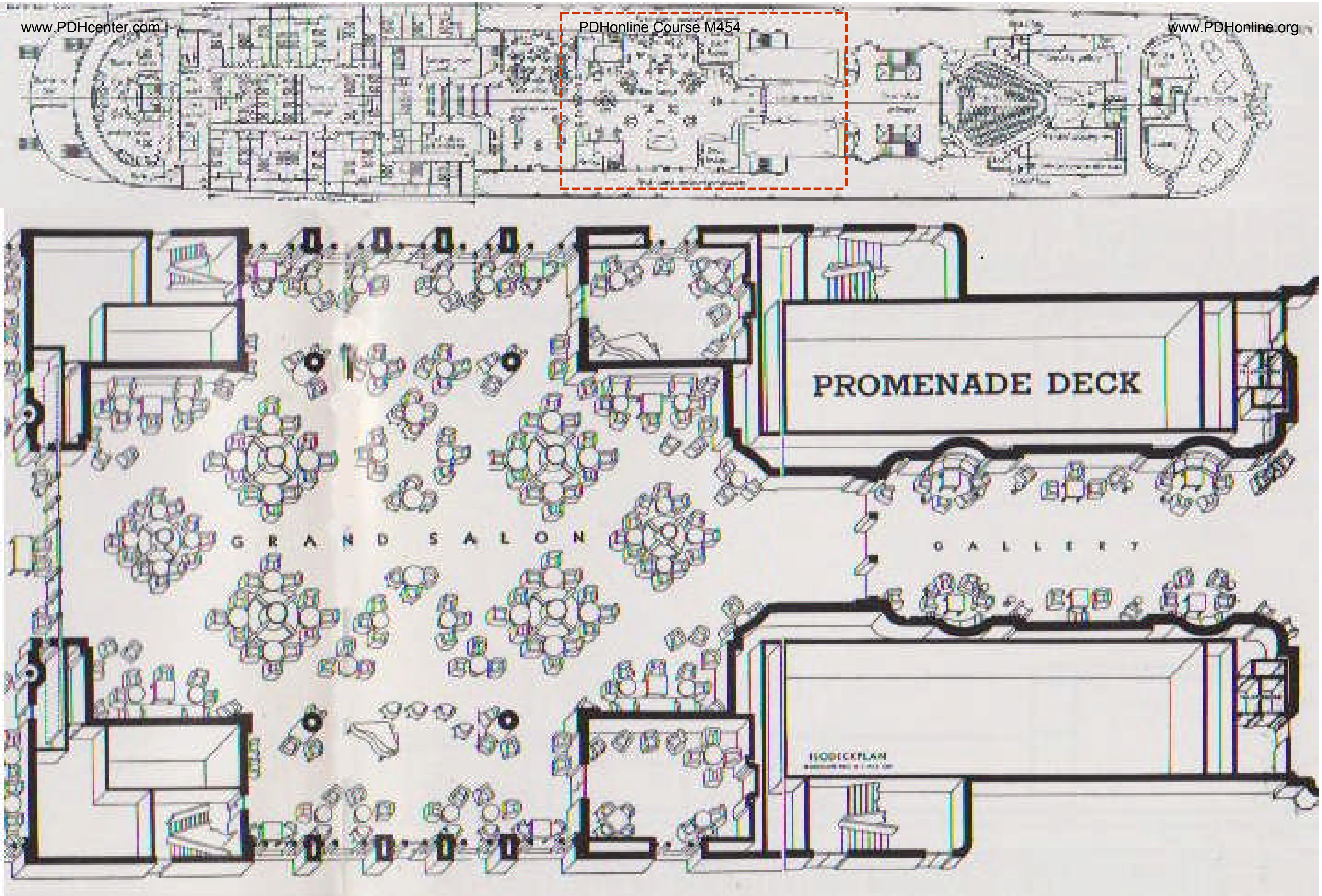
View from Gallery looking aft towards Grand Salon

Elevator in Grand Hall/Foyer
(model)

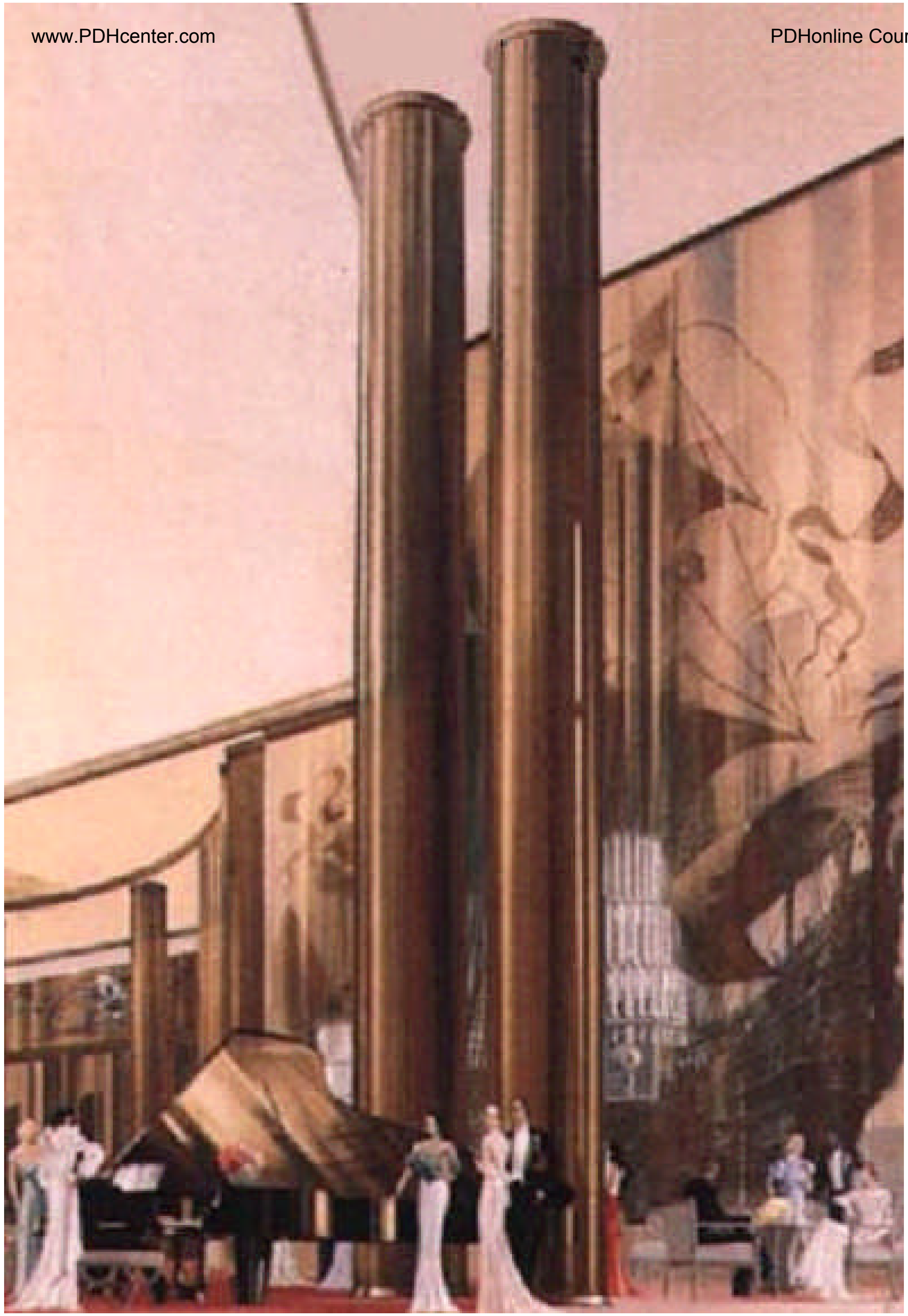
Grand Hall/Foyer
(model)

Gallery (right)
(model)

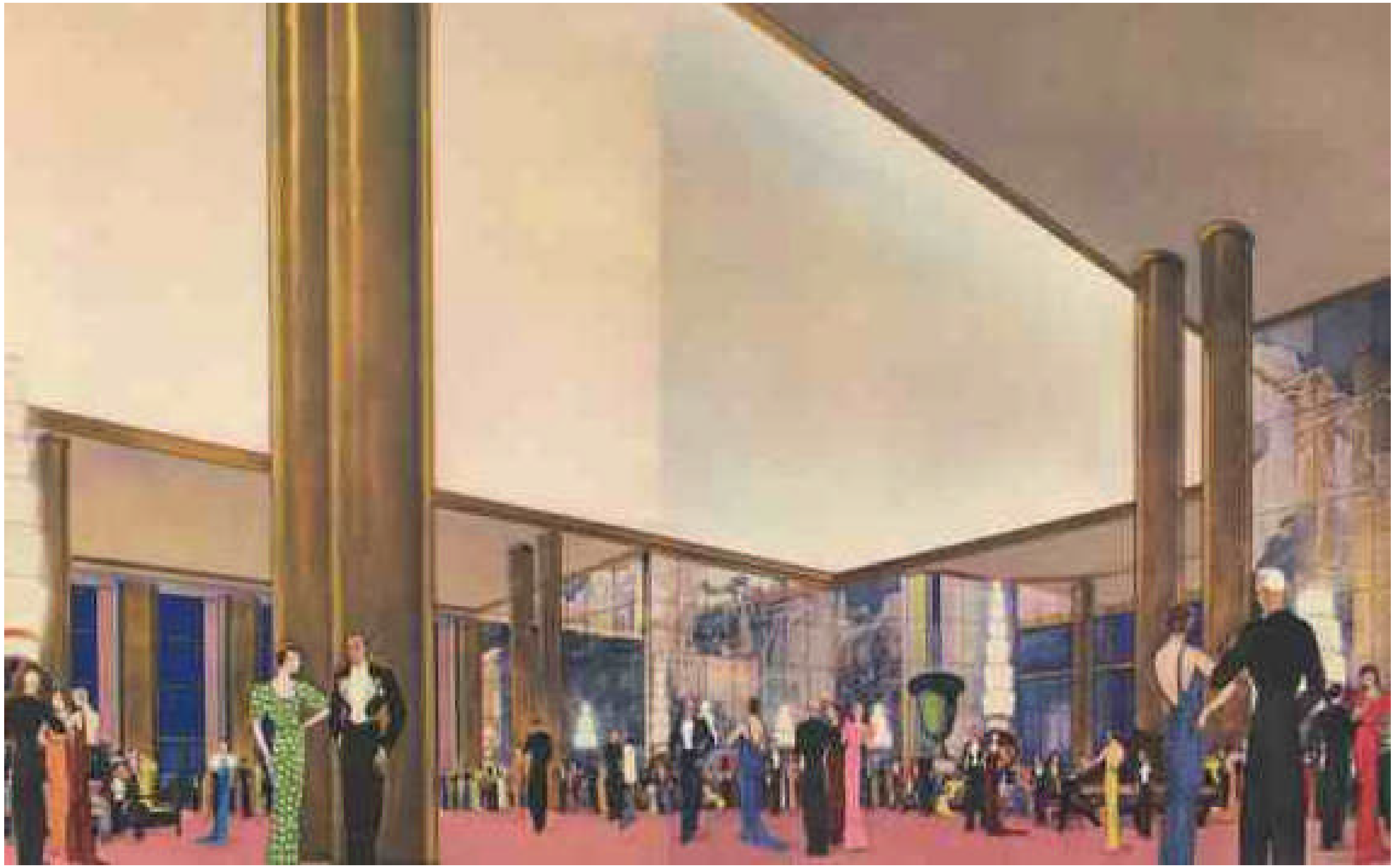
Grand Salon


PROMENADE DECK
GRAND SALON
GALLERY
ISODECKPLAN

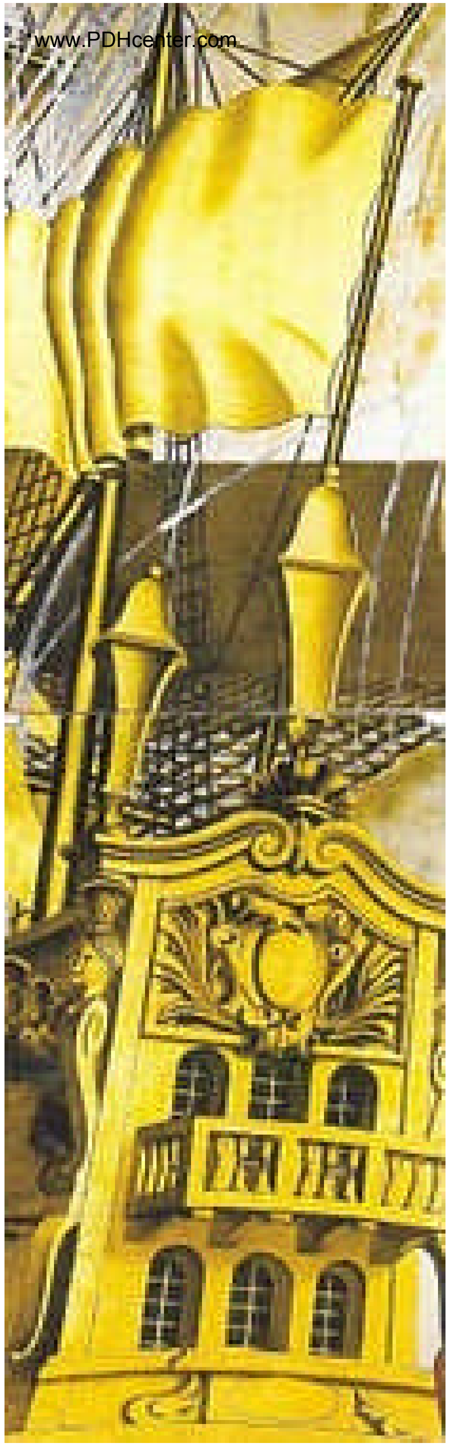
Sectional View of Grand Salon
(Main Dining Room below)
(model)



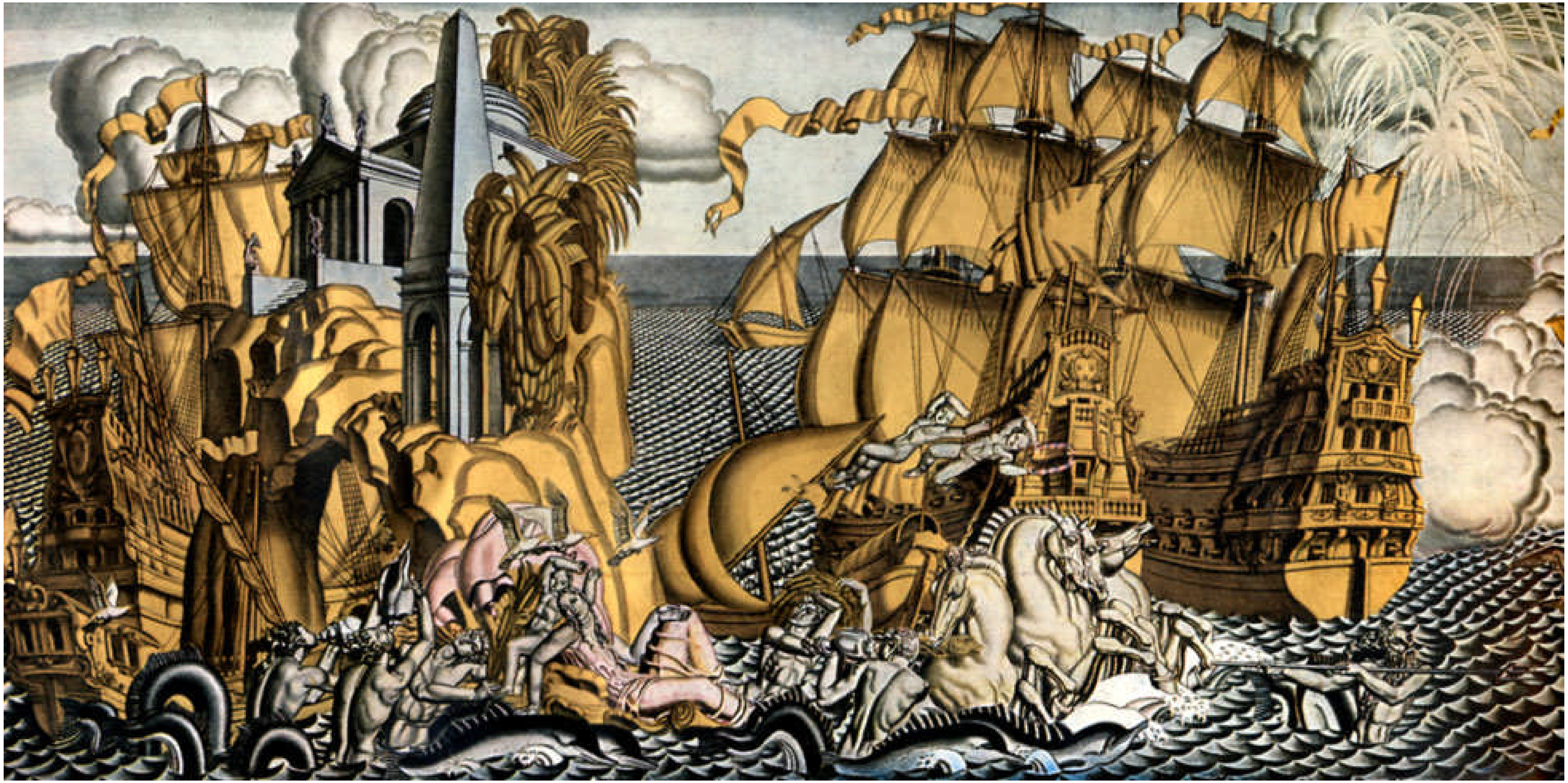
Normandie **was designed and built to be a first-class ship serving the upper strata of society in both Europe and America. Fully three-quarters of the ship was devoted to serving the needs of her first-class passengers. For the traveler of lesser means, the ship could be intimidating and/or overwhelming. At 85-feet by 110-feet (with a thirty-foot high ceiling), the *Grand Salon* (a.k.a. *First Class Lounge*) could be very intimidating to the less well-heeled traveler.**

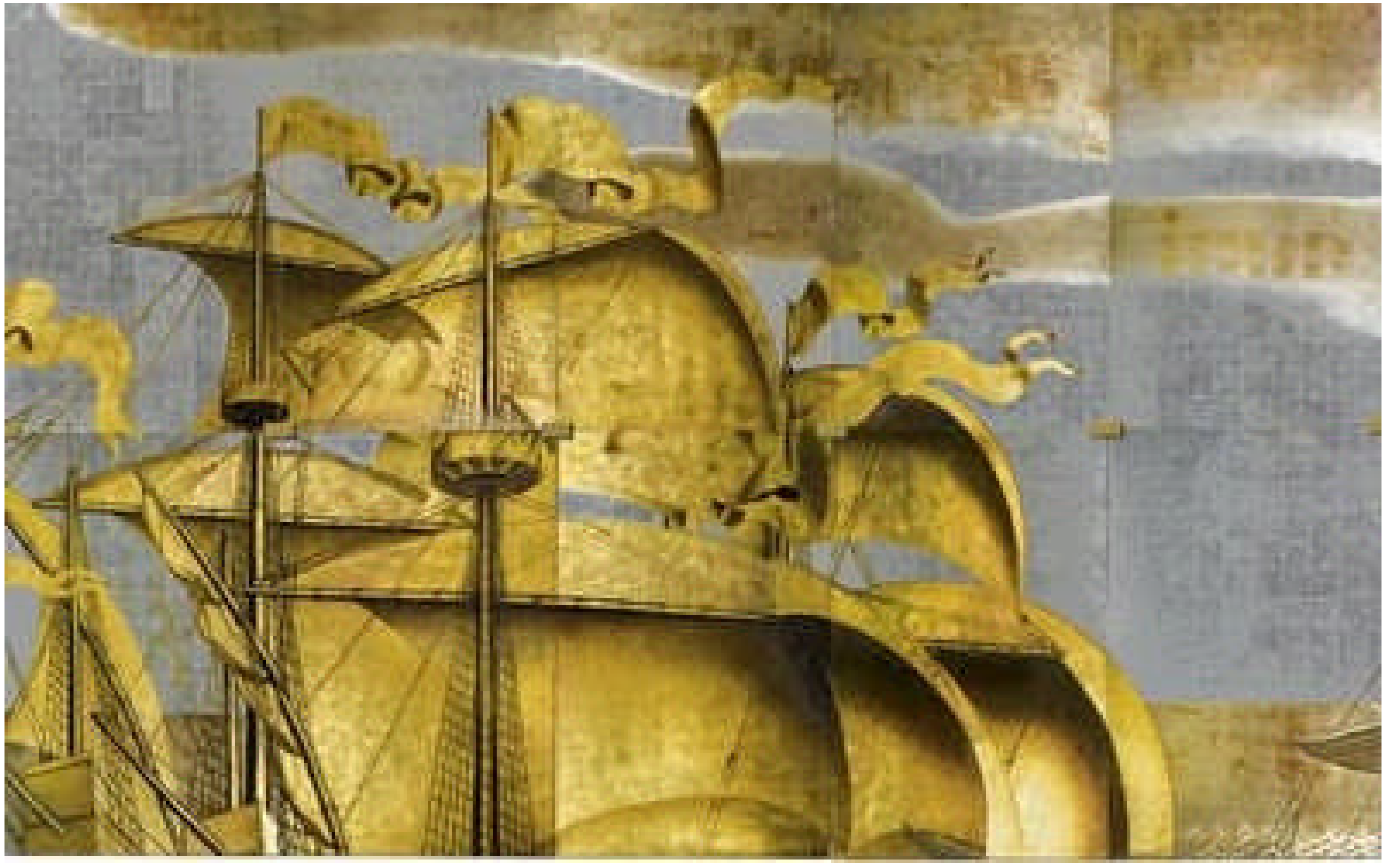


“Chariot of Aurora”
(wall mural above entry doors)



At the center of the *Grand Salon* was a parquet floor which was a duplicate of the one to be found in the throne room of the *Fountainbleu Palace*. *Rene Lalique* – the famed glass designer, created four light stands to frame the space at its four corners and *Jean Dupas* covered the walls with glass panels featuring gold, silver and platinum filigree. The theme of the panels was *History of Navigation and Ocean Folklore.*

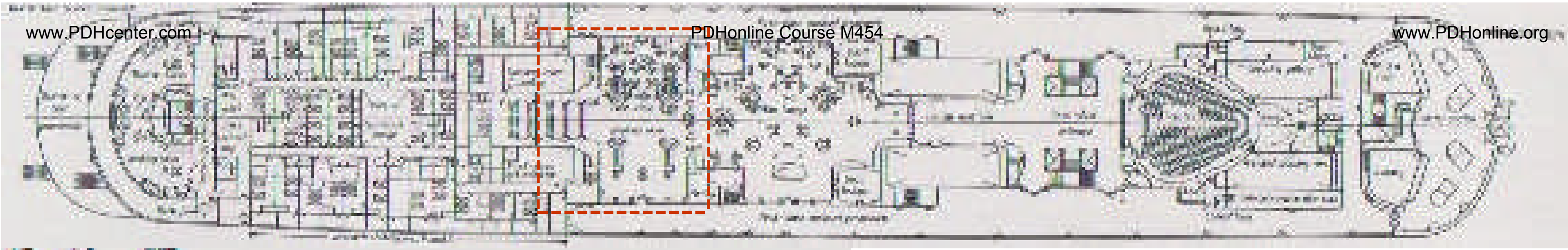


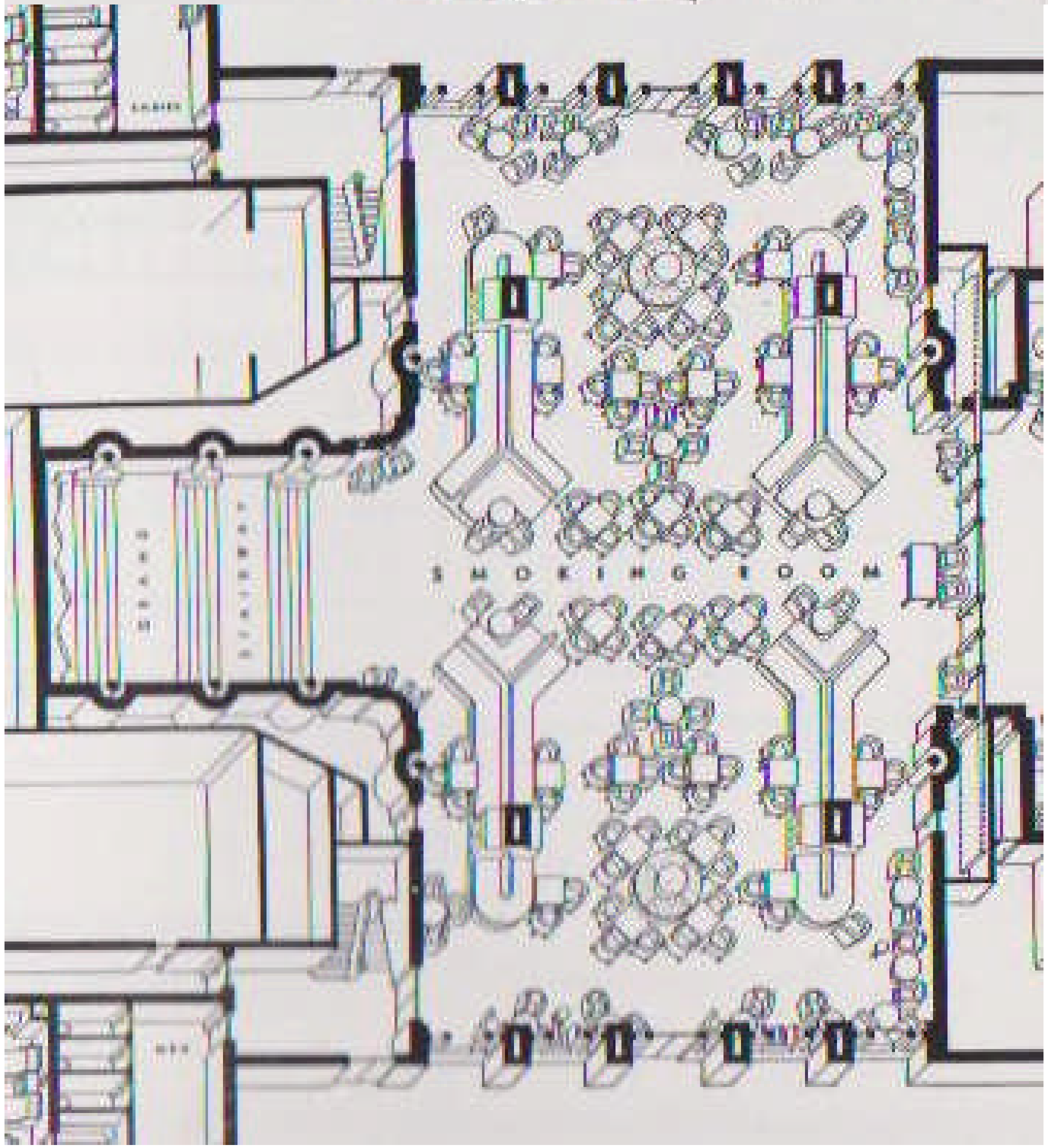


Private Salon

Ladies Salon

Smoking Room

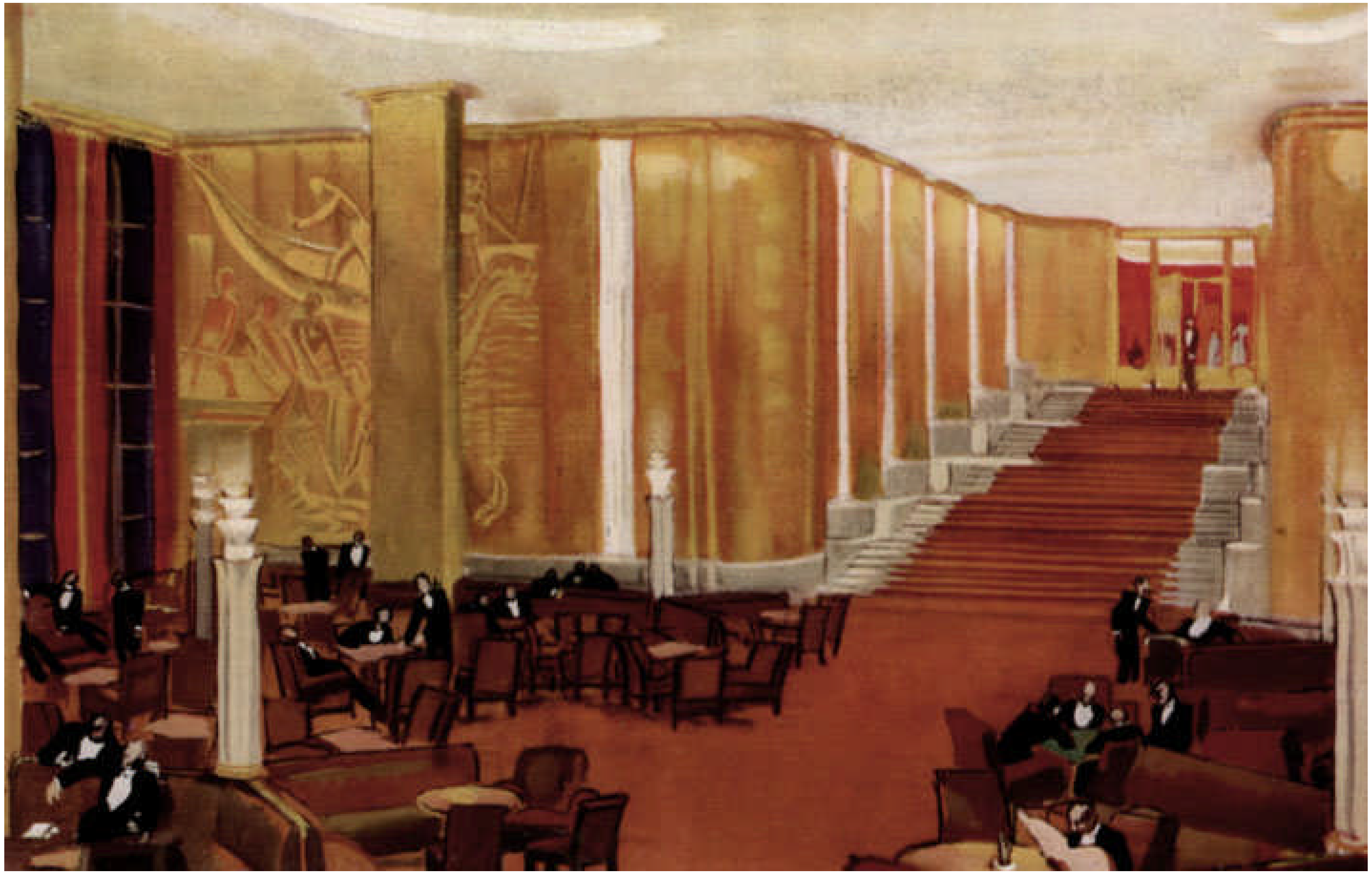


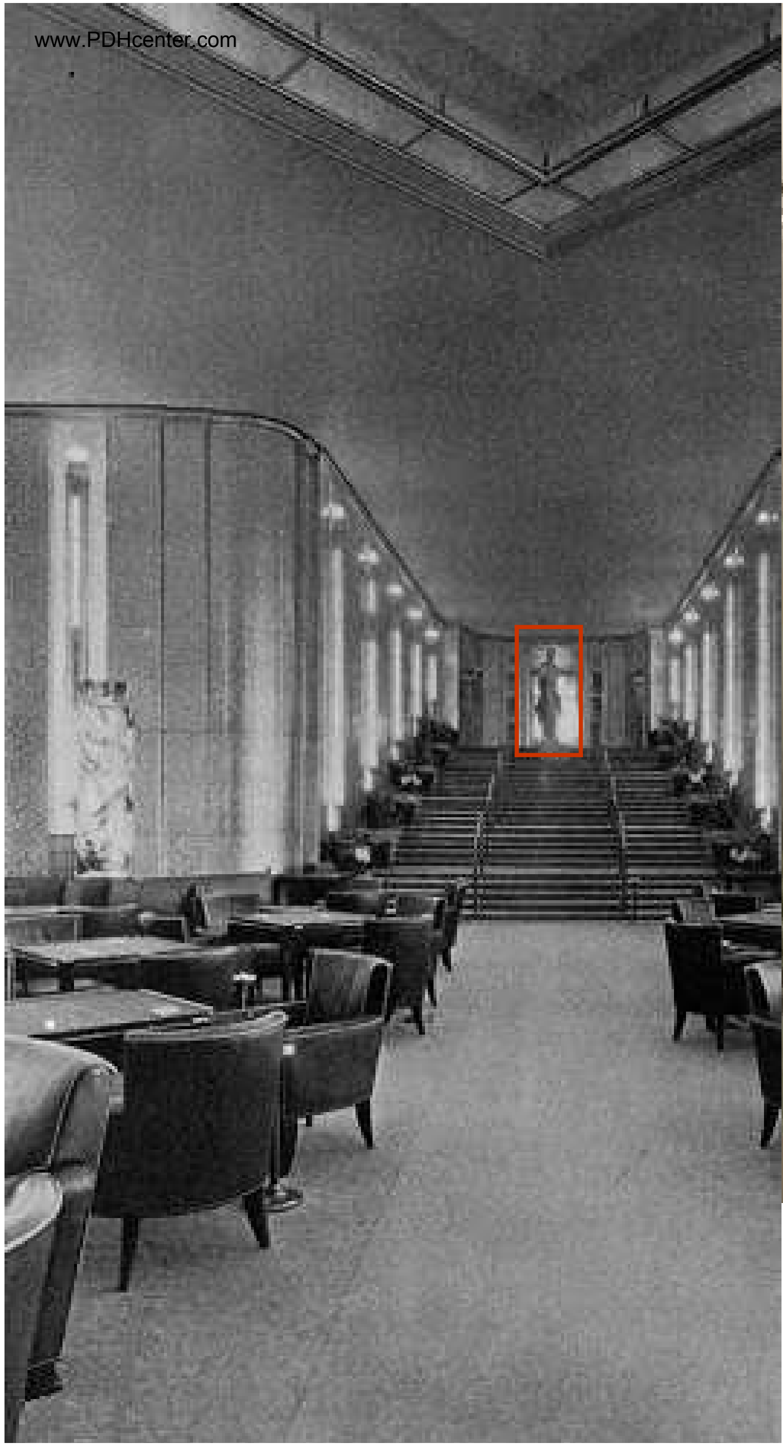


Promenade Deck

Like all transatlantic liners of the era, *Normandie* featured a first-class *Smoking Room* which was a private male preserve. After-dinner card games and expensive cigars enjoyed in comfortable leather chairs gave the room the feeling of an exclusive men's club. The shear dimensions of the room: 85-feet wide by 55-feet long, added to the mystique. Like the Main Dining Room, the Smoking Room featured a tall (eight-feet) statue entitled: *La Normandie* (at the top of the *Grand Stairway*). It was done in gilt bronze and portrayed a peasant woman of Normandy province.

Sectional View of the Smoking Room's *Grand Stairway* (model)

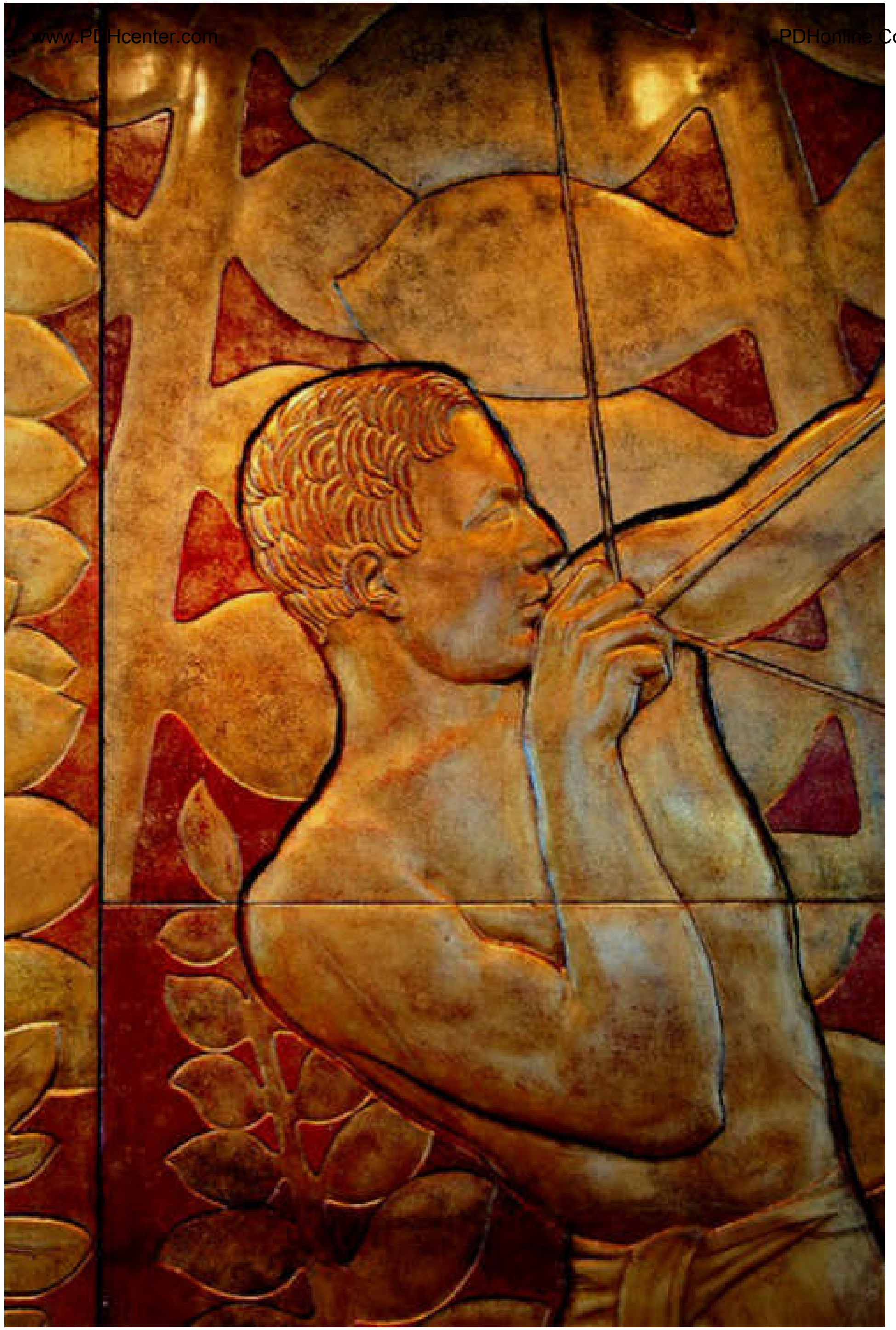




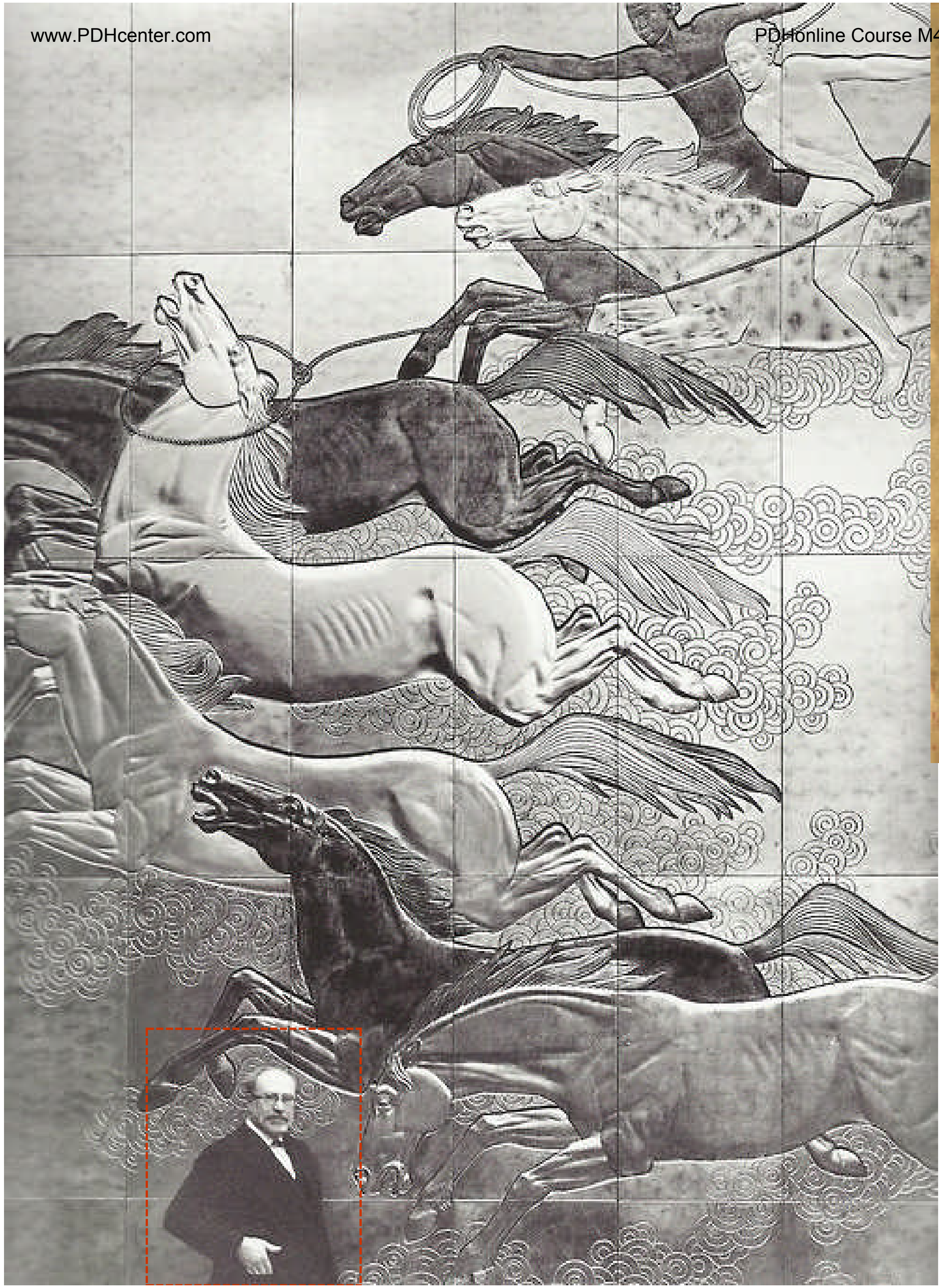
“La Normandie”

Normandie **was not meant to be simply a utilitarian means of transporting her luxury-minded passengers from one side of the pond to the other. She was also meant to put on display the best France had to offer the world; interior design in particular. To this end, *Jean Dunand* designed a series of beautifully crafted lacquer wall panels for the Smoking Room (with its male clientele in mind). The panels celebrated "The Games and Pleasures of Humanity." In general, they celebrated sport but also included individual panels celebrating hunting and fishing, equestrian pastimes, dance and vineyard cultivation.**

Four lacquer panels by *Jean Dunand* for *Normandie's* Smoking Room entitled "La Chasse" (Hunting).

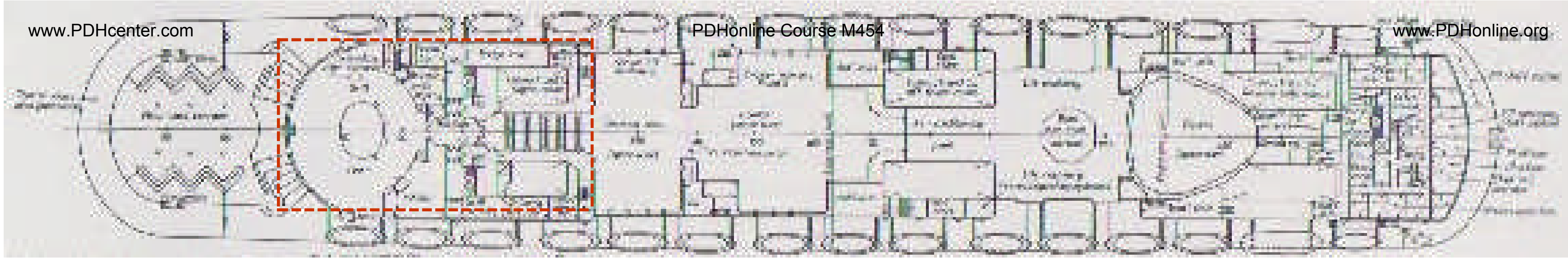


Detail from “La Chasse”

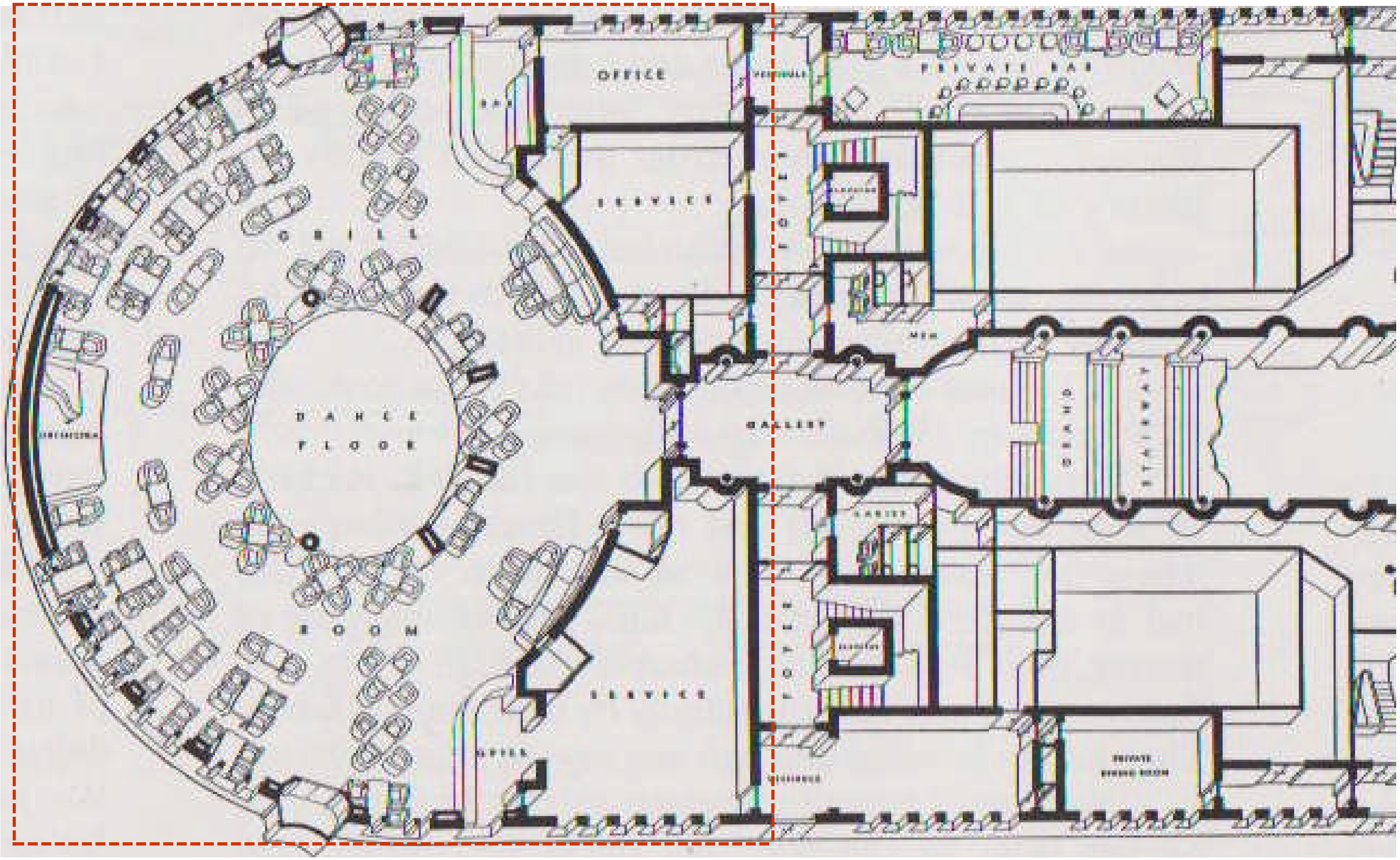


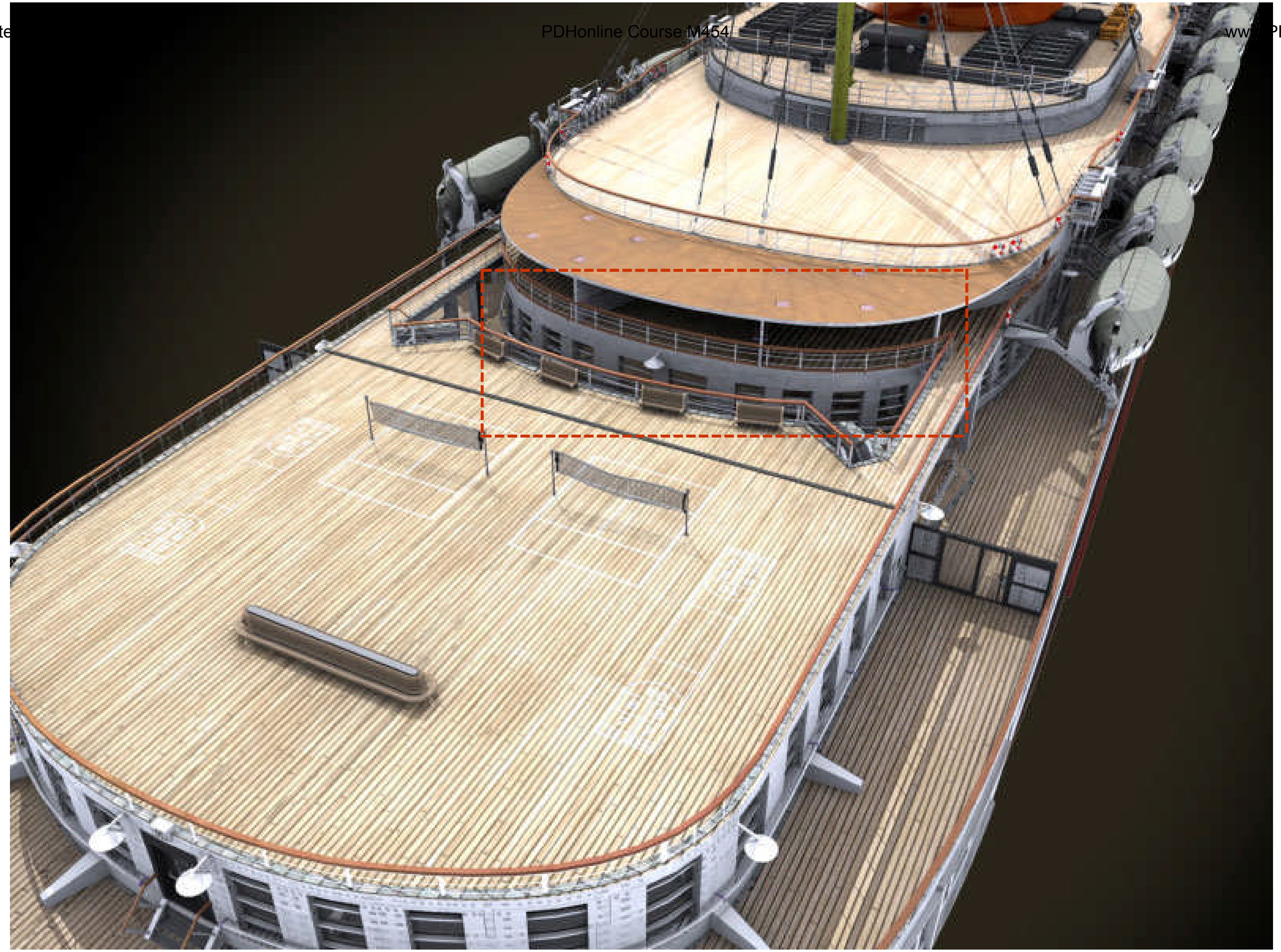
Swiss artist *Jean Dunand* (left) stands in front of the lacquer panel he created for the Smoking Room entitled *"Conquest of the Horse."*

Grill Room

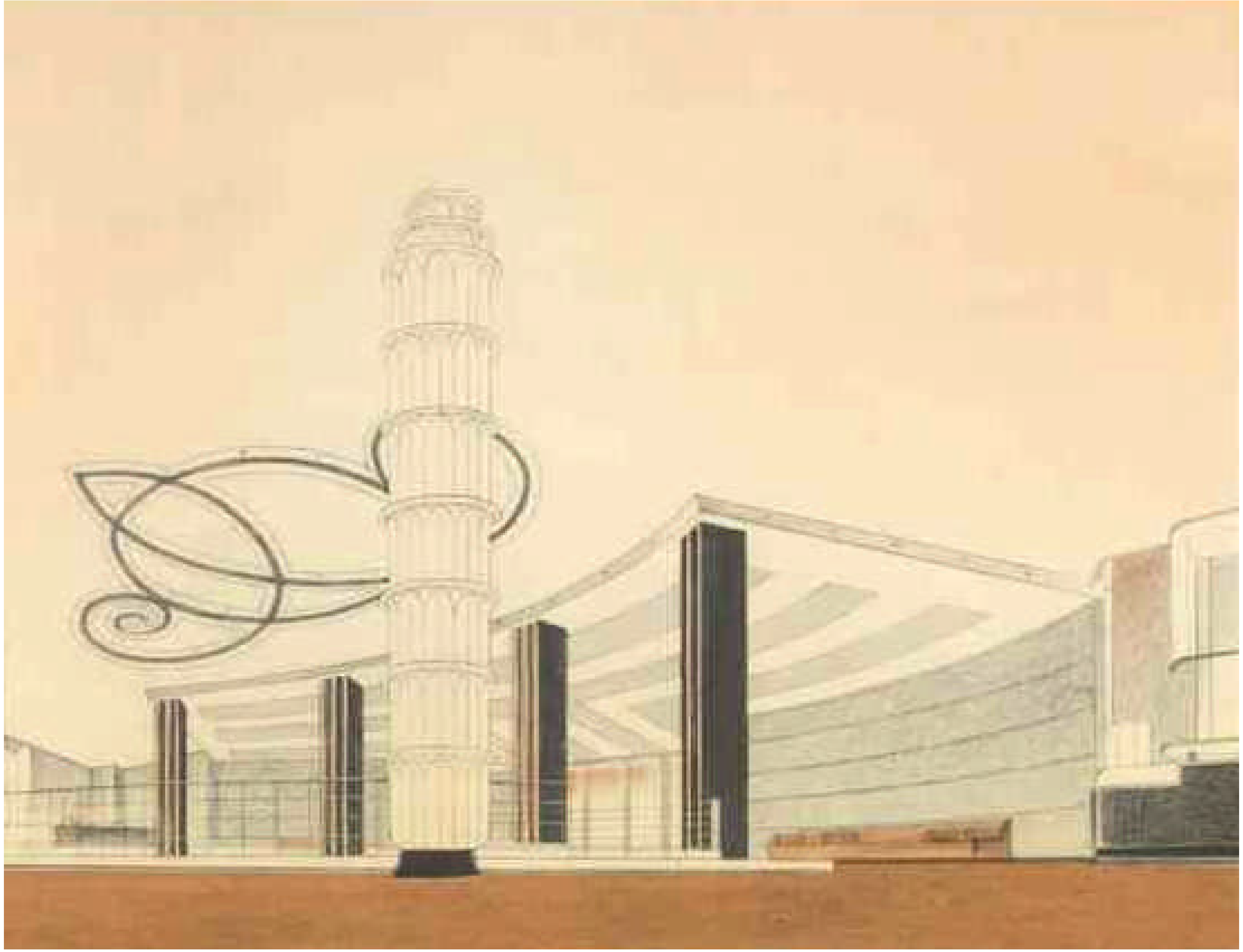


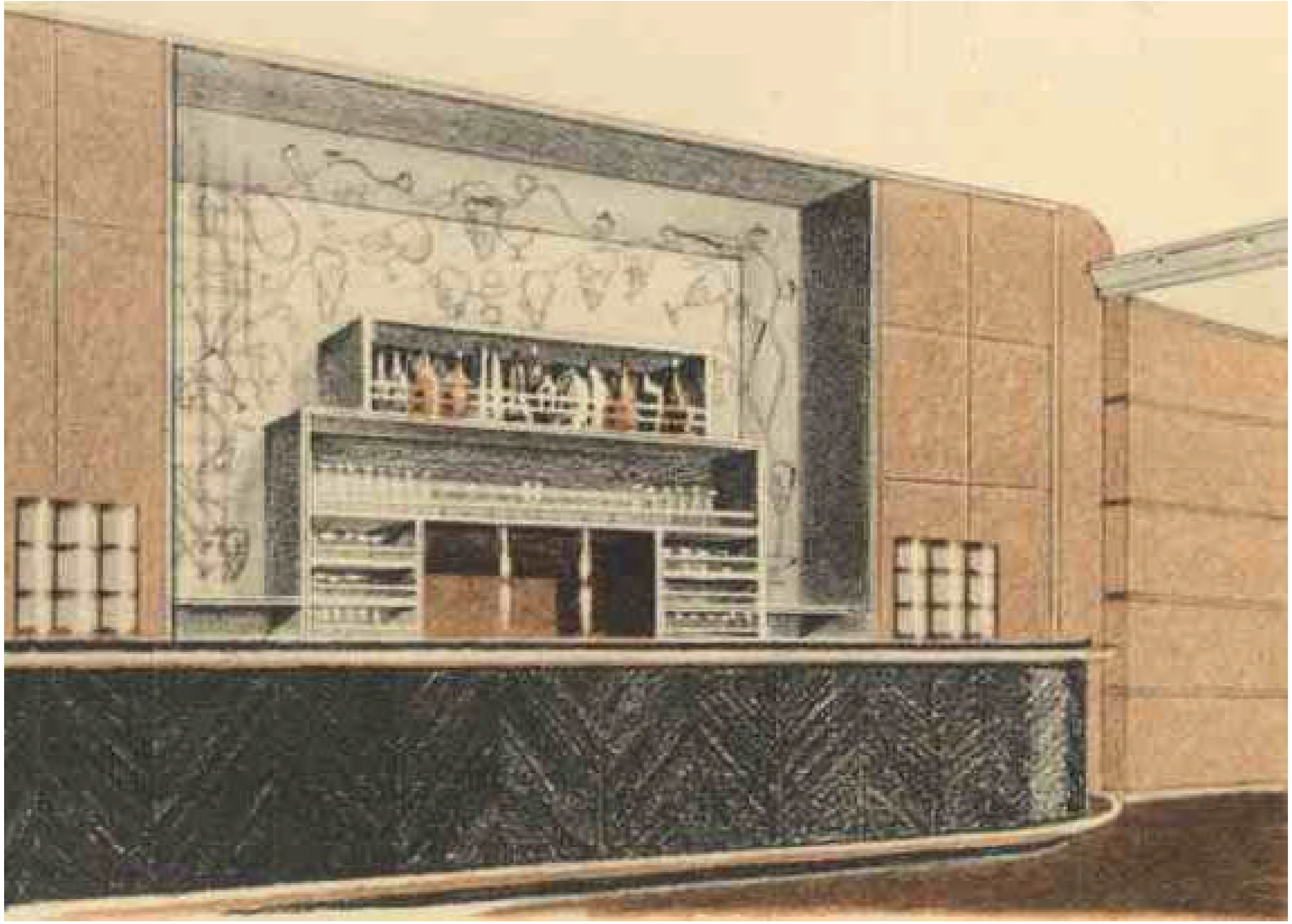
Boat Deck

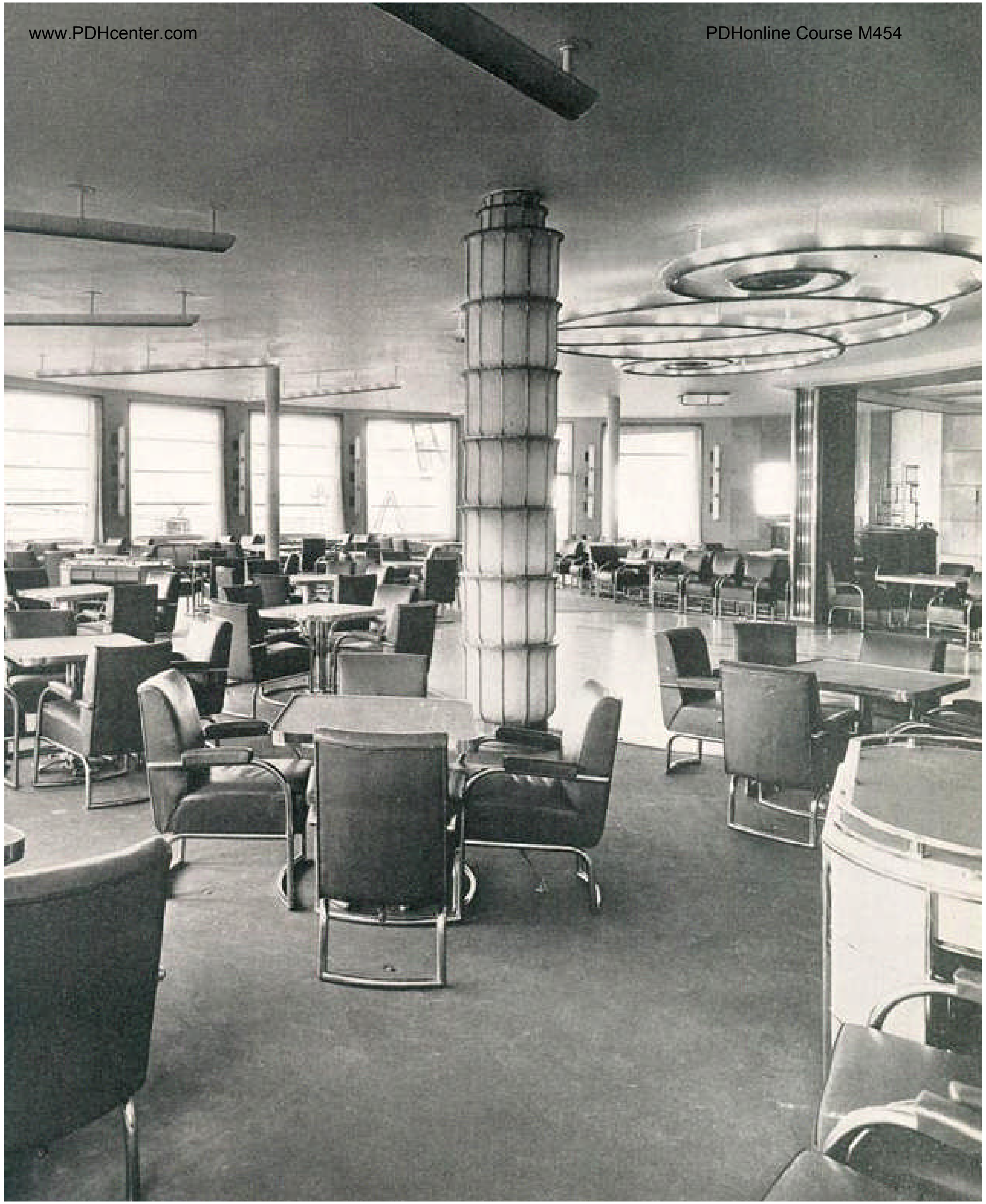

OFFICE
PRIVATE BAR
SERVICE
FOYER
GRILL
DANCE FLOOR
ROOM
GALLERY
GRAND STAIRWAY
SERVICE
FOYER



(model)

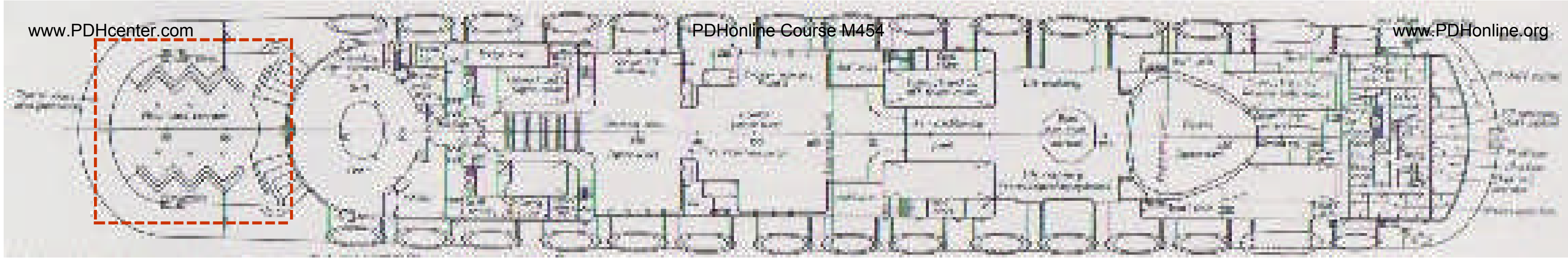


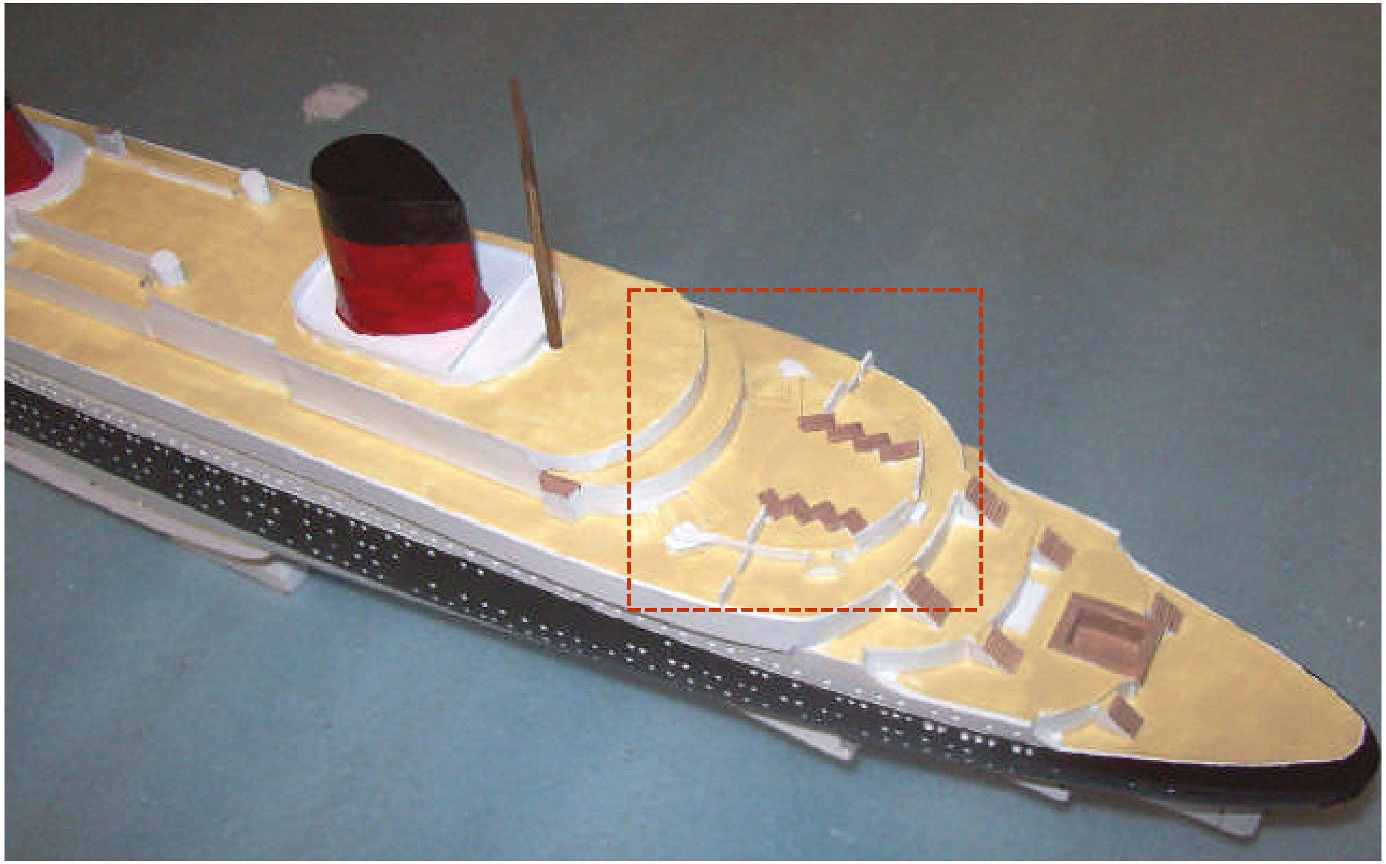




Sunlit by day and softly illuminated at night, the Boat Deck's *Grill Room* (a.k.a. *Cafe Grill*) was very popular with passengers as an after theater/evening entertainment venue. It featured an *A La Carte* restaurant (by day) and nightclub/bar (by night) and was open 'til the wee hours of the morning. It opened on June 1st 1935 (during the maiden voyage)

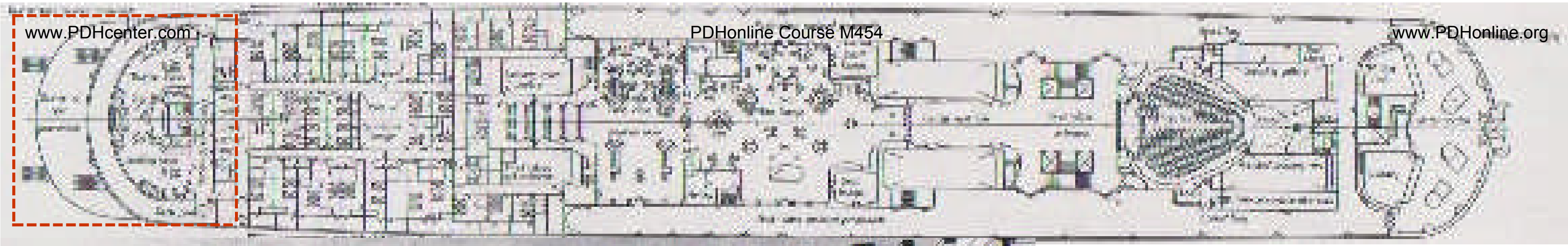
Beach Deck
(a.k.a. First Class Terrace)

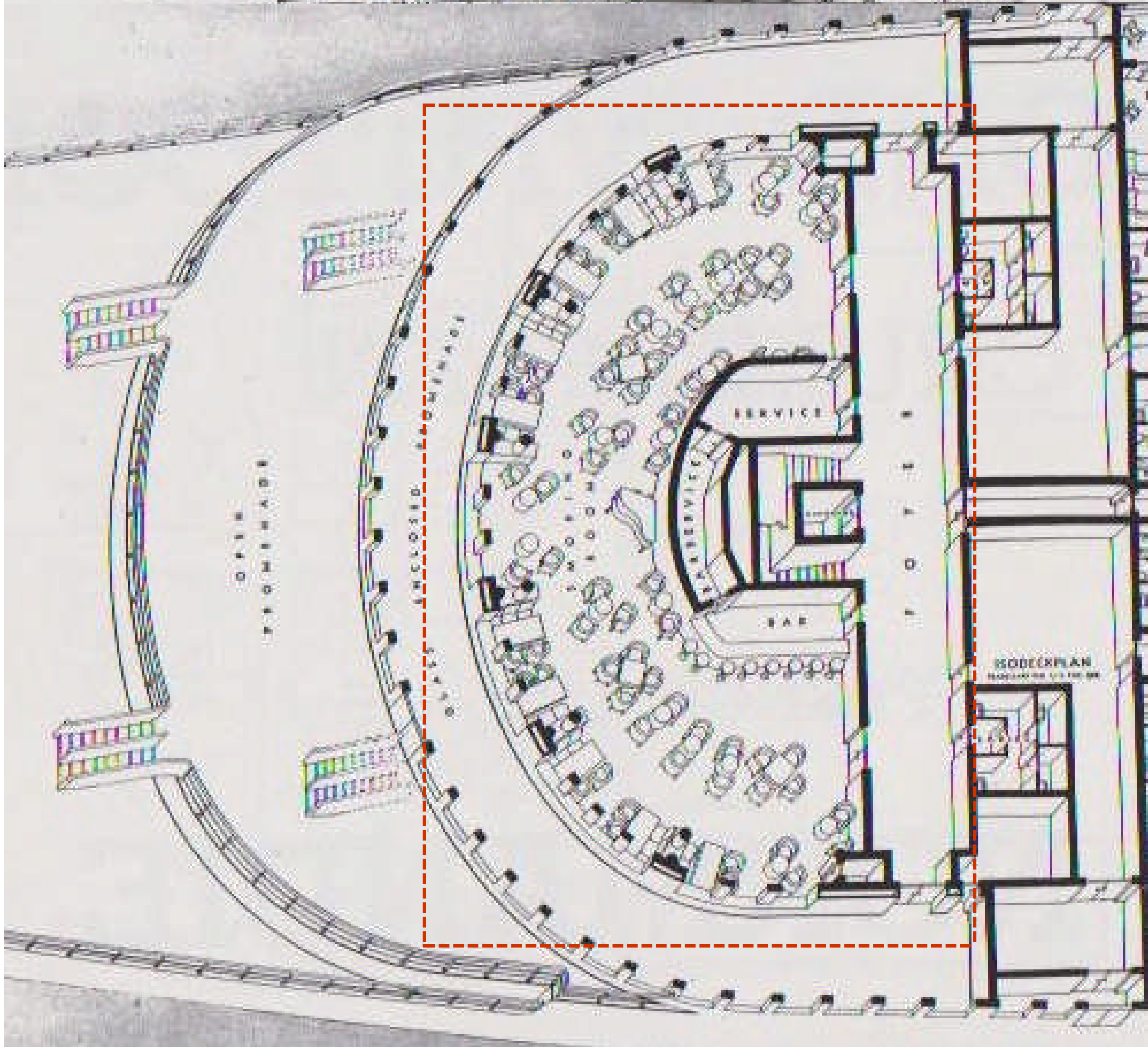




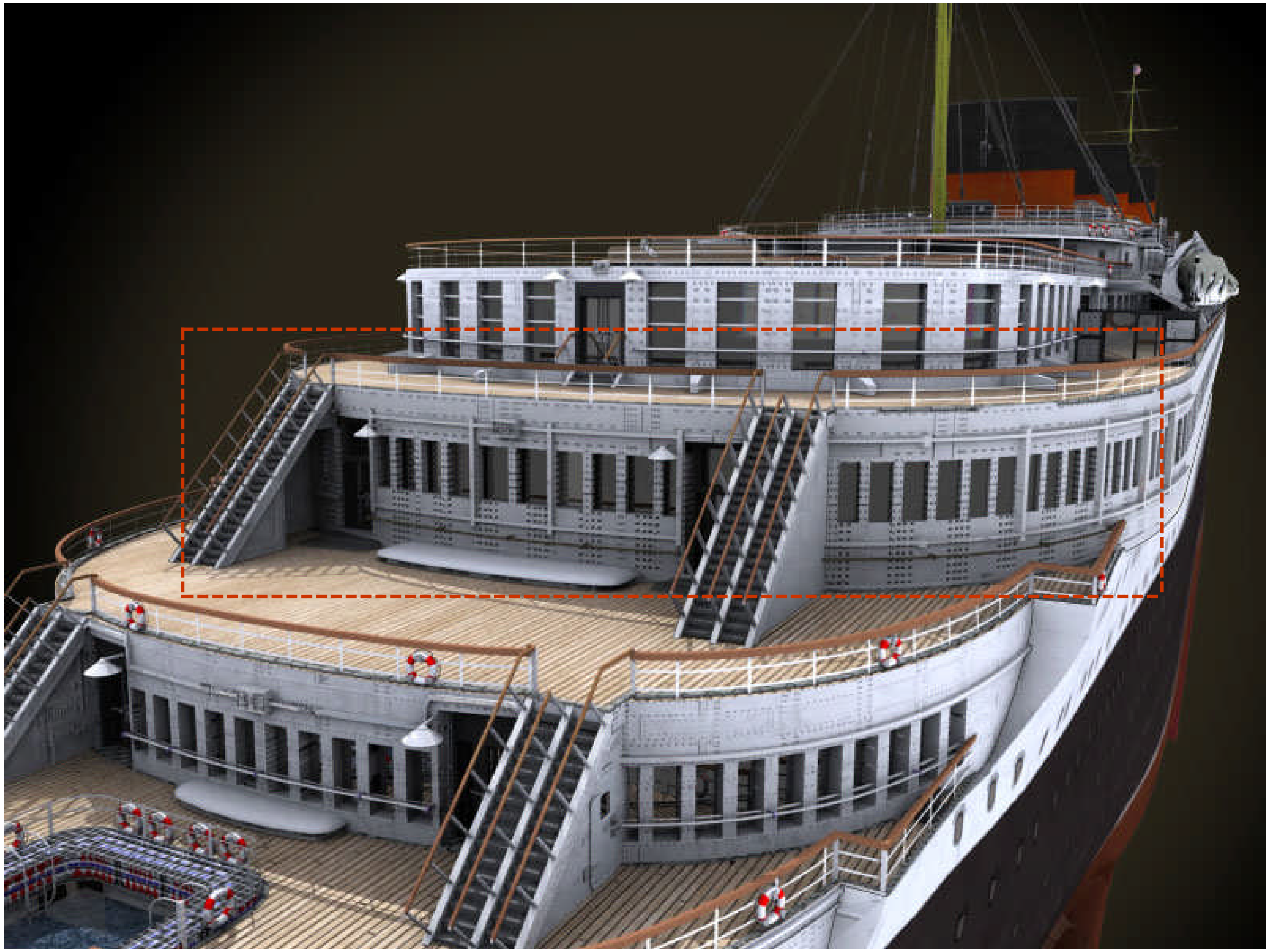
(model)

Aft Smoking Room/Bar



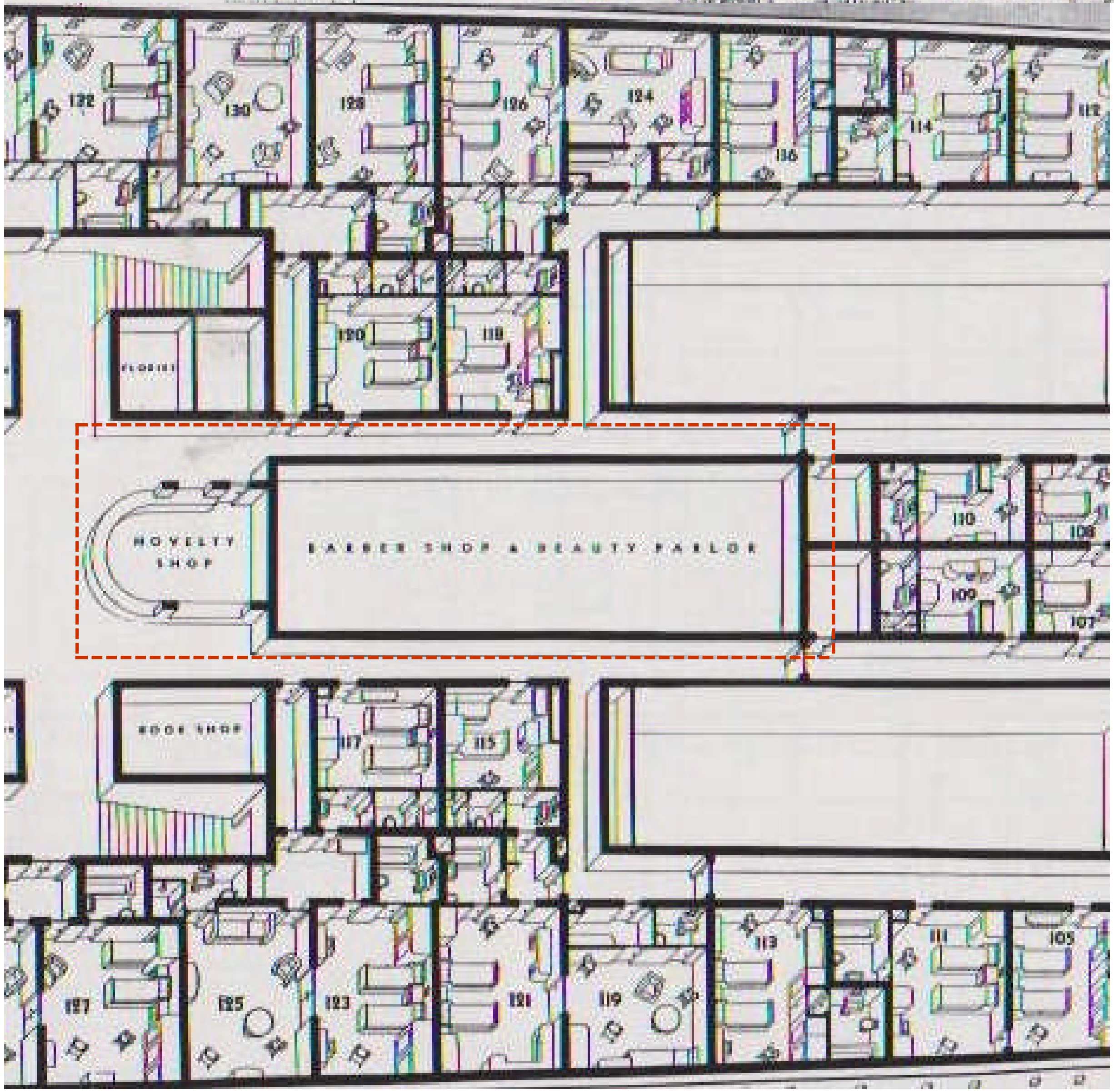


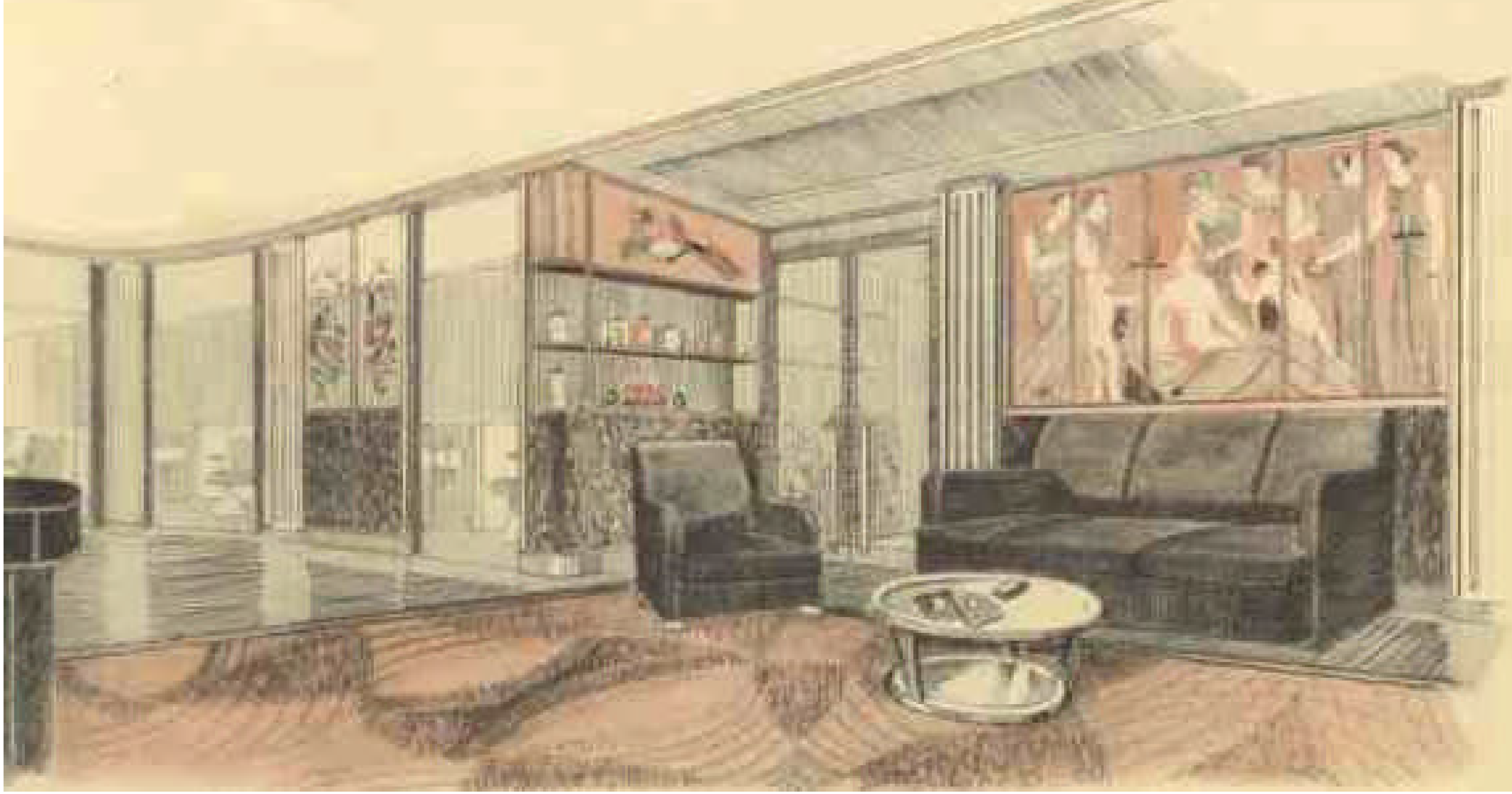
Promenade Deck Level



Hairdressing Salon and Novelty Shop

Main Deck Plan

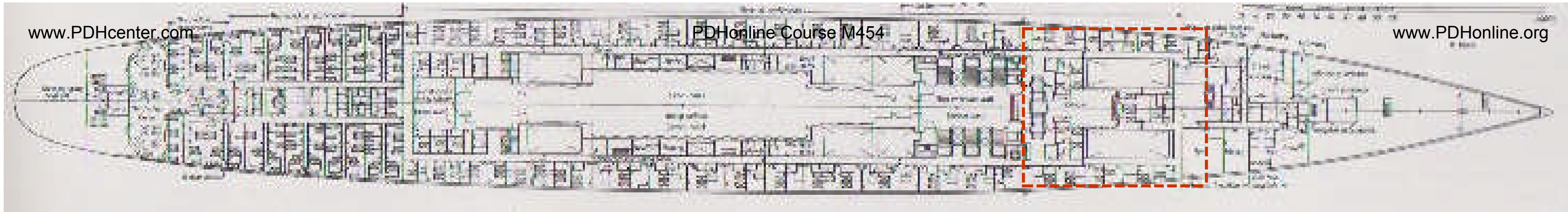


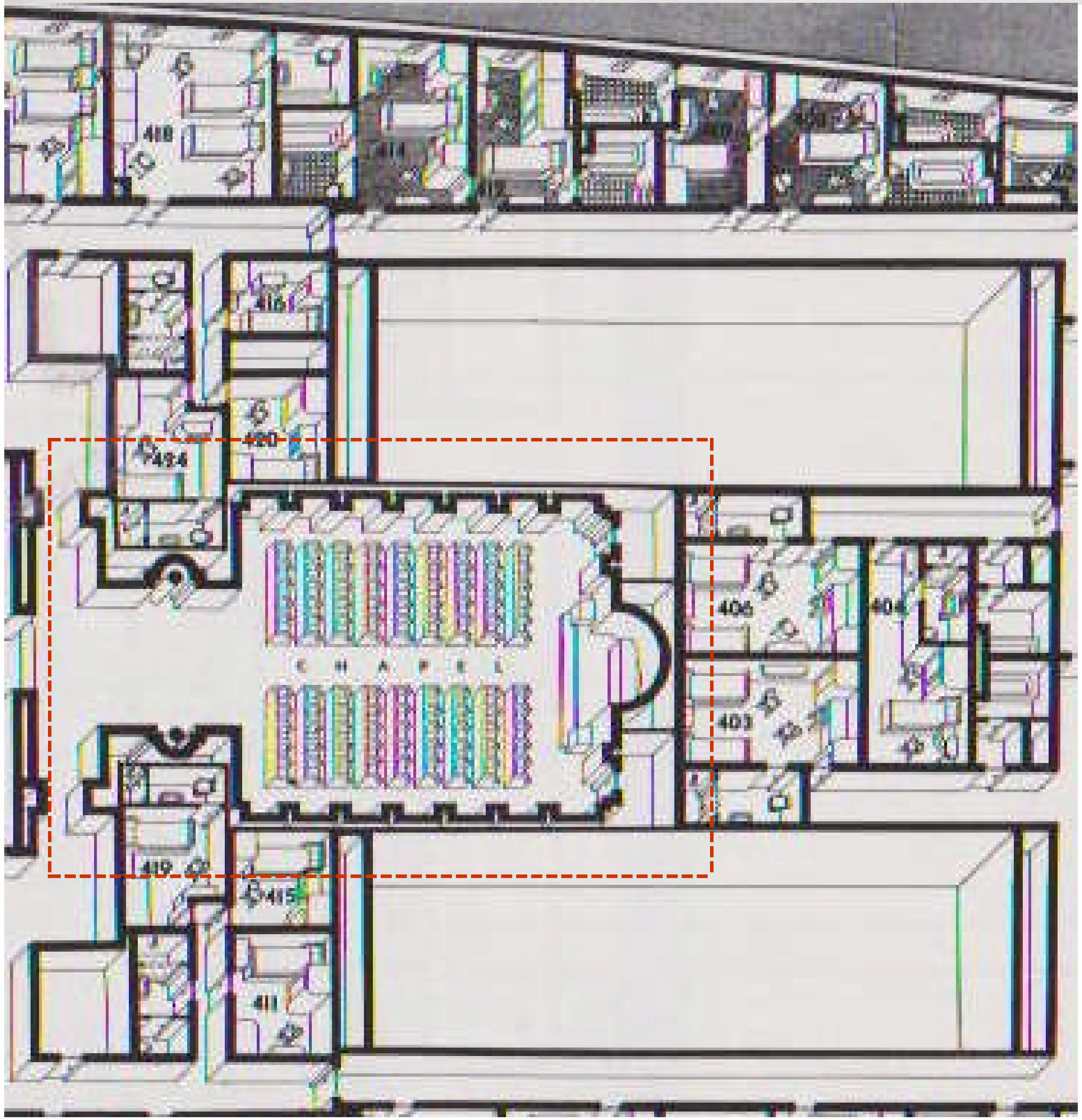


Hairdressing and Manicure Salon

Novelty Shop

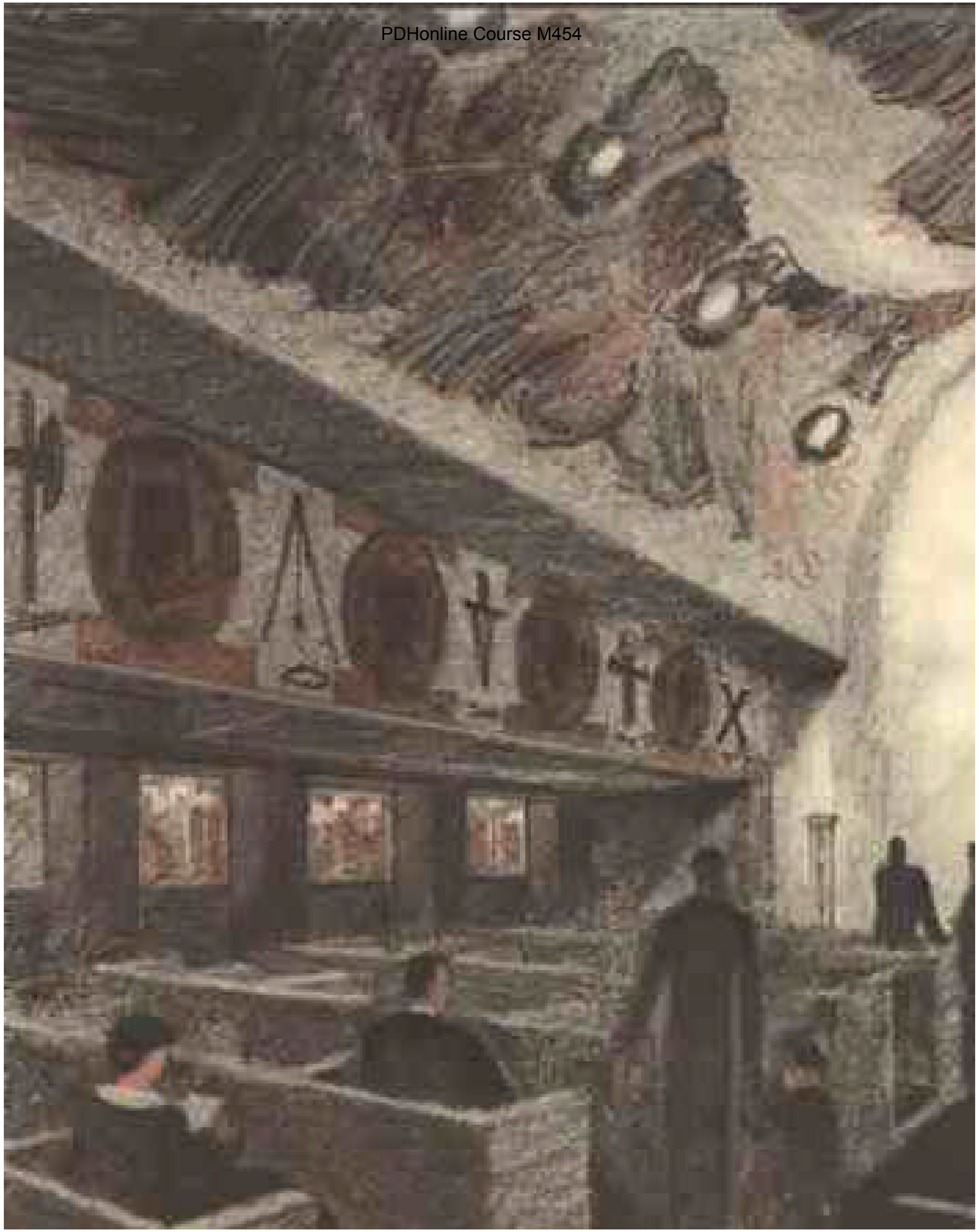
Chapel



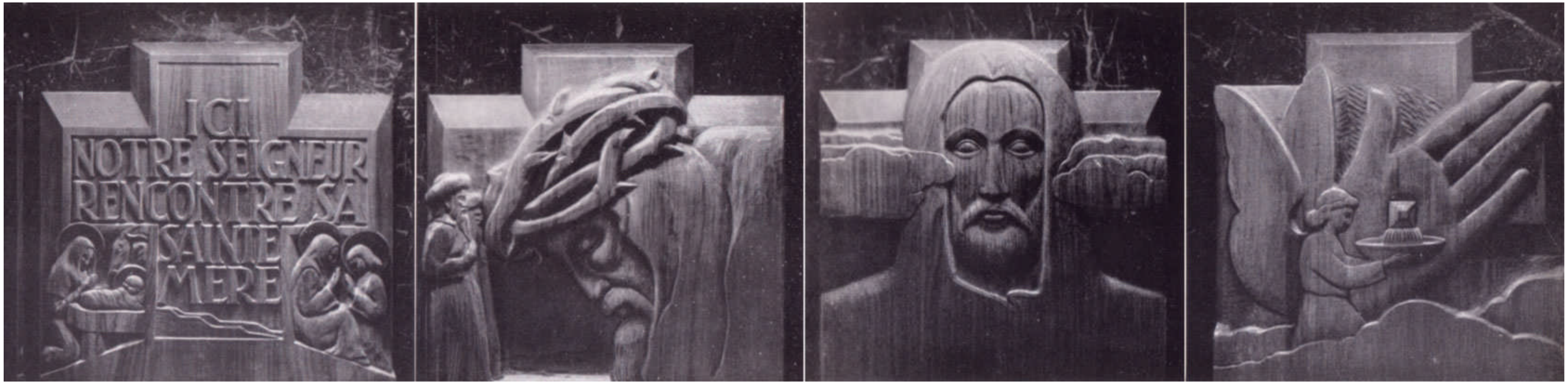


B-Deck Plan

The Chapel was located on B-Deck (forward of the main foyer) and was designed for Roman Catholic services. It featured a fifty-foot high vaulted ceiling and a central naive well decorated with ecclesiastical paintings and the stations of the cross (in wood). In 1936, a synagogue was added for Jewish passengers.



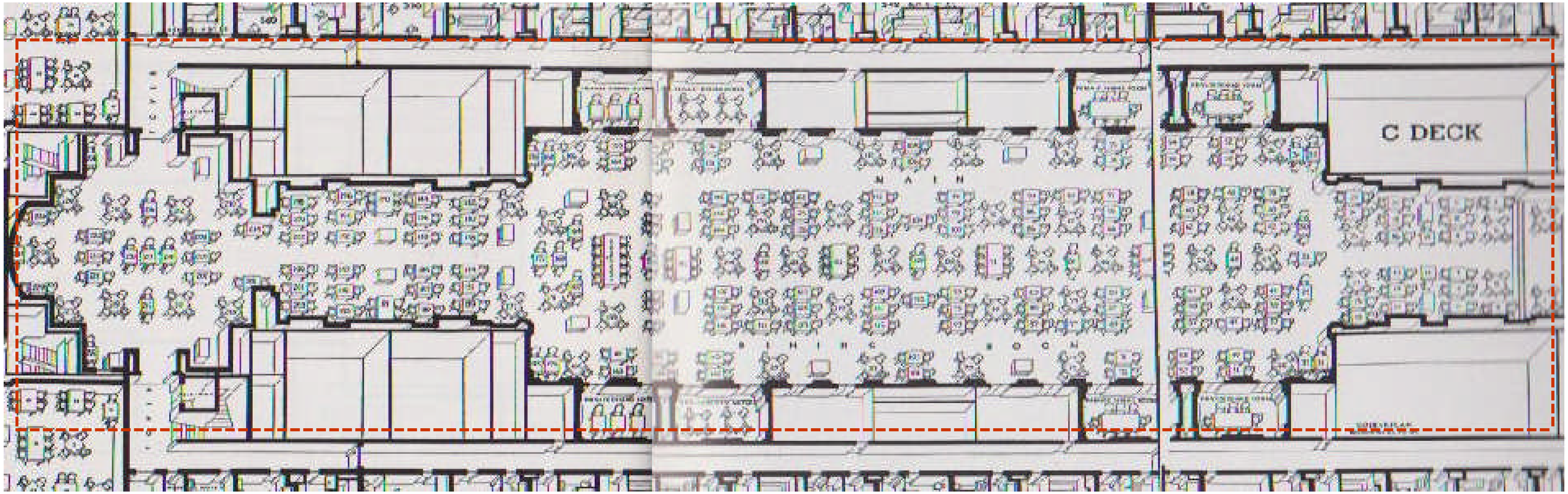
View forward from the Main Foyer towards the Chapel entrance. Note the large figure of a Norman Knight at the entrance. It is a large bas-relief wrought in cloissone enamels.

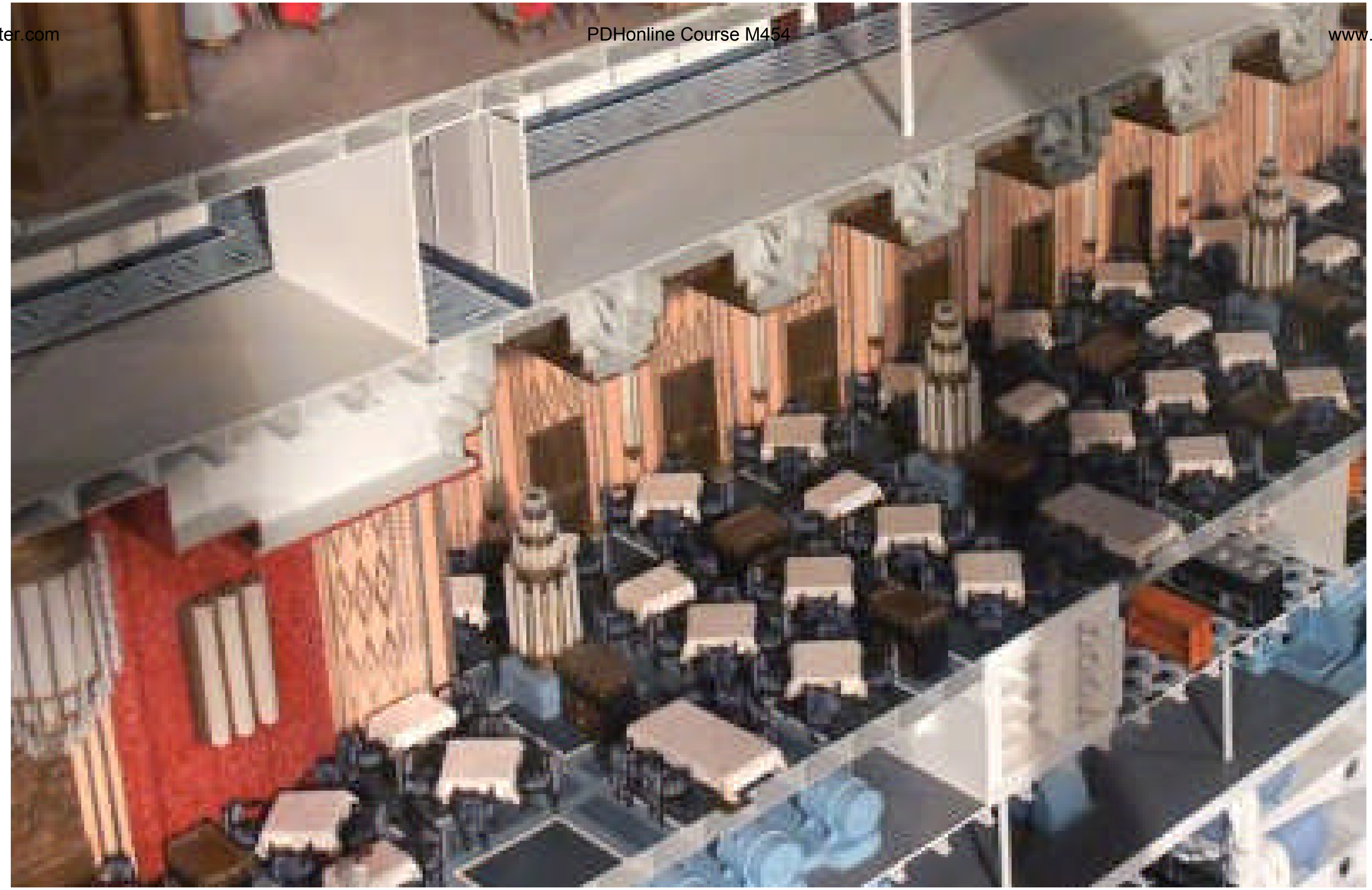


Stations of the Cross

Main Dining Room

C-Deck Plan





Main Dining Room Sectional View
(model)

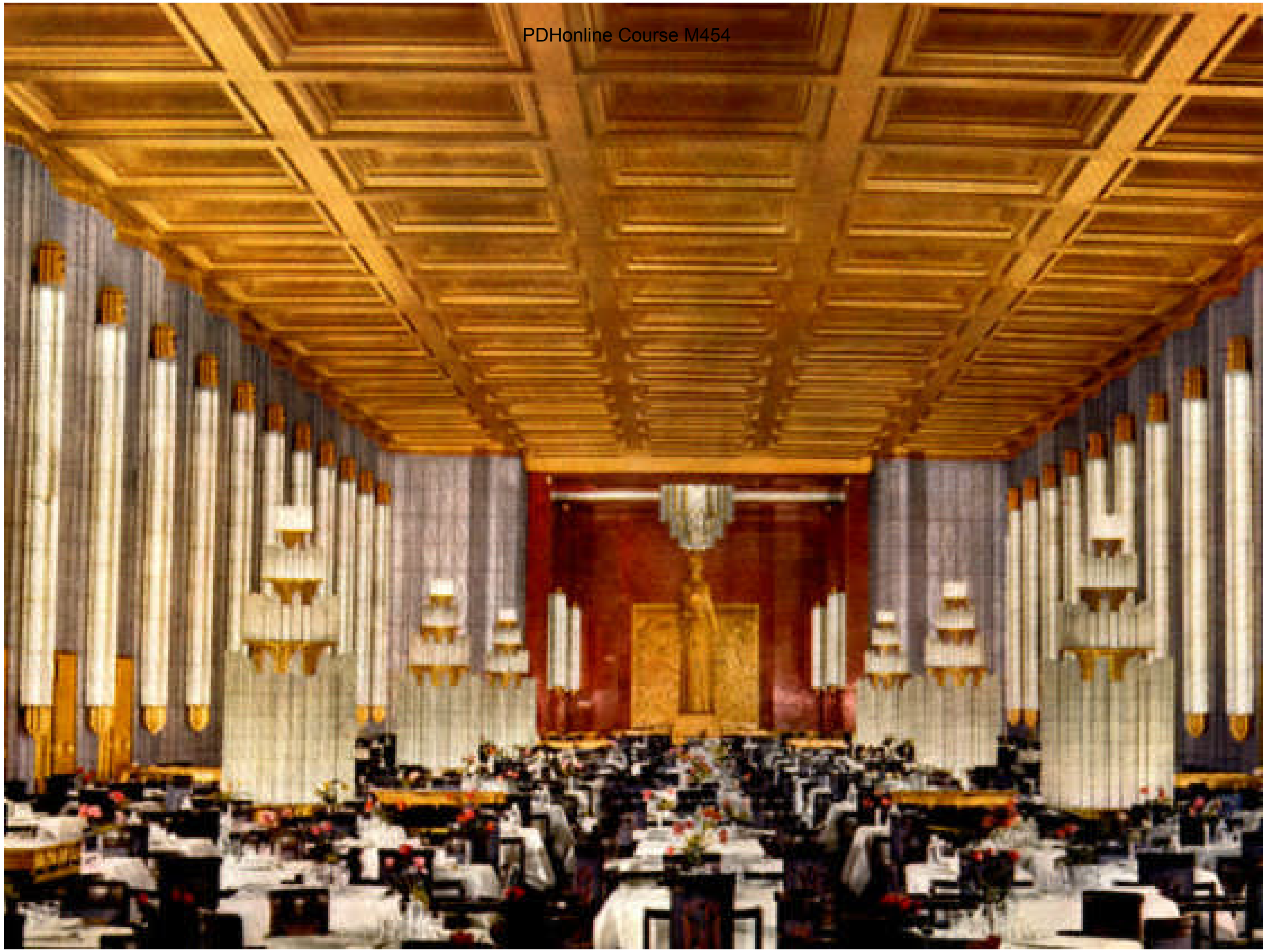
Larger than the *Hall of Mirrors* at Versailles; 46-feet wide by 305-feet long with a three-story (28-foot high) coffered ceiling, the *First Class Dining Room* was the largest public room ever built on an ocean liner. It could seat all 848 first class passengers at one sitting for a strictly white-tie dinner service (at 8:00PM). Rene Lalique lit the room with thirty-eight “crystal pillars” along the walls and a double row (twelve total) of fifteen-foot tall “fountains of light” (some removed in 1936 to create additional floor space). At each end of the room was a large chandelier. This light treatment by Lalique earned *Normandie* the nickname *Ship of Light*. An 18-foot tall gilt bronze sculpture graced the middle of the room.

The eighteen-foot tall gilt bronze sculpture (by *Louis Dejean*) of a peasant woman of Normandy province (placed in the middle of the Main Dining Room).

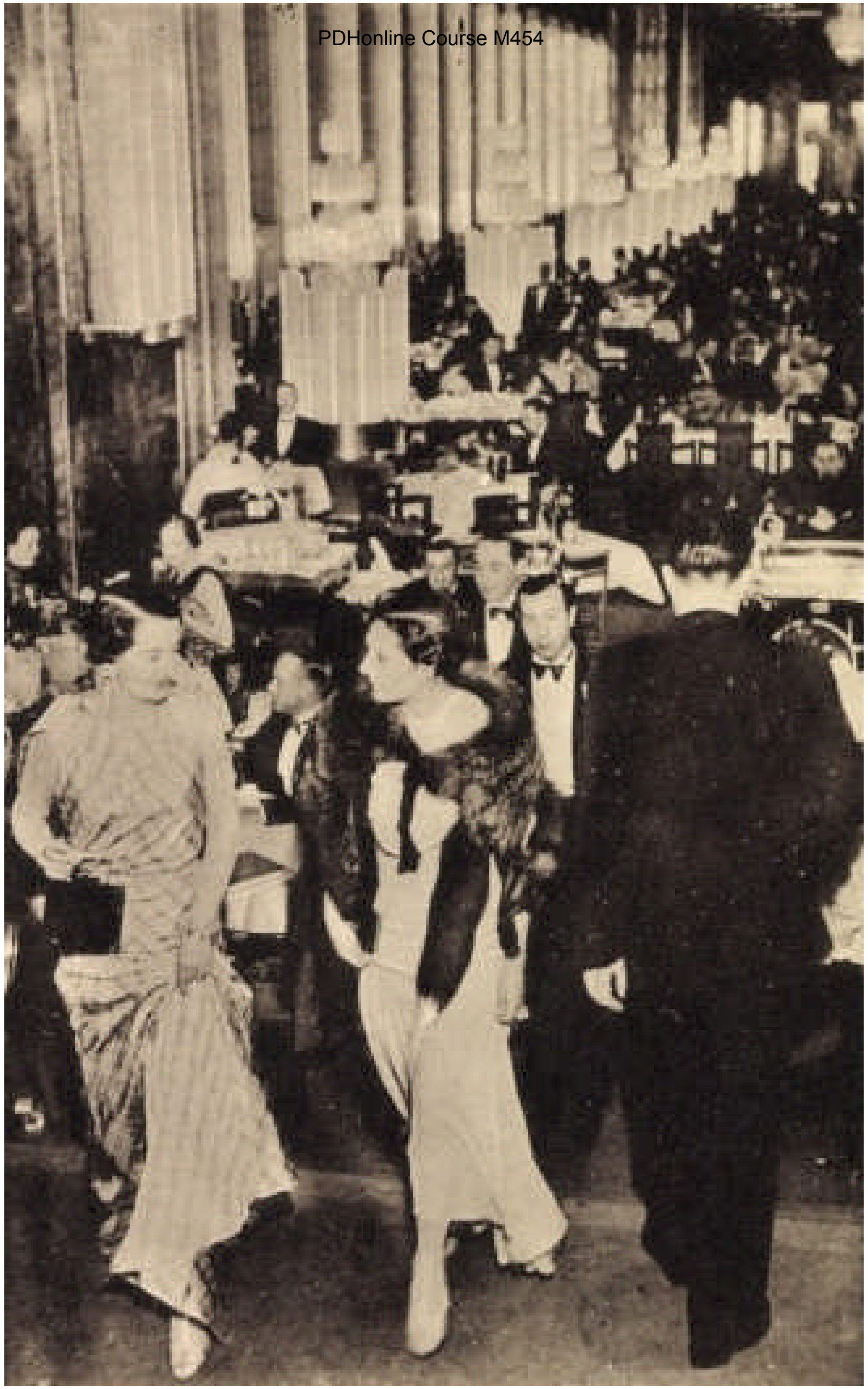
"Lalique created the famed walls of eglomisé glass and elegant glass columns which filled the Dining Room and Grand Salon, as well as the magnificent dining room service wear of the S.S. Normandie, much of which is now part of the permanent collection of the Metropolitan Museum of Art. His brilliant eye and skilled hand were also responsible for some of the smallest appointments aboard the ship. Lalique crafted the small crystal bottles that housed the Jean Patou fragrance created specifically for Normandie's passengers."

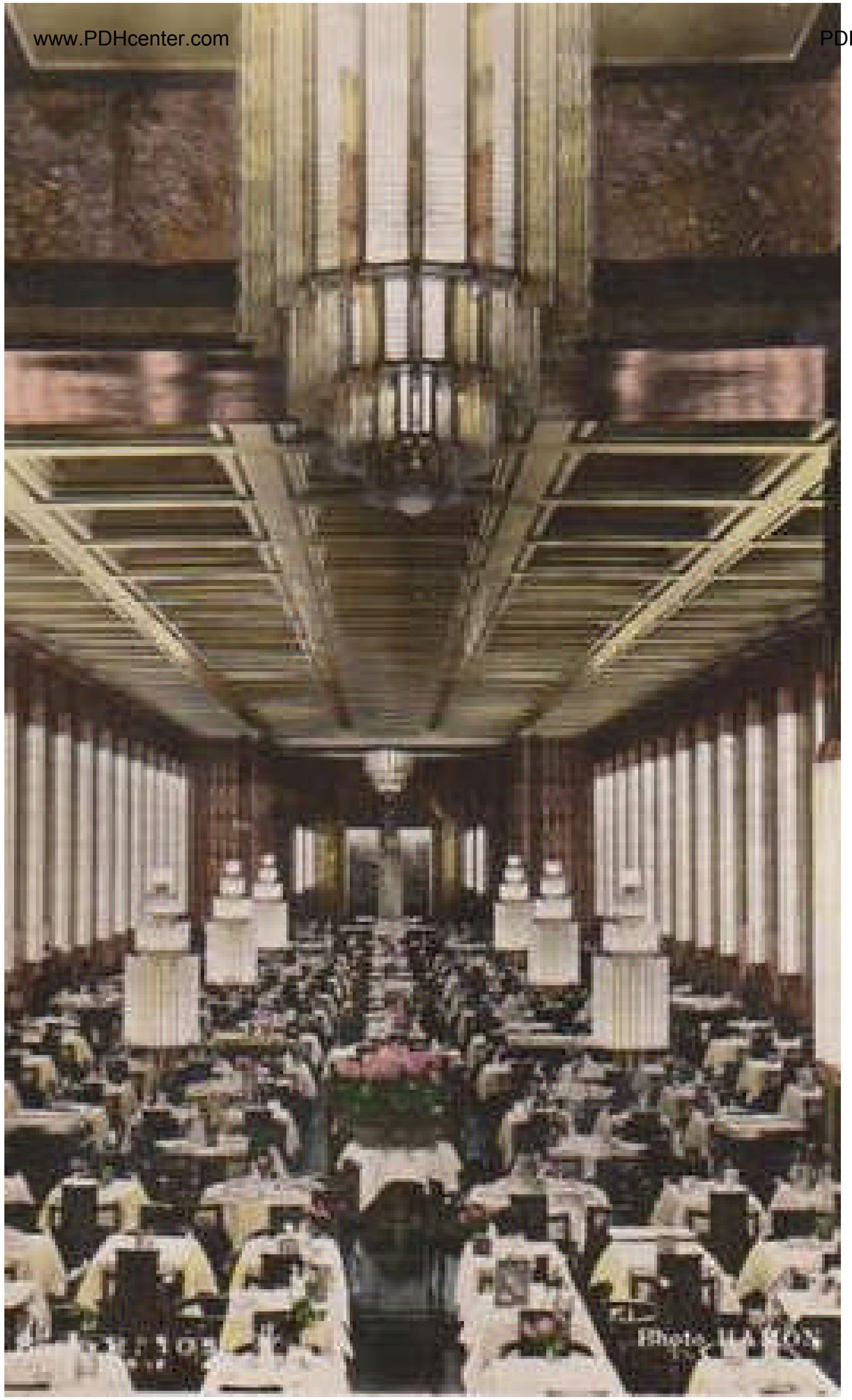
RE: excerpt from *S.S. Normandie Exhibit* at the *South Street Seaport Museum*, February 2010

A cup and saucer set for the *S.S. Normandie*
by *Suzanne Lalique* (ca. 1935)



“Crystal Pillars” and freestanding “Fountains of Light”
(chandelier at far end)





Lalique Chandelier
(one of two)

The twenty-foot tall gilt double-doors leading to the *First Class Dining Room* by artist *Raymond Subes*. Each door had five circular medallions depicting scenes from Normandy province.

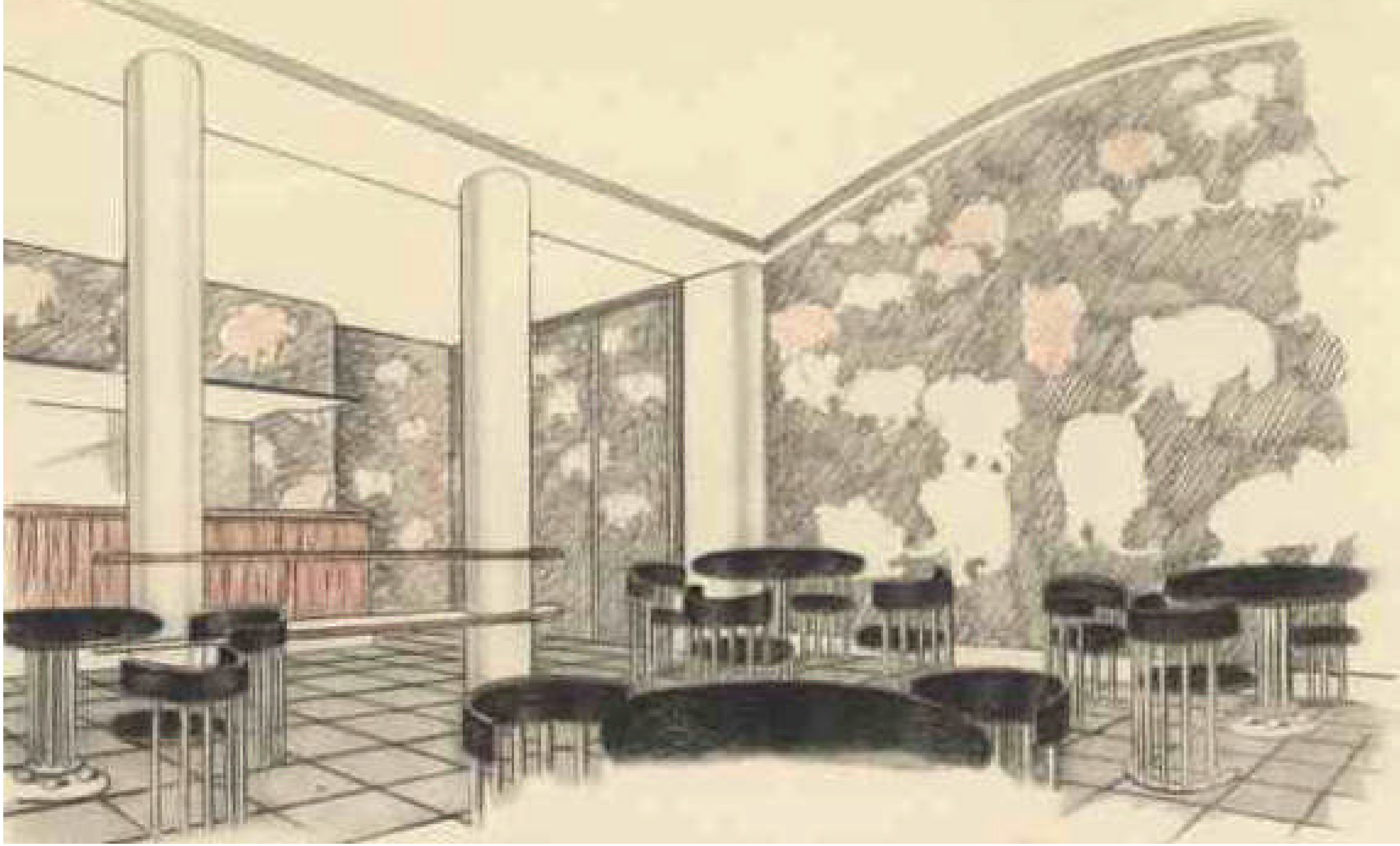
The medallions from the Main Dining Room doors were sold at auction in 1945. They now adorn the front (at left) and side entrance/s of *Our Lady of Lebanon* Roman Catholic Church, in Brooklyn Heights, New York.

Side Entrance

The walls of the First Class Dining Room featured hammered bronze relief panels depicting peasant life in Normandy Province.

Banquet Room

Private Dining Room
(reservation required / one of eight)

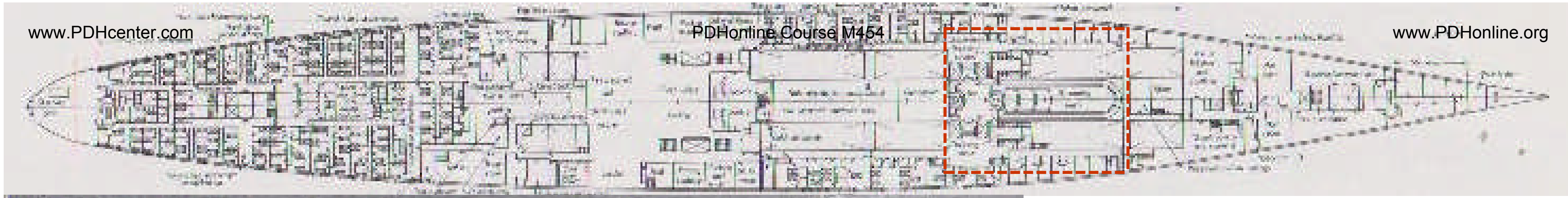


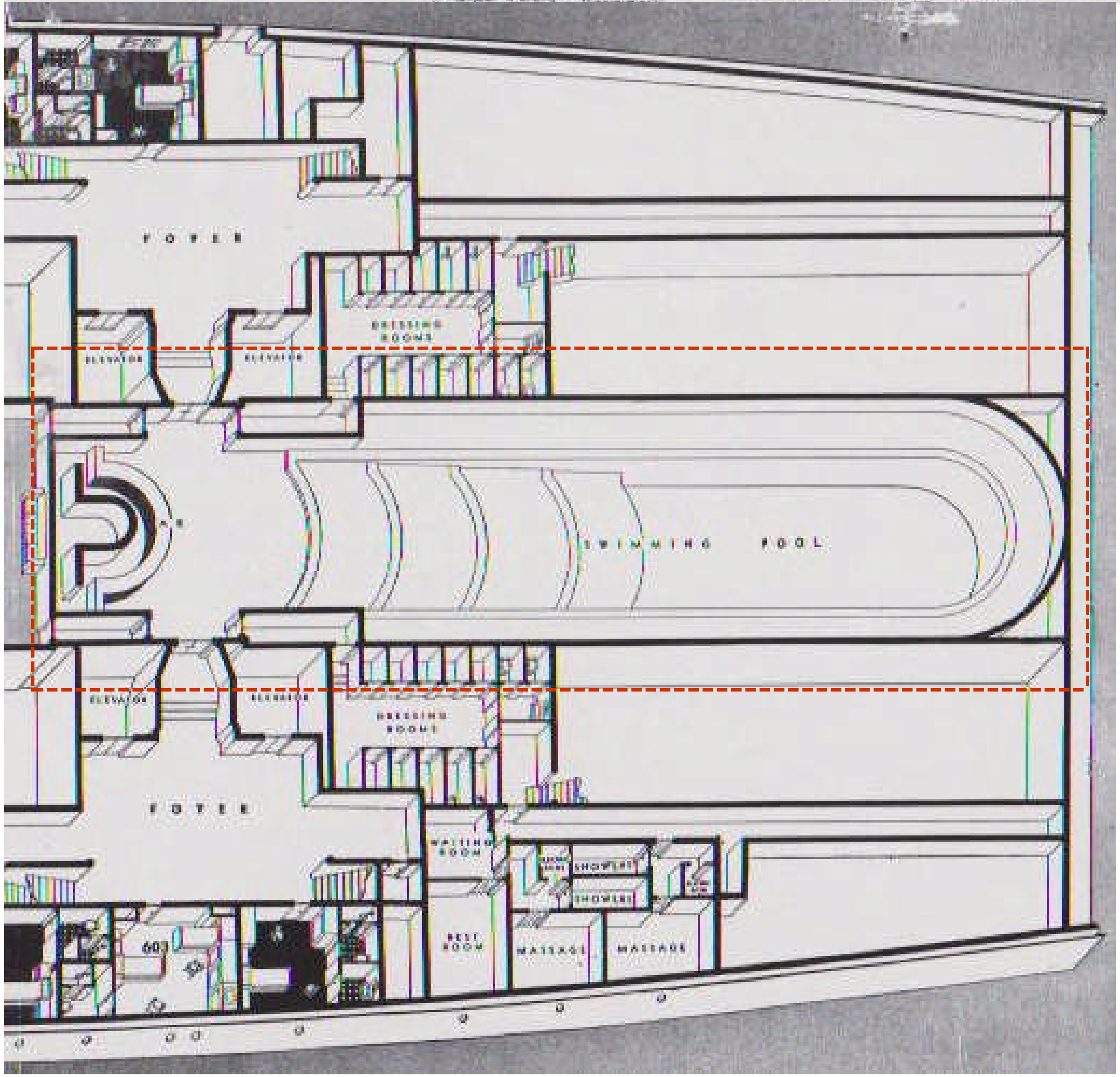
Children's Dining Room

***Jean de Brunhoff* decorated the *Children's Dining Room* walls with figures of *Babar the Elephant* (and friends).**

Wine Cellar
(there were seventy-three Champagnes to choose from)

Swimming Pool



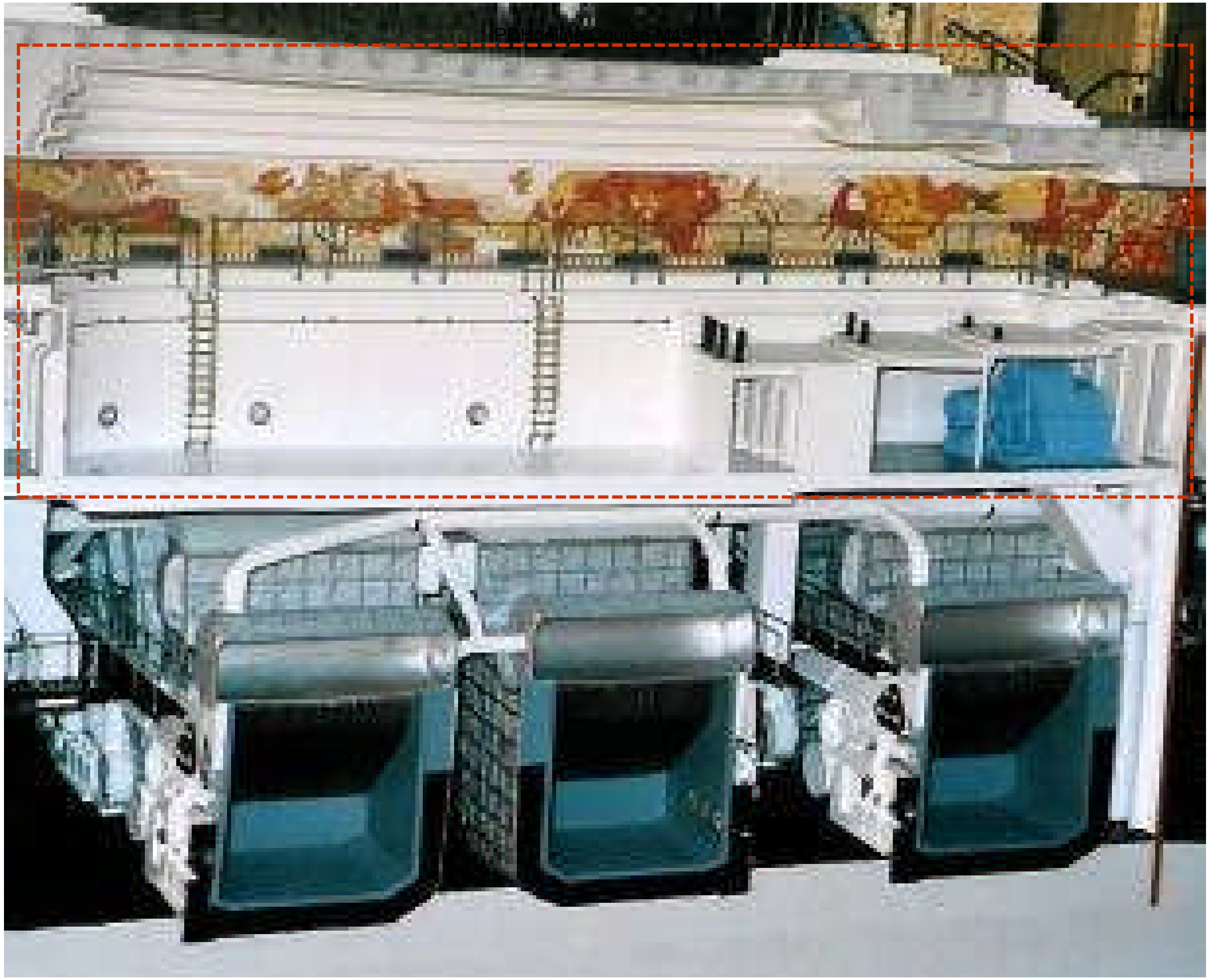


D-Deck Plan

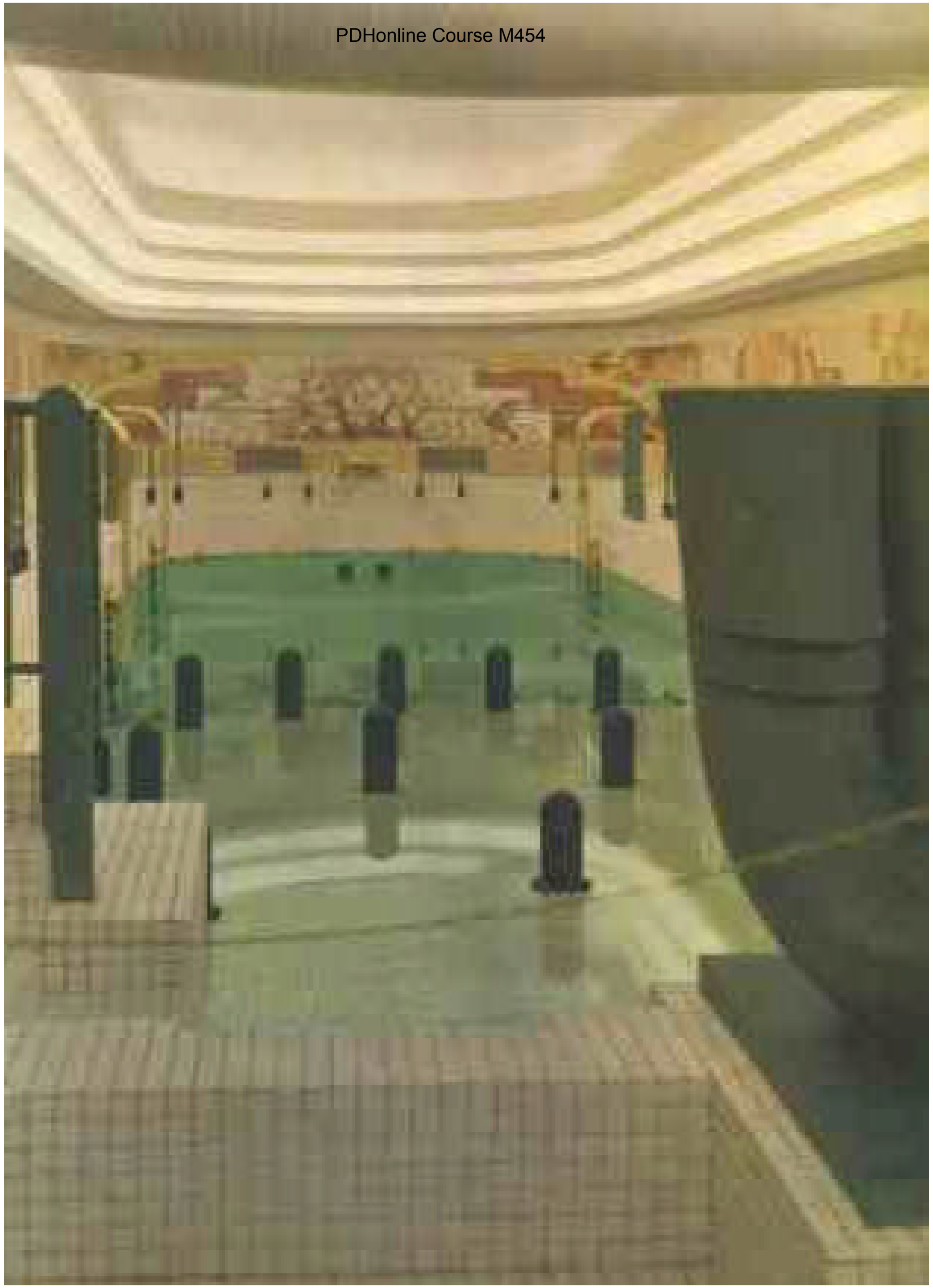
"…The swimming pool is 112-feet long and thirty-feet wide, with a graduated depth. Diving and swimming contests can be held here without difficulty…"

Popular Mechanics, **June 1935**

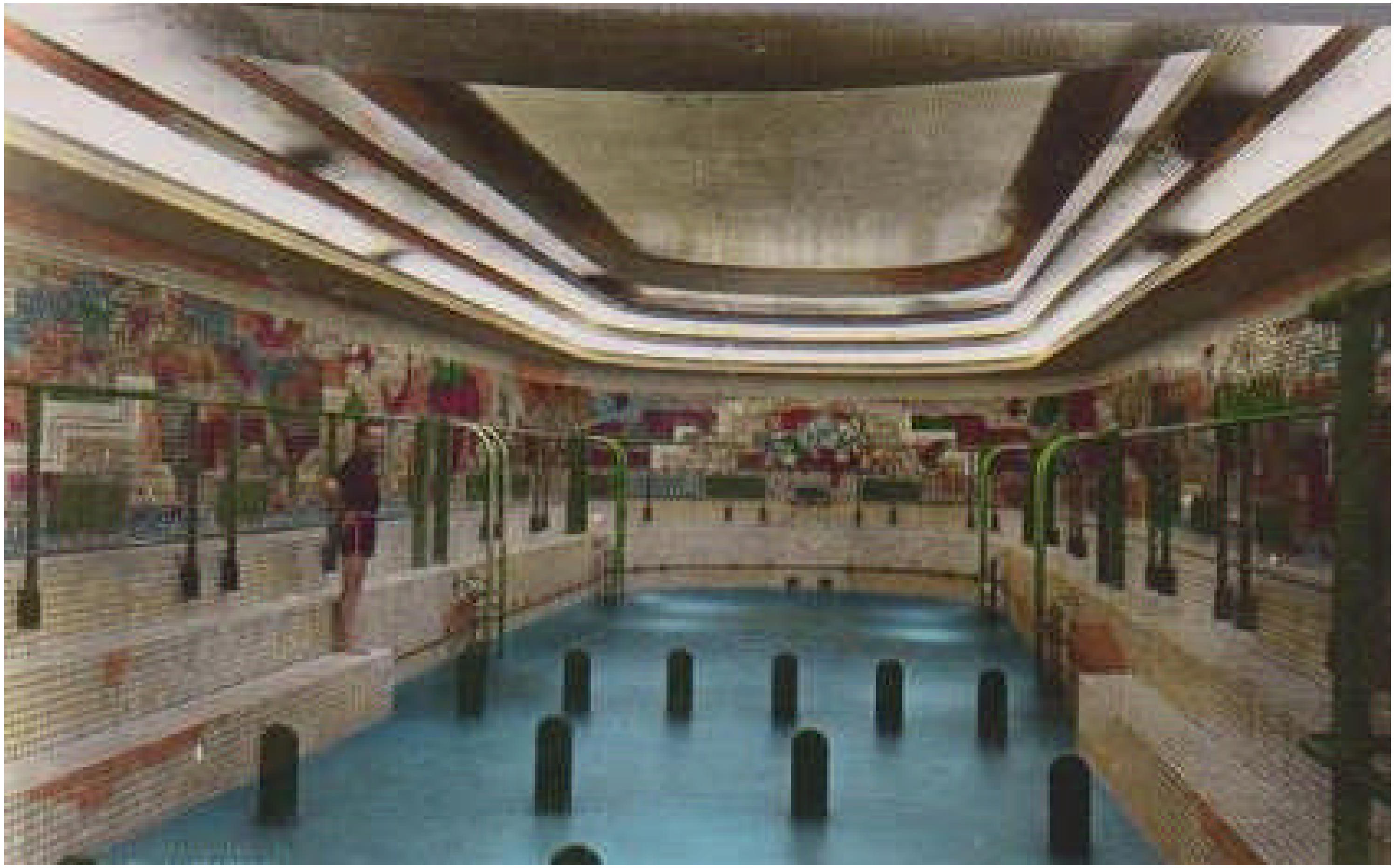
RE: actually, the pool measured 18-feet wide by 75-feet long and was located in the bowels of the ship (six decks down on D-Deck). It featured staggered depths with a shallow "training beach" for children. Most popular was the bar (at the aft end of the pool).

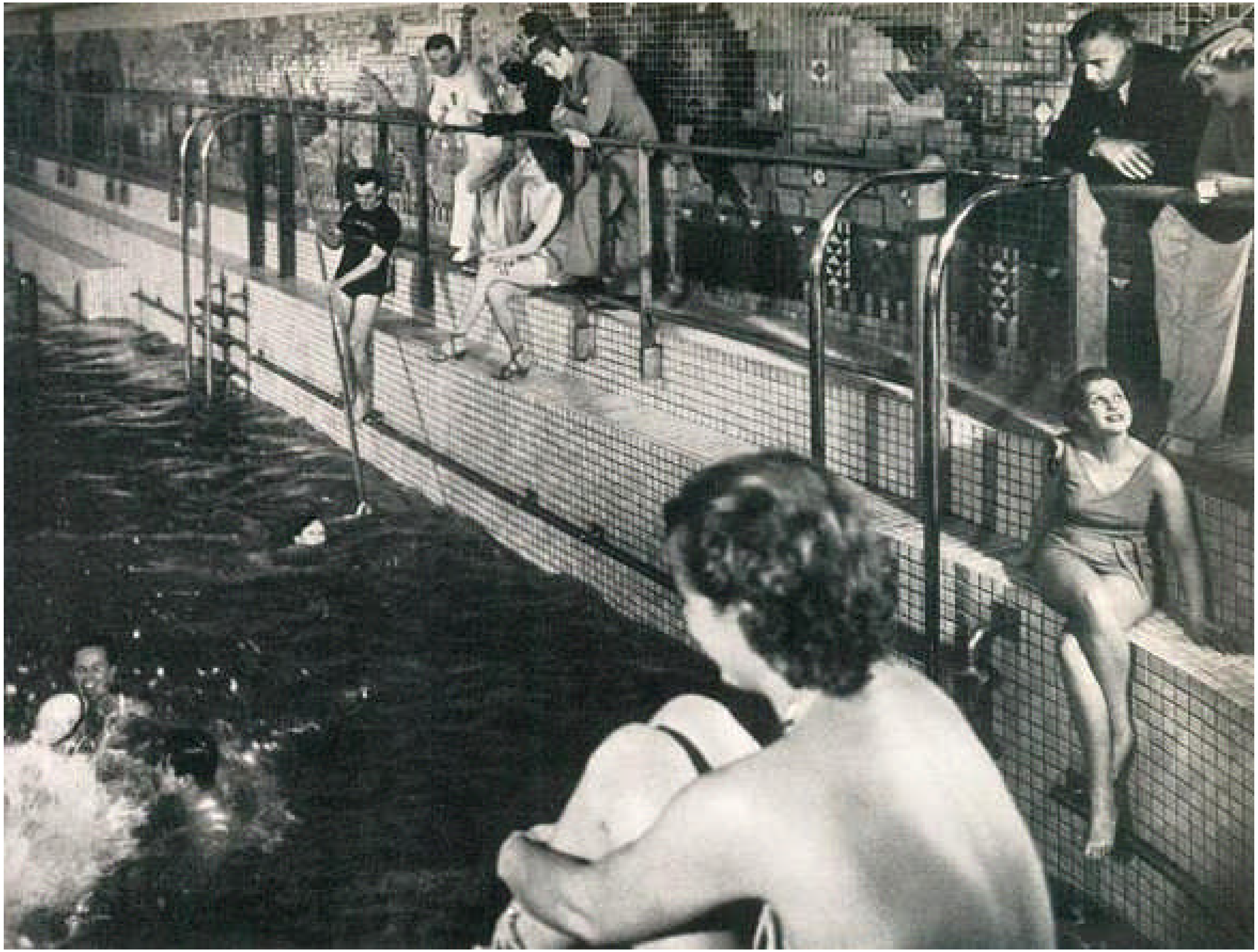


Sectional View of Pool (boilers below)
(model)



The D-Deck (indoor) pool featured a spectator's promenade (lengthwise) and a circular bar at one end. It was warmly lit with indirect lighting which created an interesting atmosphere.





View of pool (from deep end)
(looking aft - towards bar)

View of pool (from Bar)
(looking forward)

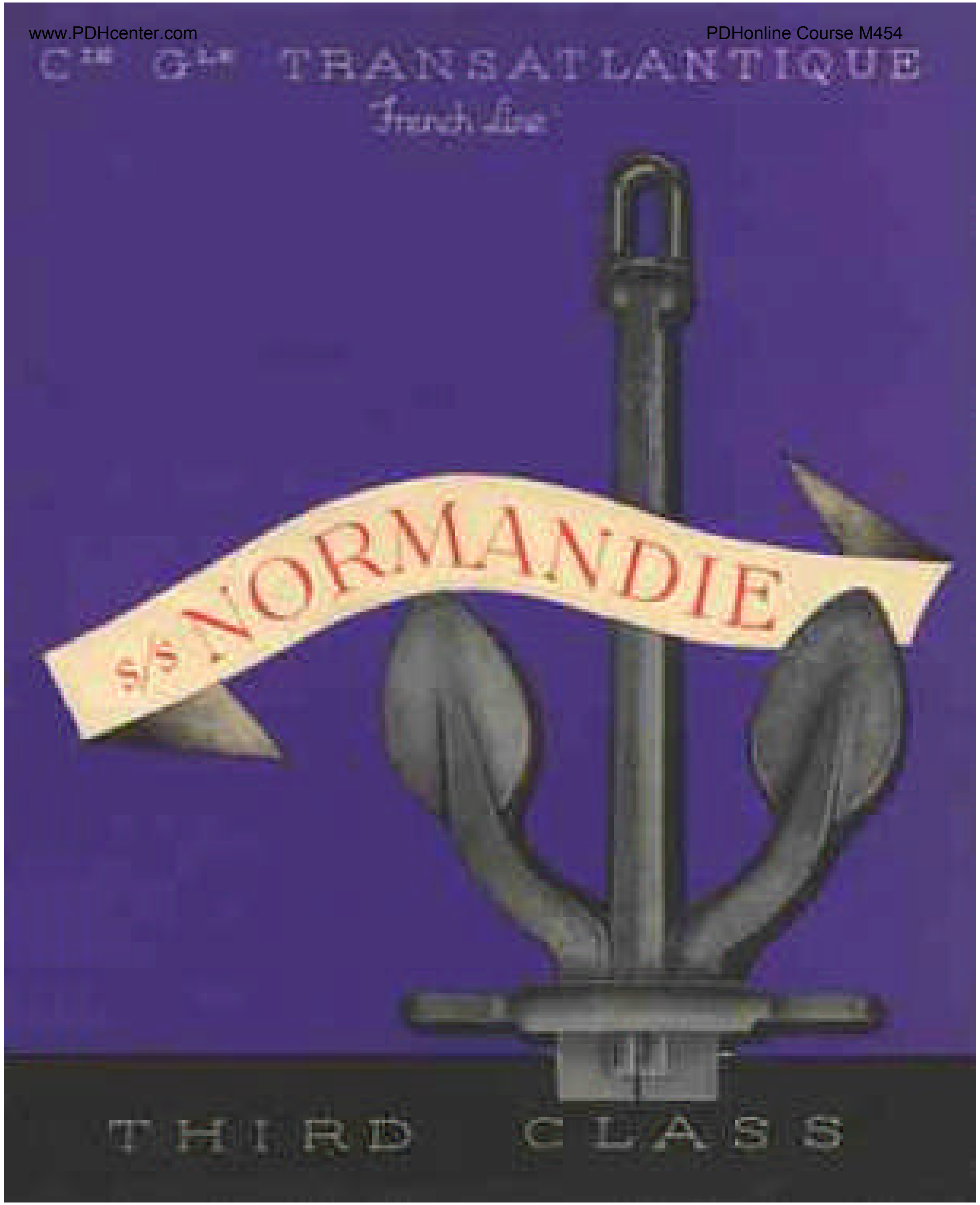
Swimming Pool Bar

TOURIST CLASS

Many seasoned transatlantic travelers commented that second class (referred to as *Tourist Class*) on the *Normandie* was as good as first class on other ships. Proof of this was to be found in the *Second Class Dining Room*. Featuring a two-story domed ceiling with a crystal chandelier (left), it had all the charm and feel of a first-class dining experience at sea. In fact, it shared the same cuisine with the First Class Dining Room. A total of 670 people could travel Tourist Class on the *Normandie* (about one-third of her total passenger capacity of 1,972).

Though not as spacious as the First Class Lounge, the *Second Class Lounge* (a.k.a. *Salon*) was nevertheless well furnished and decorated. It featured a parquet dance floor and an etched glass dome overhead. Second Class passengers also enjoyed a combination library/reading room, smoking room, snack bar, children's playroom and an elevator for their exclusive use. Though most Tourist Class cabins lacked a bathtub, they did include a shower.

THIRD CLASS



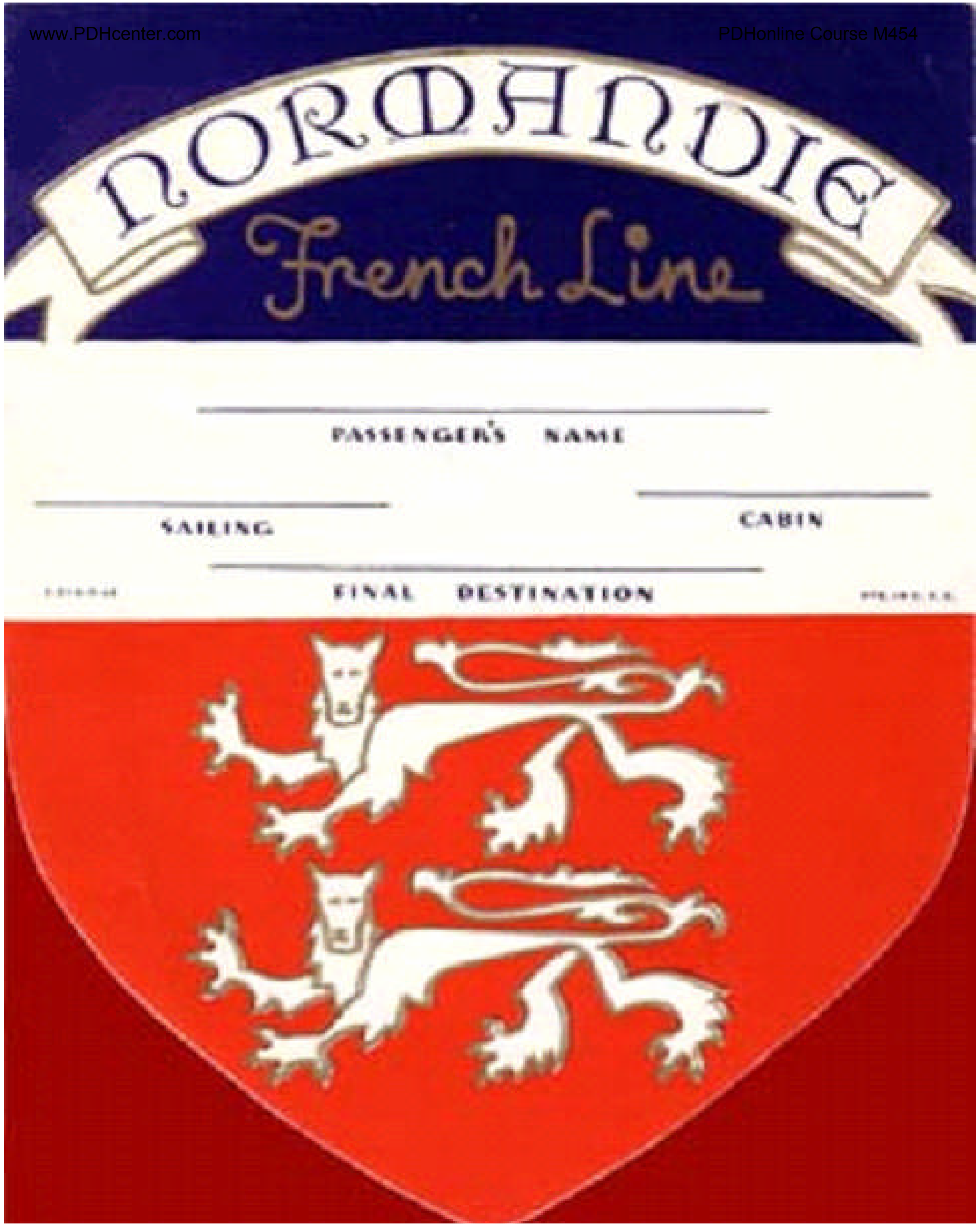
Like all transatlantic liners of the era, ***Steerage*** **(Third-Class) had given way to luxury by the 1930s thus it was not surprising that** ***Normandie*** **included room for only 454 steerage passengers – the smallest proportion of any transatlantic liner of her day. This was in stark contrast to the majority being steerage passengers on liners like the** ***Lusitania*** **(before America shut her doors to immigration in the '20s). Though the cabins were barebones (white-painted walls devoid of any decoration), there was a smoking room and lounge with leather furniture and ocean views. There was also an information desk and a private elevator. The Dining Room was two-stories tall and nicely decorated.**

Smoking Room

Bar

Part 7

Accommodations

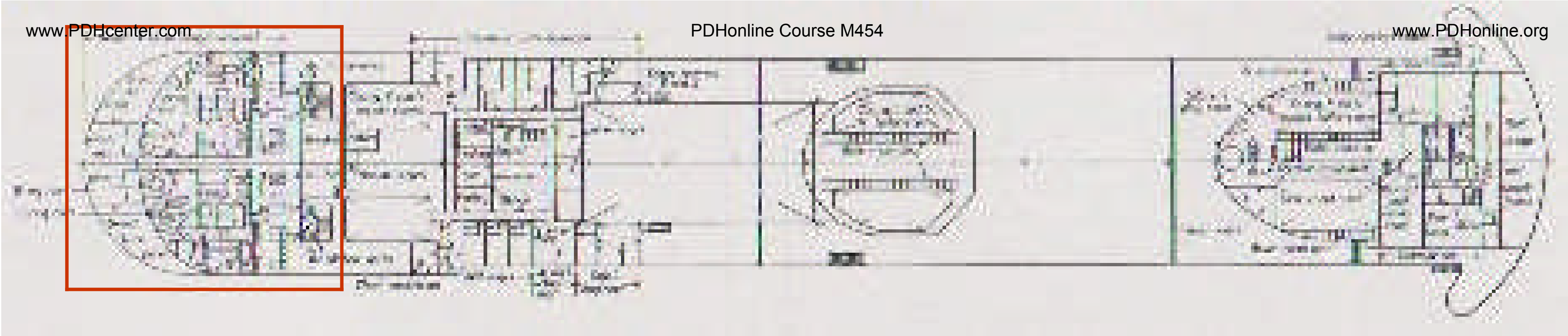

NORMANDIE
French Line
PASSENGER'S NAME
SAILING
CABIN
FINAL DESTINATION

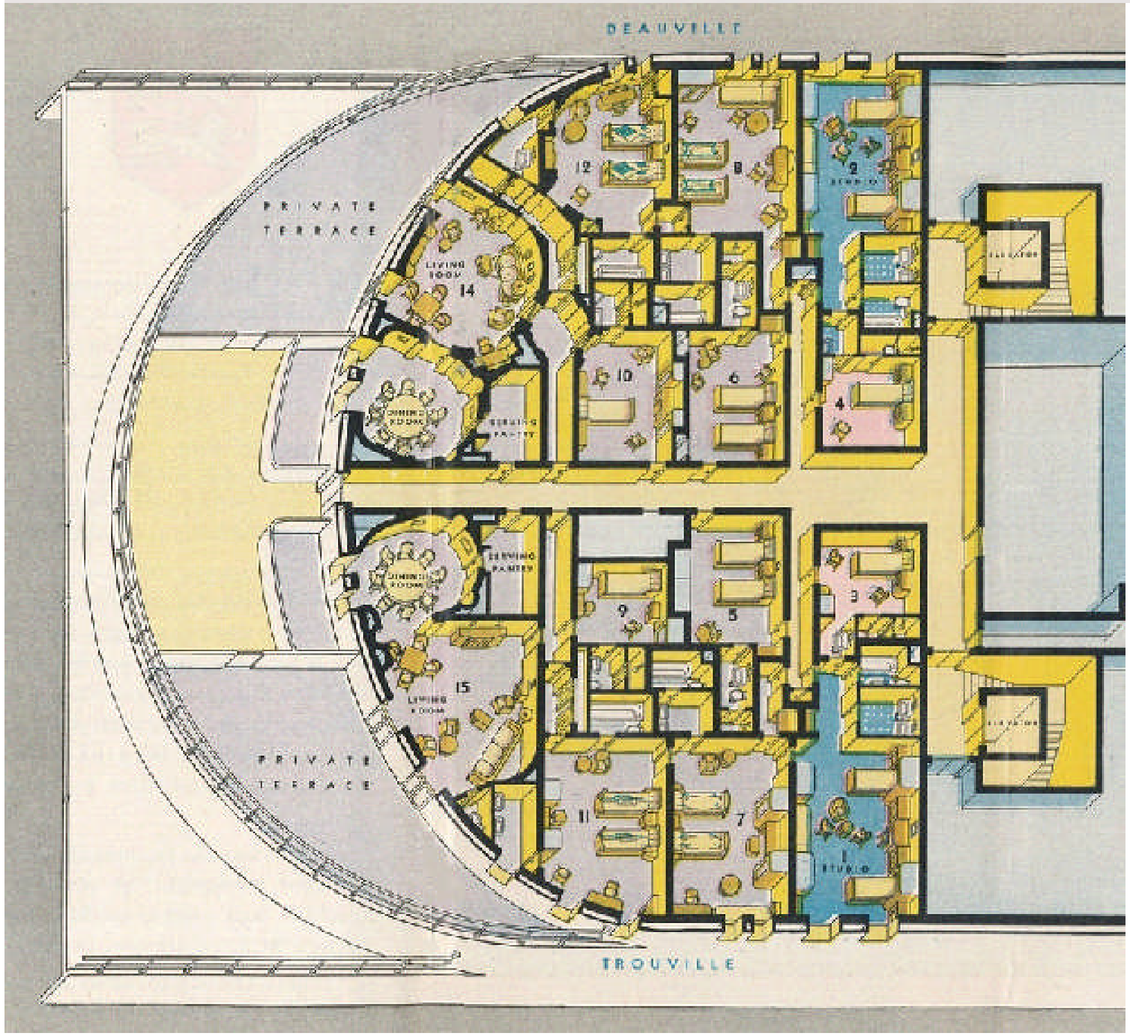
First Class

First Class Service Guide

Of the nearly two-thousand cabins aboard the *Normandie*, nearly half were devoted to first-class passengers. Apart from the *Deauville* and *Trouville* (at left) Suites (*Sun Deck Suites*), there were twenty-four *Deluxe* Suites with private bathrooms (on the Promenade Deck). Two of these were *Grand Deluxe* Suites (*Caen* and *Rouen*). Next came the *Verandah* Suites; smaller than the Deluxe Suites but still plenty of art-deco luxury, shower or bath and a private terrace. Two suites featured *Louis XV* and/or *Louis XVI* décor (for those less inclined to the overall art-deco theme of the interior décor). The 406 basic suites included a *Murphy Bed* which could be folded up during the day. Cabin service included refreshments delivered and drawn baths.

Grand Luxe Suites
(Sun Deck)





Sun Deck Plan

Located at the aft-end of the Sun Deck, the *Deauville* (port) and *Trouville* (starboard) Suites were the same size with variations in their plans and décor (each had its own interior designer). Both featured four bedrooms, four bathrooms, a private terrace, service pantry and a studio apartment (for persons traveling with the suite occupant's entourage).

(model)

View of the *Deauville* Suite (Port-side)
(from Sun Deck looking forward)

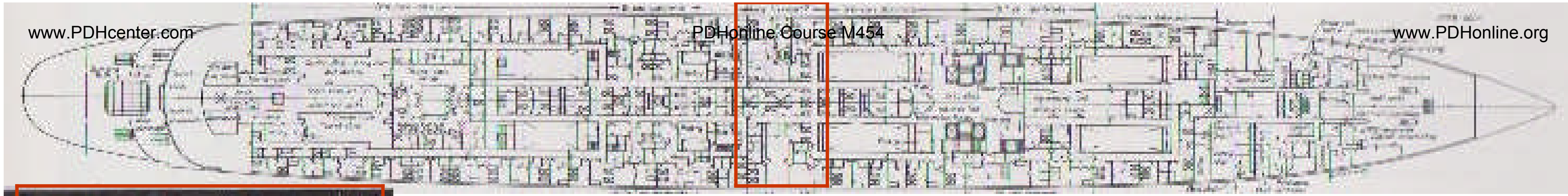
Trouville Suite
Living Room

***Trouville* Suite**
Living Room
(Dining Room beyond)

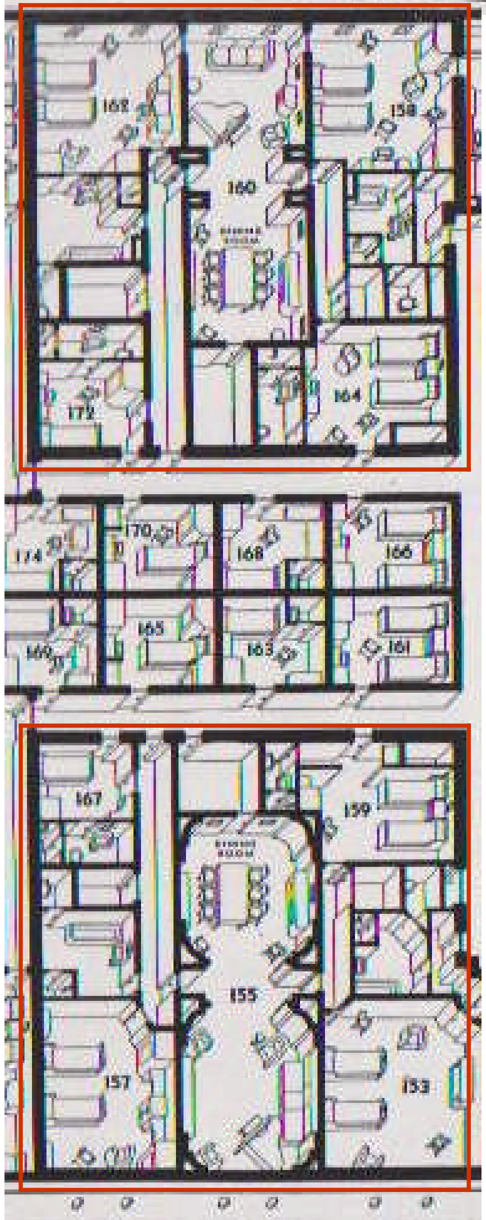
***Deauville* Suite Living Room**
(Dining Room beyond)

Actress *Marlene Dietrich* seated at a a one-of-a-kind ash-veneer baby grand piano designed by *Louis Sue* for the *Deauville* Suite (*Jules Leleu* was the designer of the *Trouville* Suite) . Each of the *Normandie's* four "Grand Luxe" suites included a piano as a unique creation by the suite's respective interior designer.

Grand Luxe Suites
(Main Deck)



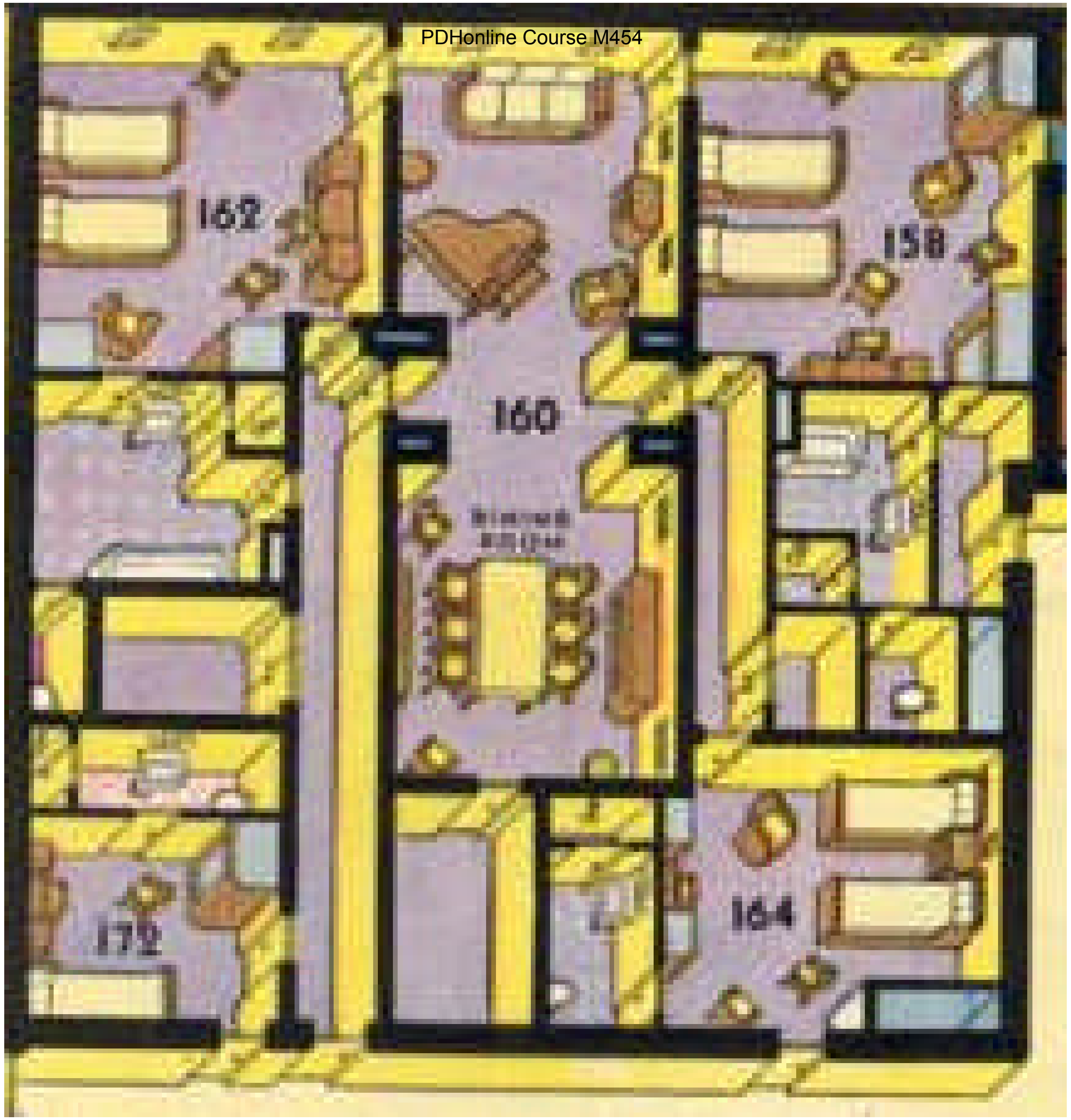
Main Deck Plan



Caen Grand Luxe Suite
(Port side)

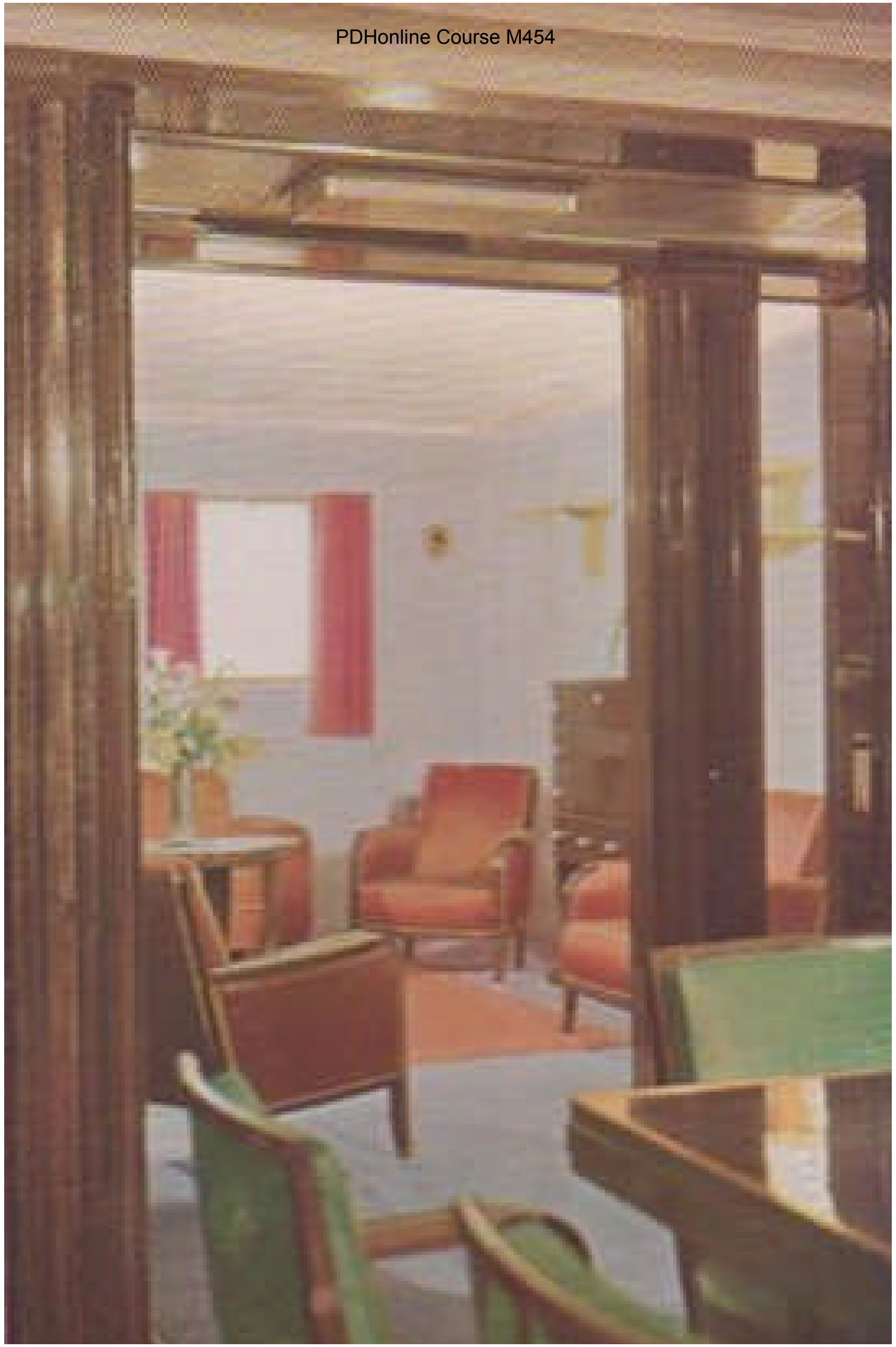
The two *Grand Luxe* Suites (*Caen* and *Rouen*) on the Main Deck (mid-ship) featured a separate dining room, shark-skin furniture, a grand piano and hand-wrought fixtures.

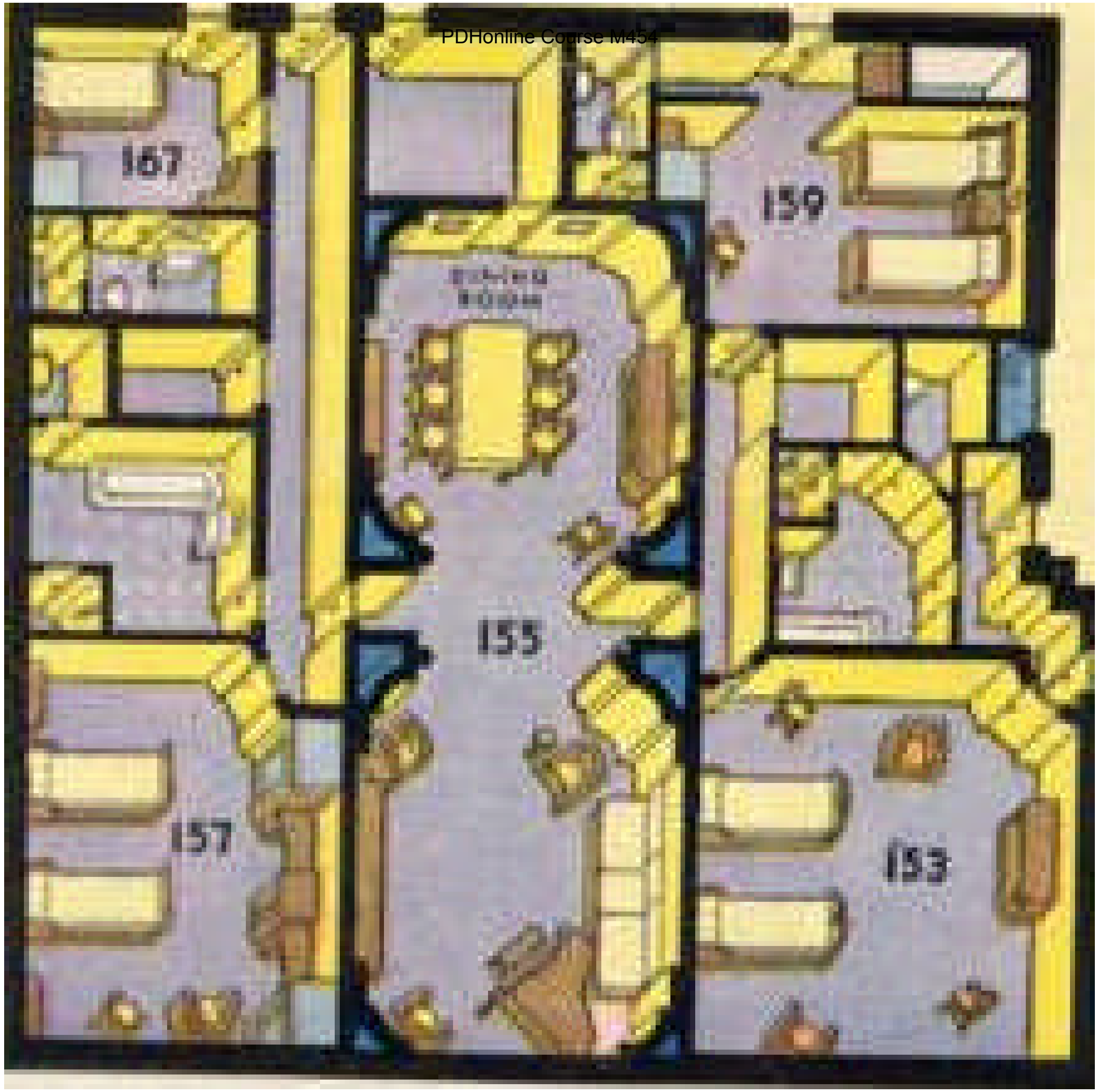
Rouen Grand Luxe Suite
(Starboard side)



Caen Grand Deluxe Suite Plan

Caen Grand Deluxe Suite Dining Room



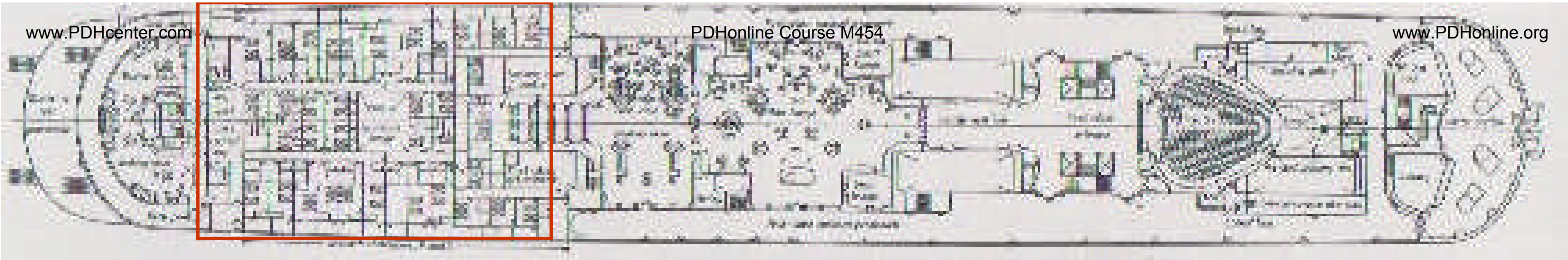


***Rouen* Grand Deluxe Suite**

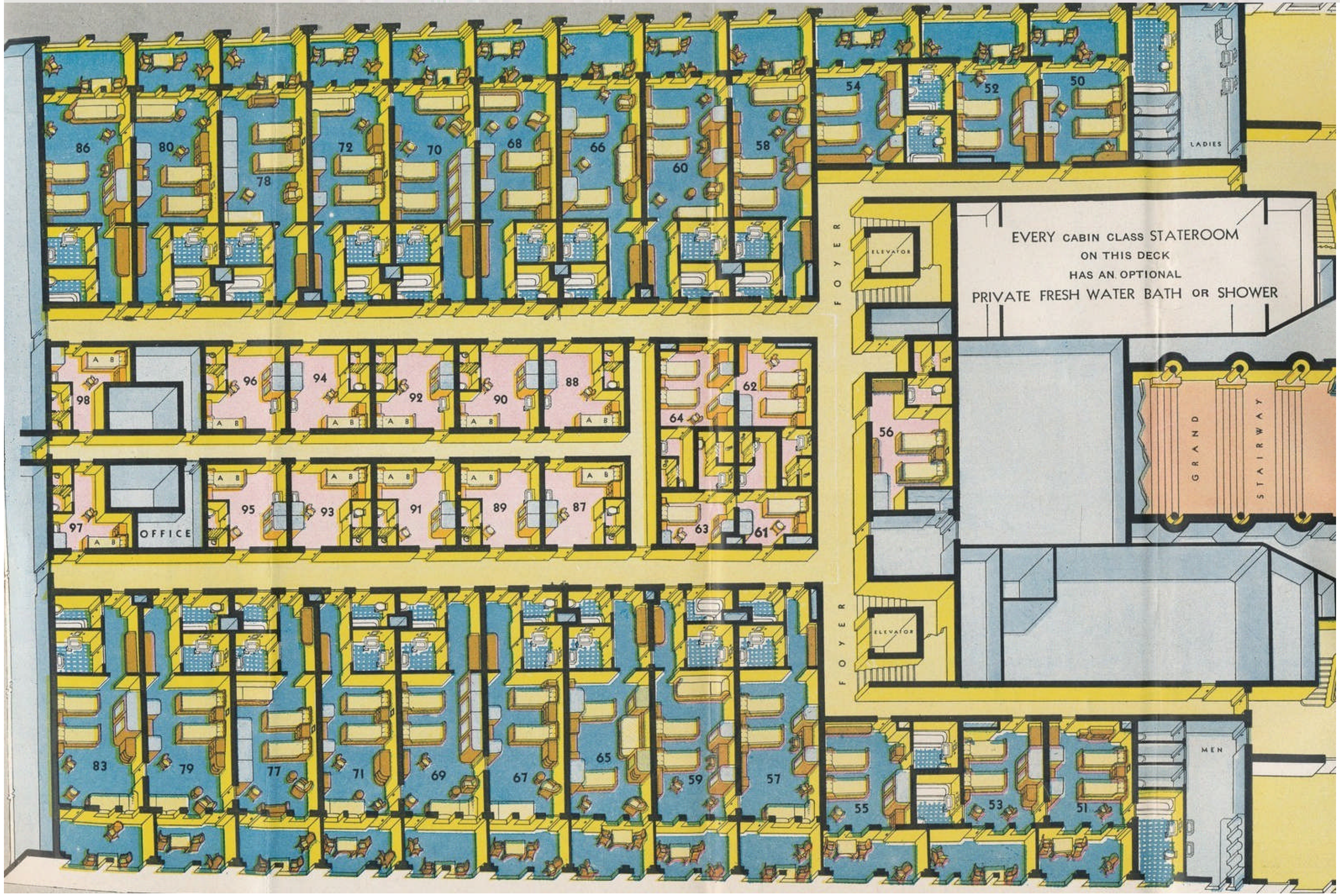
***Rouen* Grand Deluxe Suite Living Room**

***Rouen* Grand Deluxe Suite Bedroom**

Promenade Deck Suites



Promenade Deck Plan

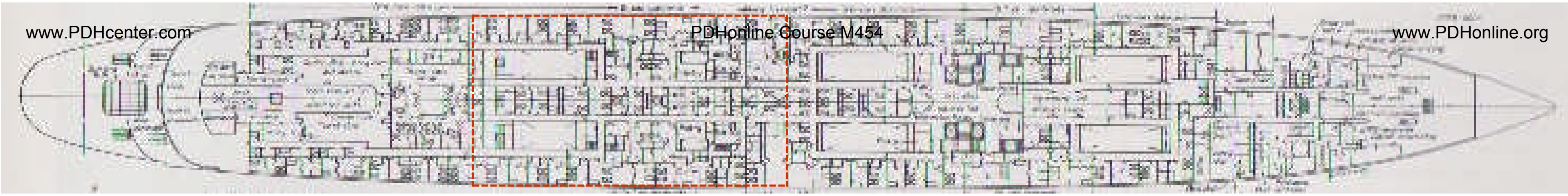


Cabin Plan (Deluxe Suites)

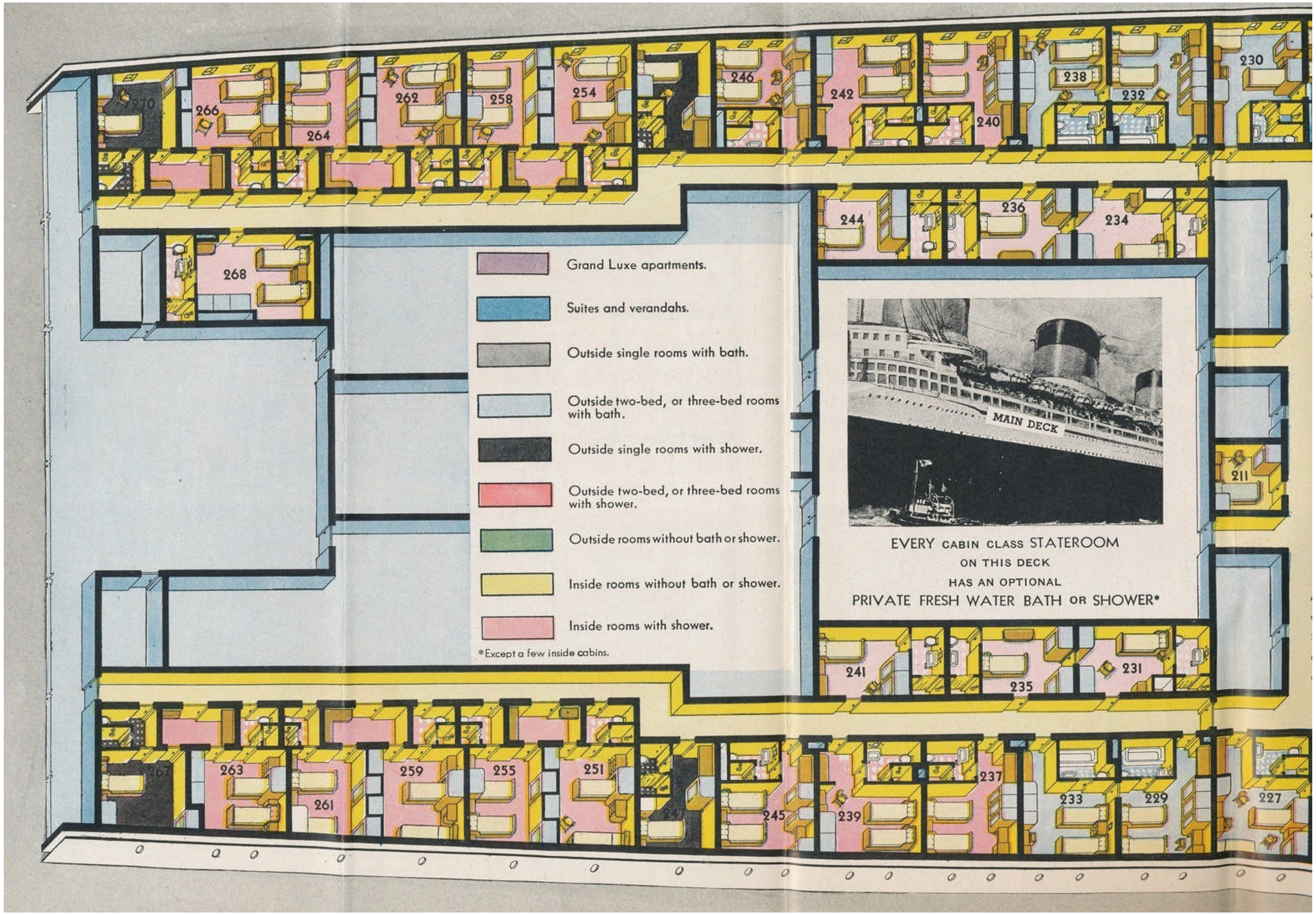
Promenade Deck
(view from mid-ship looking aft)

First Class Cabin with Terrace

Main Deck Suites

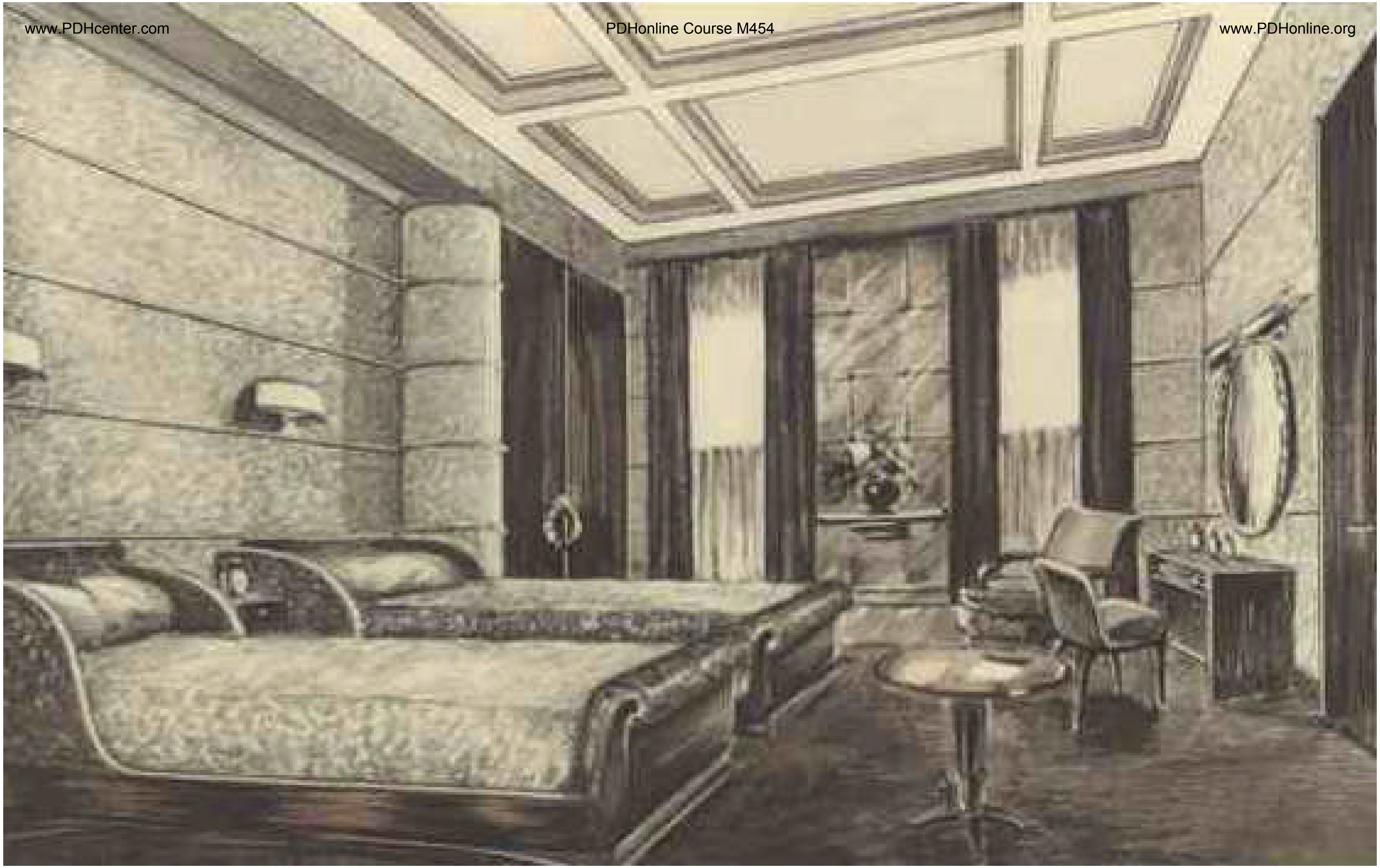


Main Deck Plan



Cabin Plan (Partial)

***Deluxe* Suite Living Room**

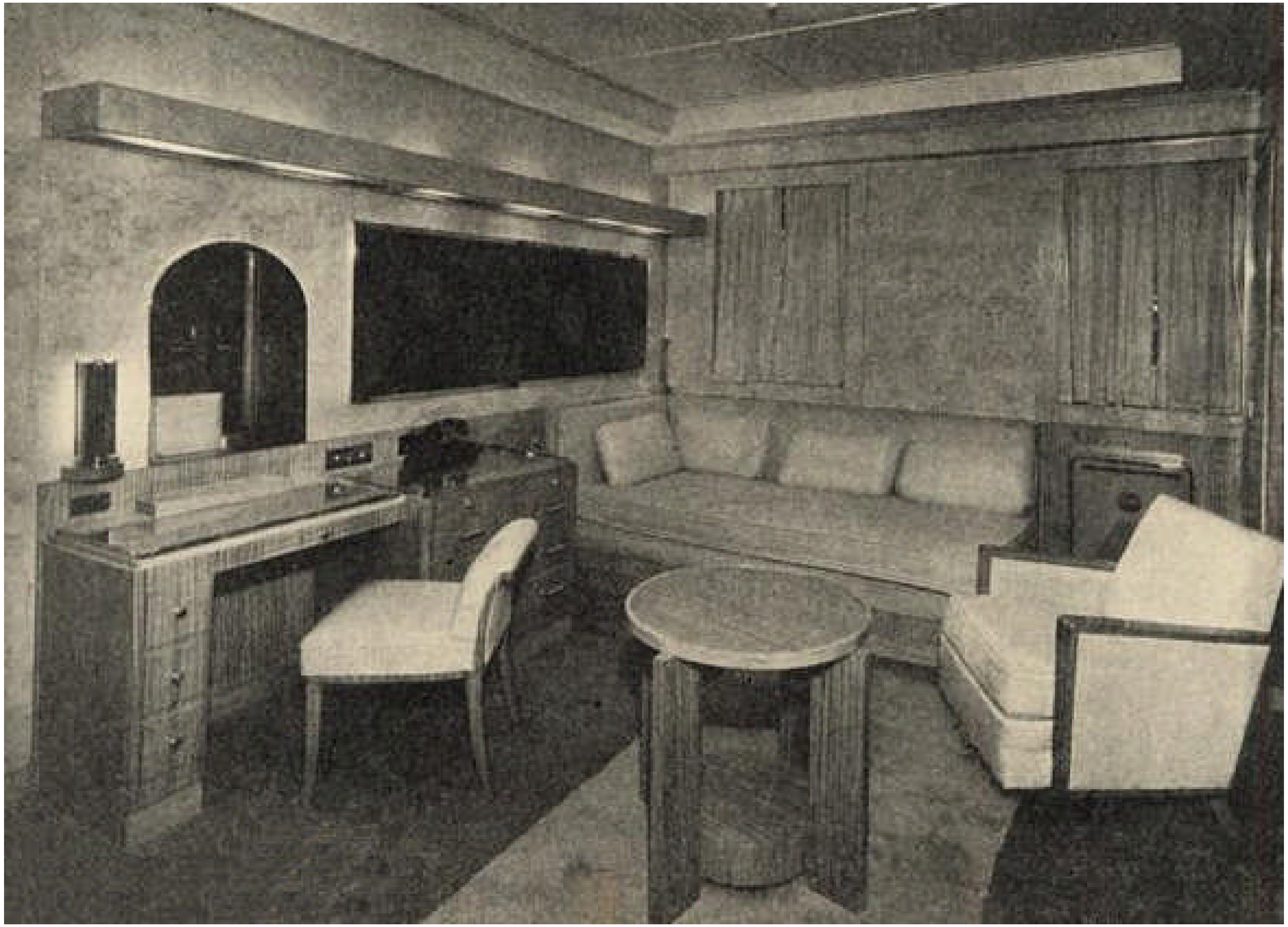


***Deluxe* Suite Bedroom**

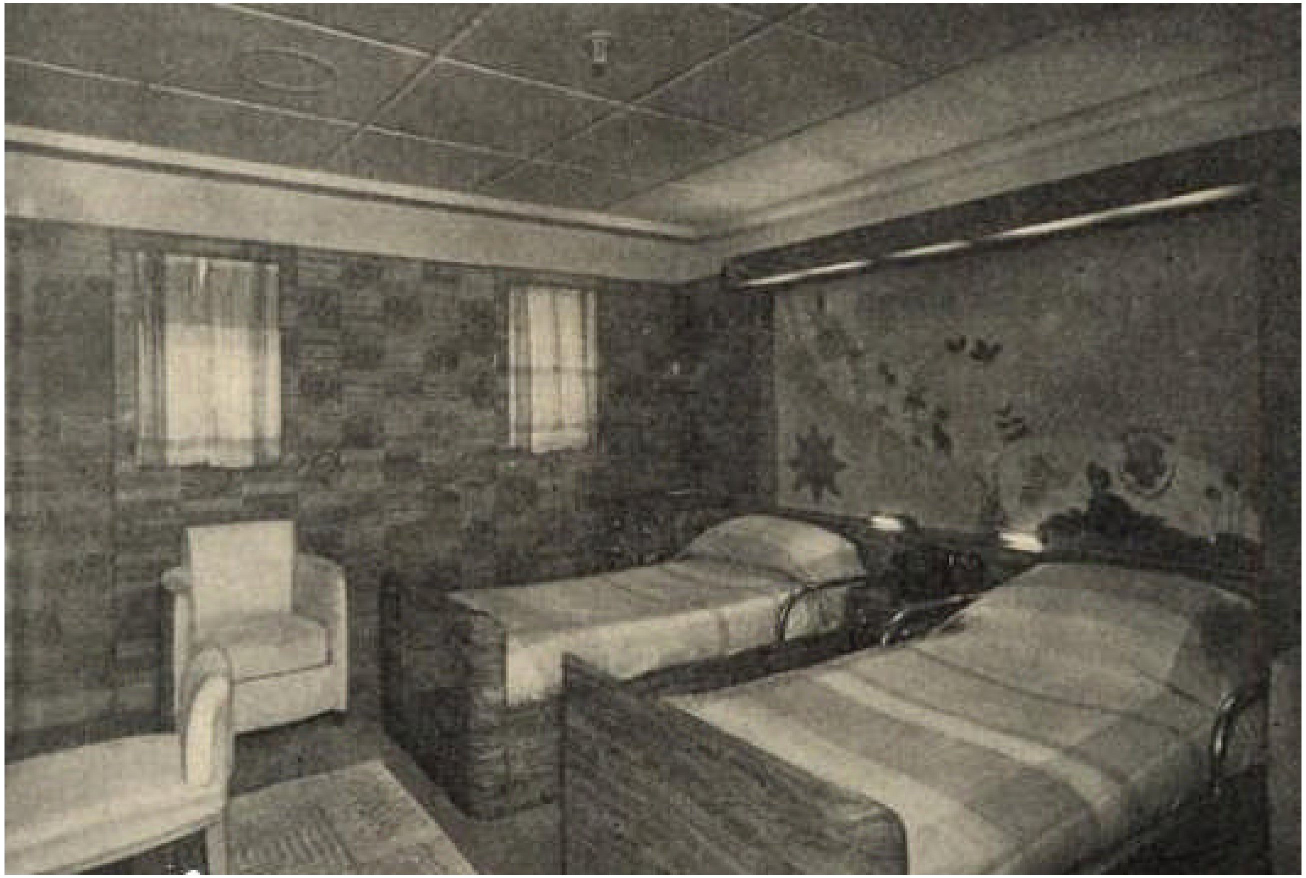
Chambre de Jumieges

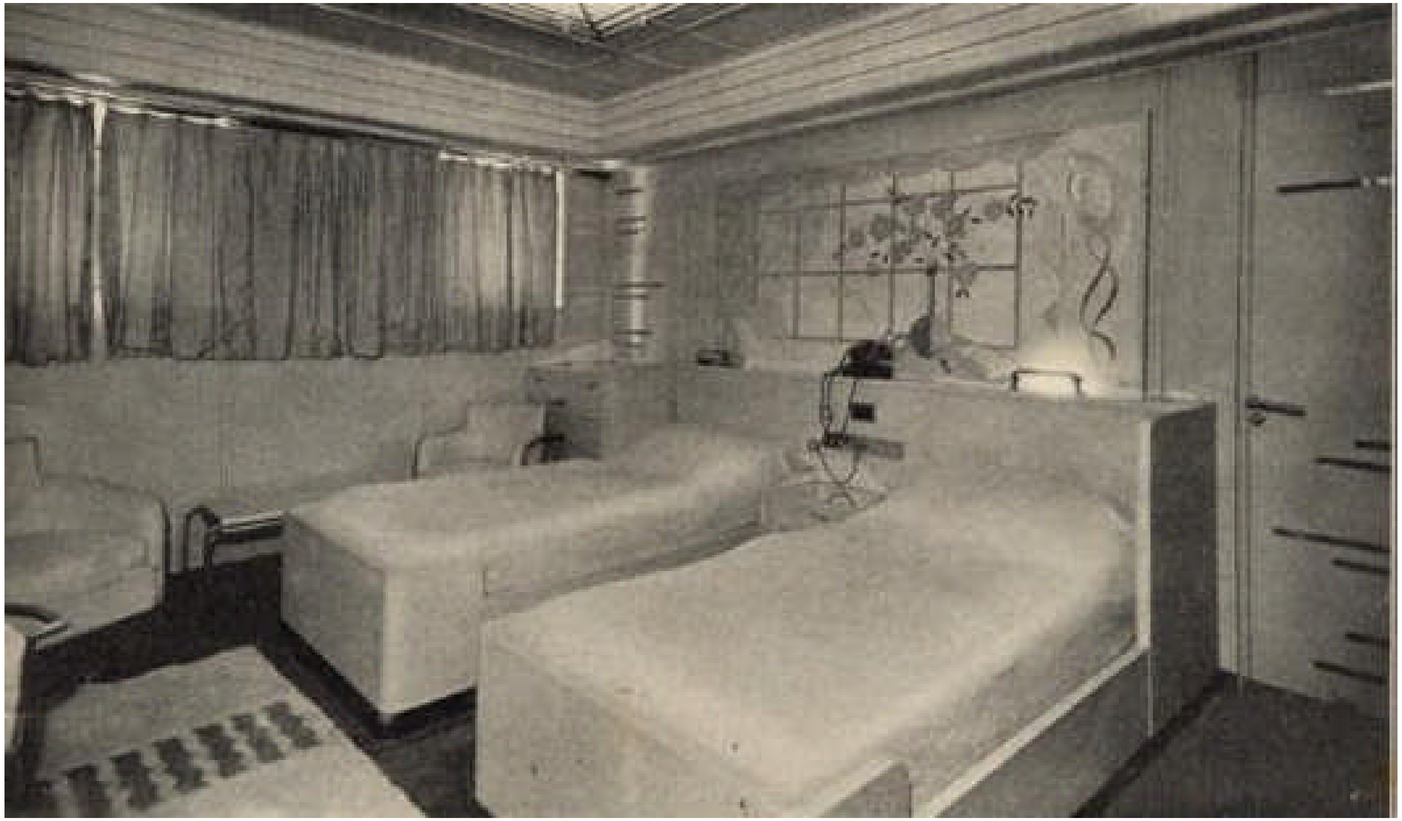
(Deluxe Apartment furnished in the French Empire style)

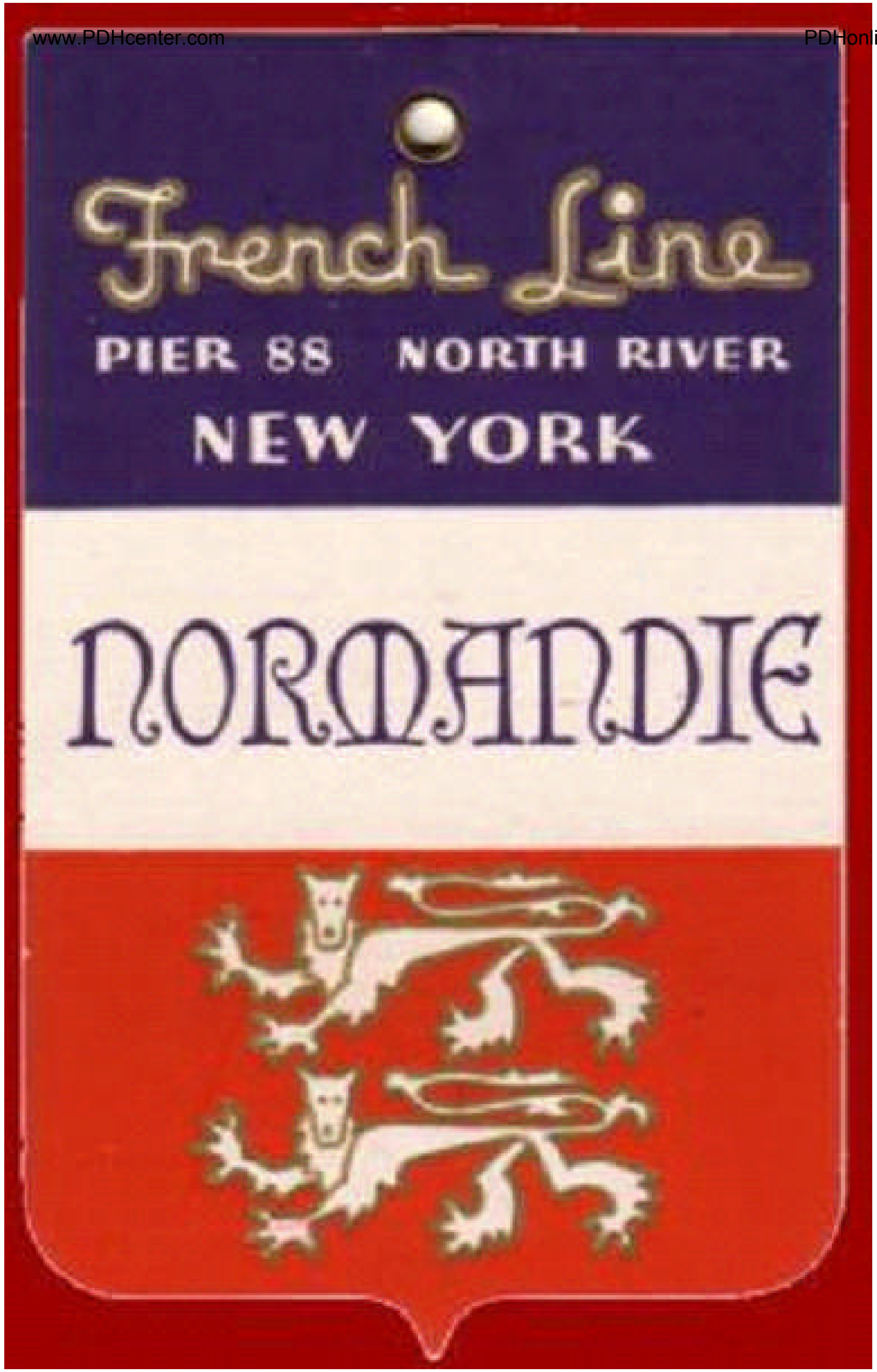
First Class Cabin Living Room



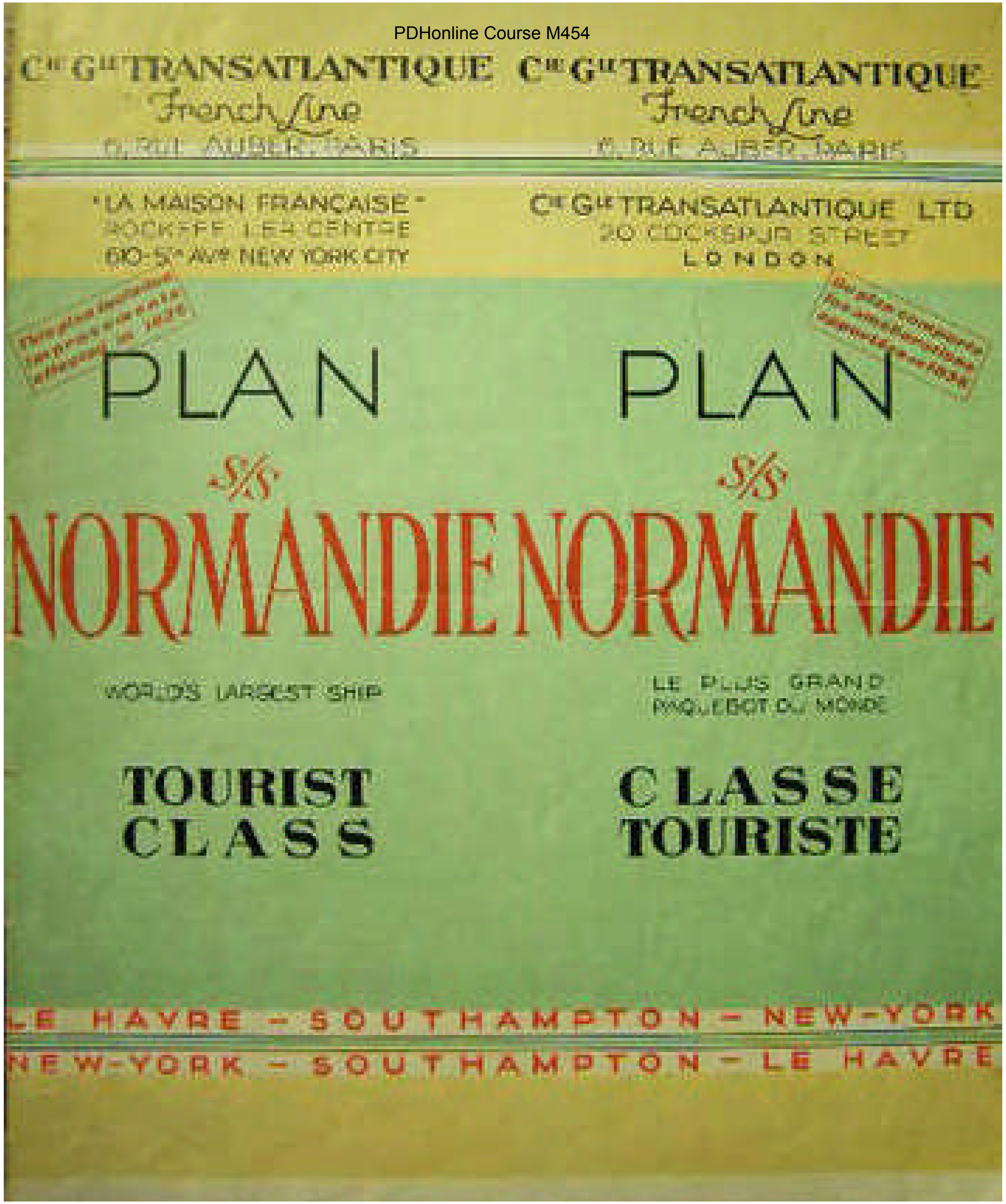
First Class Cabin Bedroom







Tourist Class


Cie Gle TRANSATLANTIQUE
French Line
6, RUE AUBER, PARIS
Cie Gle TRANSATLANTIQUE
French Line
6, RUE AUBER, PARIS
"LA MAISON FRANÇAISE"
ROCKEFELLER CENTRE
610-5th AVE NEW YORK CITY
Cie Gle TRANSATLANTIQUE LTD
20 COCKSPUR STREET
LONDON
PLAN
PLAN
S/S
S/S
NORMANDIE
NORMANDIE
WORLD'S LARGEST SHIP
LE PLUS GRAND
PAQUEBOT DU MONDE
TOURIST
CLASS
CLASSE
TOURISTE
LE HAVRE - SOUTHAMPTON - NEW-YORK
NEW-YORK - SOUTHAMPTON - LE HAVRE

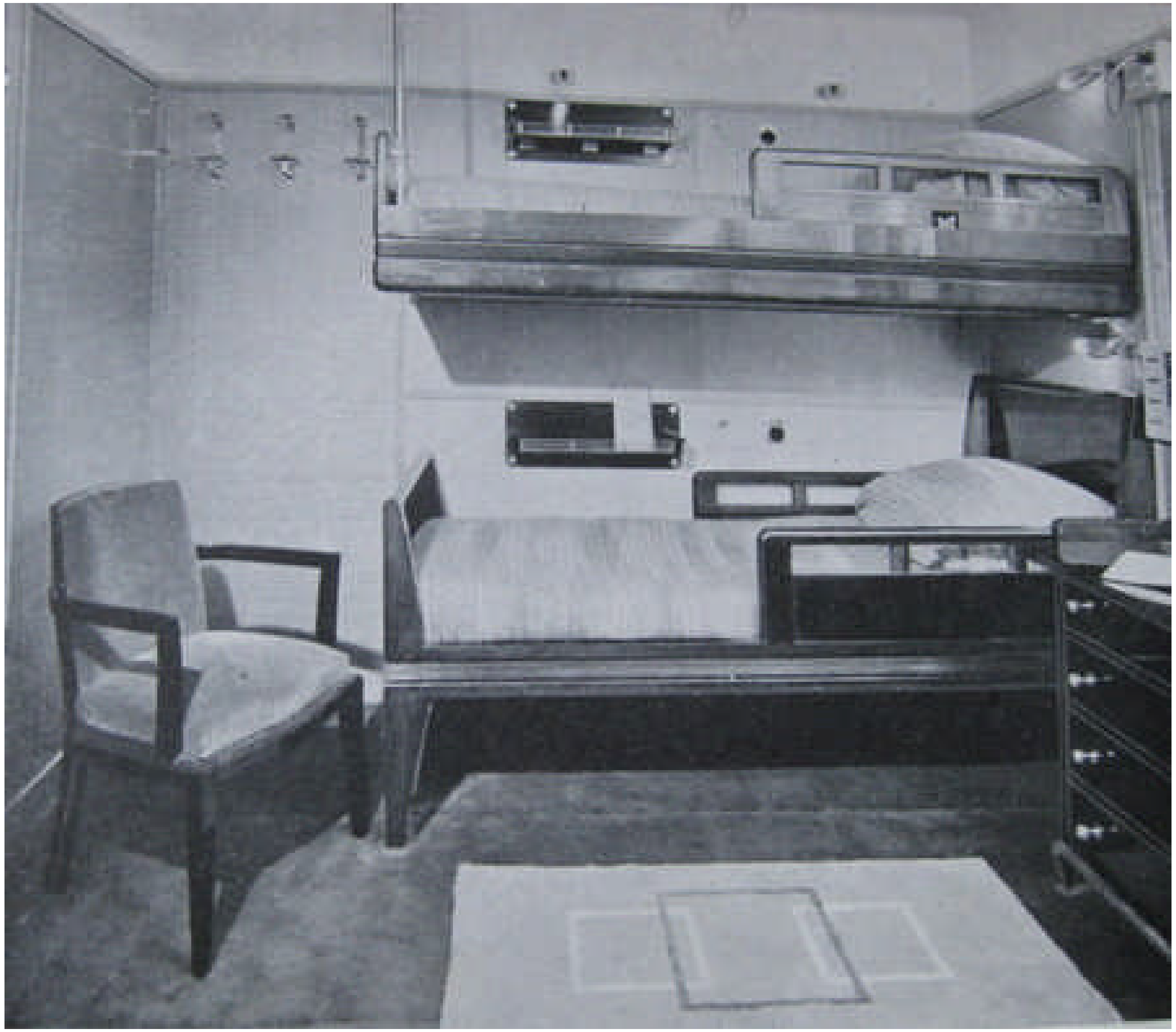
Tourist Class Cabin Living Room


French Line
NEW YORK • PLYMOUTH • HAVRE
CABIN NO.
CABIN NO.
NAME
STEAMER
DATE
EUROPEAN ADDRESS
THIRD CLASS BAGGAGE
PIER
NORTH RIVER FOOT OF WEST
ST. NEW YORK

Third Class

"…The ship's third class is placed near the stern instead of within the narrow confines of the bow…"

***Popular Mechanics,* June 1935**




GUEST
OF
FRANCE
French
Line

Part 8

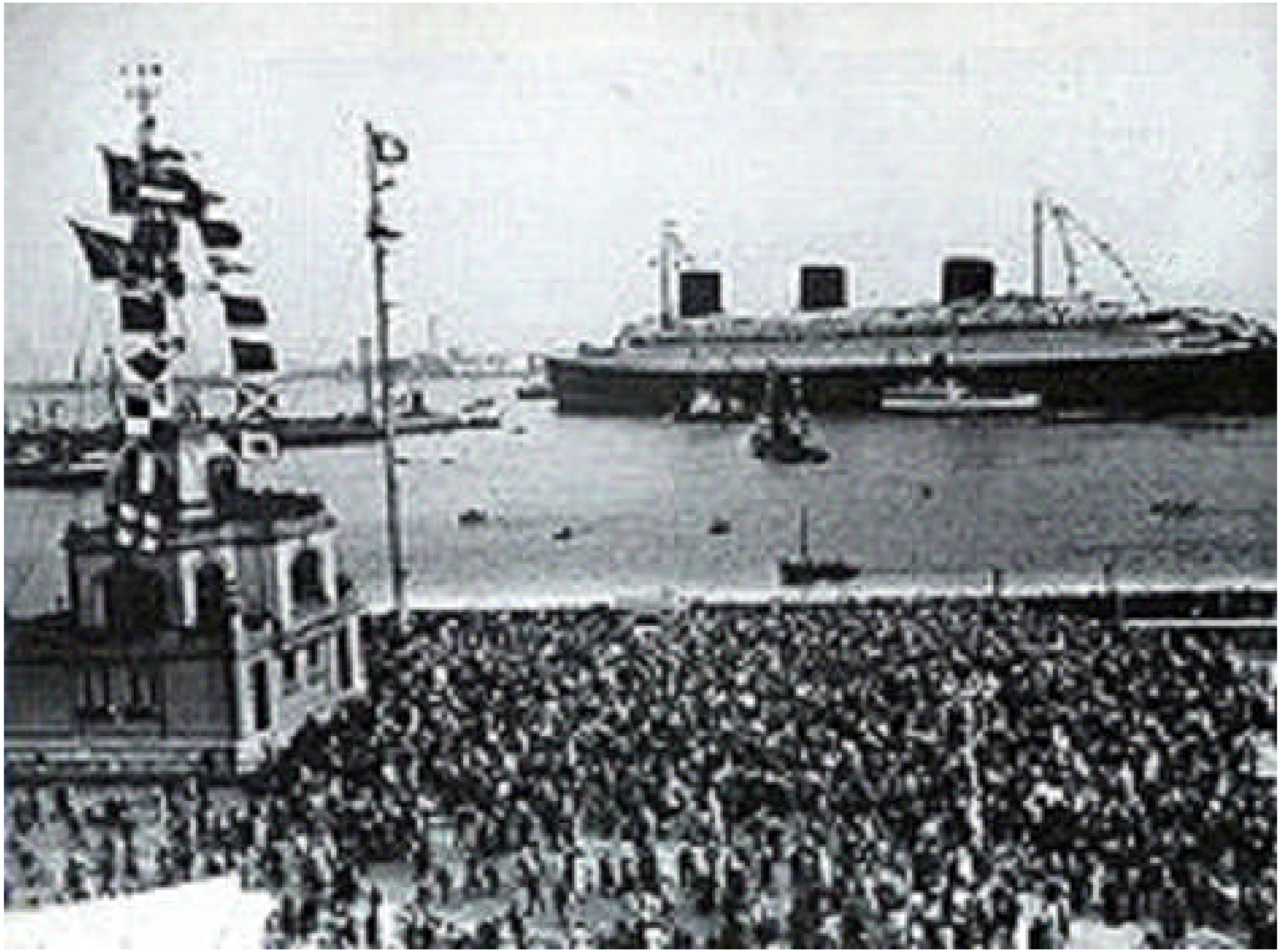
Voyages

Pride of the French Line

At 5:00PM on the 29th of May 1935, *Normandie* departed from *Le Havre* on her maiden voyage to New York (with a first stop across the English Channel at *Southampton*). To celebrate the event, for three days prior one-thousand invited guests enjoyed dinners, galas and parties aboard the new CGT flagship, the *Pride of the French Line: S.S. Normandie*. As well, local, national and international press heavily publicized the ship and its inaugural transatlantic voyage. Fifty-thousand people saw her off from her home port on what would be a momentous journey.

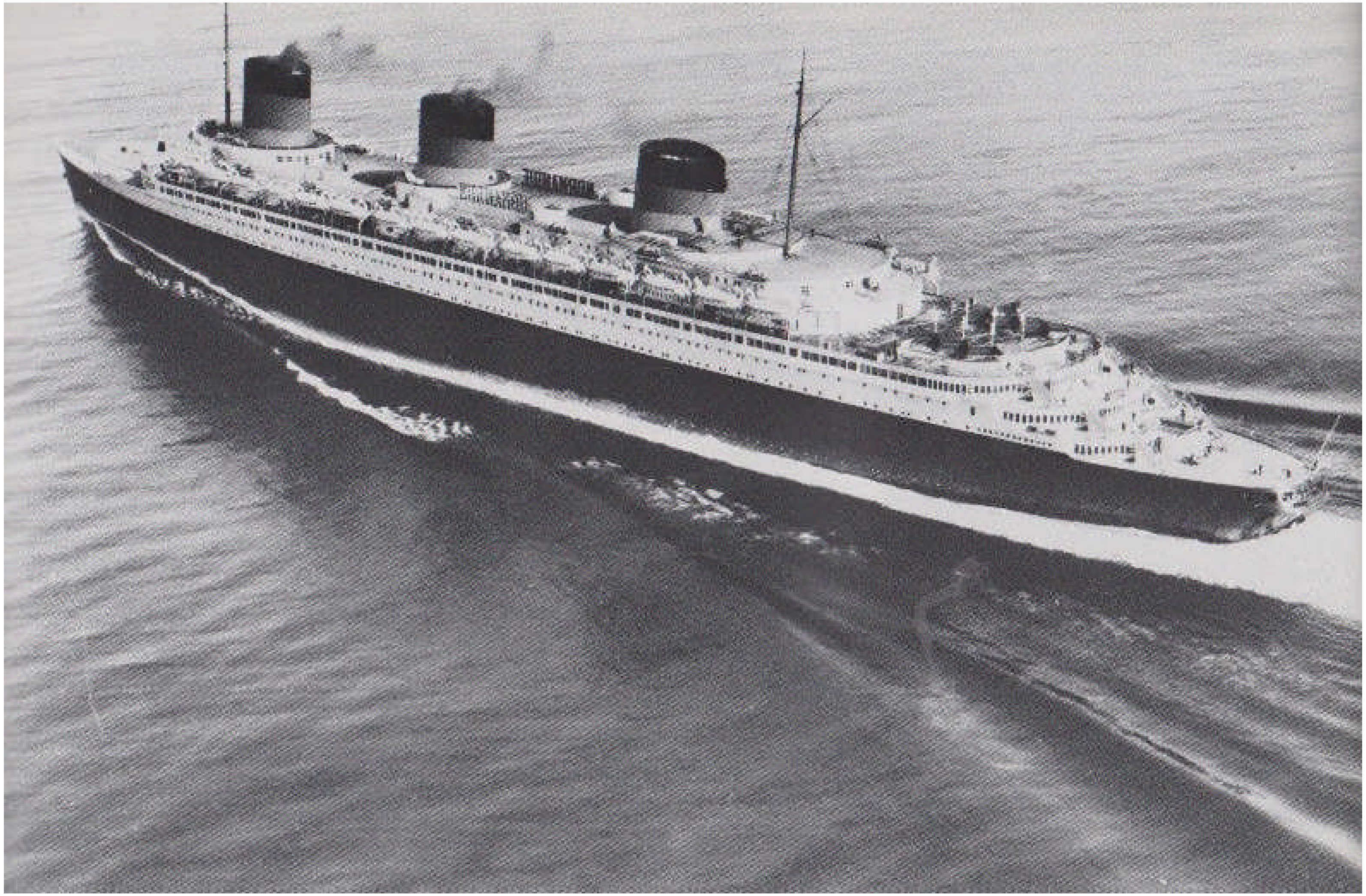
Maiden Voyage

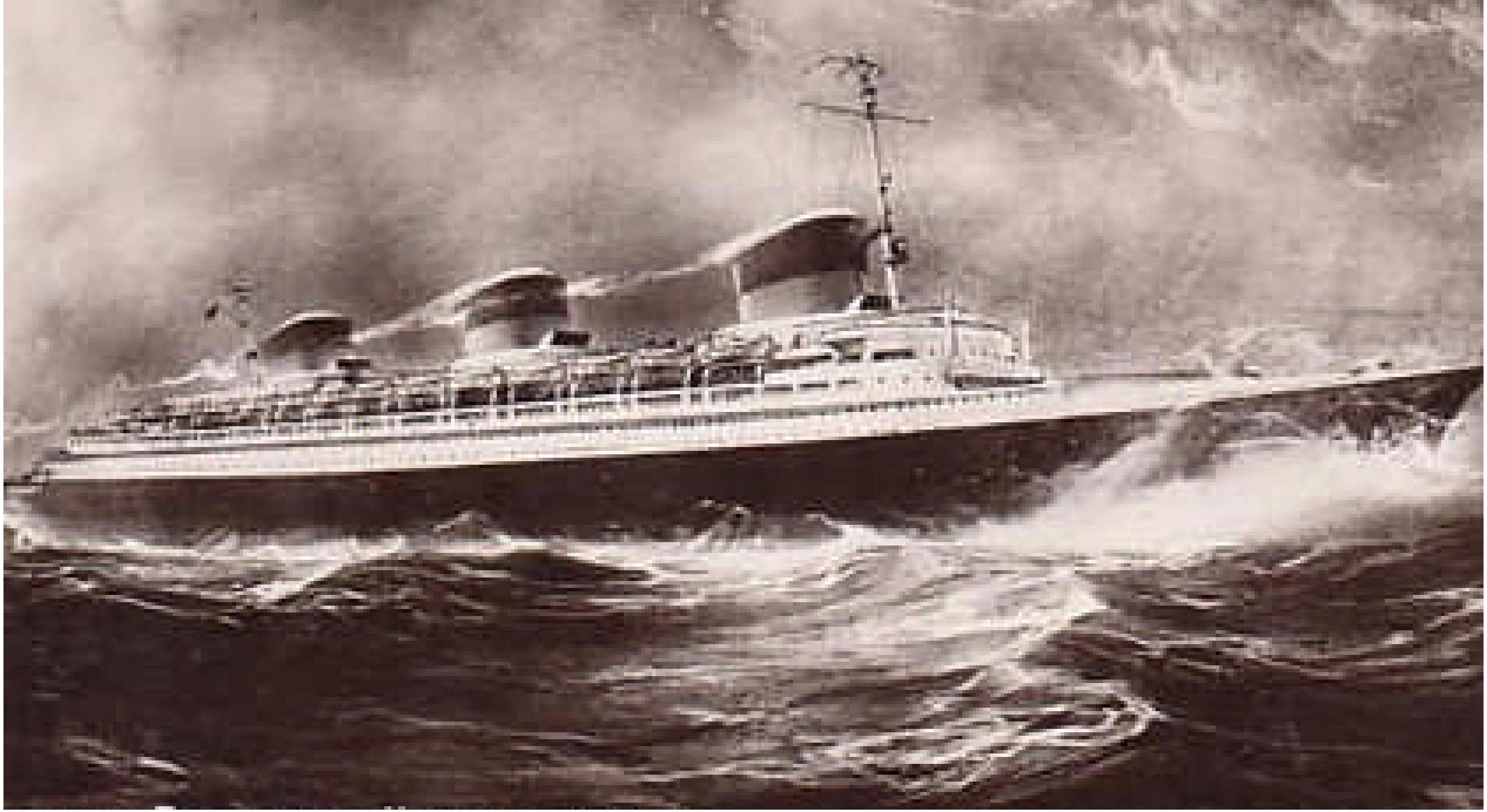

Du 29 Mai
au
12 Juin 1935
VOYAGE INAUGURAL
DE
NORMANDIE
LE HAVRE - NEW YORK - LE HAVRE
Nous certifions que M
a pris passage à bord du paquebot
Normandie lors de son voyage inaugural
de à



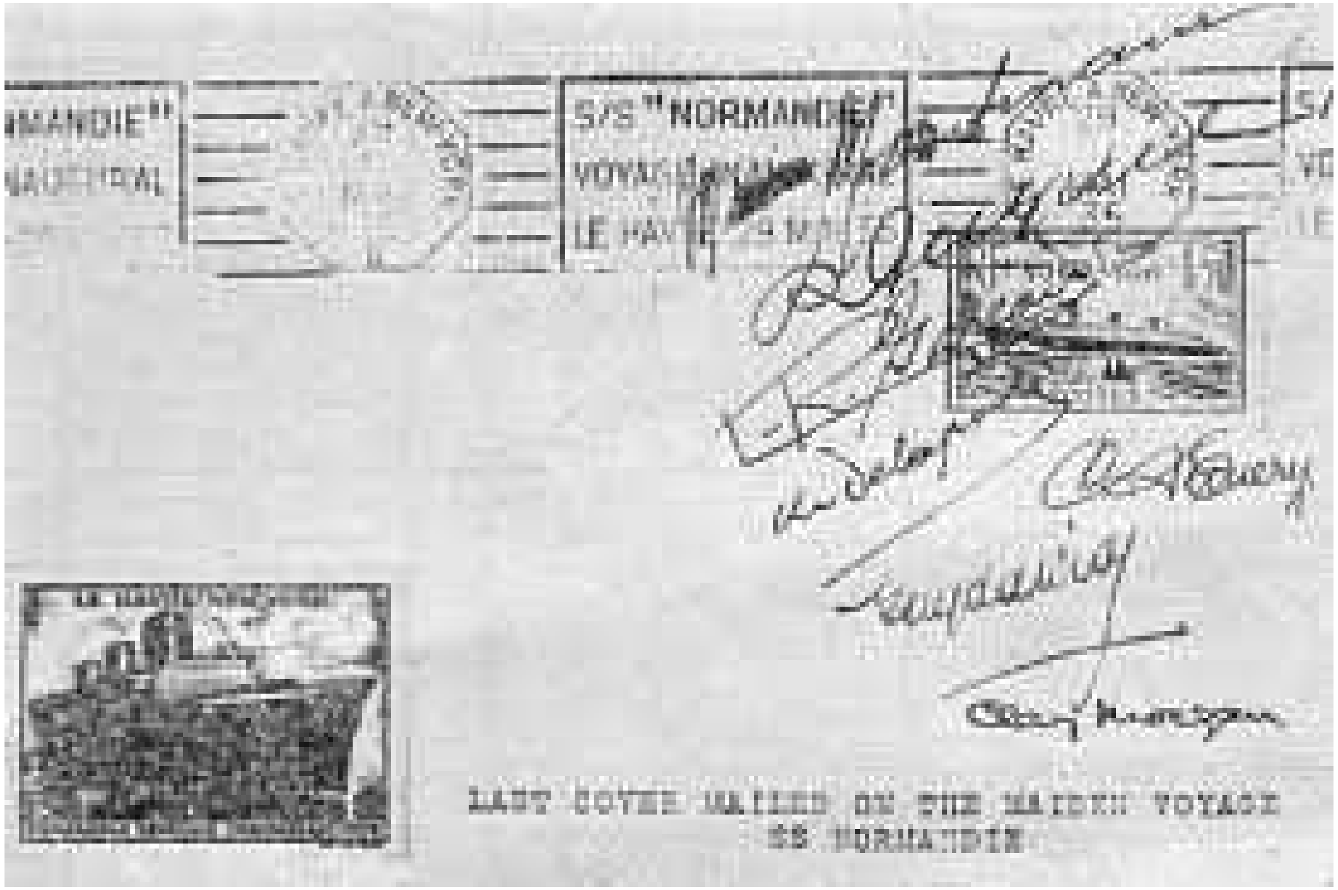
Cover of *L'Illustration*
(Published June 1st 1935)
***Normandie* leaving Le Havre on her maiden voyage to New York**

Though CGT became aware of Normandie's excessive vibrations during her sea trials, they did not want to delay any longer her maiden voyage. Tourist class passengers whose cabins were in the stern (where the shaking and rattling was worst) had to be given other cabins. It was clear to CGT that the vibration problem had to be remedied as soon as possible. That meant four bladed propellers to replace the initial three bladed set.





On her second day at sea (May 31st), it was announced that the *Normandie* had made a first day's run of 744 nautical miles by averaging 29.76 knots during the first 24 hours – a new world's record.


S/S "NORMANDIE"
LAST COVER MAILED ON THE MAIDEN VOYAGE
SS NORMANDIE

Besides excessive vibrations, another characteristic of *Normandie* discovered by passengers on her maiden (and subsequent) voyages was her tendency to roll, even in fairly calm seas

Another problem noticed by passengers on her maiden voyage was soot from the funnels. The forward motion of the ship spread it back across the sun deck, mainly on first-class passengers at play.

Battle of the Super-Liners

On June 2nd 1935, *Normandie* approached the *Ambrose Lightship* marking the end of her first transatlantic (westbound) crossing. She had crossed the 3K miles of North Atlantic in just four days, three hours and fourteen minutes averaging +29-knots, thus taking the Blue Riband from the Italian liner *Rex*. CGT refused to predict a new speed record for their flagship's maiden voyage, but they prepared nevertheless. Victory medallions were handed out and the 100K spectators lining the shore in New York couldn't help but notice the thirty-foot long blue pendant flying from *Normandie's* yardarm upon her arrival. *Captain Rene Pugnet* was a national hero; the honor of the French nation had been upheld, after all this was the first time a French ship won the prestigious honor. Thus began the "Battle of the Super-Liners" for speed supremacy. In August 1936, the *Queen Mary* – averaging 30-knots, took back the Riband from *Normandie*. With her retrofit complete, in July 1937 *Normandie* took the Riband back with an average speed of 32-knots. However, the *Queen Mary* would take back the Riband from the *Normandie* for good in 1938. WWII ended the rivalry and plans to build a sister-ship for the *Normandie* which would have been longer and larger: *S.S. Bretagne.* Though she was a hit with the public for her speed and elegance, *Normandie* typically traveled at 60% capacity, covering her operating expenses but never turning a profit, due in large part to her emphasis on attracting first-class passengers.


NORMANDIE
BLUE RIBBON

In 1936, the *Work Progress Administration* (WPA) and the *Treasury Relief Art Project* commissioned artist *Reginald Marsh* to design and paint eight large murals depicting ocean liners at various stages of arrival in the *Port of New York* in the eliptical dome (at left) of the *U.S.* (a.k.a. *Alexander Hamilton*) *Customs House* on Bowling Green (at the foot of lower Broadway, NYC). There was some controversy about which liners should be depicted but, in the end, they were: United States Lines' *S.S. Manhattan* and *S.S. Washington* (at the time the the largest passenger liners under the American flag), Cunard's flagship *R.M.S. Queen Mary*, and the French Line's flagship *S.S. Normandie*. In between the murals are eight smaller panels depicting explorers. The United States Lines' *S.S. Manhattan* passes *Ambrose Lightship* (at right) marking the beginning of the shipping channel (via the Narrows) into the Port of New York.

<u>Left</u>: *Sandy Hook* Pilot boards liner via rope ladder
<u>Right</u>: The harbor tug *Calumet* approaches the U.S. Lines' *S.S. Washington* (in the channel off Staten Island)

<u>Left</u>: Officials boarding a liner from a tug in Upper New York Bay

<u>Right</u>: *R.M.S. Queen Mary* passes the *Statue of Liberty* and is about to enter the busy North (Hudson) River. The Lower Manhattan skyline lies ahead (to starboard).


<u>Left</u>: Tugs maneuver the French Line's *S.S. Normandie* into her West Side berth (Pier 88)
<u>Right</u>: A 1937 Packard is being pushed off *Normandie* while a sling (containing the mail) is offloaded. The nets prevented objects from falling in the water.

Rene Pugnet, Master Captain of the *S.S. Normandie*

Winner of the *Blue Riband*, Hero of France

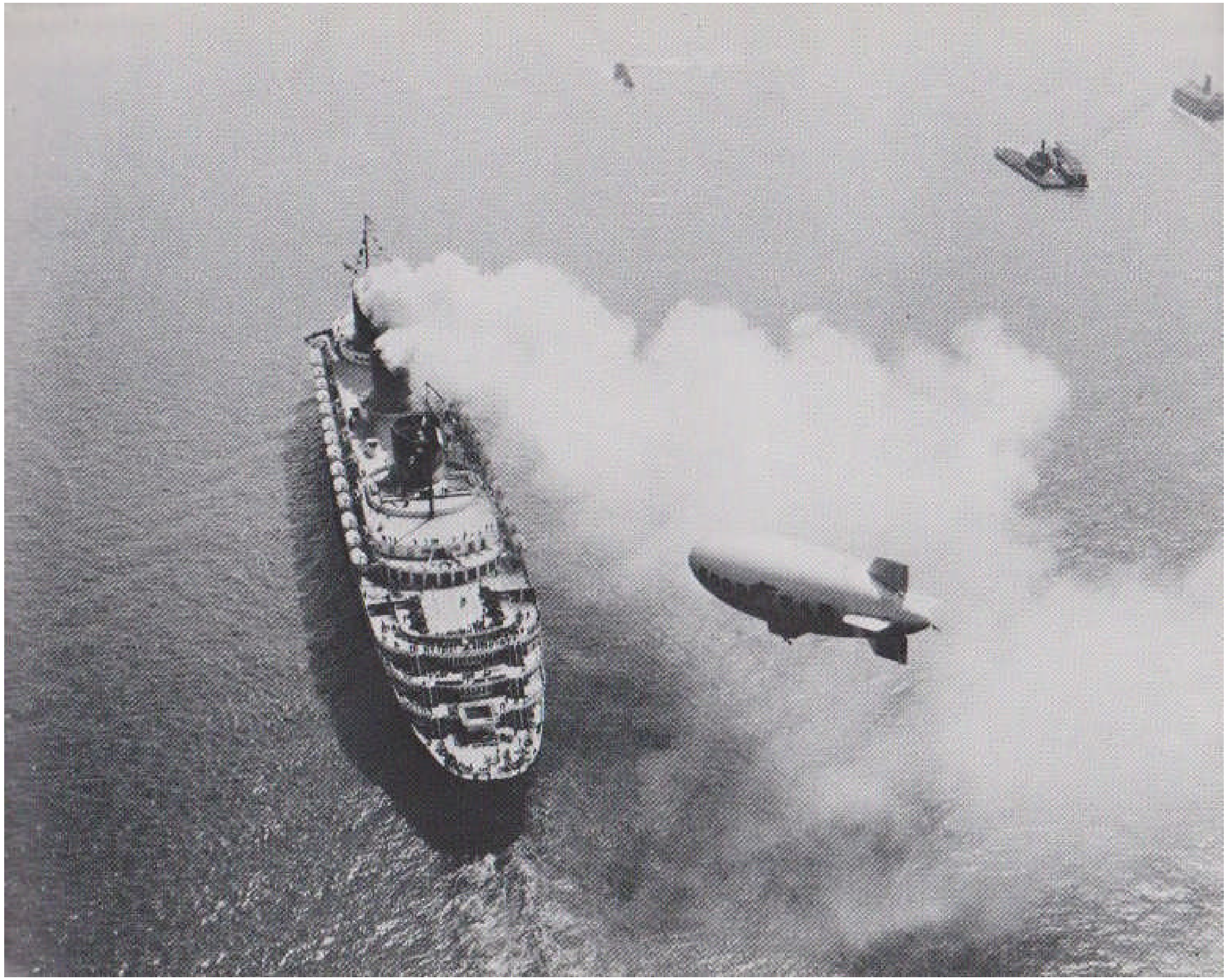
"Bravo to the Queen Mary until next time!"

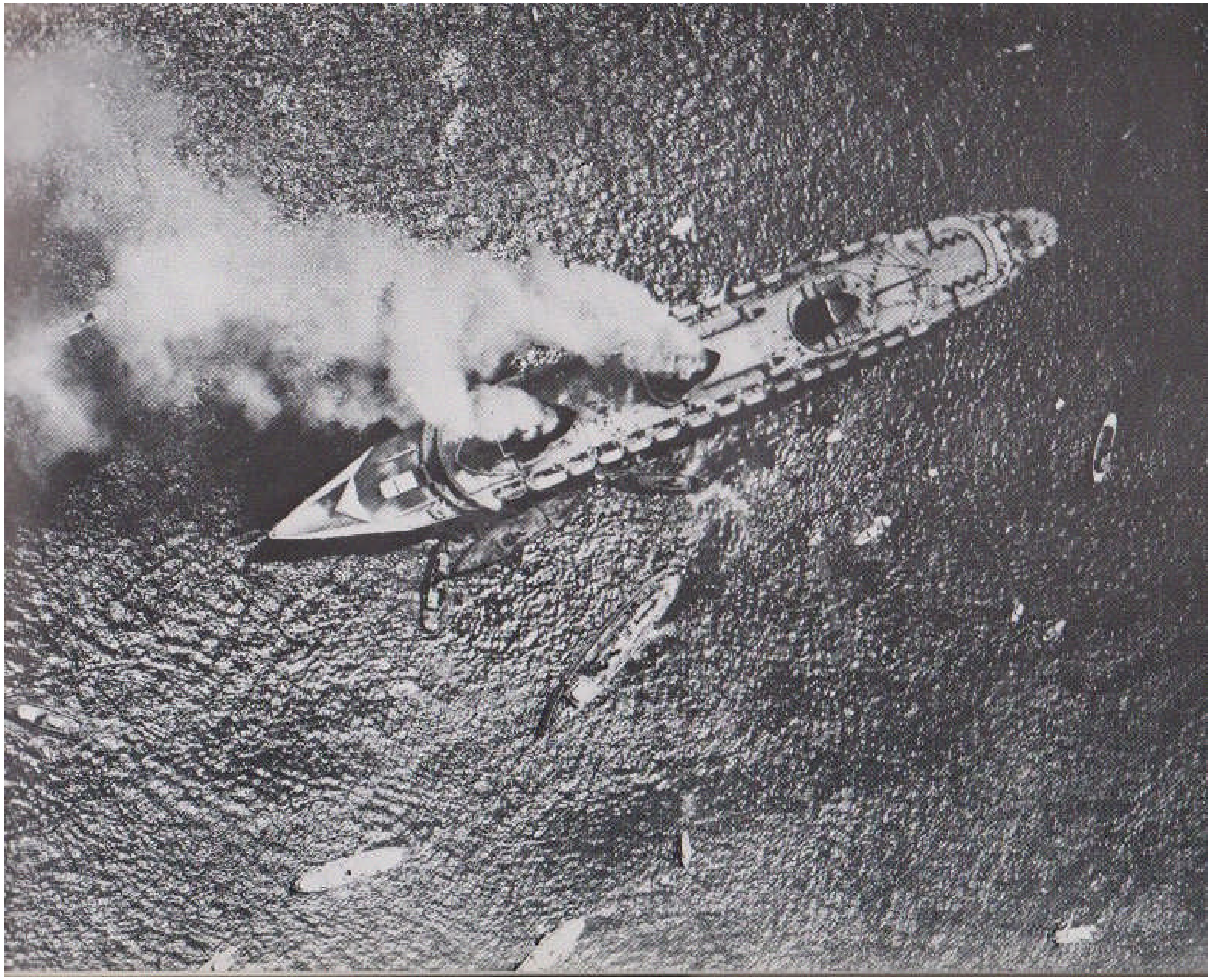
Rene Pugnet – Master Captain, *S.S. Normandie*

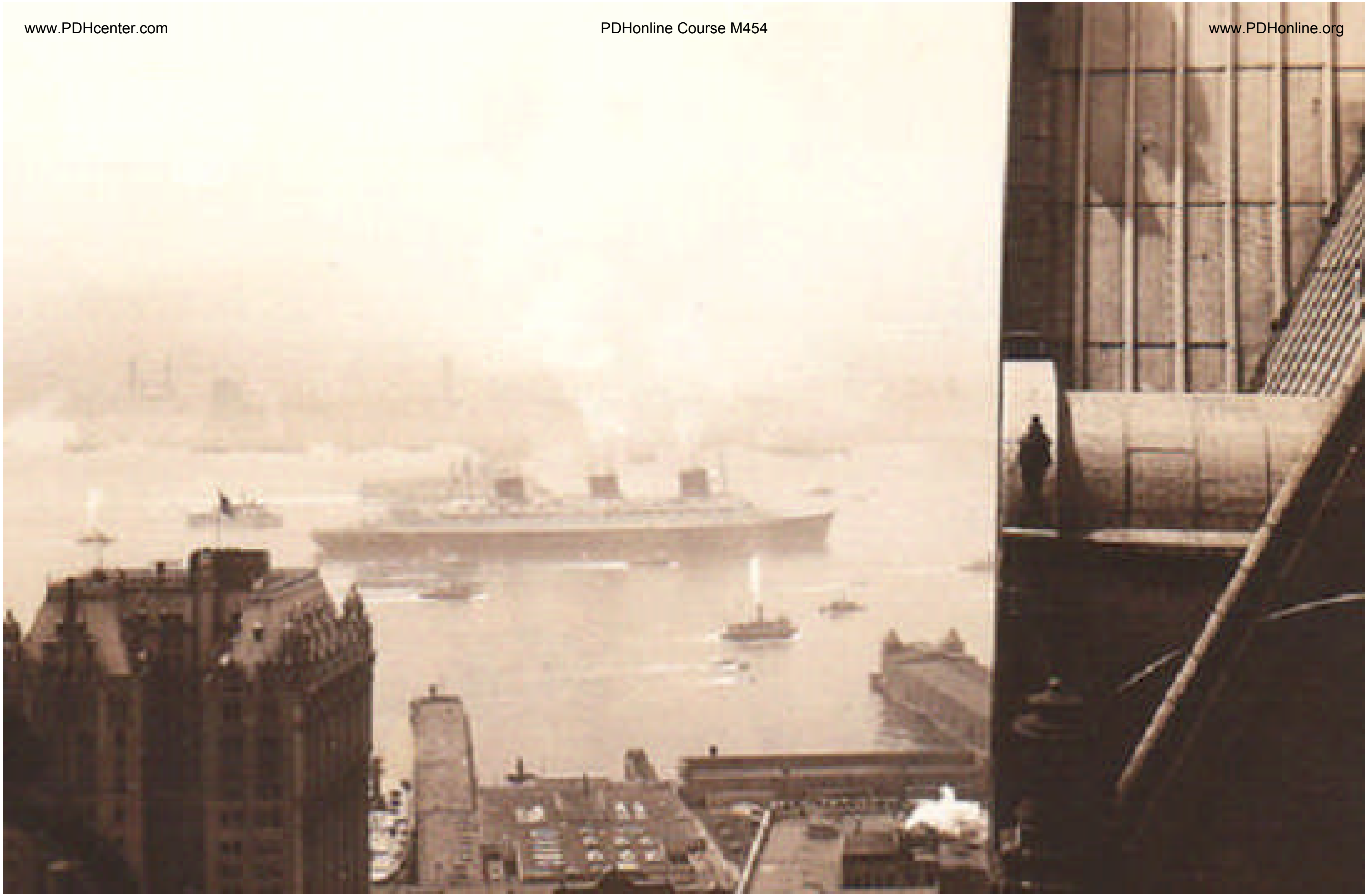
RE: message to the *Queen Mary* upon regaining the Blue Riband from *Normandie* in 1938

Normandie (left) / Queen Mary (right)
New York ca. 1940

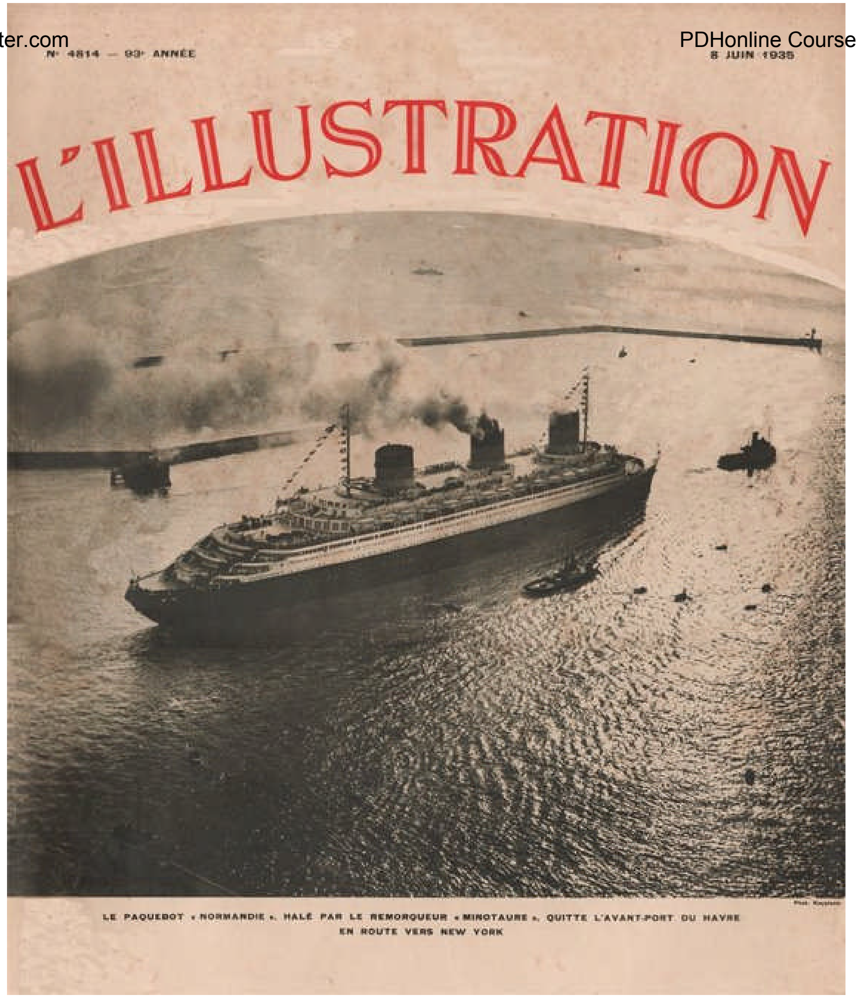
As Normandie arrived in New York, she was surrounded by welcoming boats, ships, ferries, planes and admiring crowds. She had crossed the North Atlantic with an average speed of 29.98 knots, faster than any transatlantic liner before her. A celebration was in order.







View from the Woolworth Building

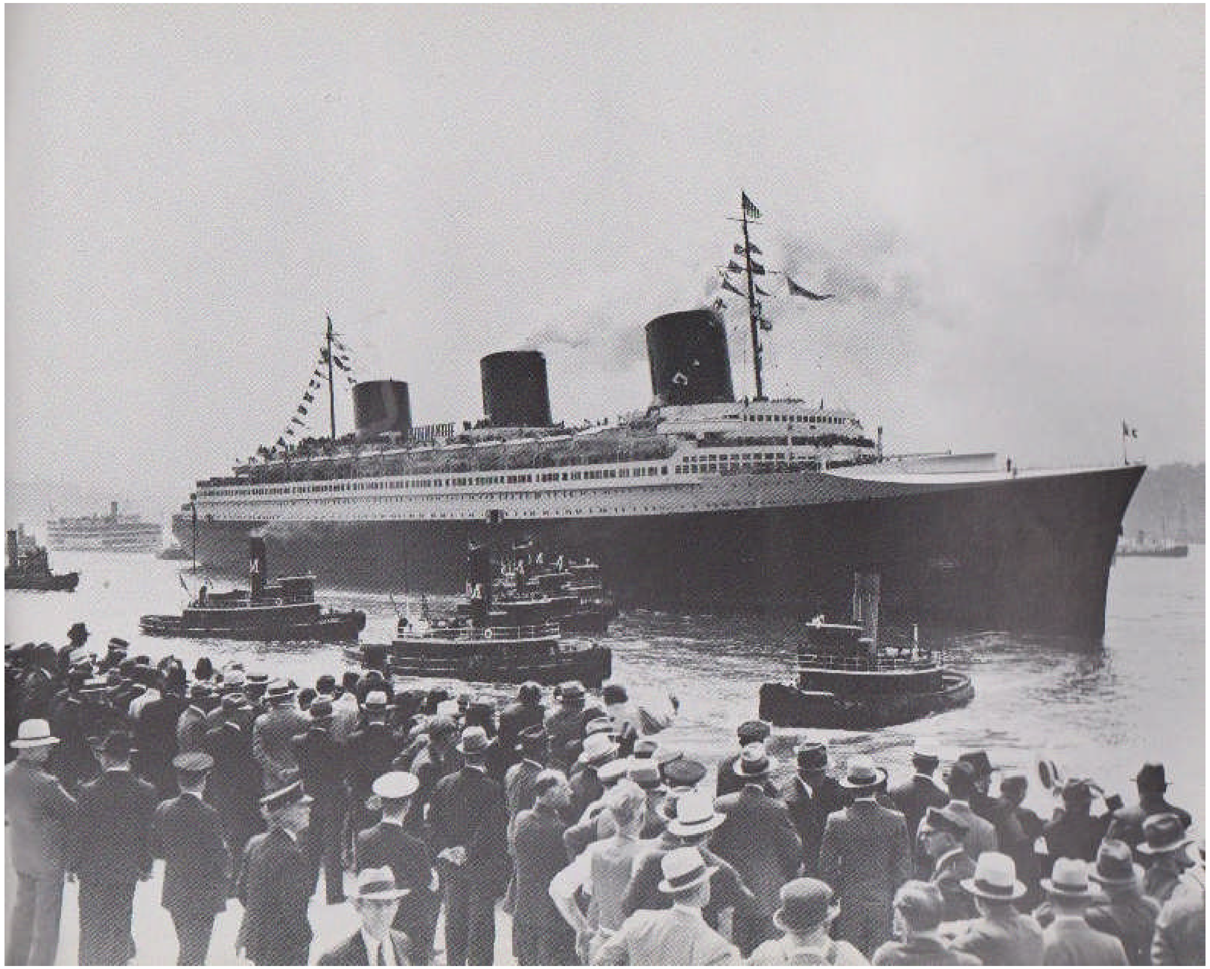


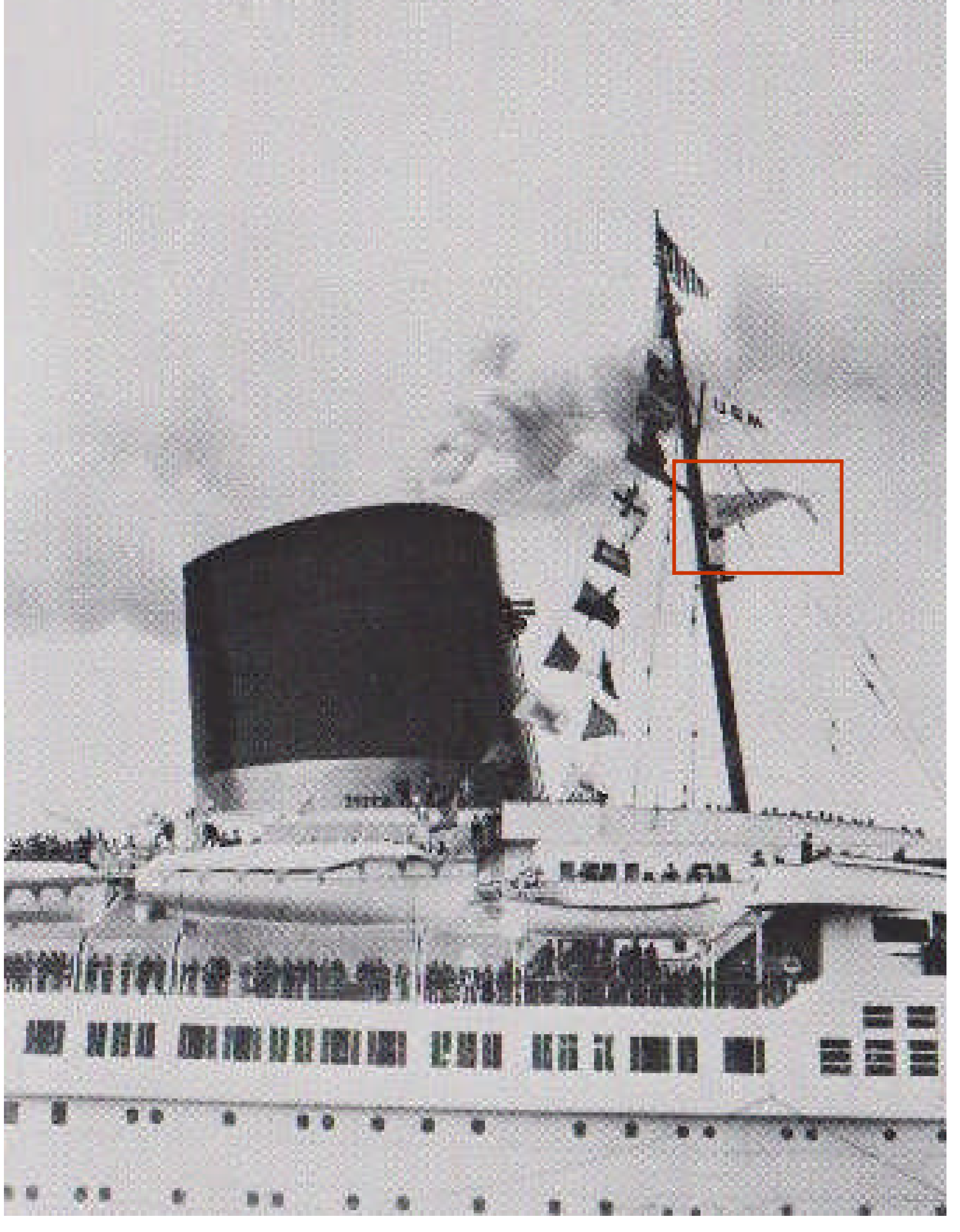
"The liner Normandie, hauled by tug Monotaur, before leaving the port of Le Havre en route to New* York (left)…*Out of the harbor of Le Havre, the largest cruise ship set sail for its first transatlantic crossing…The arrival to the skyscrapers of New York, June 3rd* (right)…*The liner Normandie won the Blue Ribbon…"

***L'Illustration,* June 8th 1935**

This artist's postcard has two errors. First, it shows real smoke coming out of *Normandie's* dummy third funnel. Second, it shows Normandie entering New York harbor *down* from the *East River* rather than it's actual course (through the narrows, into the bay and *up* the *Hudson River*).

Pier 88, North River





Blue Riband Banner

The French Line Terminal

Hudson River Pier 88; at West 50th Street, on the west-side of New York City, was extended by 200-feet to accommodate *Normandie*

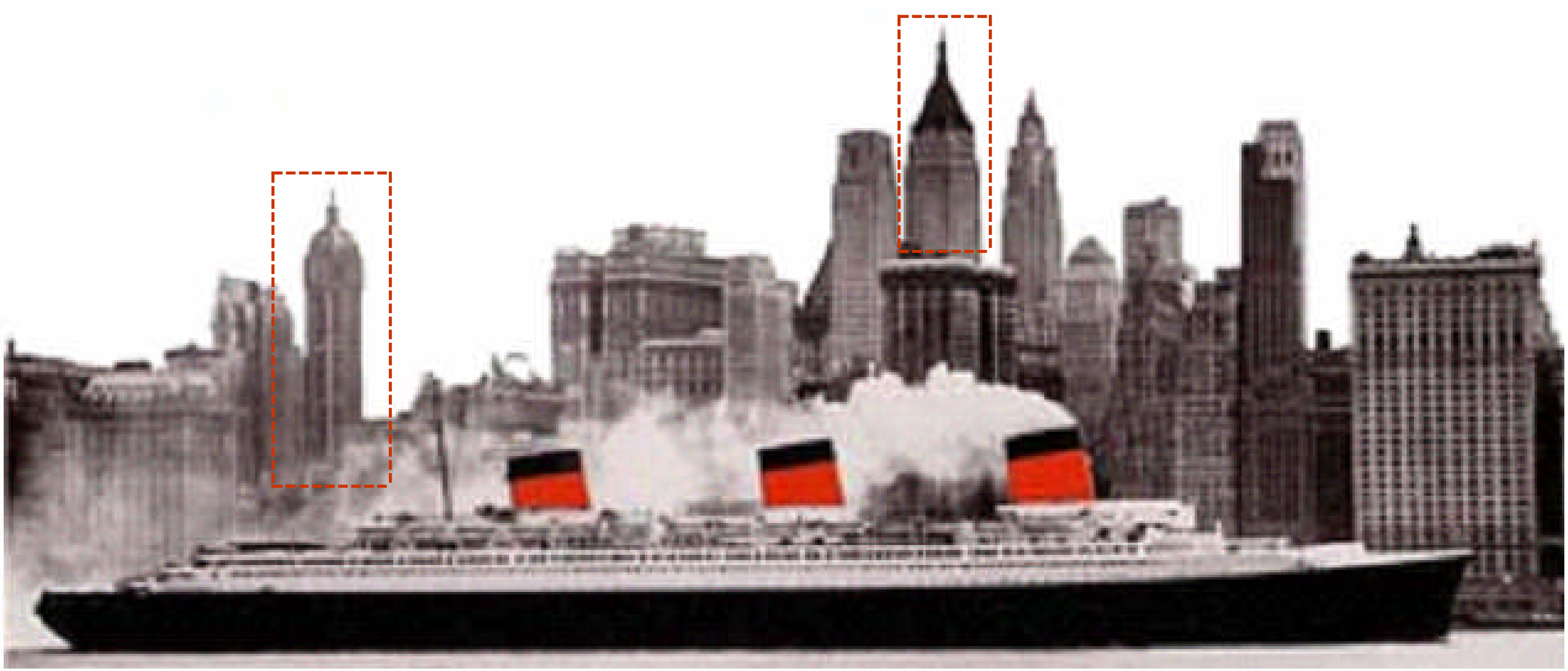
Birds-eye view looking north up the *Hudson* (a.k.a. *North*) River at the passenger steamship piers on Manhattan's west side. In all, 358,274 tons of passenger liner shipping are docked in New York Harbor (ca. late 1930s) at this one time. From bottom to top, the liners are: *Hamburg*, *Bremen*, *Columbus*, *De Grasse*, *Normandie*, *Britannic*, *Aquitania*, *Conte de Savoia*, *Fort Townsend* and *Monarch of Bermuda.*


HOTEL
TAFT
FRENCH LINE


S/S NORMANDIE
WORLD'S LARGEST SHIP
COMMEMORATING
MAIDEN VOYAGE

After a three-day turnaround, *Normandie* departed NY for Southampton arriving in 4-days, 3-hours and 28-minutes averaging +30-knots thus taking from the liner *Bremen* the eastbound speed record she had held since 1929. Through the summer and autumn of 1935, *Normandie* made the Atlantic crossing many times attracting a celebrity clientele. However, by the onset of winter, she was in her dry dock at St. Nazaire. The vibration problem was studied carefully and it was determined that four-bladed propellers and hull strengthening would solve the vibration problem (it did). At 79,280 tons, *Normandie* was about to be bested by the new super-liner *Queen Mary* at +80K-tons. Rather than lose the title to their British rival, CGT decided to take advantage of the situation by adding additional tonnage to *Normandie* while still in dry dock to maintain her status as the world’s largest liner. New bridge wings, an enclosed café-lounge (on the aft Boat Deck) and other changes added up to 83,423 tons thus surpassing Queen Mary in gross tonnage by 2K-tons. Though lighter and less hydrodynamically efficient, *Queen Mary* had more powerful engines allowing her to compete successfully for the Blue Riband. In March 1940, the new British liner *Queen Elizabeth* made her way to New York (seeking refuge from German bombers) to join her sister *Queen Mary*. At 83,673 gross tons, she beat out *Normandie* for the largest liner title by just 250-tons. Had it not been for the outbreak of WWII, the liner wars would most certainly have continued into the 1940s.

Outward Bound
June 6th 1935



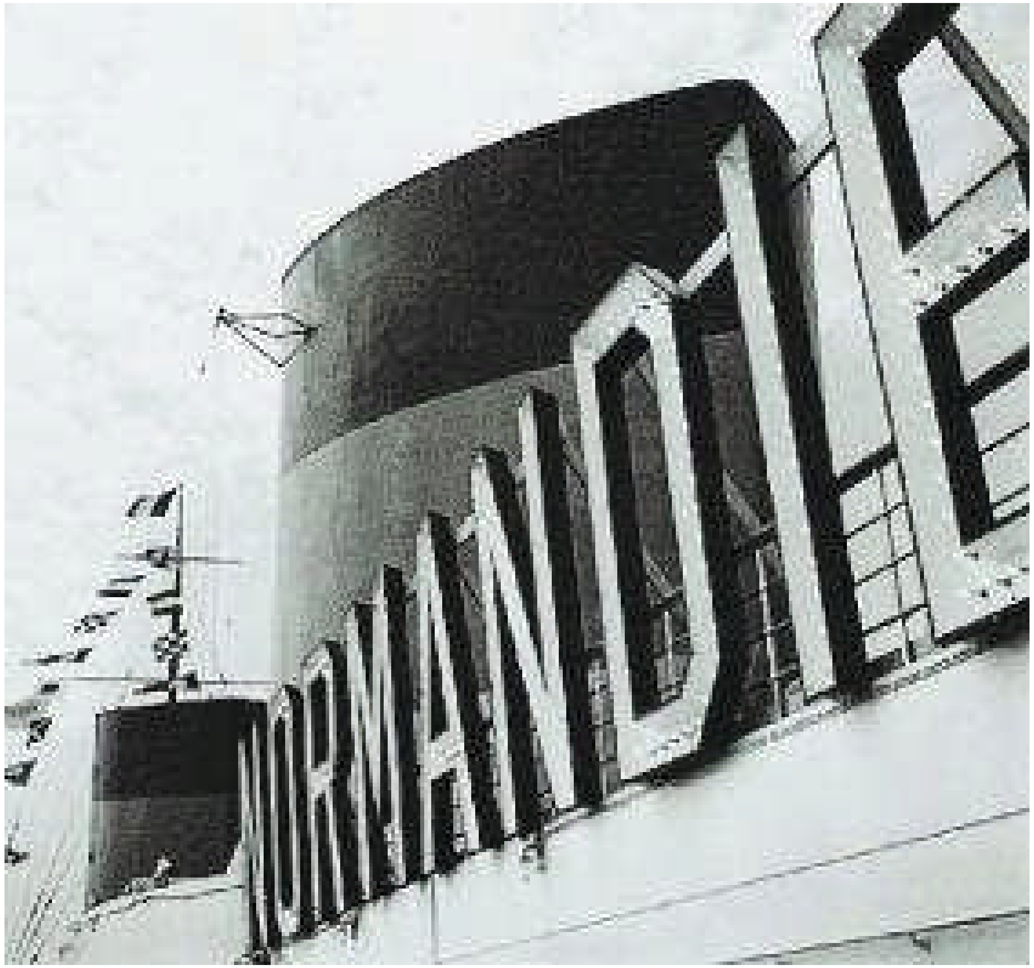
Passing Lower Manhattan
***Singer Building* (left) / *Woolworth Building* (right)**

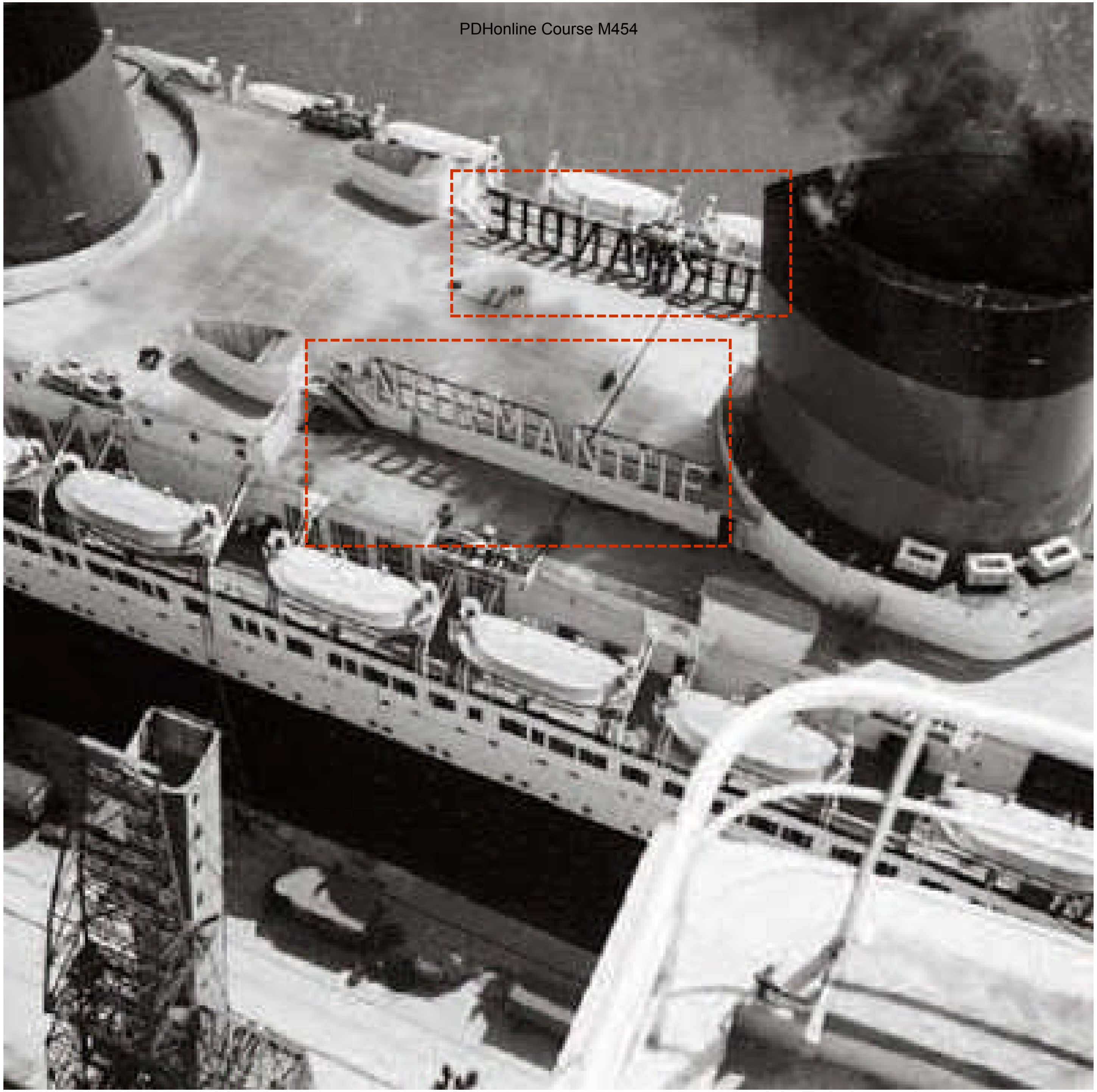
Le Havre

Retrofit

Between the second and third funnels, the word “NORMANDIE” in very large, illuminated letters appeared on both the port and starboard sides (Sun Deck). These were removed during the 1935/36 winter retrofit (to widen the tennis court).


NORMANDIE





Tennis Court
(after widening)

Star Appeal

Marlene Dietrich

Marlene Dietrich **aboard** ***Normandie*** **with all of her luggage (including five full-height wardrobe trunks)**

Cary Grant

Bob Hope

Ernest Hemingway

Charles Boyer

George Raft

Eddie Cantor

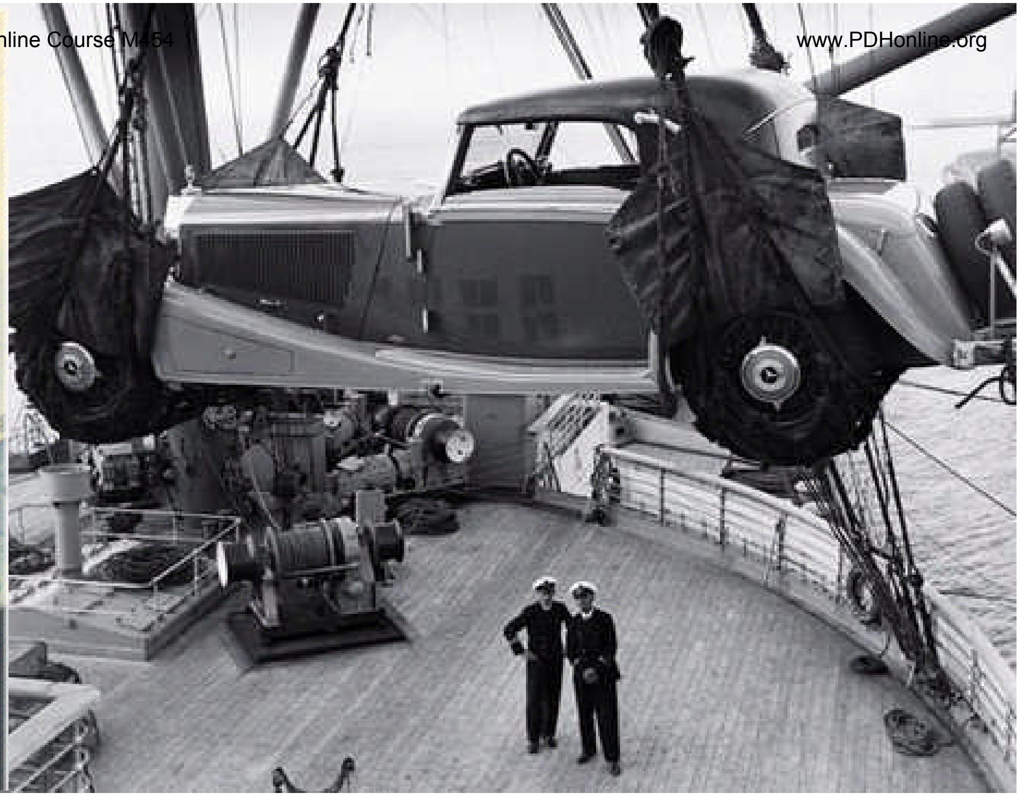
Simone Simon
(French Actress)

Mrs. Joseph P. Kennedy
(Rose Kennedy)

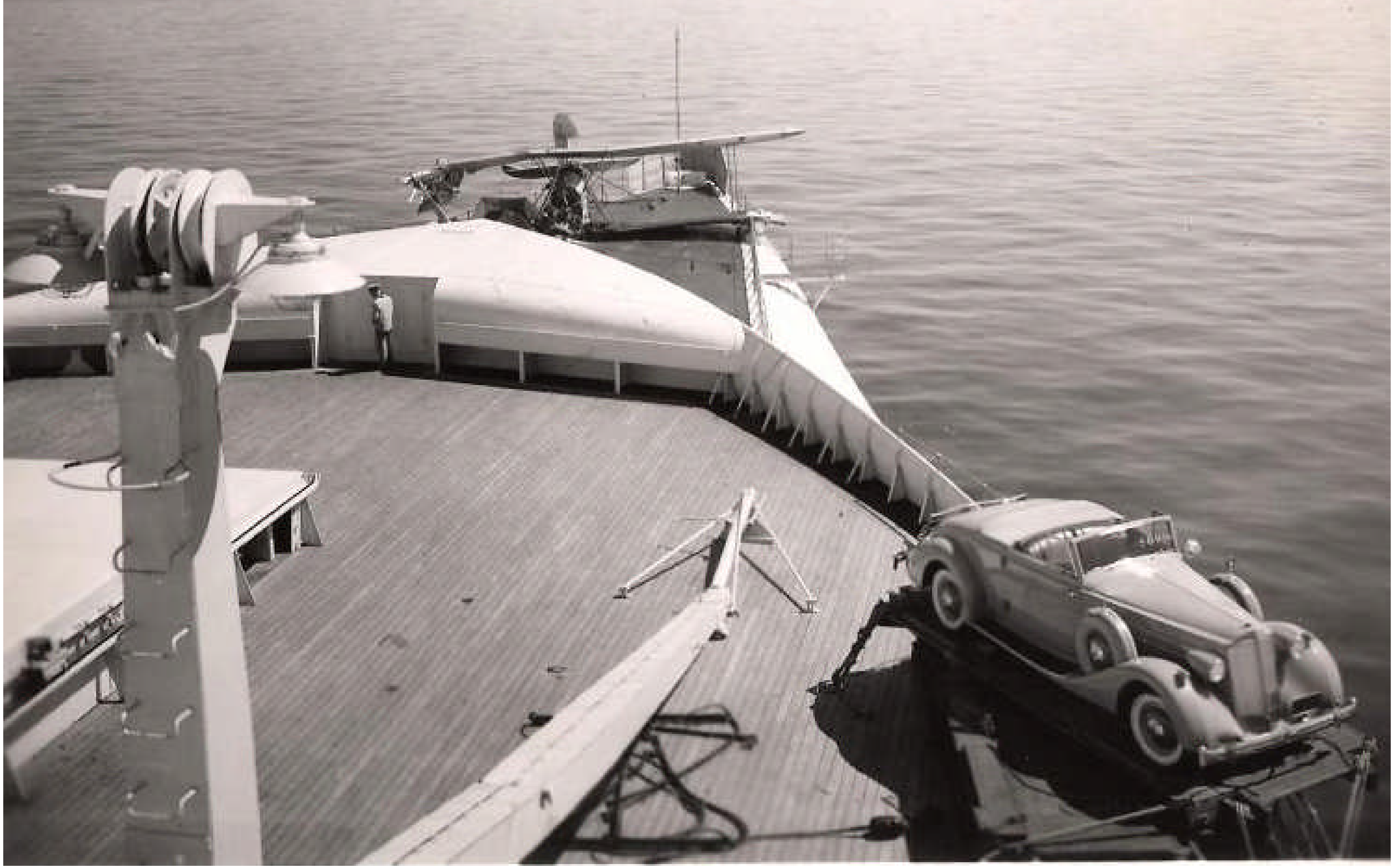
Maurice Chevalier (right)

Mickey Mouse

Crash Landing



On June 22nd 1936, an RAF *Gosport* - while on torpedo-dropping practice near *Ryde Pier*, Southampton, buzzed *Normandie* and collided with a derrick which was transferring a motor car belonging to *Arthur Evans*, MP, onto a barge alongside the ship. The aircraft crashed onto *Normandie*'s bow. The pilot was taken off by tender, but the wreckage of the aircraft remained on board *Normandie* since she had to sail on the tide. It was carried to Le Havre, France. A salvage team from the Royal Air Force later removed the wreckage. The pilot was court-martialed and found guilty. Evans' car was wrecked in the accident.



Torpedo plane wreckage (on bow)

(note the *Packard* convertible being transported at lower right)

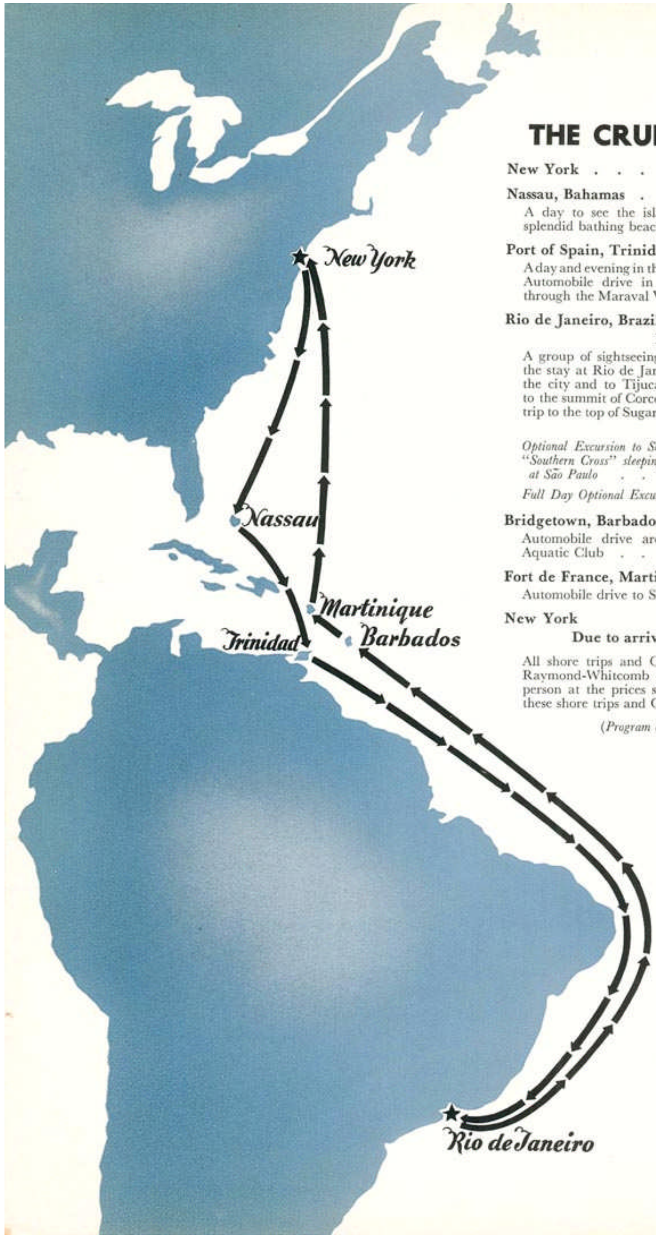
Location of crash
(model)

Heading South

"In planning their 'Normandie to Rio Cruise' for the coming winter, it was the aim of the French Line and Raymond-Whitcomb to devise a cruise of moderate length…To that end for a cruise ship they selected the Normandie, which is the largest liner ever to sail the high sea and one of the fastest. They arranged for her to visit Rio de Janiero…and to remain there for nearly four days…And to break the voyages to South America, and back, and still further enrich the program, they added calls at four bright and picturesque islands of the West Indies…"

RE: excerpt from brochure for Feb. 4 thru 28 1939 "Normandie to Rio" cruise. With transatlantic travel in the off-season slow, CGT sent Normandie south in the winter/s of 1938/39.


THE FRENCH LINE
S.S. NORMANDIE
TO
RIO
FEB. 4 TO 28
1939
A
RAYMOND-WHITCOMB
CRUISE



THE CRUISE PROGRAM

New York . . . . **Sail on Feb. 4, 5 p.m.**

Nassau, Bahamas . . . . **Feb. 6**
A day to see the island with its fashionable hotels and splendid bathing beaches.

Port of Spain, Trinidad . **Feb. 9 to 10 (early a.m.)**
A day and evening in the metropolis of the British West Indies. Automobile drive in the city, over "The Saddle" and through the Maraval Valley. Luncheon on shore. Price: $7

Rio de Janeiro, Brazil
Feb. 15 (p.m.) to 19 (early a.m.)
A group of sightseeing drives and excursions arranged for the stay at Rio de Janeiro consists of: automobile drives in the city and to Tijuca; excursion by electric cog railway to the summit of Corcovado; a ticket for the aerial railway trip to the top of Sugar Loaf; luncheon on shore on two days. Price: $24

Optional Excursion to São Paulo with two nights on the famous "Southern Cross" sleeping car train and a full day of sightseeing at São Paulo . . . . Price: $37.50

Full Day Optional Excursion to Petropolis . . . Price: $10

Bridgetown, Barbados . . . . **Feb. 24**
Automobile drive around the island; luncheon at the Aquatic Club . . . . Price: $7

Fort de France, Martinique . . . . . **Feb. 25**
Automobile drive to St. Pierre . . . . . Price: $7.50

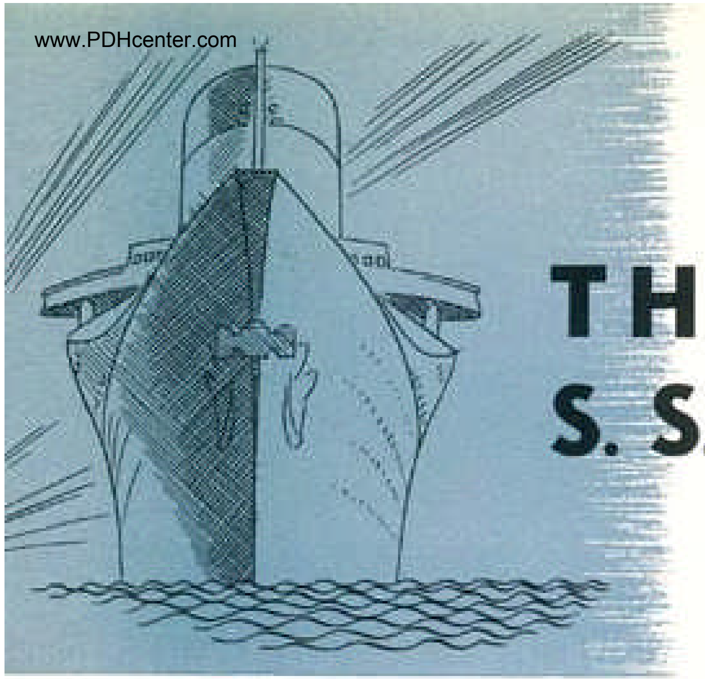
New York
Due to arrive at Quarantine, Feb. 28, noon

All shore trips and Optional Excursions, as arranged by Raymond-Whitcomb and listed above, will be sold per person at the prices shown. For a detailed description of these shore trips and Optional Excursions, see page 27.

(Program and rates subject to change)

Normandie to Rio & the West Indies

Rising above the Organ Mountains in the background, towering, needle-like Corcovado, and the huge statue of Christ that surmounts it, is one of the first landmarks to be sighted on approaching Rio de Janeiro, and one of the last to fall below the horizon on departure.

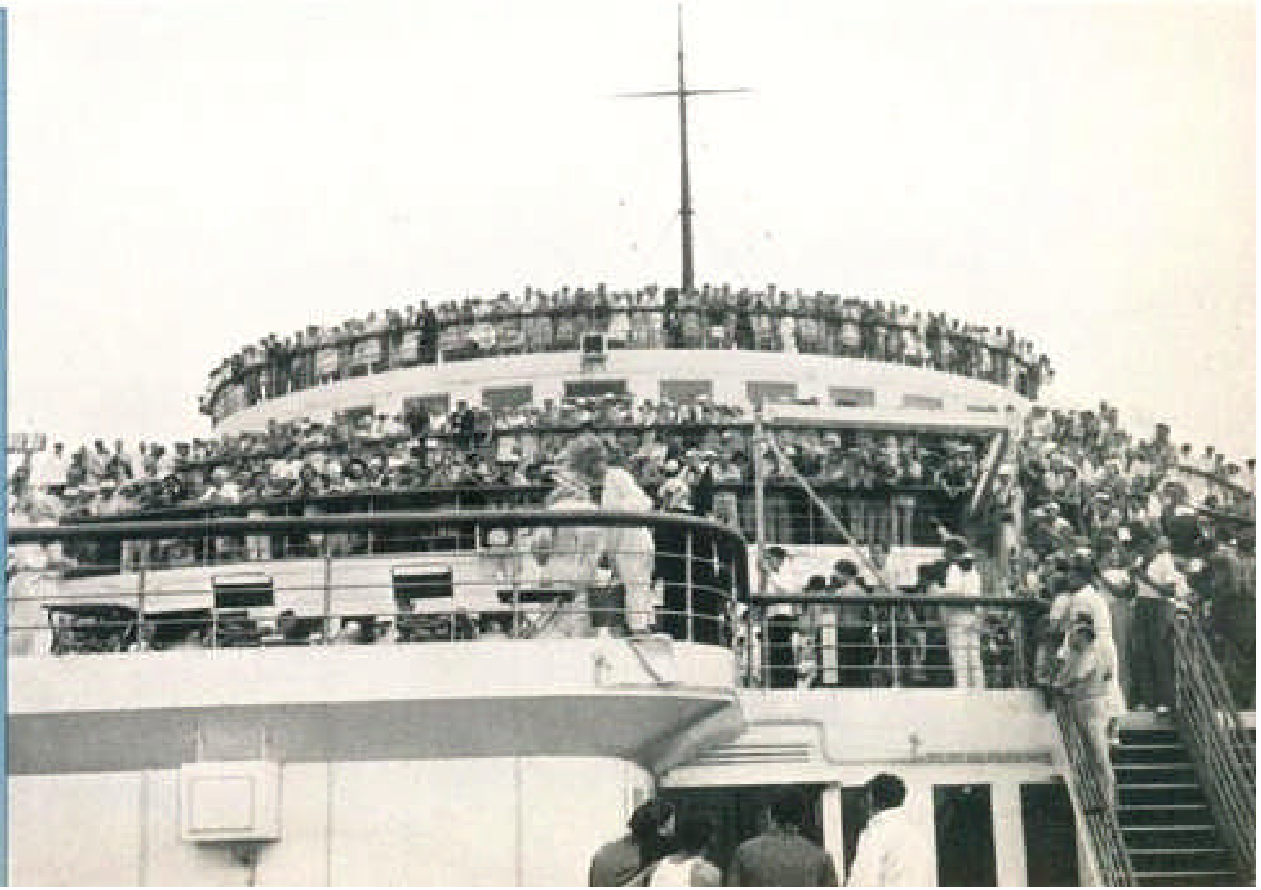


THE CRUISE SHIP S.S. NORMANDIE

The NORMANDIE sailed from Havre for New York on her maiden voyage on May 29, 1935. In July of this year, 1938, she made her one-hundredth Atlantic crossing. In those three years of service and that century of Transatlantic voyages she covered 334,000 nautical miles, which amount to more than fifteen times the circumference of the earth, at an average speed of 28.54 knots.

She is officially rated at 83,422 tons, and is 1029 feet long and 118 feet wide. With that enormous size she is, as has been emphasized on earlier pages of this booklet, the largest ship ever in service in the world. She can carry over 1800 passengers and her complement of officers and crew is some 1300, so that, when filled, she houses a compact community of 3100 souls. On this Raymond-Whitcomb Cruise, membership will be limited to slightly over half her capacity so that there will be more room for all passengers on the decks and in the public rooms.

When the NORMANDIE crosses the Equator on February 12, Neptune will come on board, even as he did a year ago, when this picture of the gallery was taken, and passengers again will gather on her decks to watch the antics of his motley court.



SCHEDULE OF RATES

(One Class Only)

SUN DECK

SUITES DE LUXE

TROUVILLE Rooms 5/7/9/11/15 — Sitting room, dining room, 2 outside bedrooms with 2 beds each, 1 inside bedroom with 2 beds, 1 inside bedroom with 1 bed, 2 baths, 2 showers, 5 toilets, private terrace.

4 persons, the suite	$6850
5 persons, the suite	7350
6 persons, the suite	7850
7 persons, the suite	8200
8 persons, the suite	8600

DEAUVILLE Rooms 6/8/10/12/14 — Sitting room, dining room, 2 outside bedrooms with 2 beds each, 1 inside bedroom with 2 beds, 1 inside bedroom with 1 bed, 2 baths, 2 showers, 5 toilets, private terrace.

4 persons, the suite	$6850
5 persons, the suite	7350
6 persons, the suite	7850
7 persons, the suite	8200
8 persons, the suite	8600

9/11/15, 10/12/14 — Sitting room, dining room, 1 outside bedroom with 2 beds, 1 inside bedroom with 1 bed, bath, shower, 3 toilets, private terrace.

2 persons, the suite	$4250
3 persons, the suite	4600

12/14 — Sitting room, dining room, 1 outside bedroom with 2 beds, bath, 2 toilets, private terrace.

2 persons, the suite	$4000

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
1, 2	2 beds, sofa, bath, toilet	2	$1125	....
3, 4	1 bed, shower, toilet	1	....	$665
5, 6	2 beds, shower, toilet	2	....	600
7, 8	2 beds, bath, toilet	2	1125	....
10	1 bed, shower, toilet	1	....	665

PROMENADE DECK

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
50, 51, 52, 53, 54, 55	2 beds, bath, toilet, verandah	2	1375	....
56	2 beds, shower, toilet	2	....	600
57, 58, 59, 60	2 beds, sofa, bath, toilet, verandah	2	1450	....
61	1 bed, shower, toilet	1	....	630
62	2 beds, shower, toilet	2	....	600
63	1 bed, shower, toilet	1	....	630
64	2 beds, shower, toilet	2	....	600
65, 66, 67, 68, 69, 70, 71, 72, 77, 78, 79, 80, 83, 86	2 beds, sofa, bath, toilet, verandah	2	1450	....
87, 88, 89, 90, 91, 92, 93, 94, 95, 96	1 bed, shower, toilet	1	....	645
97, 98	1 bed, shower, toilet	1	....	630

MAIN DECK

SUITES DE LUXE

119/121 — Sitting room, outside bedroom with 2 beds, bath, 2 toilets.

2 persons, the suite	$3200
3 persons, the suite	3600

123/125 — Sitting room, outside bedroom with 2 beds, bath, shower, 2 toilets.

2 persons, the suite	$3250
3 persons, the suite	3650

124/126 — Sitting room, outside bedroom with 2 beds, bath, 2 toilets.

2 persons, the suite	$3200
3 persons, the suite	3600

127/129, 128/130, 132/134 — Sitting room, outside bedroom with 2 beds, bath, shower, 2 toilets.

2 persons, the suite	$3250
3 persons, the suite	3650

ROUEN Rooms 153/155/157/159/167 — Sitting room, dining room, 2 outside bedrooms with 2 beds each, 1 inside bedroom with 2 beds, 1 inside room with 1 bed, 2 baths, 4 showers, 4 toilets.

4 persons, the suite	$7575
5 persons, the suite	7975
6 persons, the suite	8375
7 persons, the suite	8775
8 persons, the suite	9175

MAIN DECK—(*Continued*)

SUITES DE LUXE

153/155/157/159 — Sitting room, dining room, 2 outside bedrooms with 2 beds each, 1 inside bedroom with 2 beds, 2 baths, 3 showers, 3 toilets.

3 persons, the suite	$7000
4 persons, the suite	7350
5 persons, the suite	7750
6 persons, the suite	8200
7 persons, the suite	8600

153/155/157/167 — Sitting room, dining room, 2 outside bedrooms with 2 beds each, 1 inside bedroom with 1 bed, 2 baths, 3 showers, 3 toilets.

3 persons, the suite	$6800
4 persons, the suite	7200
5 persons, the suite	7600
6 persons, the suite	8000

153/155/157 — Sitting room, dining room, 2 outside bedrooms with 2 beds each, 2 baths, 2 showers, 2 toilets.

2 persons, the suite	$5150
3 persons, the suite	6550
4 persons, the suite	6950
5 persons, the suite	7350

153/155, 155/157 — Sitting room, dining room, outside bedroom with 2 beds, bath, shower, toilet.

2 persons, the suite	$4250
3 persons, the suite	4650

CAEN Rooms 158/160/162 164/172 — Sitting room, dining room, 2 outside bedrooms with 2 beds each, 1 inside bedroom with 2 beds, 1 inside bedroom with 1 bed, 2 baths, 4 showers, 4 toilets.

4 persons, the suite	$7575
5 persons, the suite	7975
6 persons, the suite	8375
7 persons, the suite	8775
8 persons, the suite	9175

158/160/162/164 — Sitting room, dining room, 2 outside bedrooms with 2 beds each, 1 inside bedroom with 2 beds, 2 baths, 3 showers, 3 toilets.

3 persons, the suite	$7000
4 persons, the suite	7350
5 persons, the suite	7750
6 persons, the suite	8200
7 persons, the suite	8600

158/160/162/172 — Sitting room, dining room, 2 outside bedrooms with 2 beds each, 1 inside bedroom with 1 bed, 2 baths, 3 showers, 3 toilets.

3 persons, the suite	$6800
4 persons, the suite	7200
5 persons, the suite	7600
6 persons, the suite	8000

158/160/162 — Sitting room, dining room, 2 outside bedrooms, with 2 beds each, 2 baths, 2 showers, 2 toilets.

2 persons, the suite	$5150
3 persons, the suite	6550
4 persons, the suite	6950
5 persons, the suite	7350

158/160, 160/162 — Sitting room, dining room, outside bedroom with 2 beds, bath, shower, toilet.

2 persons, the suite	$4250
3 persons, the suite	4650

183/185 — Sitting room, outside bedroom with 2 beds, bath, shower, 2 toilets.

2 persons, the suite	$3250
3 persons, the suite	3650

187/189 — Sitting room, outside bedroom with 2 beds, 2 baths, 2 toilets.

2 persons, the suite	$3300
3 persons, the suite	3700

188/190 — Sitting room, outside bedroom with 2 beds, bath, shower, 2 toilets.

2 persons, the suite	$3250
3 persons, the suite	3650

200/202 — Sitting room, outside bedroom with 2 beds, 2 baths, 2 toilets.

2 persons, the suite	$3300
3 persons, the suite	3700

MAIN DECK—(*Continued*)

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
101	2 beds, sofa, bath, toilet	2	$1050	....
102	2 beds, bath, toilet	2	1040	....
103	1 bed, shower, toilet	1	....	$645
104	2 beds, shower, toilet	2	....	600
105	2 beds, bath, toilet	2	1040	....
106	2 beds, sofa, bath, toilet	2	1050	....
107, 108, 109, 110	1 bed, shower, toilet	1	....	670
111, 112, 113, 114	2 beds, bath, toilet	2	1040	....
115	1 bed, shower, toilet	1	....	705
116	2 beds, bath, toilet	2	1040	....
117	2 beds, shower, toilet	2	....	630
118	1 bed, shower, toilet	1	....	705
120	2 beds, shower, toilet	2	....	630
131	2 beds, sofa, bath, toilet	2	1200	....
133	1 bed, sofa, shower, toilet	1	1350	....
Room 133 for two persons, each			925	....
135	2 beds, bath, toilet	2	1125	....
136	2 beds, bath, toilet	2	1200	....
137, 138	1 bed, sofa, shower, toilet.	1	1350	....
Rooms 137, 138 for two persons, each			925	....
139, 140	2 beds, bath, toilet	2	1125	....
141, 142	1 bed, sofa, shower, toilet	1	1350	....
Rooms 141, 142 for two persons, each			925	....
143, 144	2 beds, bath, toilet	2	1125	....
145, 146	1 bed, sofa, shower, toilet	1	1350	....
Rooms 145, 146 for two persons, each			925	....
147	1 bed	1	....	500
148	2 beds, bath, toilet	2	1125	....
149	1 bed	1	....	500
150	1 bed, sofa, shower, toilet	1	1350	....
Room 150 for two persons, each			925	....
151	2 beds	2	....	485
152	1 bed	1	....	500
153	2 beds, bath, shower, toilet	2	1325	....
154	1 bed	1	....	500
156	2 beds	2	....	485
157, 158	2 beds, bath, shower, toilet	2	1325	....
159	2 beds, shower, toilet	2	....	645
161	2 beds	2	....	485
162	2 beds, bath, shower, toilet	2	1325	....
163	1 bed	1	....	500
164	2 beds, shower, toilet	2	....	645
165	1 bed	1	....	500
166	2 beds	2	....	485
167	1 bed, shower, toilet	1	....	685
168, 169, 170	1 bed	1	....	500
171	2 beds, sofa, bath, toilet.	2	1175	....
172	1 bed, shower, toilet	1	....	685
173	2 beds, shower, toilet	2	....	630
174	1 bed	1	....	500
175	2 beds, bath, toilet	2	1175	....
176	2 beds, sofa, bath, toilet.	2	1175	....
178	2 beds, shower, toilet	2	....	630
179	1 bed	1	....	500
180	2 beds, bath, toilet	2	1175	....
181, 184, 186	1 bed	1	....	500
191, 192	2 beds, shower, toilet	2	....	645
193, 194, 195, 196	1 bed	1	....	500
197, 198	1 bed, shower, toilet	1	....	695
199	1 bed, bath, toilet	1	....	735
201, 203	1 bed	1	....	500
204	1 bed, bath, toilet	1	....	735
205	2 beds, sofa, bath, toilet.	2	1200	....
206	1 bed	1	....	500
207	2 beds, bath, toilet	2	1125	....
208, 209	1 bed	1	....	500
210	2 beds, bath, toilet	2	1200	....
211	1 bed	1	....	500
212	2 beds, bath, toilet	2	1125	....
213, 214, 215	1 bed	1	....	500
217	2 beds, shower, toilet	2	....	635
218	1 bed	1	....	500
219	1 bed, sofa, shower, toilet.	1	1350	....
Room 219 for two persons, each			925	....
220	1 bed	1	....	500
221	2 beds, bath, toilet	2	1100	....
222, 223	1 bed, sofa, shower, toilet.	1	1350	....
Rooms 222, 223 for two persons, each			925	....
224, 225	2 beds, bath, toilet	2	1100	....
226, 227	1 bed, sofa, shower, toilet.	1	1350	....
Rooms 226, 227 for two persons, each			925	....
228	2 beds, bath, toilet	2	1100	....
229	2 beds, bath, toilet	2	1075	....
230	1 bed, sofa, shower, toilet	1	1350	....
Room 230 for two persons, each			925	....
231	1 bed, shower, toilet	1	....	670
232, 233	2 beds, bath, toilet	2	1075	....

SCHEDULE OF RATES—Continued

(Rates are published subject to change)

MAIN DECK—(Continued)

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
234, 235, 236	1 bed, shower, toilet	1		$670
237	2 beds, shower, toilet	2	$825	
238	2 beds, bath, toilet	2	1075	
239, 240	2 beds, shower, toilet	2	825	
241	1 bed, shower, toilet	1		670
242	2 beds, shower, toilet	2	825	
244	1 bed, shower, toilet	1		670
245, 246	2 beds, shower, toilet	2	825	
247, 250	1 bed, shower, toilet	1	1100	
251, 254	1 bed, sofa, shower, toilet	1	1150	
Rooms 251, 254 for two persons, each			800	
255, 258	2 beds, shower, toilet	2	800	
259	1 bed, sofa, shower, toilet	1	1150	
Room 259 for two persons, each			800	
261	2 beds, shower, toilet	2	800	
262	1 bed, sofa, shower, toilet	1	1150	
Room 262 for two persons, each			800	
263, 264, 266	2 beds, shower, toilet	2	800	
267	1 bed, shower, toilet	1	1125	
268	2 beds, shower, toilet	2		620
270	1 bed, shower, toilet	1	1125	
271, 272	1 bed, shower, toilet	1		555
273, 274	1 bed, shower, toilet	1		620
275, 276	1 bed, shower, toilet	1		555
277, 278	1 bed, shower, toilet	1		620
279, 280	1 bed, shower, toilet	1		555
281, 282	1 bed, shower, toilet	1		620
283, 284	1 bed, shower, toilet	1		555
285, 286	1 bed, shower, toilet	1		620
287, 288	1 bed, shower, toilet	1		555

A DECK

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
300	1 bed, shower, toilet	1		610
301, 302	1 bed, shower, toilet	1		630
303	2 beds, bath, toilet	2	1000	
304	2 beds, sofa, bath, toilet	2	1000	
305, 306	1 bed, shower, toilet	1	1100	
307	1 bed, shower, toilet	1		630
308	2 beds, shower, toilet	2		585
309	1 bed, shower, toilet	1		630
310, 311	1 bed, shower, toilet	1	1125	
312, 313, 314, 315, 316, 317	2 beds, bath, toilet	2	1000	
318, 319	1 bed, sofa, shower, toilet	1		670
320, 321, 322, 323	2 beds, bath, toilet	2	1060	
324	2 beds, sofa, bath, toilet	2	1110	
325, 326	2 beds, bath, toilet	2	1110	
327, 328	1 bed, sofa, shower, toilet	1	1265	
Rooms 327, 328 for two persons, each			825	
329, 330	2 beds, bath, toilet	2	1110	
331, 332	1 bed, sofa, shower, toilet	1	1255	
Rooms 331, 332 for two persons, each			825	
333, 334	2 beds, bath, toilet	2	1110	
335, 336	1 bed, sofa, shower, toilet	1	1255	
Rooms 335, 336 for two persons, each			825	
337, 338	2 beds, bath, toilet	2	1110	
339, 340	1 bed, sofa, shower, toilet	1	1265	
Rooms 339, 340 for two persons, each			825	
341, 342	2 beds, bath, toilet	2	1110	
343, 344	1 bed, sofa, shower, toilet	1	1265	
Rooms 343, 344 for two persons, each			825	
345, 346	2 beds, bath, toilet	2	1110	
347, 348	1 bed, sofa, shower, toilet	1	1265	
Rooms 347, 348 for two persons, each			825	
349, 350	2 beds, bath, toilet	2	1110	
351, 352	1 bed, sofa, shower, toilet	1	1255	
Rooms 351, 352 for two persons, each			825	
353, 354	2 beds, bath, toilet	2	1110	
355, 356	1 bed, sofa, shower, toilet	1	1265	
Rooms 355, 356 for two persons, each			825	
357, 358	2 beds, bath, toilet	2	1090	
359, 360	1 bed, sofa, shower, toilet	1	1260	
Rooms 359, 360 for two persons, each			820	
361, 362	2 beds, bath, toilet	2	1090	
363, 364	1 bed, sofa, shower, toilet	1	1260	
Rooms 363, 364 for two persons, each			820	
365, 366, 367, 368, 369, 370	2 beds, bath, toilet	2	1065	
371, 372, 373, 374	2 beds, shower, toilet	2		600
375, 376	2 beds, bath, toilet	2	1055	
377, 378	2 beds, shower, toilet	2		585
379, 380, 381, 382	2 beds, shower, toilet	2	785	
383, 384	2 beds, saower, toilet	2		585
385, 386	2 beds, shower, toilet	2	785	

A DECK—(Continued)

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
387, 388	2 beds, shower, toilet	2		$585
389, 390, 391, 392	2 beds, shower, toilet	2	$785	
393, 394	2 beds, shower, toilet	2		585
395, 396	2 beds, shower, toilet	2	785	
397	2 beds, bath, toilet	2	1025	
398	2 beds, shower, toilet	2		585
399	1 bed, shower, toilet	1		610
703, 704, 705, 706, 707, 708, 709, 710	2 beds	2		465
720	2 beds	2		450
721, 722	1 bed	1		485
723, 724	2 beds	2		450
725, 726, 727, 728	2 beds	2	510	
729, 730, 731, 732	2 beds	2		450

B DECK

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
401	1 bed, shower, toilet	1	1075	
402	1 bed, bath, toilet	1	1250	
403	2 beds, shower, toilet	2		540
404	1 bed, shower, toilet	1		585
405	1 bed, bath, toilet	1	1250	
406	2 beds, shower, toilet	2		540
407	1 bed, bath, toilet	1	1325	
408	1 bed, bath, toilet	1	1250	
409	2 beds, bath, toilet	2	925	
410, 412	1 bed, bath, toilet	1	1250	
413	2 beds, bath, toilet	2	950	
414	1 bed, bath, toilet	1	1275	
417, 418	2 beds, bath, toilet	2	950	
419	1 bed, shower, toilet	1		565
421	2 beds, sofa, bath, toilet	2	975	
422	2 beds, bath, toilet	2	950	
423	1 bed, sofa, shower, toilet	1	1225	
Room 423 for two persons, each			800	
424	1 bed, shower, toilet	1		565
425	2 beds, bath, toilet	2	975	
426	2 beds, sofa, bath, toilet	2	975	
427, 428	1 bed, sofa, shower, toilet	1	1225	
Rooms 427, 428 for two persons, each			800	
429, 430	2 beds, bath, toilet	2	975	
431, 432	1 bed, sofa, shower, toilet	1	1225	
Rooms 431, 432 for two persons, each			800	
433, 434	2 beds, bath, toilet	2	975	
435, 436	1 bed, sofa, shower, toilet	1	1225	
Rooms 435, 436 for two persons, each			800	
437, 438	2 beds, bath, toilet	2	975	
439, 440	1 bed, sofa, shower, toilet	1	1225	
Rooms 439, 440 for two persons, each			800	
441, 442	2 beds, bath, toilet	2	975	
443, 444	1 bed, sofa, shower, toilet	1	1225	
Rooms 443, 444 for two persons, each			800	
445	1 bed, shower, toilet	1		585
446, 447	2 beds, bath, toilet	2	975	
448, 449	1 bed, sofa, shower, toilet	1	1225	
Rooms 448, 449 for two persons, each			800	
450	1 bed, shower, toilet	1		585
452, 453	2 beds, bath, toilet	2	975	
454, 455	1 bed, sofa, shower, toilet	1	1225	
Rooms 454, 455 for two persons, each			800	
457, 458	2 beds, bath, toilet	2	975	
459, 460	1 bed, sofa, shower, toilet	1	1225	
Rooms 459, 460 for two persons, each			800	
461, 462	2 beds, bath, toilet	2	975	
464, 465	1 bed, sofa, shower, toilet	1	1225	
Rooms 464, 465 for two persons, each			800	
466, 467	2 beds, bath, toilet	2	975	
469, 470	1 bed, sofa, shower, toilet	1	1225	
Rooms 469, 470 for two persons, each			800	
471, 472	2 beds, bath, toilet	2	975	
473	2 beds, shower, toilet	2	785	
474	1 bed, sofa, shower, toilet	1	1225	
Room 474 for two persons, each			800	
475	2 beds, shower, toilet	2	775	
476	2 beds, bath, toilet	2	975	
477, 478, 479	2 beds, shower, toilet	2	785	
480	2 beds, shower, toilet	2	775	
481, 482	2 beds, shower, toilet	2	785	
483	2 beds, shower, toilet	2	775	
484	2 beds, shower, toilet	2	785	
485	1 bed, shower, toilet	1		585
486	2 beds, shower, toilet	2	785	
487	1 bed, shower, toilet	1		585
488, 489	2 beds, shower, toilet	2	775	
490, 491, 492	1 bed, shower, toilet	1		585

B DECK—(Continued)

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
493	1 bed, shower, toilet	1	$1050	
494	2 beds, shower, toilet	2	775	
496	1 bed, shower, toilet	1		$585
498	1 bed, shower, toilet	1	1050	
803, 804, 805, 806	2 beds	2		450
807, 808	2 beds	2	495	
809, 810, 811, 812	2 beds	2	510	
813, 814	2 beds	2	495	
815, 816	2 beds	2		450
817, 818	1 bed	1		465
821, 822	2 beds	2		450
823, 824	2 beds	2	495	
825, 826, 827, 828	2 beds	2	510	
829, 830	2 beds	2	495	
831, 832	2 beds	2		450
835	2 beds	2		460
836	1 bed	1		465
837	2 beds	2	495	
838	1 bed	1		465
839	2 beds	2	510	
840	2 beds	2	495	
841, 842	2 beds	2	510	
843	2 beds	2	495	
844	2 beds	2	510	
845	2 beds	2		450
846	2 beds	2	495	
847	1 bed	1		465
848	2 beds	2		450
849, 850, 851, 852	1 bed	1		465
853	2 beds	2	500	
854	1 bed	1		465
855	2 beds	2	510	
856	2 beds	2	500	
857, 858	2 beds	2	510	
859	2 beds	2	500	
860	2 beds	2	510	
861	1 bed	1		470
862	2 beds	2	500	
863	2 beds	2	490	
864	1 bed	1		470
865	2 beds	2	500	
866	2 beds	2		450
867	2 beds	2	500	
868	2 beds	2	490	
869	2 beds	2	485	
870	2 beds	2	500	
871	2 beds	2		450
872	2 beds	2	500	
873	1 bed	1		465
874, 875	2 beds	2	485	
876	2 beds	2		450
877	2 beds	2	500	
878	1 bed	1		465
879	2 beds	2	500	
880	2 beds	2	485	
881	2 beds	2		450
882	2 beds	2	500	
883	2 beds	2		450
884	2 beds	2	500	
886, 888	2 beds	2		450

C DECK

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
502	2 beds, bath, toilet	2	775	
503	2 beds, shower, toilet	2		540
504, 505	1 bed, shower, toilet	1	935	
506	1 bed, shower, toilet	1	950	
507	2 beds, shower, toilet	2		540
508	1 bed, shower, toilet	1	950	
509	2 beds, shower, toilet	2		540
510	2 beds, bath, toilet	2	800	
511	1 bed, shower, toilet	1	950	
512	2 beds, bath, toilet	2	810	
513	1 bed, shower, toilet	1	950	
514	2 beds, bath, toilet	2	810	
515	2 beds, bath, toilet	2	800	
517, 519	2 beds, bath, toilet	2	810	
522	1 bed, sofa, shower, toilet	1	1050	
Room 522 for two persons, each			725	
523	2 beds, bath, toilet	2	810	
524	2 beds, bath, toilet	2	850	
525	1 bed, shower, toilet	1	975	
526	1 bed, sofa, shower, toilet	1	1050	
Room 526 for two persons, each			725	
527, 528	2 beds, bath, toilet	2	850	

SCHEDULE OF RATES—Continued

(Rates are published subject to change)

C DECK—(*Continued*)

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
529, 530	1 bed, sofa, shower, toilet	1	$1050	....
Rooms 529, 530 for two persons, each			725	....
531, 532	2 beds, bath, toilet	2	850	....
533	1 bed, sofa, shower, toilet	1	1050	....
Room 533 for two persons, each			725	....
534	2 beds, bath, toilet	2	875	....
535	2 beds, bath, toilet	2	850	....
536	1 bed, sofa, shower, toilet	1	1050	....
Room 536 for two persons, each			725	....
537	1 bed, shower, toilet	1	975	....
538	2 beds, bath, toilet	2	850	....
539	2 beds, bath, toilet	2	875	....
540, 541	1 bed, sofa, shower, toilet	1	1050	....
Rooms 540, 541 for two persons, each			725	....
542, 543	2 beds, bath, toilet	2	850	....
544, 545	1 bed, sofa, shower, toilet	1	1050	....
Rooms 544, 545 for two persons, each			725	....
546, 547	2 beds, bath, toilet	2	850	....
548, 549	1 bed, sofa, shower, toilet	1	1050	....
Rooms 548, 549 for two persons, each			725	....
550, 551	2 beds, bath, toilet	2	850	....
552, 553	1 bed, sofa, shower, toilet	1	1050	....
Rooms 552, 553 for two persons, each			725	....
554, 555	2 beds, bath, toilet	2	850	....
556	2 beds, shower, toilet	2	750	....
557	1 bed, sofa, shower, toilet	1	1050	....
Room 557 for two persons, each			725	....
558	2 beds, shower, toilet	2	725	....
559	2 beds, bath, toilet	2	850	....
560	2 beds, bath, toilet	2	825	....
561	2 beds, shower, toilet	2	750	....
563	2 beds, shower, toilet	2	725	....
565	2 beds, bath, toilet	2	825	....
901, 902, 903	1 bed	1	....	$450
904, 905	2 beds	2	....	440
906	2 beds	2	460	....
907, 908, 909	2 beds	2	480	....
910	1 bed	1	510	....
911	2 beds	2	....	440
912	2 beds	2	460	....
913	1 bed	1	....	450
914, 915, 916	2 beds	2	....	440
917	1 bed	1	....	450
919	2 beds	2	460	....
920	1 bed	1	....	450
921	2 beds	2	480	....
922	2 beds	2	460	....
923, 924	2 beds	2	480	....
925	2 beds	2	460	....
926	1 bed	1	510	....
927	2 beds	2	....	440
928	2 beds	2	460	....
929	2 beds	2	....	440
930	1 bed	1	....	450
931	2 beds	2	....	440
932	1 bed	1	....	450
933	2 beds	2	460	....
934	2 beds	2	....	440
935	2 beds	2	480	....
936	2 beds	2	460	....
937, 938	2 beds	2	480	....
939	2 beds	2	460	....
940	2 beds	2	480	....
941	2 beds	2	....	440
942	2 beds	2	460	....
943	1 bed	1	....	450
944	2 beds	2	....	440
946, 947	1 bed	1	....	450
948	2 beds	2	460	....
949	2 beds	2	450	....
950	2 beds	2	480	....
951	2 beds	2	460	....
952	2 beds	2	480	....
953, 954	2 beds	2	460	....

C DECK—(*Continued*)

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
955	2 beds	2	....	$440
956, 957, 958	1 bed	1	....	450
959, 960	2 beds	2	$450	....
961, 962, 963, 964	2 beds	2	465	....
965	2 beds	2	450	....
966	2 beds	2	....	440
967	2 beds	2	450	....
968	1 bed	1	....	450
969	2 beds	2	460	....
970	2 beds	2	450	....
971	1 bed	1	485	....
972	2 beds	2	465	....
973	2 beds	2	450	....
974	2 beds	2	465	....
975	1 bed	1	475	....
976	2 beds	2	450	....
977	1 bed	1	485	....
978	2 beds	2	450	....
979	1 bed	1	485	....
980	2 beds	2	460	....
982	1 bed	1	475	....

D DECK

ROOM NO.		No. Persons	Each Person Outside	Each Person Inside
601, 602	1 bed, shower, toilet	1	885	....
603	2 beds, shower, toilet	2	665	....
604, 605	1 bed, shower, toilet	1	885	....
606, 607	1 bed, shower, toilet	1	865	....
608, 609, 610, 611	2 beds, bath, toilet	2	750	....
612	1 bed, shower, toilet	1	865	....
613	2 beds, bath, toilet	2	750	....
614	1 bed, shower, toilet	1	865	....
615, 619	2 beds, bath, toilet	2	750	....
1002	2 beds	2	....	435
1004	1 bed	1	....	440
1006	2 beds	2	465	....
1008	1 bed	1	....	440
1010	2 beds	2	465	....
1012, 1014, 1015	1 bed	1	....	440
1016	1 bed	1	475	....
1017, 1018	2 beds	2	465	....
1019	1 bed	1	....	440
1020	2 beds	2	....	435
1021, 1022	1 bed	1	....	440
1023	2 beds	2	450	....
1024	1 bed	1	....	440
1025, 1027	2 beds	2	465	....
1029	2 beds	2	450	....
1031, 1033	1 bed	1	....	440
1034	2 beds	2	....	435
1035	1 bed	1	....	440
1036, 1037	2 beds	2	....	435
1038	2 beds	2	465	....
1039	2 beds	2	450	....
1040, 1041	2 beds	2	465	....
1042	2 beds	2	....	435
1043	2 beds	2	465	....
1044	2 beds	2	....	435
1045	2 beds	2	450	....
1046	2 beds	2	....	435
1047	1 bed	1	....	440
1048	2 beds	2	....	435
1049	2 beds	2	450	....
1050, 1051, 1052, 1053	2 beds	2	465	....
1054	2 beds	2	....	435
1055	1 bed	1	....	440
1056, 1057, 1058, 1060	2 beds	2	....	435
1062, 1064	2 beds	2	450	....
1066, 1068, 1070	2 beds	2	....	435
1072, 1074	2 beds	2	450	....
1076	2 beds	2	450	....
1078	2 beds	2	....	435

All the rooms listed herein have hot and cold running water and Punkah Louvre ventilating system.

In rooms and suites listed for one or two persons which will accommodate additional passengers, such additional passengers will pay the minimum rate, unless otherwise specified. Such additional passengers, however, because of the limited number of persons that will be taken on this Cruise, may be booked only with the consent of Raymond-Whitcomb Inc., confirmed at that company's principal office in Boston.

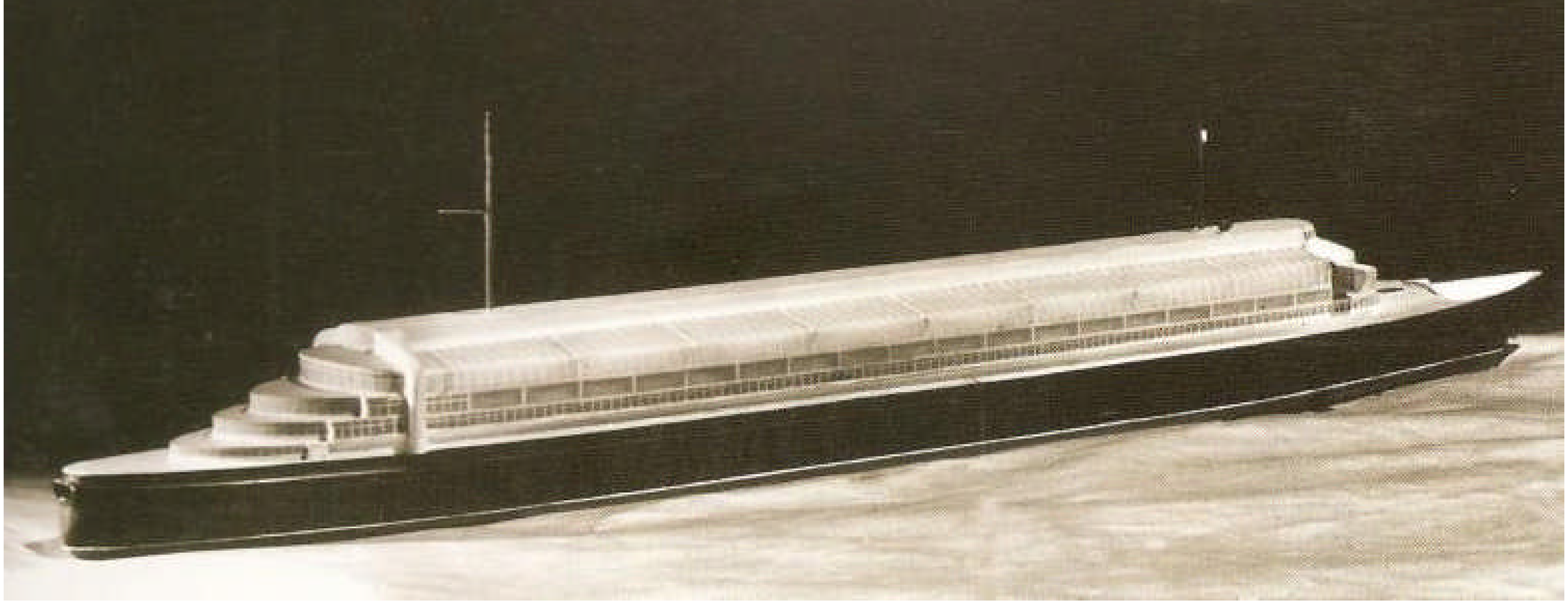
Servants will be carried on this Cruise, if accommodated in servants' rooms, at the minimum rate.


"NORMANDIE"
TRANSATLANTIQUE
LE HAVRE-NEW-YORK
SOUVENIR
"NORMANDIE"
RIO DE JANEIRO

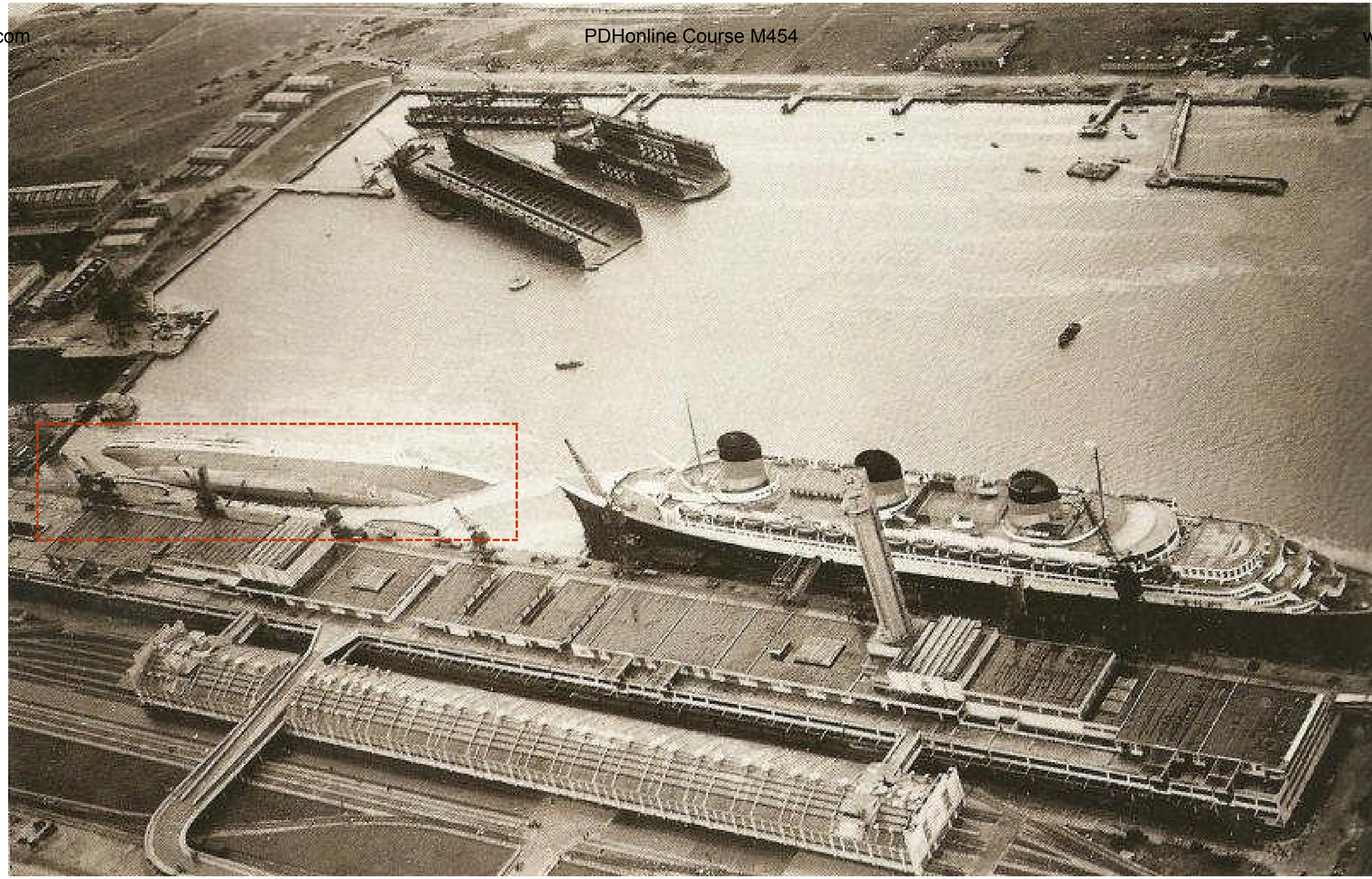
On April 18th 1939; while at her berth in *Le Havre*, the CGT liner *S.S. Paris* (1916) caught fire and capsized temporarily preventing the *Normandie* from exiting her dry dock. The manner of the demise of the great CGT liner was a harbinger of things to come.

***Normandie* in dry dock at Le Havre / *S.S. Paris* aflame at her berth**
April 18th 1939

Le Havre Harbor



The loss of the *S.S. Paris* renewed interest in a sister ship for *Normandie.* In 1937, a study was conducted by *Peter Maglaive* – representative of CGT in London, and British architect *A.C. Hardy*. A ship four-hundred meters long carrying four-thousand passengers at a speed of 37-knots was envisioned. It turned its back on luxury allocating only 15% of the passenger capacity to first-class. It was designed to compete directly with the growing competition from airlines for transatlantic passengers. The project was never realized due to the outbreak of WWII and the subsequent fall of France.



On August 23rd 1939, Le Havre, France

The capsized hull of the *S.S. Paris* and *Normandie* at her berth (preparing for her 139th crossing). With 1,417 passengers (including actor *Jimmy Stewart*), it would be her last transatlantic voyage. War in Europe broke out on September 1st and her planned return voyage to Le Havre (leaving New York August 30th) was to be postponed indefinitely.

Part 9

A View to a Kill

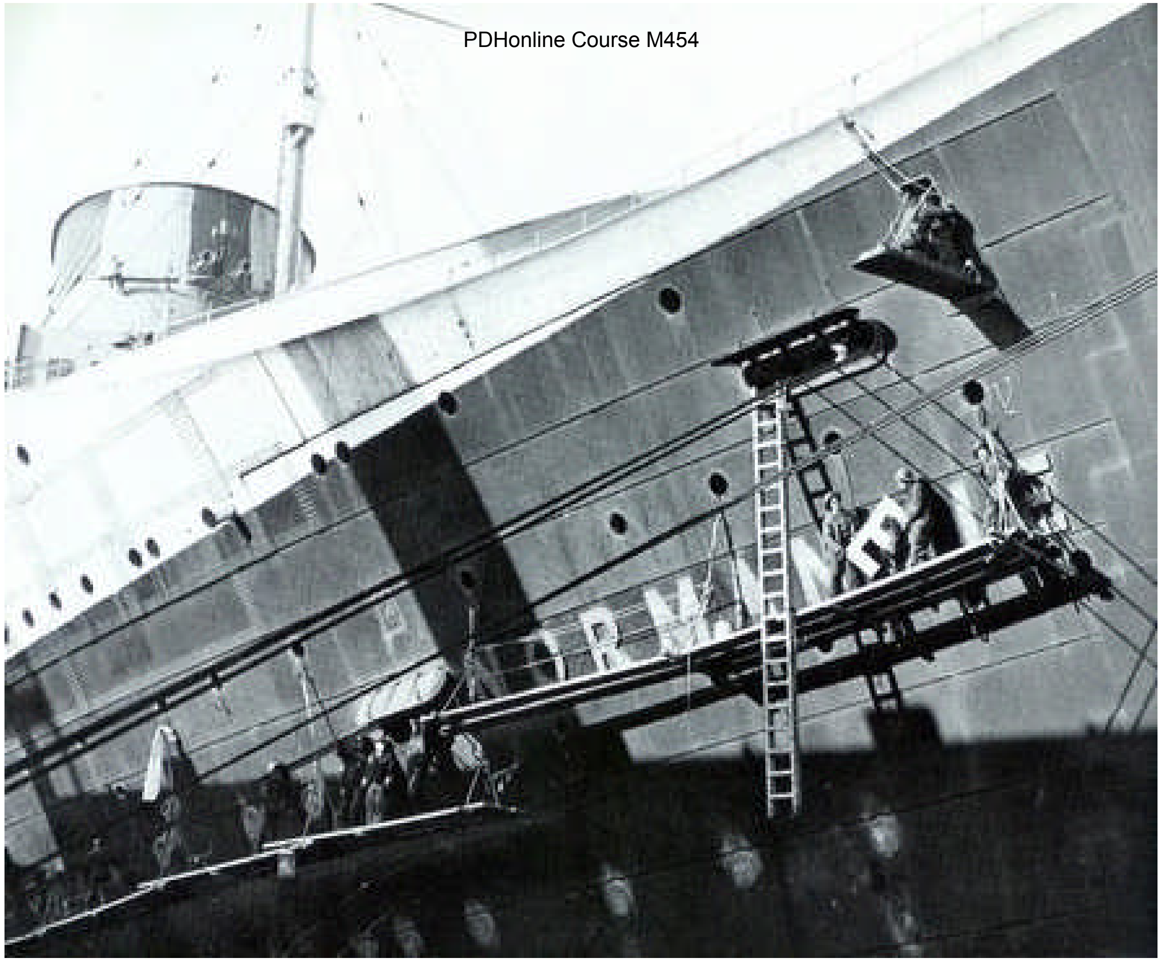
Mothballed

On Sept. 1st 1939, WWII broke out in Europe while *Normandie* was at her berth in NY. On Sept. 3rd, while the captain and crew remained on board to maintain the ship and with the tri-color on her flagstaff, she was interned by the U.S. government. France fell on June 22nd 1940 and nearly a year later; on May 15th 1941, the *Treasury Dept*. ordered 150 Coast Guardsmen (the CG became part of the Navy in Nov. 1941) to board *Normandie* to guard against sabotage. Under the right of *Angary* (the right of a belligerent to seize and apply for the purposes of war - or to prevent the enemy from doing so, any kind of property on belligerent territory), on Dec. 12th 1941 – just five days after the Pearl Harbor attack, the *U.S. Maritime Commission* ordered the seizure of *Normandie* with a promise of compensation. The tri-color was lowered and the French crew removed by the CG. A fire watch was observed, routine maintenance performed and steam maintained in her boilers. On January 15th 1942, the *War Dept*. took *Normandie* over with plans to convert her into a "convoy unit loaded transport" (a.k.a. *Troopship*). There was discussion of converting *Normandie* into an aircraft carrier, but the need was greater for moving troops to the warfronts. As such, a contract was awarded on Dec. 27th 1941 to the *Robins Dry Dock and Repair Co.* with a completion date set for January 31st 1942. In honor of the *Marquis de Lafayette* – the French general who fought for American independence during the revolution, *Normandie* was renamed *U.S.S. Lafayette* on Christmas Eve 1942.

Some French crew members reading news of WWII while *Normandie* remained in limbo at Pier 88 (prior to being seized by the United States). Her return to France would have meant seizure by the *Vichy French* government.

Left to right: *S.S. Normandie/R.M.S. Queen Mary/R.M.S. Queen Elizabeth*
New York (ca. September/October 1939)
***Queen Mary & Queen Elizabeth* were both converted into troopships during WWII**

One suggestion was to convert the *Normandie* into the world's largest aircraft carrier (depicted above), but this scheme was abandoned due to high costs (it was cheaper to build new ones). Later, President Roosevelt would ask ***William Francis Gibbs***; one of the country's greatest naval architects, to investigate the possibilities of rebuilding the *Normandie* as a passenger liner.

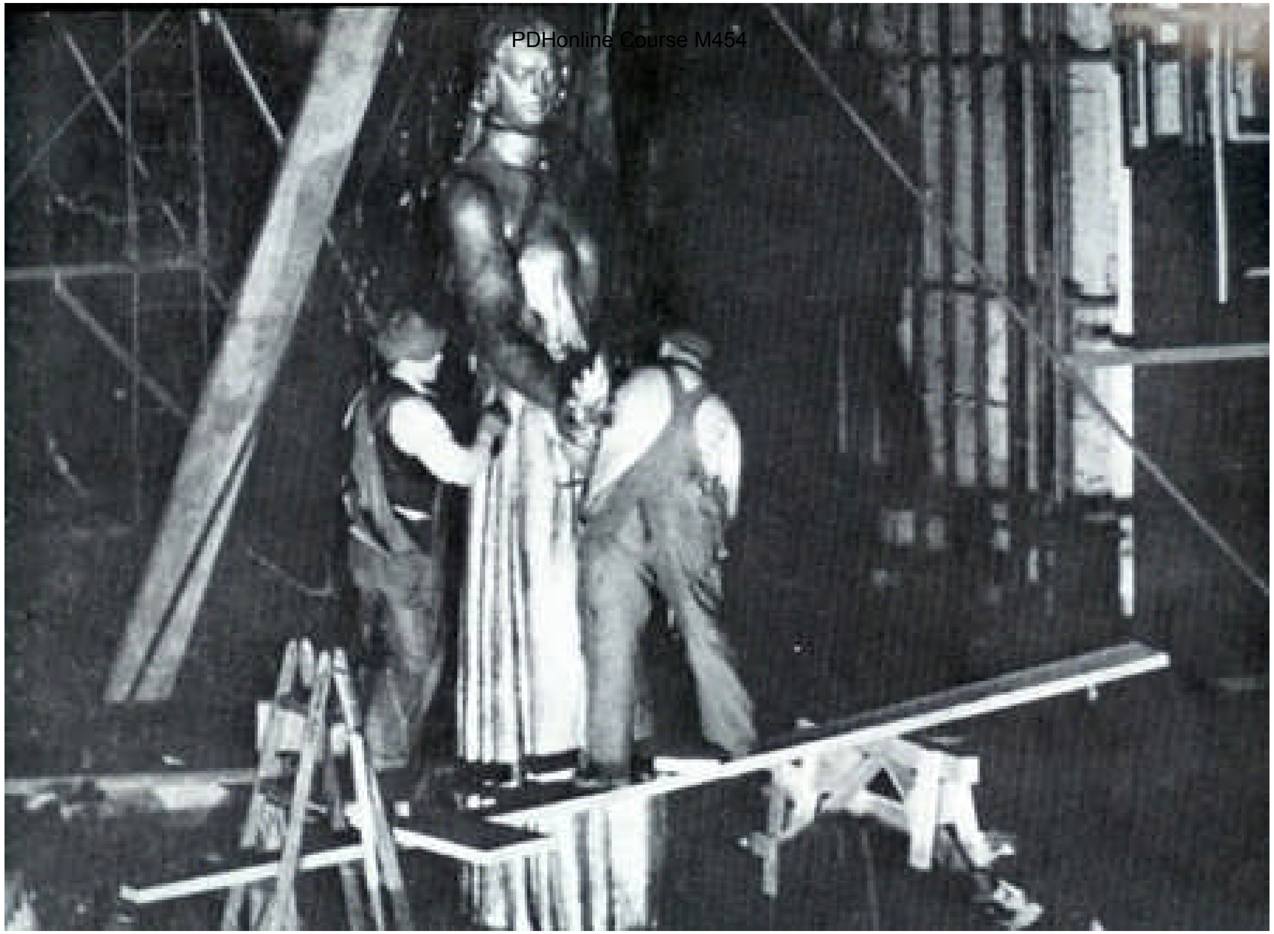


Removing her name from the bow. *Normandie's* expeditious conversion to a troopship took place at her Pier 88 berth. As a troopship (designated AP-53), she could carry 18K troops at one time (about 338K each year of the war). On her upper decks, fourteen 50mm anti-aircraft guns were installed on newly added platforms. On three of her lower decks, steel plates were welded over all porthole openings.

Left to right: ***R.M.S. Acquitania* / *R.M.S. Queen Mary***

S.S. Normandie* / *S.S. Ile de France

New York (ca. 1941)

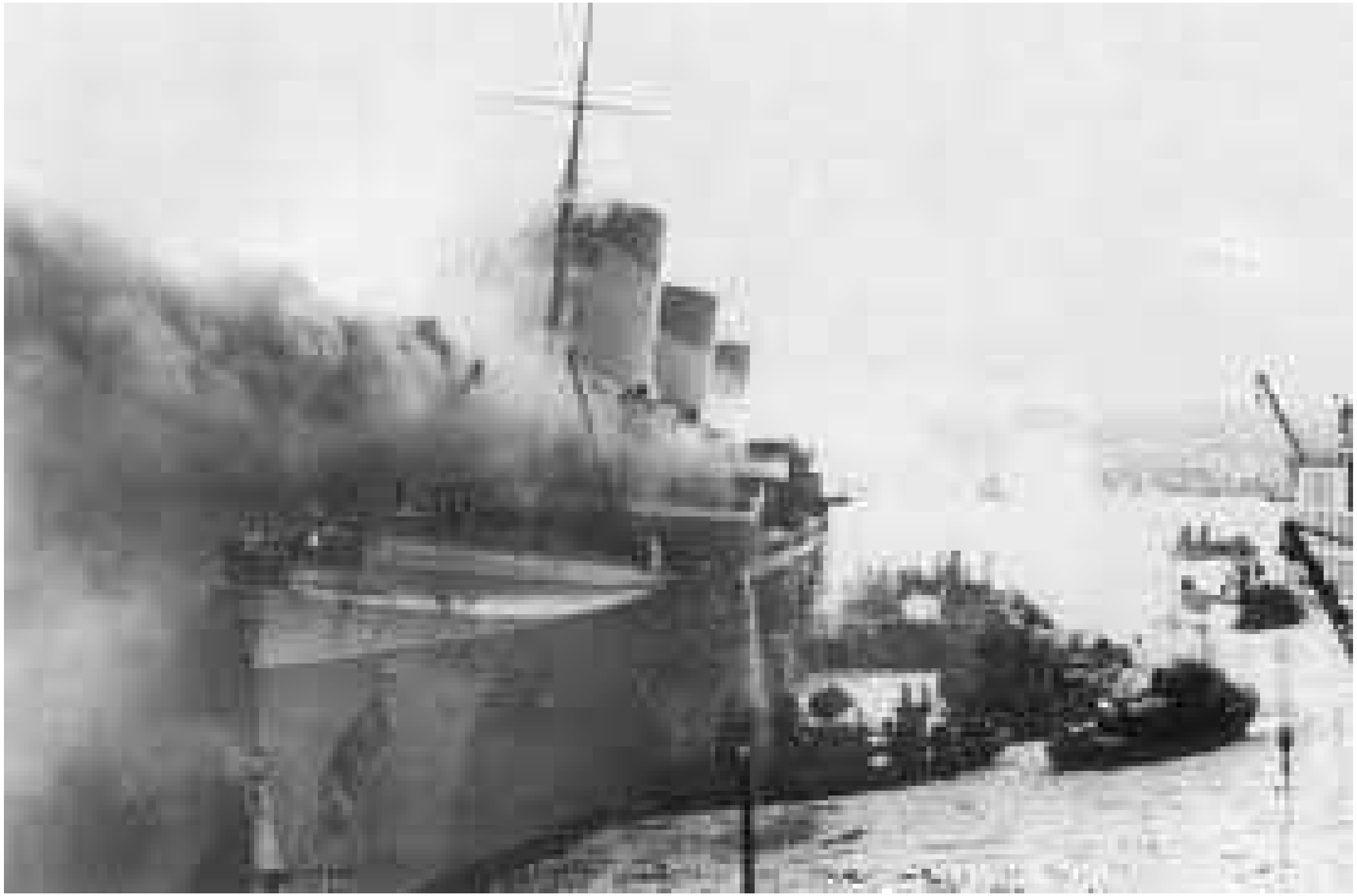


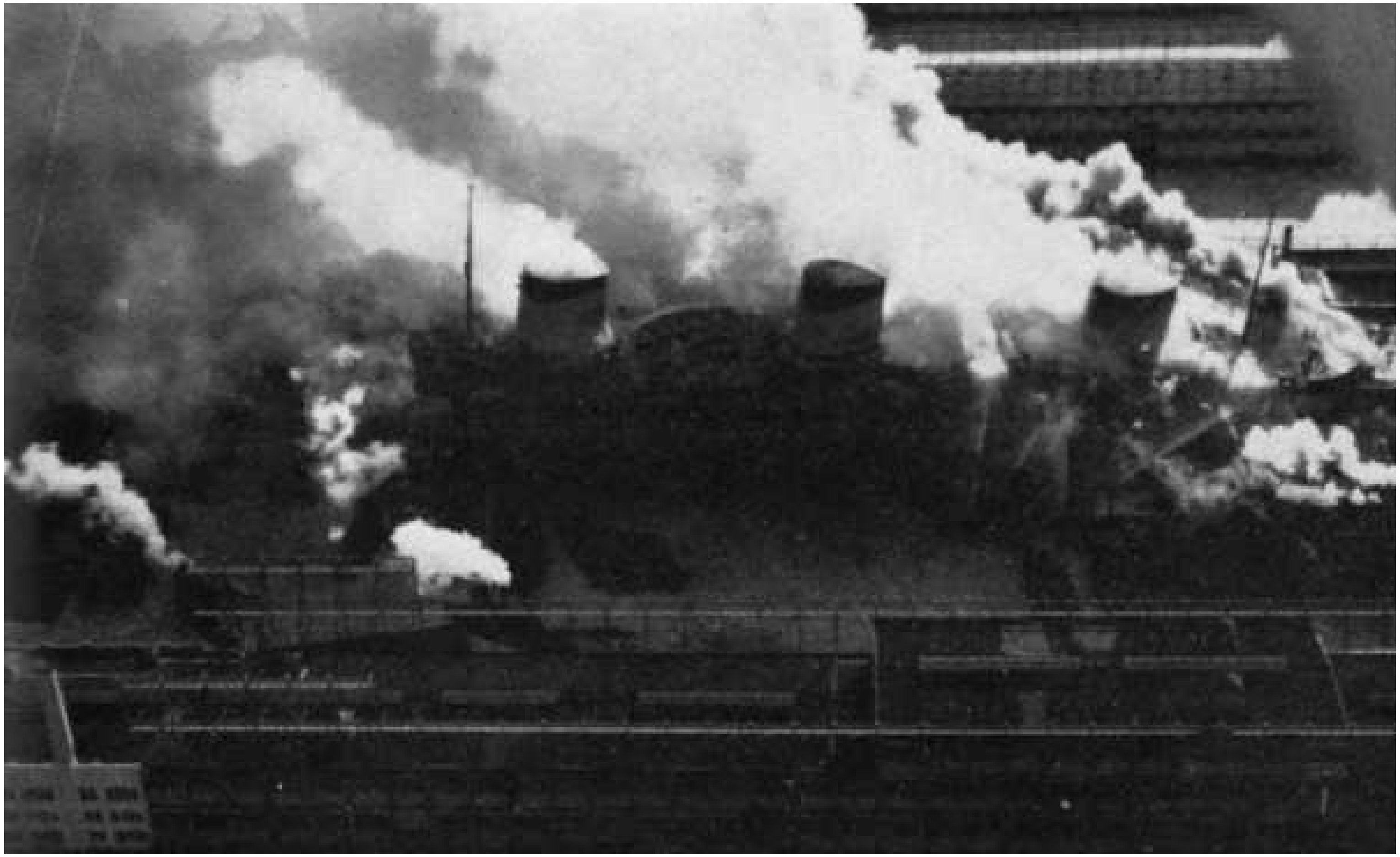
The eighteen-foot tall gilt bronze sculpture by *Louis Dejean* of a peasant woman of *Normandy* province (placed in the middle of the *Main Dining Room*) is carefully prepared for removal. During the conversion, *Normandie* was stripped of her artwork and interior fittings in preparation for service as a troopship. Anything "fancy" had to go including the glass panels on the walls of the *Grand Salon*, the *Lalique* crystal chandeliers and fixtures in the *Main Dining Room* etc. Only the *Sun Deck Suites* would remain intact (for high-ranking officer's use).

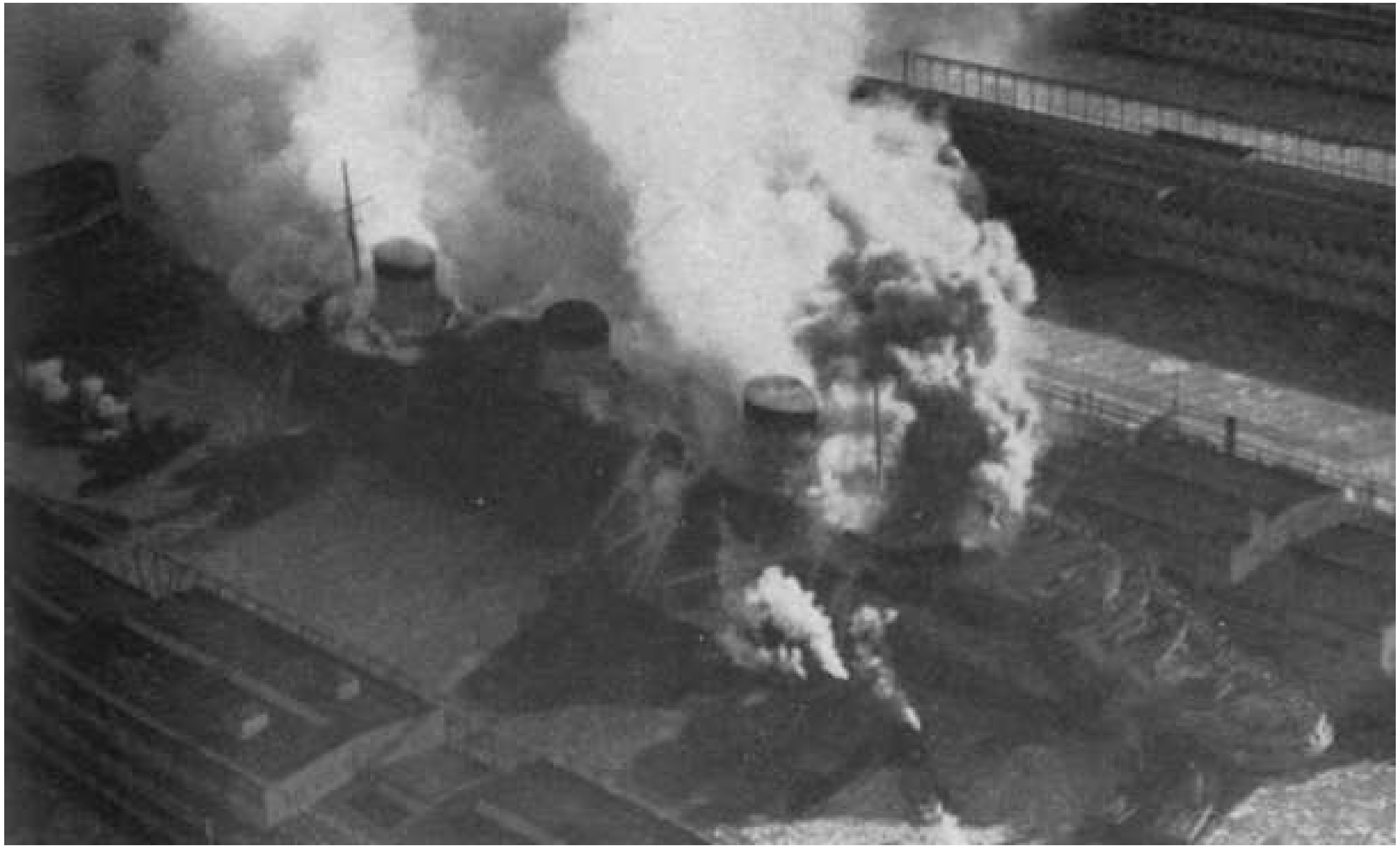
With a conversion completion date of January 31st 1942 and a first sailing scheduled for February 14th 1942 (*Valentine's Day*), the skeleton crew of nearly five-hundred had great difficulty in meeting the conversion timetable. The ship was so large that crew familiarization became a major issue and additional personnel were requested by *Captain Robert G. Coman* (perspective commanding officer). Thus, on February 6th a request was submitted to the *Assistant Chief of Naval Operations* for a two-week extension of the first sailing date. Ironically, on that very day a 60-to-90 day schedule extension of the first sailing had been granted to allow for removal of superstructure elements (to improve stability). However, the next day (February 7th) orders arrived to abandon the superstructure reduction and sail - as originally scheduled, on the 14th. This reversal triggered a frantic effort to get the work done in time and lobbying by the officers in charge for more time. These meetings; requested for February 9th 1942 (in New York and Washington), would never happen.

Smoke Over Manhattan

On Feb. 9th 1942, light stanchions in the *First Class Lounge* were being removed. At 2:47pm, as a welder (*Clement Derrick*) was making the last cut, a spark jumped from his torch igniting a stack of life jackets being stored nearby. Filled with *Kapok* – a highly flammable material, the life jackets ignited instantly and the fire spread quickly. Though there was a fire watch on-duty at all times, the fire watch for that particular room was, unfortunately, on their lunch break at the time. *Normandie's* glamorous artwork had been removed by then but her woodwork was still in place and it helped spread the fire. *Normandie* had a very efficient, sophisticated fire protection system but it was disconnected and her internal pumping system was deactivated during the conversion. She was a French ship with French firefighting equipment that did not match American equipment (i.e. hose diameter). Thus, there was no means on-board to effectively quell the spreading inferno.



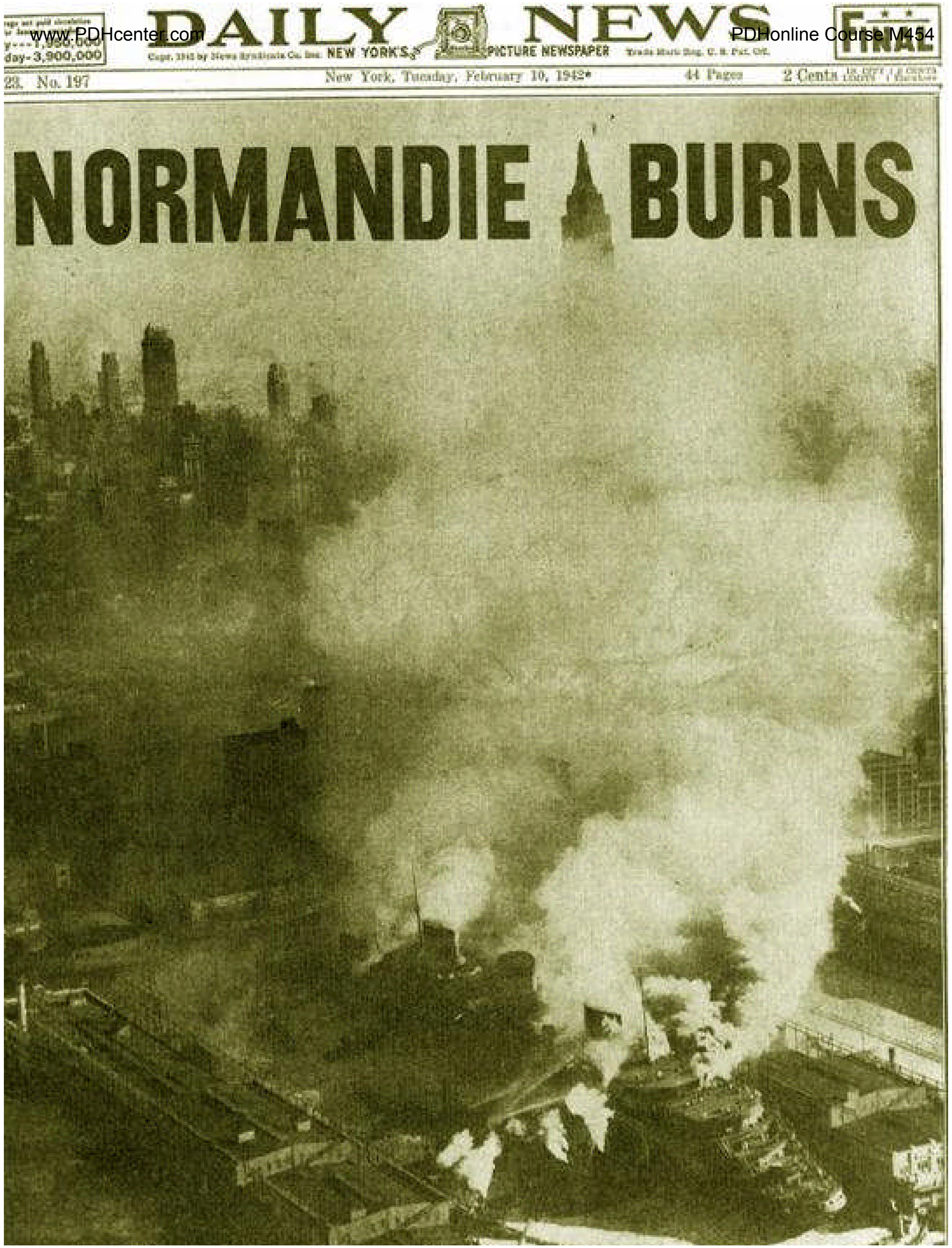




This is a Navy Job!

About twelve minutes passed before the *Fire Department* was alerted. When they got to the scene, they could not board due to the great number of workmen fleeing the burning ship. After about an hour on-scene, the firefighters were able to get aboard with hoses fed from fire trucks on the pier and fireboats alongside pouring water onto the flames via their water canons. As more fireboats arrived and more water was poured onto her, *Normandie* began to noticeably list on her port side. Because of her compartmentalization, water did not enter the lower decks thus she became top-heavy with water. Vladimir Yourkevitch – *Normandie's* designer, arrived on the scene and offered his assistance. Knowing the ship better than anyone, he suggested he enter the hull and open her seacock/s thus flooding the lower decks. This would have allowed *Normandie* to settle to the mud of the river on an even keel (rather than heel over on her side). The *Navy Port Director*; *Admiral Adolphus Andrews*, refused Yourkevitch's advice/help telling him bluntly to mind his own business: *"This is a Navy job!"*

www.PDHcenter.com PDHonline Course M454 www.PDHonline.org



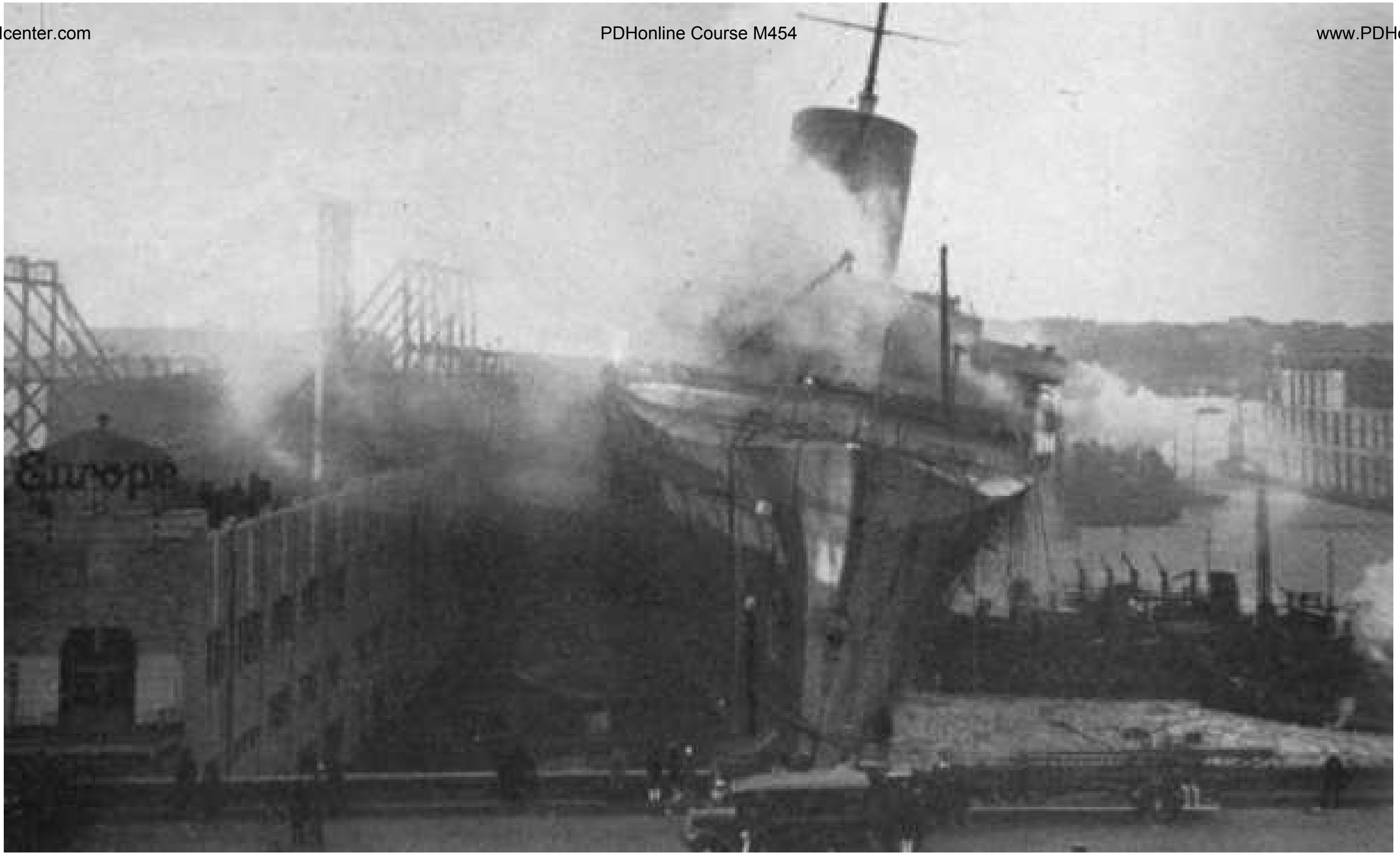
DAILY NEWS FINAL

NEW YORK'S PICTURE NEWSPAPER

No. 197 New York, Tuesday, February 10, 1942 44 Pages 2 Cents

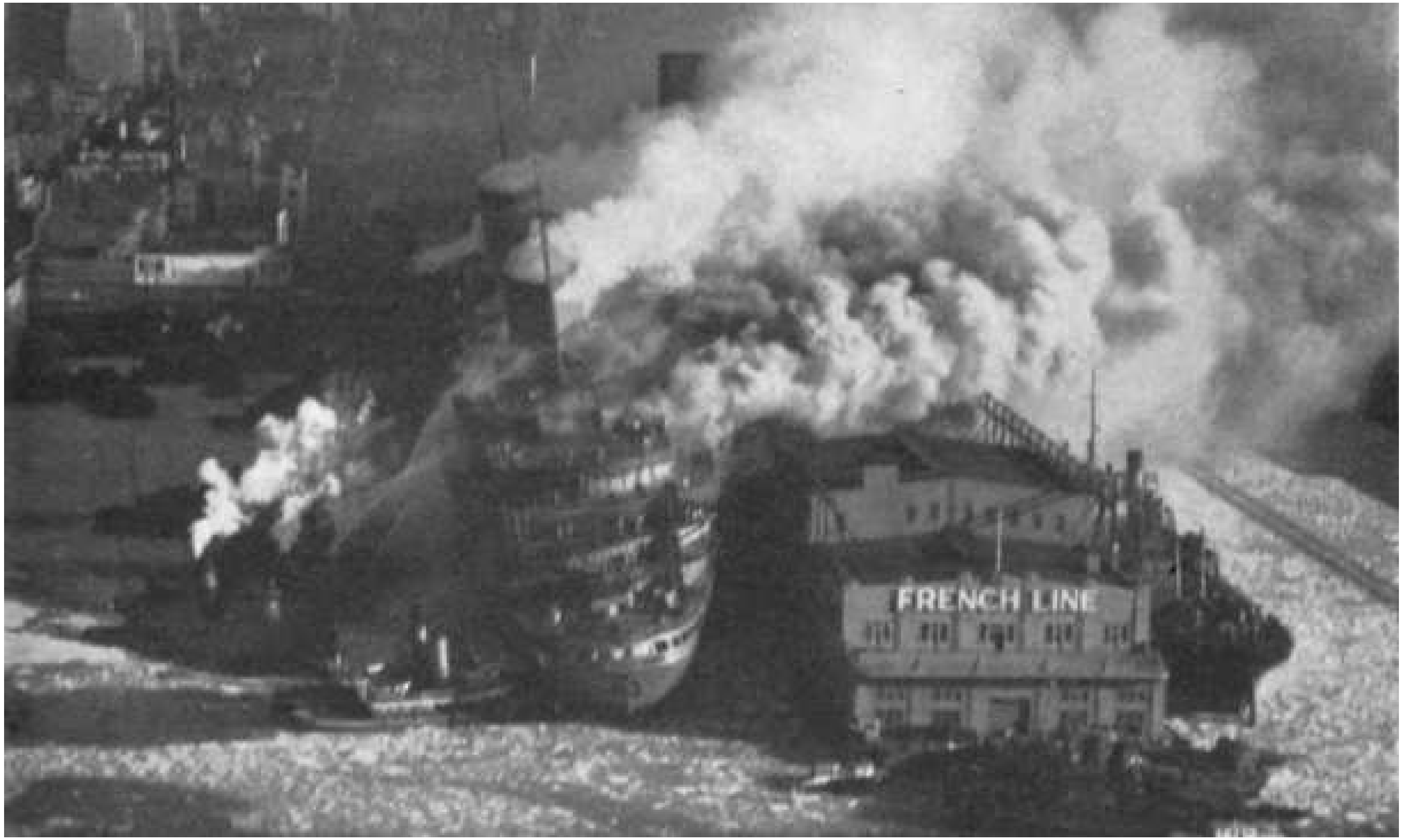
NORMANDIE BURNS

As evening approached, the fire was brought under control but *Normandie* was listing more and more on her port side from the weight of the 6K-to-10K-tons of water poured on her to subdue the fire (mostly from the dozen fireboats on-scene). The fire was confined to her upper decks causing relatively minor damage. It seems the solution had become greater than the problem. At midnight, Admiral Andrews ordered *Normandie* abandoned and at 2:45am, on the 10th of February 1942 – twelve hours after the fire began, *Normandie* rolled over gently forming a 79-degree angle. Her stern slid under Pier 88 and her bow slewed towards Pier 90 (nearly crushing one of the fireboats alongside). There was one fatality among the conversion workers and many injuries.

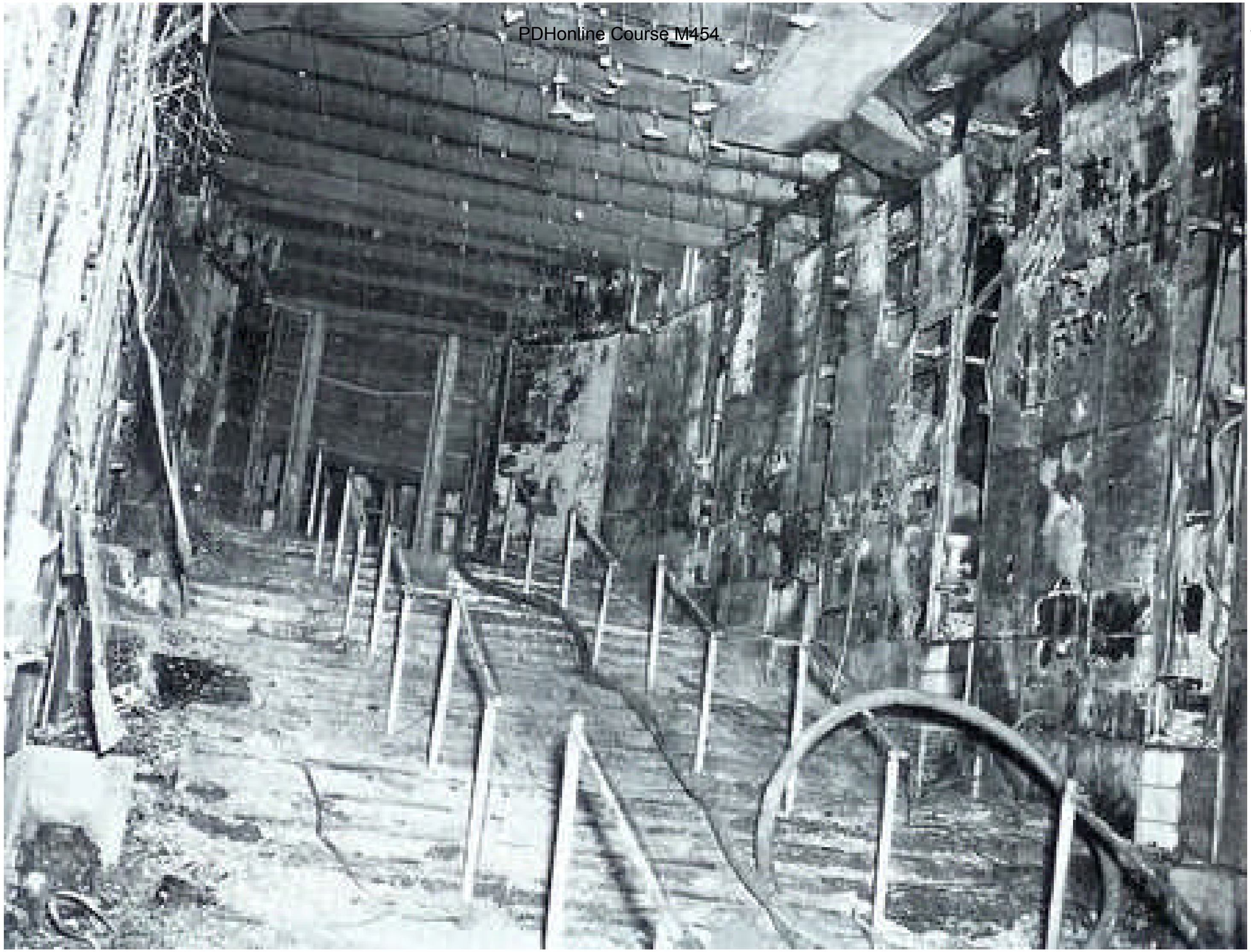


Afternoon of February 9th 1942

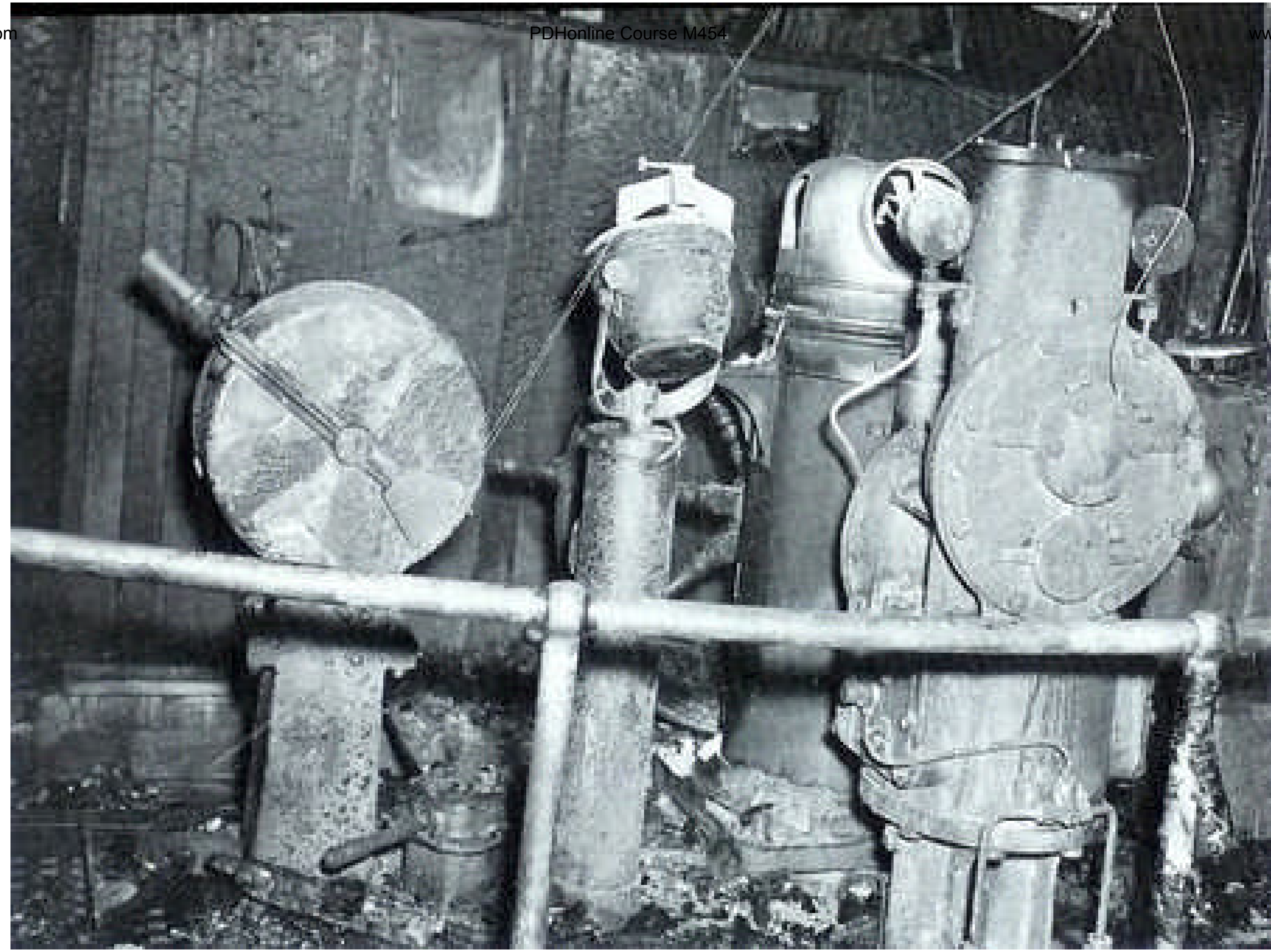
Normandie/Lafayette showing her initial list (to port)


FRENCH LINE

Grand Salon



Grand Stairway
(Grand Salon)



Bridge

"The chief's got his fire out and now the naval people will watch the ship. It's very tender - see how she listed - and now the job is to pump the water out and that's what we're doing…"

***Fiorello LaGuardia* - Mayor of New York City, February 9th 1942 (8:20PM)**

RE: comments made from the French Line offices (Pier 88). In the photograph above, Mayor LaGuardia (center) is flanked by *Captain John S. Baylis*, USCG, Captain of the Port (left) and *Rear Admiral Adolphus Andrews* (right), Commandant of the *Third Naval District*.

Evening of February 9th 1942
(list to port increasing)

Early morning of February 10th 1942
(list to port still increasing)

February 10th 1942 – 2:45AM

***Normandie/Lafayette* lying in the icy water on her port-side**
(her hull at 79-degrees to the horizontal)

Aftermath

REPORT

of the

SALVAGE OF THE U. S. S. LAFAYETTE

(ex-SS Normandie)

(Submitted by Supervisor of Salvage, U. S. N., New York)

NAVY DEPARTMENT
BUREAU OF SHIPS

SPECIAL COMMITTEE APPOINTED BY THE SECRETARY OF THE NAVY TO RECOMMEND SALVAGE OR OTHER DISPOSITION OF THE WRECK, U.S.S. LAFAYETTE

1. On 15 April 1942, the Secretary of the Navy appointed a special committee to make recommendations with respect to salvage and/or other disposition of the U. S. S. *Lafayette*.

2. For guidance of the special committee in this study, the Navy Department requested recommendation from this committee on the following:

   (a) Should this vessel be raised, or should it be disposed of as scrap in her present condition; and if the latter, what method is considered the most practical?

   (b) If it is determined to raise the vessel; when she is afloat, should she be scrapped or should she be reconditioned for service; or should the consideration of her disposition after raising be left for study until she is afloat?

3. Inasmuch as expert opinion indicated that complete removal of the hulk by cutting up would cost a prohibitive amount and future probabilities as to use and development of the slip precluded leaving a large portion of the wreck embedded in the mud, the idea of cutting it up where it lay was abandoned early in the deliberations.

4. Likewise methods of salvage, either for scrap or for the intact hull, involving the construction of cofferdams around the ship or the application of external force applied through mechanical means or both, were discarded because conditions as they existed would not permit their use at a reasonable cost in time and money. Also, if they were used and if successful, they offered only a partial solution, as in either case the vessel still had to be floated upright, and it was very doubtful that success could be attained by those methods on account of the nature of the bearing supporting the wreck. Figure 17 shows the approximate bearing condition of the capsized ship, indicating that bearing was one of the controlling considerations not only in choosing the method of salvage, but in permitting its accomplishment.

5. It was finally concluded that it appeared that the vessel could be raised and that the cheapest, fastest, and most certain method of accomplishment was to right and refloat the ship in one operation by pumping, after having made the under water hull watertight, and subdividing the underwater interior into watertight compartments so as to permit control of the vessel's movement and stability at all times.

6. On 7 May 1942, the committee reported as follows:

   (a) The vessel should be raised.

   (b) Considering the uncertain future needs of the war effort, the committee feels that a decision as to whether the ship should be reconditioned and for what purpose should not be made at this time. Such a decision should await the development of future war conditions and needs as the salvage of the ship draws nearer. Since there is a possibility that the war emergency may make the reconditioning of the ship desirable, every reasonable effort should be made to expedite the salvage.

7. It is desired to emphasize the problems which confronted the special committee. The German submarine campaign had reached its peak in the spring of 1942 and all of the few available qualified ship salvage officers, both naval and civilian, were badly needed in connection with keeping as much of the Allied shipping afloat as humanly possible. The salvage of the *Lafayette* would require the services of a considerable number of personnel, but because of the location of the *Lafayette* in New York City's most valuable slip, because of the pressure of public opinion, and for other obvious reasons, something had to be done. It was decided, therefore, to raise the *Lafayette* by utilizing the services of only one civilian salvage officer, and for the Supervisor of Salvage to supervise and direct the salvage operations in addition to his other duties. It was also decided to take advantage of the *Lafayette* to provide an enormous training laboratory and school for naval and civilian salvage and diving personnel. The greatest contribution of the salvage of the *Lafayette*, perhaps, was the production of the highly skilled salvage officers and divers, both naval and civilian, who were to play a most important role in the war in the clearance of harbors, refloating of sunken and stranded cargo ships and men-of-war, and administering emergency repairs to damaged ships in forward areas.

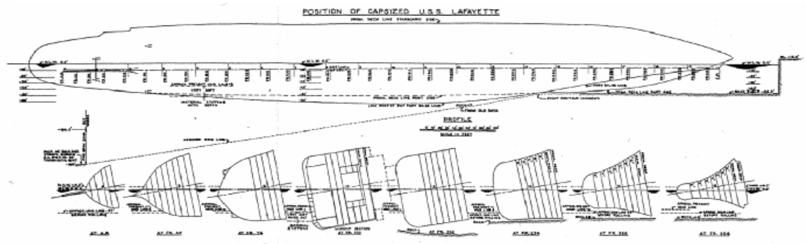


Figure 17

***USS Lafayette* in capsized position between Pier/s 88 and 90**

In her capsized position,

(a) The ship lay on her port side diagonally in the slip between Piers 88 and 90.

(b) The ship was flooded throughout up to the outside waterline.

(c) At mean low water, the keel forward was about 5 feet below water and the ship trimmed slightly by the stern so that the after end of the keel was about 13 feet below water.

(d) Range of tide (approximately), 5 feet.

(e) Angle of inclination of wreck (initial), 79° 54′.

(f) Angle of inclination of wreck (after settlement), 79° 05′.

(g) Length of Piers 88 and 90, 1,100 feet.

(h) Width of slip between Piers 88 and 90, 400 feet.

(i) Distance of forward end of keel from Pier 88, 160 feet.

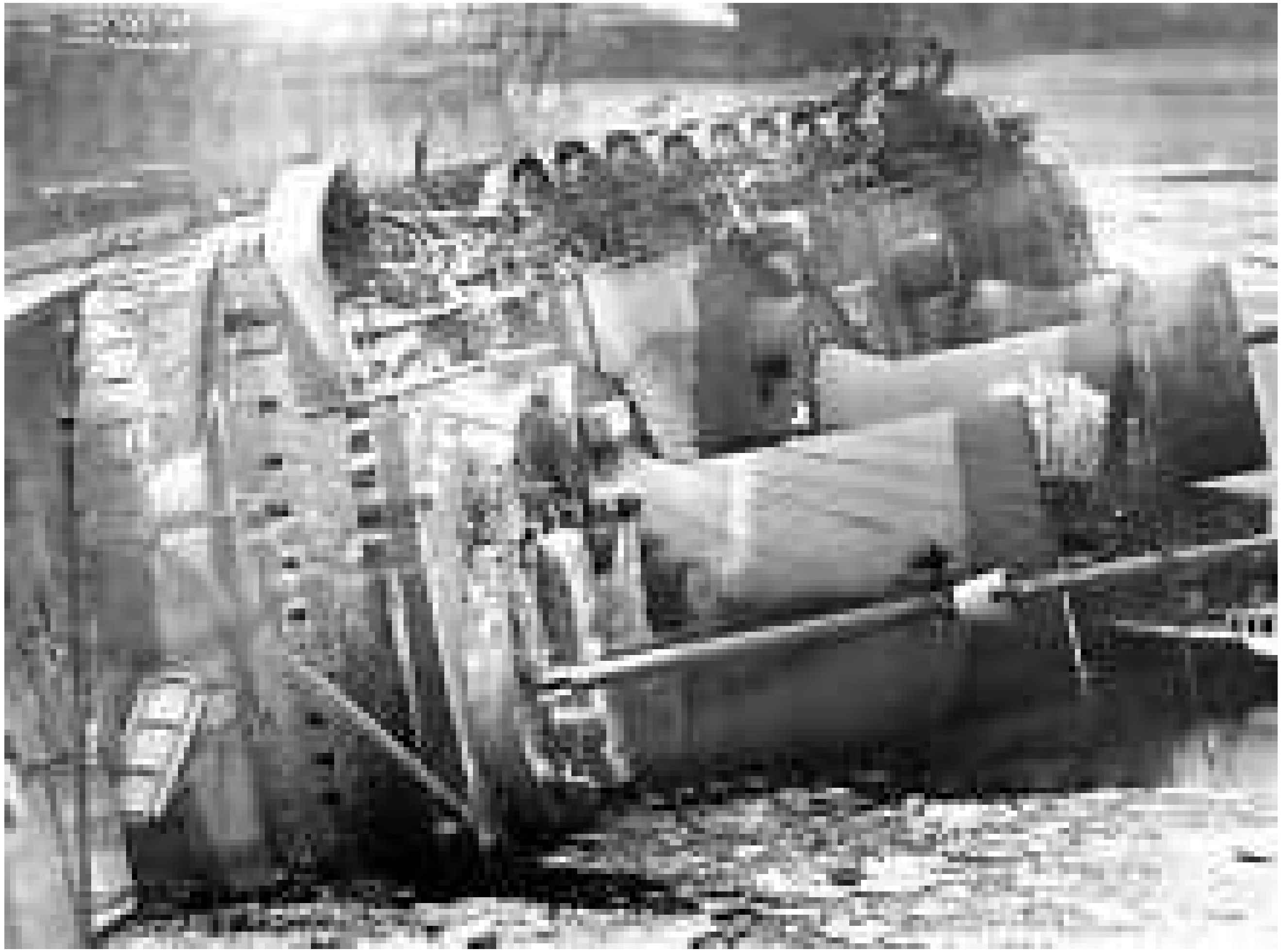
(j) Distance of aft end of keel under Pier 88, 5 feet.

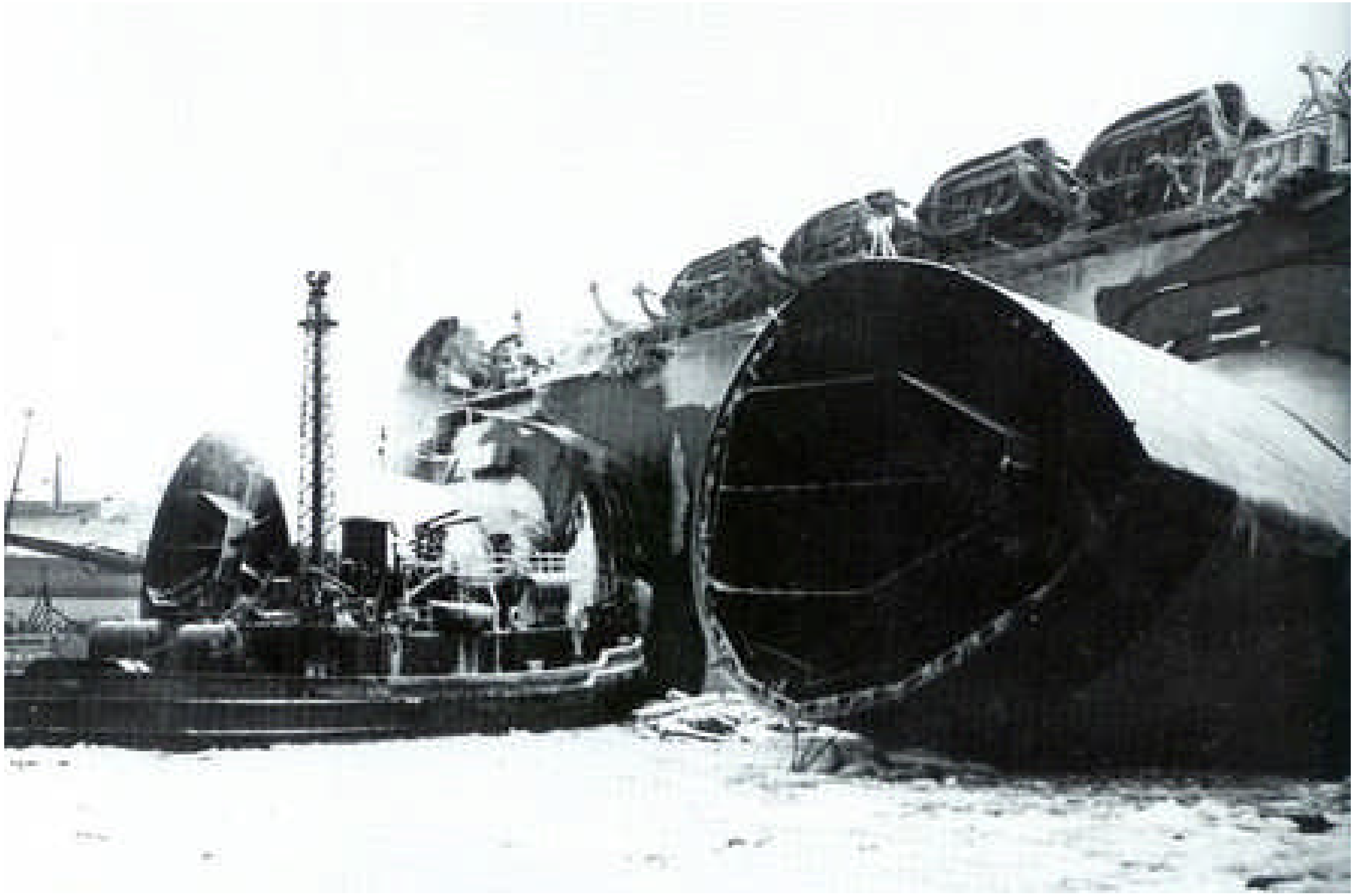
(k) Approximate total displacement of wreck (mean low water), 103,000 tons.

(l) The ship lay in a bed of soupy mud from about 26 feet down to about 40 feet below m. l. w. Below –40 feet, the soil stiffened considerably.

(m) A rock ledge at about –46 feet extended from the head of the slip towards the river to a point on the wreck about one-third of the length of the ship from the bow. From this point, the rock sloped down steeply into the river bed so that at the stern, the rock level was approximately 160 feet below mean low water.

(n) It was apparent that the wreck was being supported by a hard point at the edge of the rock ledge forward, by more or less firm soil abaft the edge of the rock ledge, and somewhat by the soupy mud which extended fore and aft.





FORCE DEFENDERS WITHI
INTO HEART OF FORTRES

NIPPON THRUST ON JAVA SEEN AS NEW MOVE

FIRE-SEARED LINER NORMANDIE ROLLS OVER BESIDE PIER

JAPS ADVANCING NEAR RANGOON

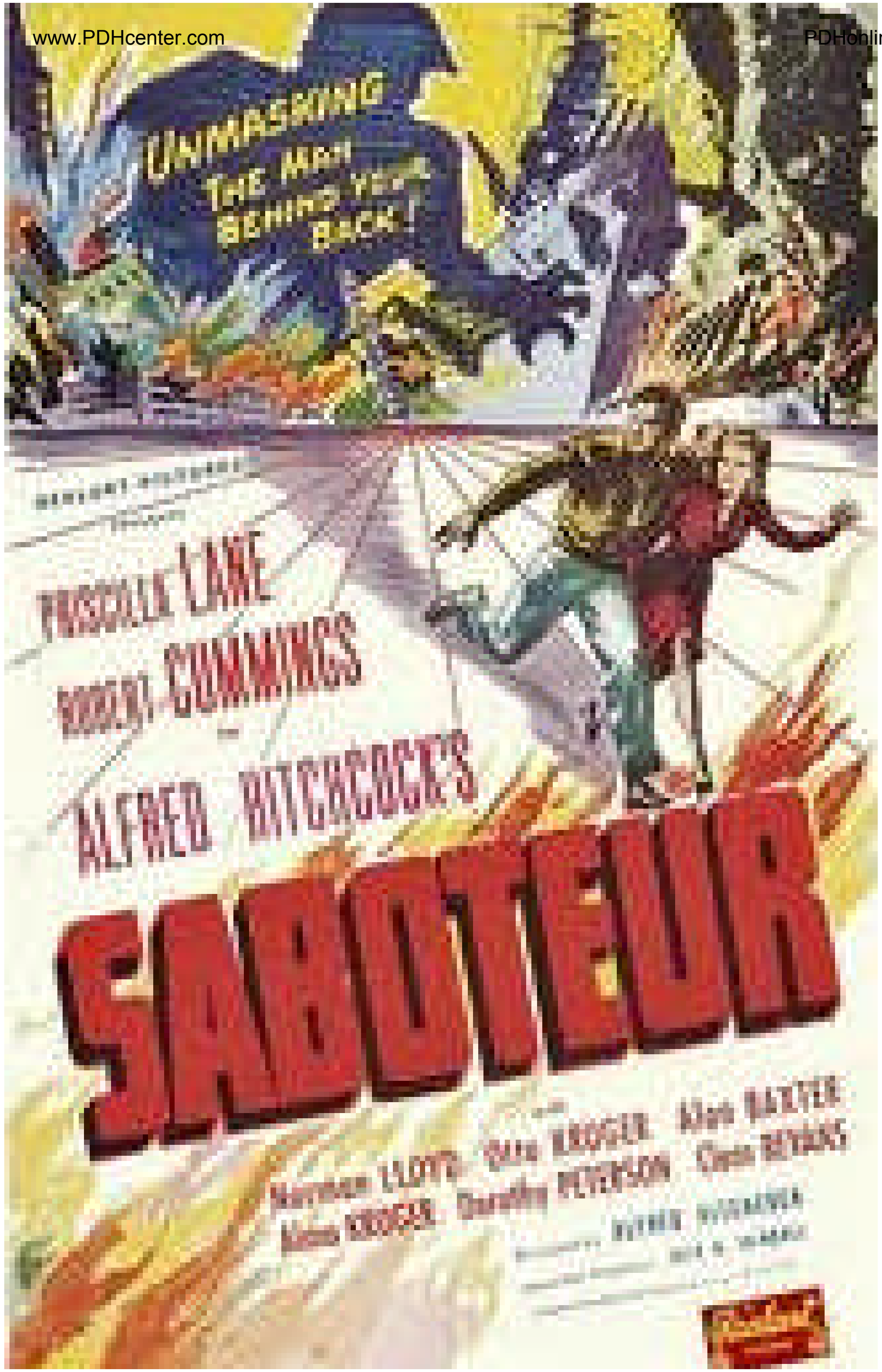
Investigation

"The world military situation at the time imposed a most pressing demand for troop transports and the enormity of the expansion of ship construction and conversion resulted in the placing of an extremely heavy burden upon the shoulders of those engaged in readying ships for military service. As a result, corners had to be cut and responsibility delegated to personnel less experienced and capable than would be the case in normal times..."

Frank Knox, Secretary of the Navy

***"…that the gross carelessness and utter violation of rules of common sense on the part of the employees of Robins Dry Dock and Repair Company, Incorporated, was the direct and sole cause of the fire on board the U.S.S. Lafayette…there was undue haste, indecision, and lack of careful planning in connection with the conversion of the Normandie…If a thorough and detailed survey had been made of this ship, it is probable that no order would ever have been issued directing such hasty preparation and speedy sailing. Such issuance of unreasonable orders, based on incomplete knowledge of actual conditions, should serve as an example to responsible officials of the dangers inherent in arbitrary decisions contrary to the recommendations or protests of the officials in the field.*"**

Congressional Committee of Investigation



There is a scene in the 1942 *Alfred Hitchcock* movie *Saboteur* where the capsized *Normandie/Lafayette* is briefly shown and the title character gives a knowing smile. The implication was, of course, that the ship was the victim of enemy sabotage. To say the least, the U.S. Navy was very displeased at the suggestion that their security was so poor as to allow such an act to occur. A congressional investigation found the events of February 9/10 1942 to be completely accidental finding that the hasty conversion, carelessness, violation of rules, lack of coordination and/or a clear command structure during the fire were to blame – not a saboteur, but rumors persisted.

Mr. Franklin Roosevelt - President of the United States
Capitol Bldg, Washington, D.C.

Mr. President

Dear Sir:

I and my bench partners are both tool and die makers working for Rowe Mfg. Co of this city. We have both been studying the pictures of the overturned French Liner Normandy at the New York Pier. We have also read all the accounts of this major disaster to our country. We both think it is sabotage which is very plain. We know it was being taken care of by totally incompetent engineers or the disaster could not possibly have happened. We know that many people in high and low stations are solely responsible for this disaster. We know it is another treasonable blunder of which this nation is lately absorbing much more of shocks than it should, but all of this is more pardonable than the do-nothing attitude of those in high places who by their inaction are letting our nation be sold down the river.

We need that ship badly and we need it right now...What are you waiting for? Are you waiting for China and Russia to do the job for us I ask you. To hell with those who sabotogued her, save her now at once and kill them after that. We need that ship now, not next year.

The same people who are directly responsible for our losing the war in the Pacific are now responsible for this fine ship laying upside down in the mud going to ruin because they are too dam traitorous and dumb to start the salvage work at once that will save her and give us a great troop transport that might make it possible to bomb Italy and Japan and Germany off the map.

You are the Nations Commander what are you wating for this time?

RE: letter from one of the contractor's bidding the salvage work for *Normandie/Lafayette*

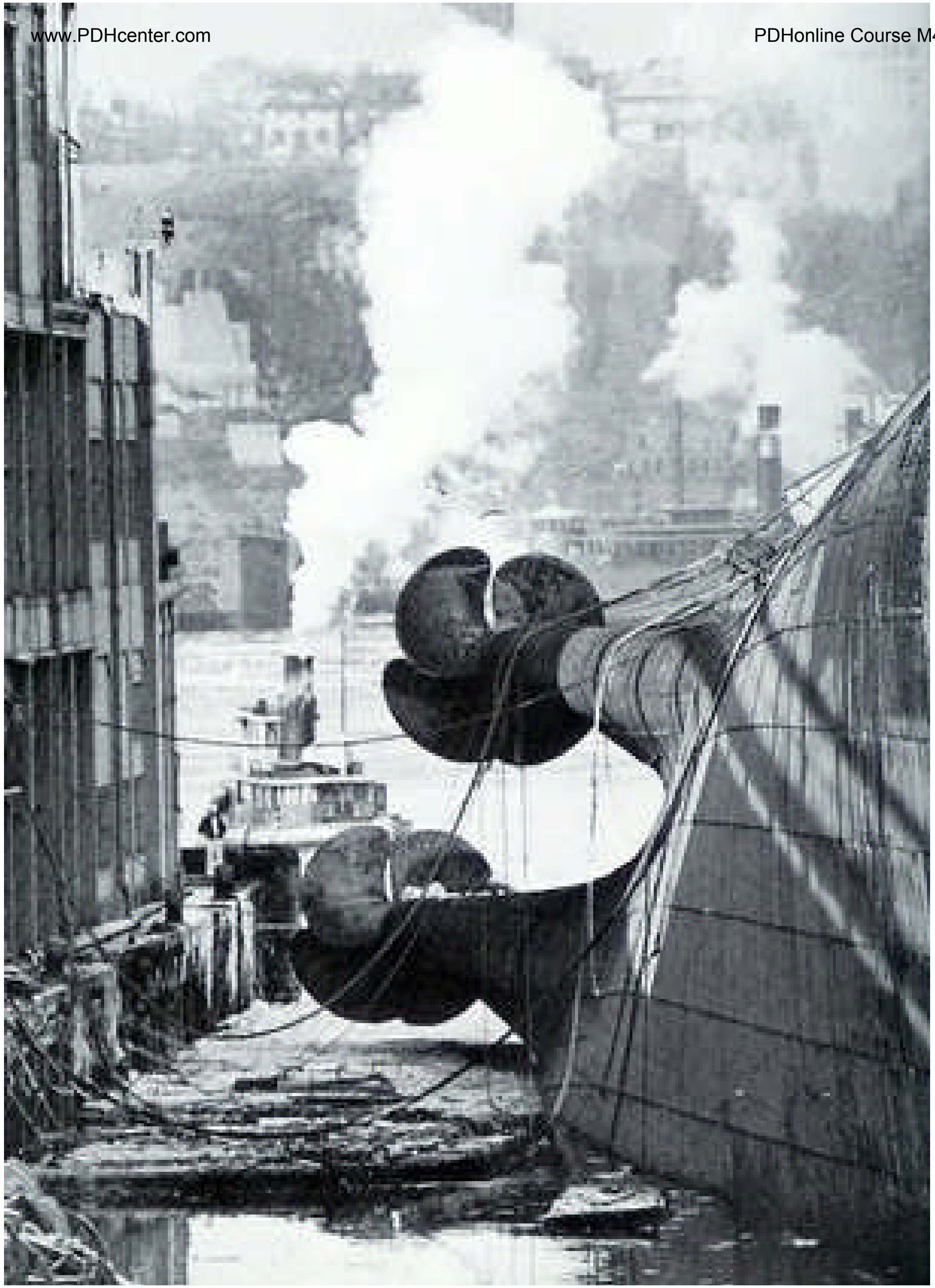
Fanning the flames of these rumors was Murder Incorporated's *Meyer Lansky* (left). His associate in crime; *Charles "Lucky" Luciano* (right), was imprisoned upstate and Lansky wanted to get him released. He devised a plan to set him free using, as a pretext, the burning and capsizing of *Normandie/Lafayette*. Using their influence with the New York *Longshoreman's Union*, they (the mob) would guard against any further acts of sabotage on the New York waterfront during the war with the condition that Luciano be released. Security was a great concern to the Navy since they were stretched thin in New York's harbor and were still reeling from the bad publicity after the loss of the ship. The Navy/government took the covert deal.

It was observed that some senior Navy officers wept at the site of the great ship on her side (akin to a beached whale). They feared her loss as a troopship would add another year or more to the war. The tragic sight attracted a lot of attention from pedestrians and drivers on the (elevated) *West Side Highway* who would stop to take in the view. Eventually, a wooden fence was erected to prevent crowds from gathering.

Cunard's Pier 90
(at right)

View of hull

(from nearby building – elevated West Side Highway in foreground)



Inside *Normandie/Lafayette*, everything was a mess. Debris was everywhere and, because of her angle, it was easy to become disoriented in the tangle of upside-down, topsy-turvy passageways, elevator shafts etc. However, the hull was intact lying on its side in a bed of Hudson River mud; her bow out of the water and starboard (four-bladed) props suspended in mid-air (left). On her port-side, a combination of dock mud and sewage extended over twenty-feet covered with water that rose and fell with the six-foot tide. The pressure caused by the rollover had also burst portholes.

Difficulty moving materials within the ship

The Nightmare

"…In the best circumstances, then, diving is no picnic. At Pier 88 in 1942, it was a nightmare. First, there was that water. It was like ink, ink mixed with sewage and oil and mud. Divers couldn't see where they were going or what they were doing. They had to feel their way into the hull, risking snagging or tearing their suits on some sharp projection. They also had to work inside the hull entirely by their sense of touch. They had to hammer and nail and saw in utter darkness. Normandie herself presented another hazard. Lying on her side, as she was, her decks had turned into bulkheads and her bulkheads into decks. As a result, divers found themselves walking on partitions that were built to carry nothing heavier than a thin layer of wallpaper. Then there was the mud. Mountains of it had oozed through open portholes and cargo doors. With one step a diver might have a solid footing, with the next he might find himself sinking over his head into mud the consistency of butter…"

***Harvey Ardman*, Author**

ENGINEERING CONSTRUCTION DIVISION

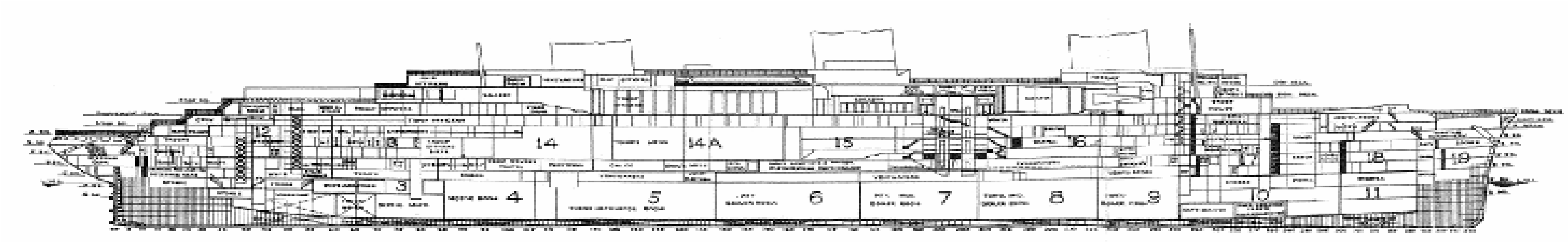
MERRITT-CHAPMAN & SCOTT CORPORATION

BATTERY PLACE NEW YORK, N.Y.

Prior to the outbreak of the war, the Office of the Supervisor of Salvage, USN, was established in the Navy Department under the Chief of the Bureau of Ships to supervise the operation of the ship Salvage Division of Merritt-Chapman & Scott Corporation under Ship Salvage Contract NObs-36. Under this contract, all of the facilities including vessels, equipment and personnel of this salvage concern are operated by the Supervisor of Salvage.

The salvage of the *Lafayette* was one of a great number of salvage operations conducted during 1942–43 by the Navy Salvage Service managed by Merritt-Chapman & Scott Corporation under the general direction of the Supervisor of Salvage, USN. Contrary to popular belief, no specific contract was let for this particular job. It was carried out under the provisions of the Ship Salvage Contract NObs-36, with Merritt-Chapman & Scott Corporation, by employing personnel as necessary to build up an organization around its nucleus of key personnel and acquiring facilities as required.

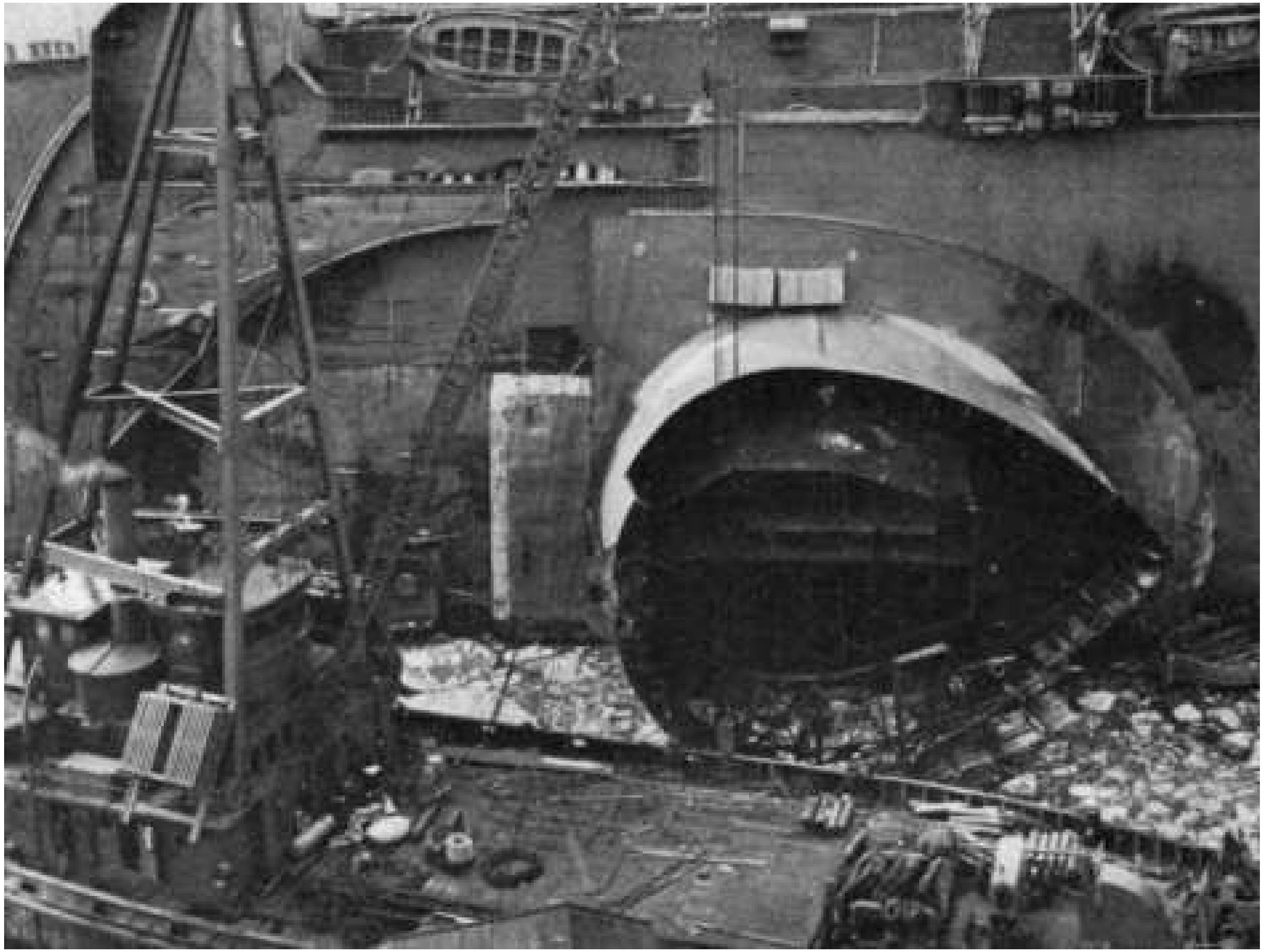
<u>Left</u>: an advertisement for *Merritt, Chapman & Scott* – a.k.a. "The Black Horse of the Sea." The original company was founded in the 1860s by *Israel Merrritt.* MC&S was a very well-respected marine salvage/construction firm with worldwide operations. They served the U.S. Navy faithfully in both World Wars transferring much of their assets directly to serve the Navy's wartime needs, including the salvage effort for *Normandie/Lafayette*. The company ceased operations in the early 1970s.

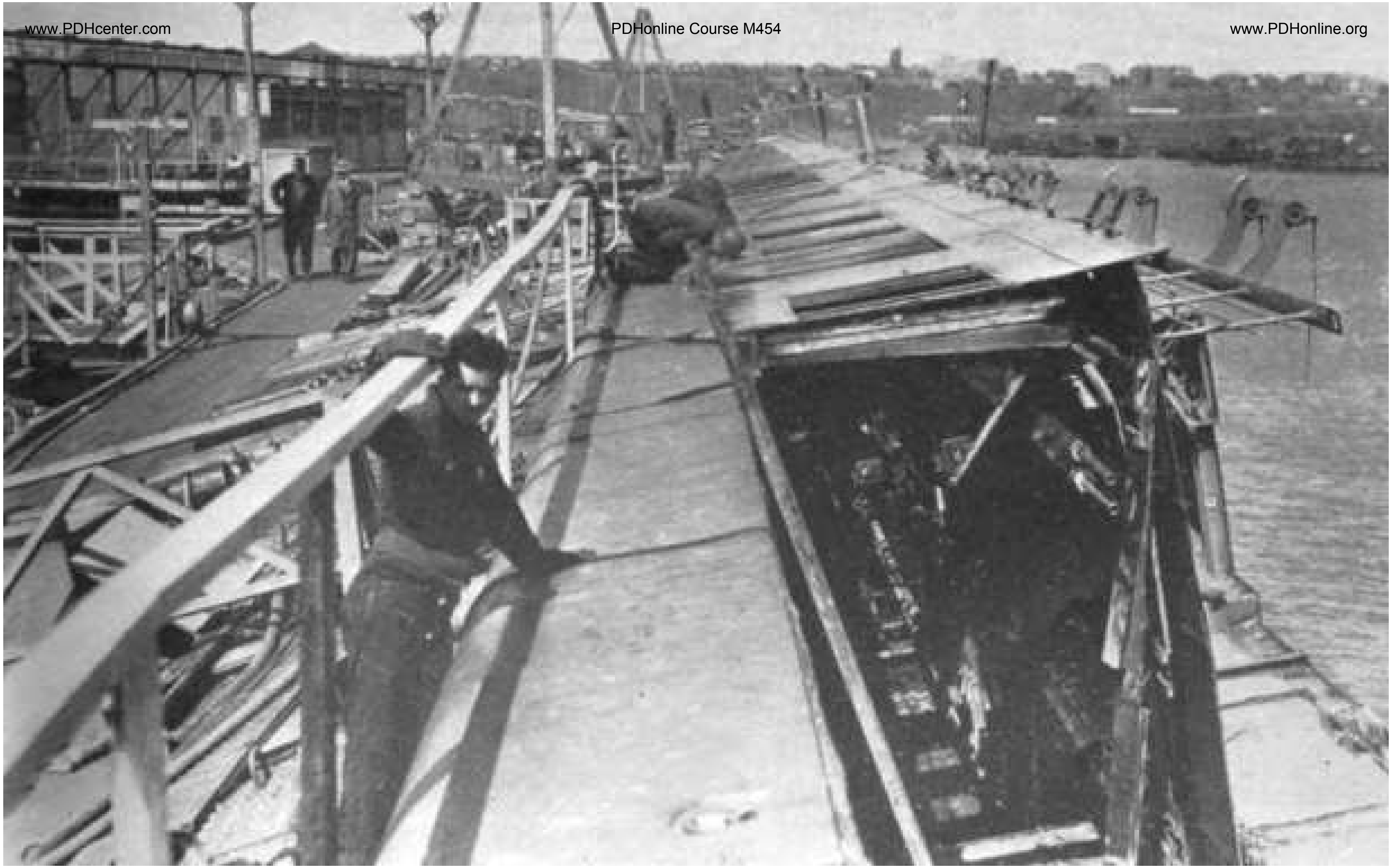


On February 21st 1942 – just twelve days after the disaster, salvage operations to "right" (bring to an even keel) *Normandie/Lafayette* began. To regain buoyancy, it was decided that each of the ship's sub-compartments be sealed and pumped clear of water. However, this meant that the ship's funnels, masts and superstructure had to be removed and sealed. Floating derricks were stationed alongside and divers would have to enter the hull to seal every opening.

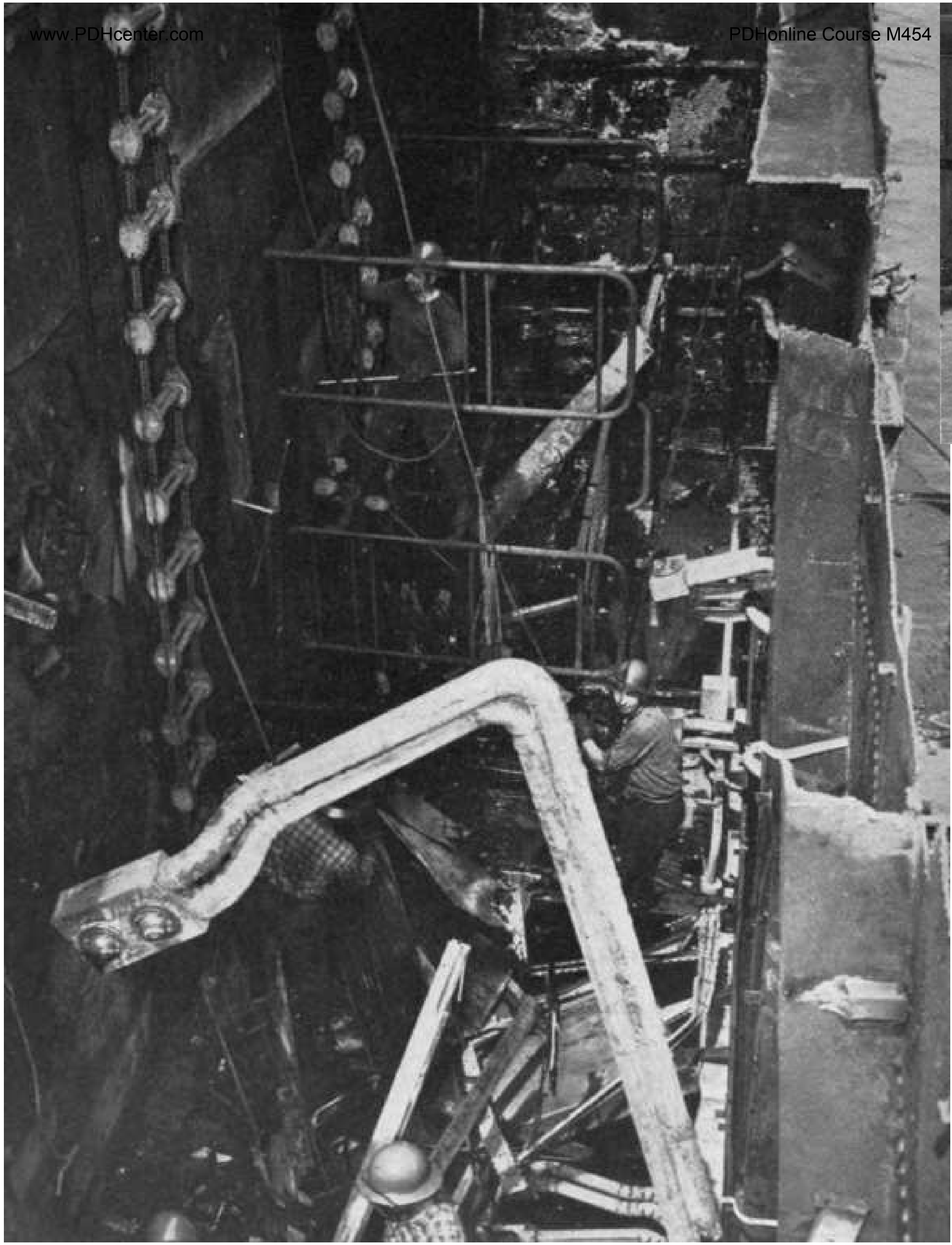
Removal of the superstructure was accomplished by burning and hoisting out sections until nothing remained above the promenade deck to a depth of 10 feet from the port side where the surrounding mud made further burning impossible. It was believed that the remaining superstructure would act as a dam against mud and silt entering the area next to the promenade deck where scuppers and holes had to be patched.

Removal of stacks

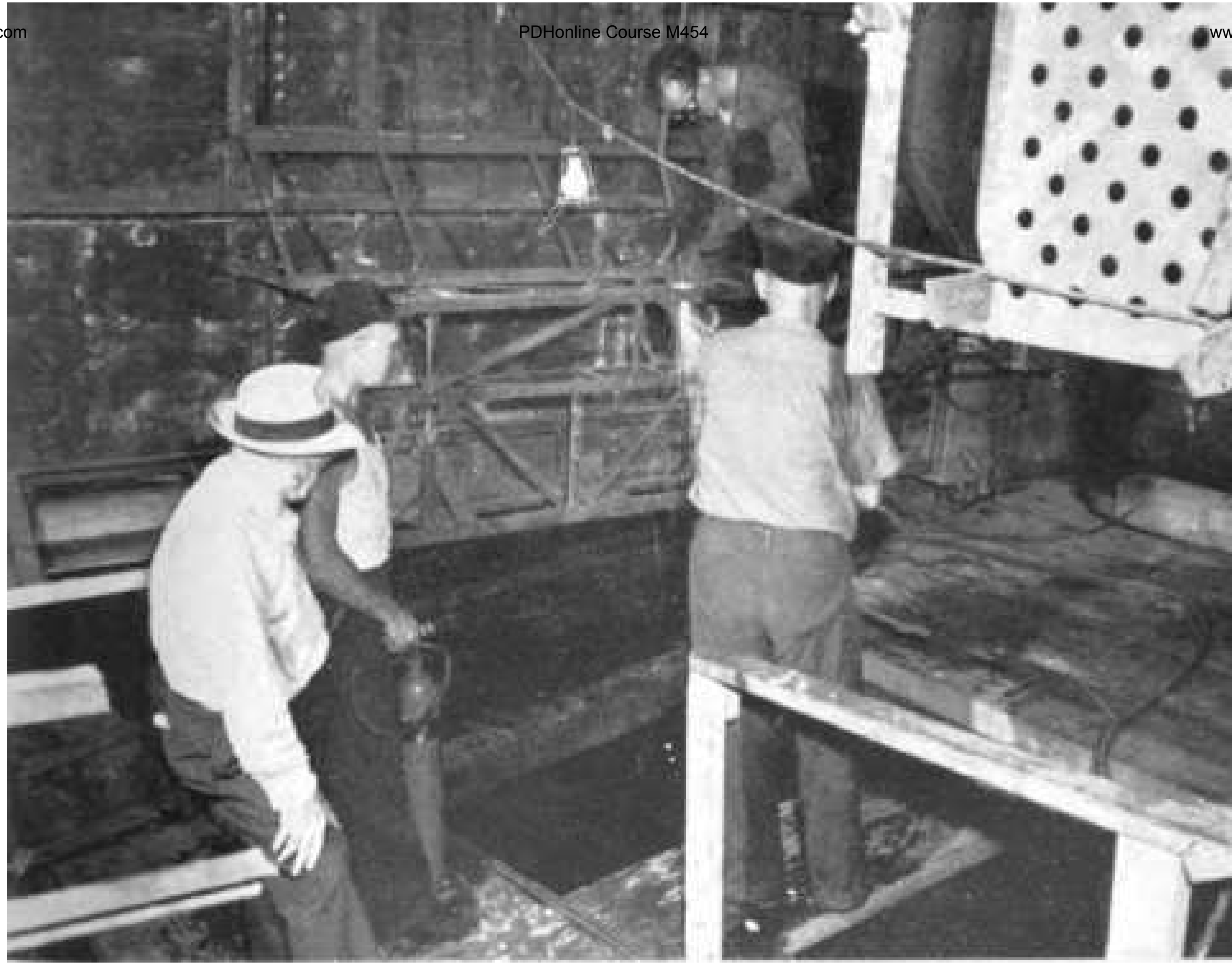




Removing structure above Promenade Deck



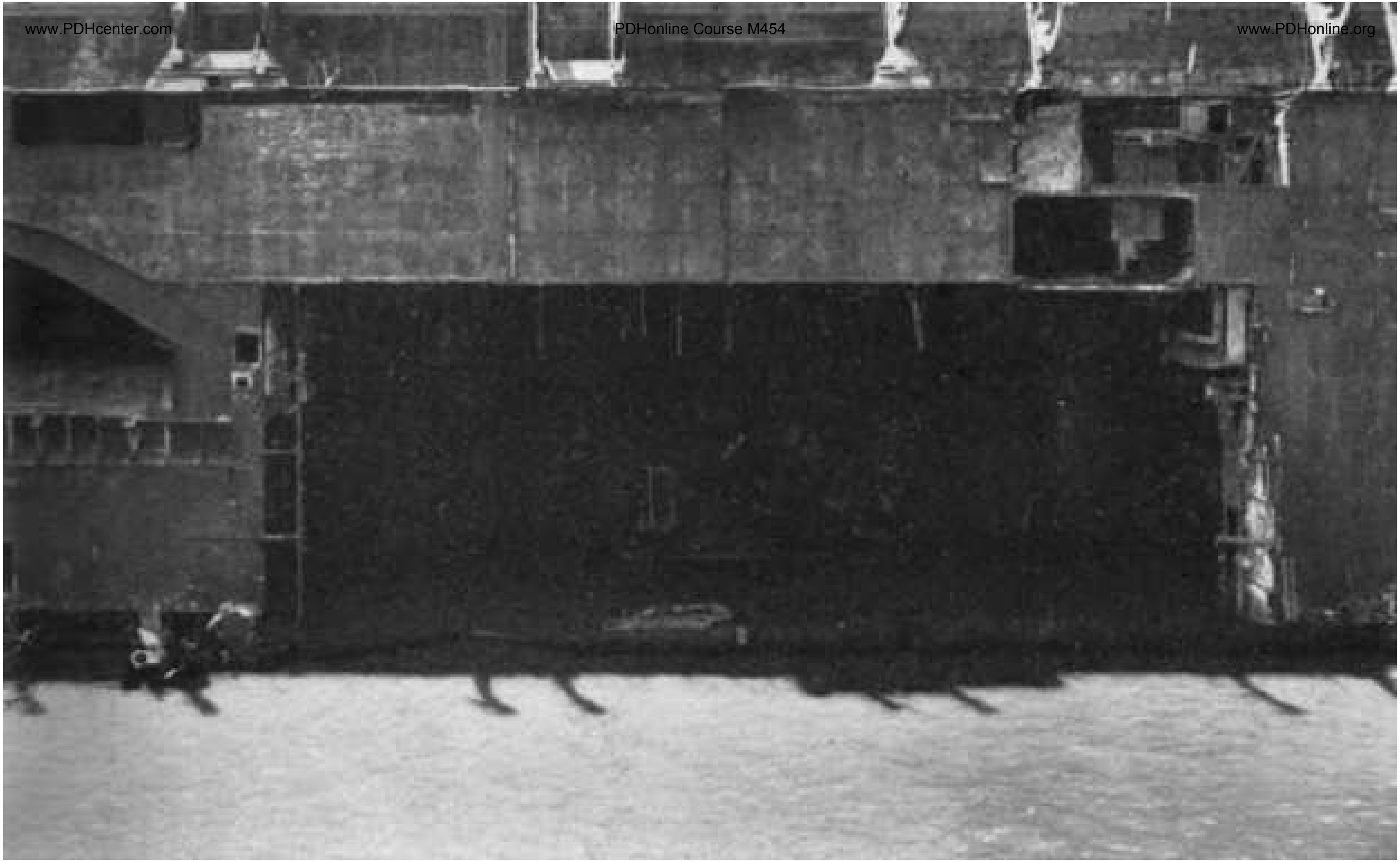
Removing (left) and removed (above) structure above Promenade Deck



Fire watch during salvage operations

Removing rubble in burned-out areas

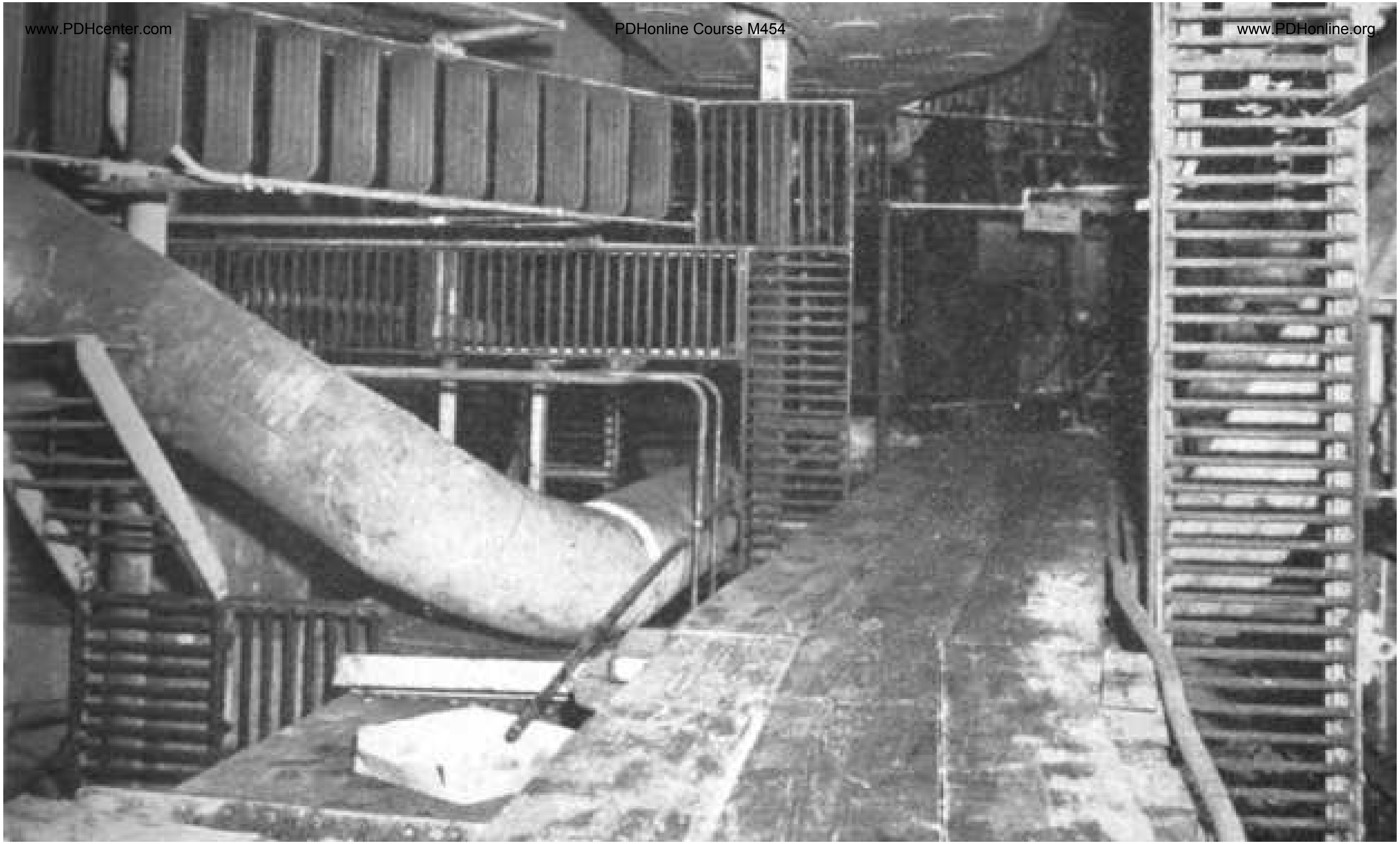
Barge filled with burnt life preservers



The fire began in this compartment

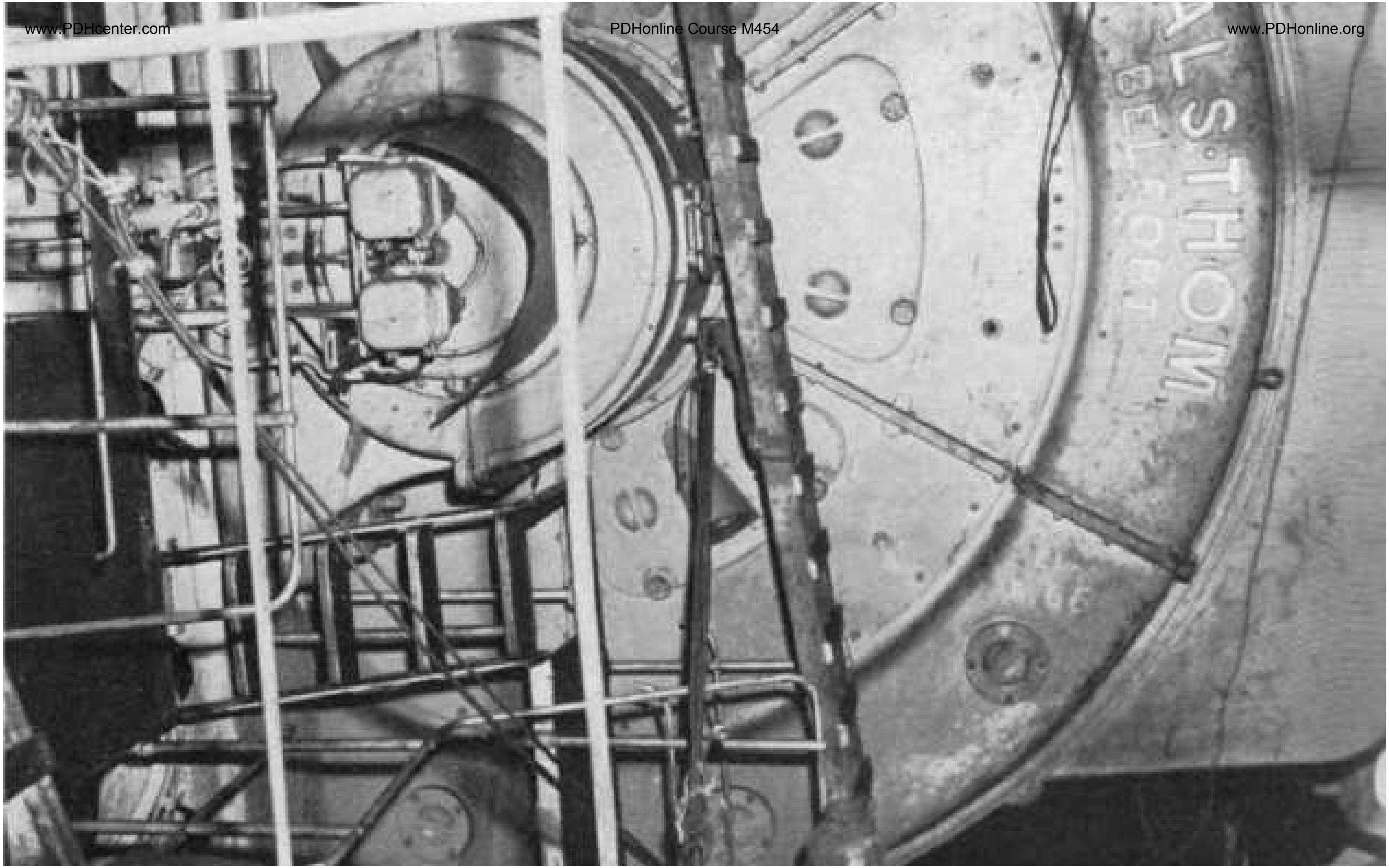
Access doorways (like the one shown above) were cut into the Promenade and/or Main Deck/s

Hoisting rubble through open cargo door



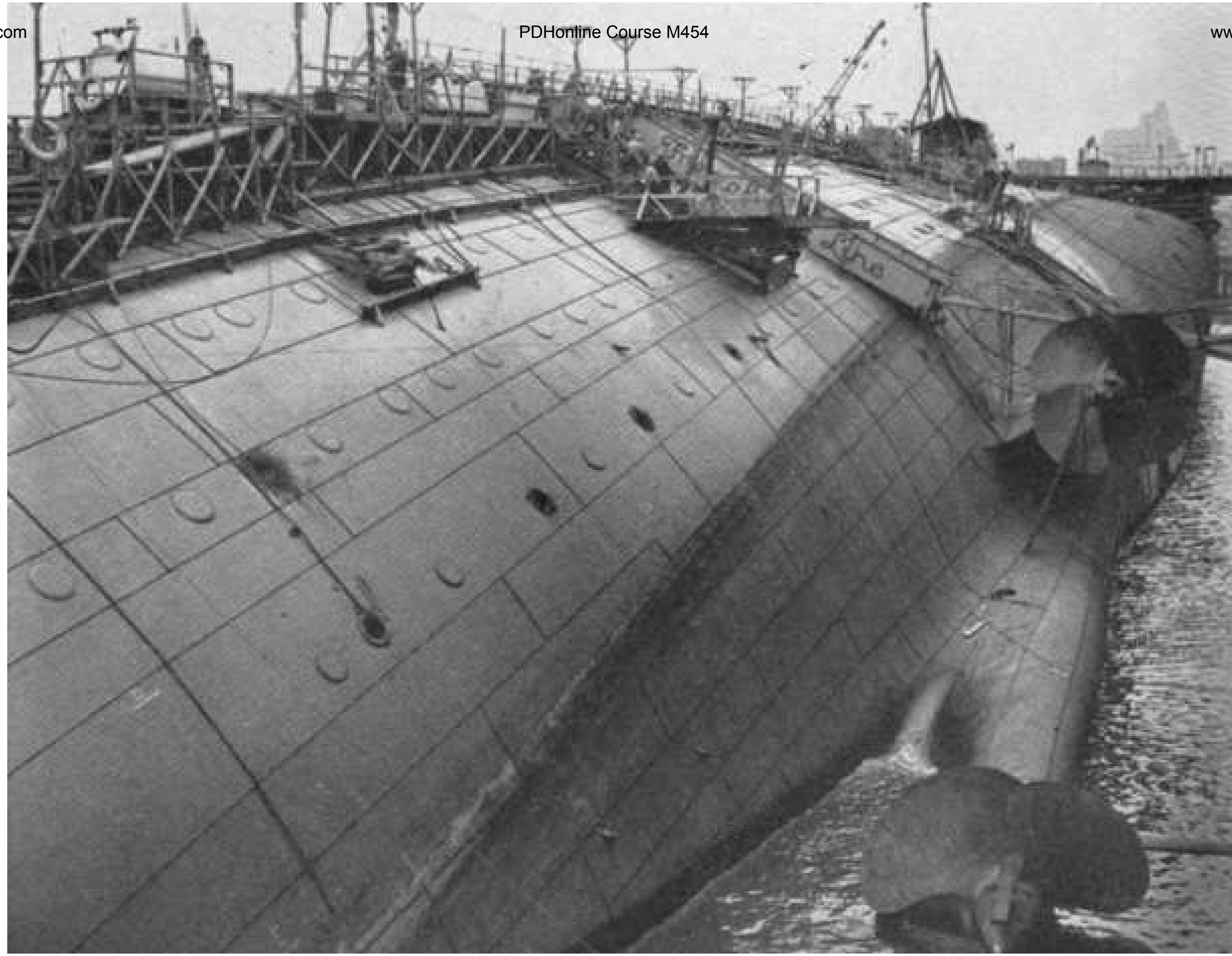
The Engine Room (nearly horizontal) provided deep access into the ship

Starboard Inboard Engine (partially submerged)
(both port engines were completely submerged)

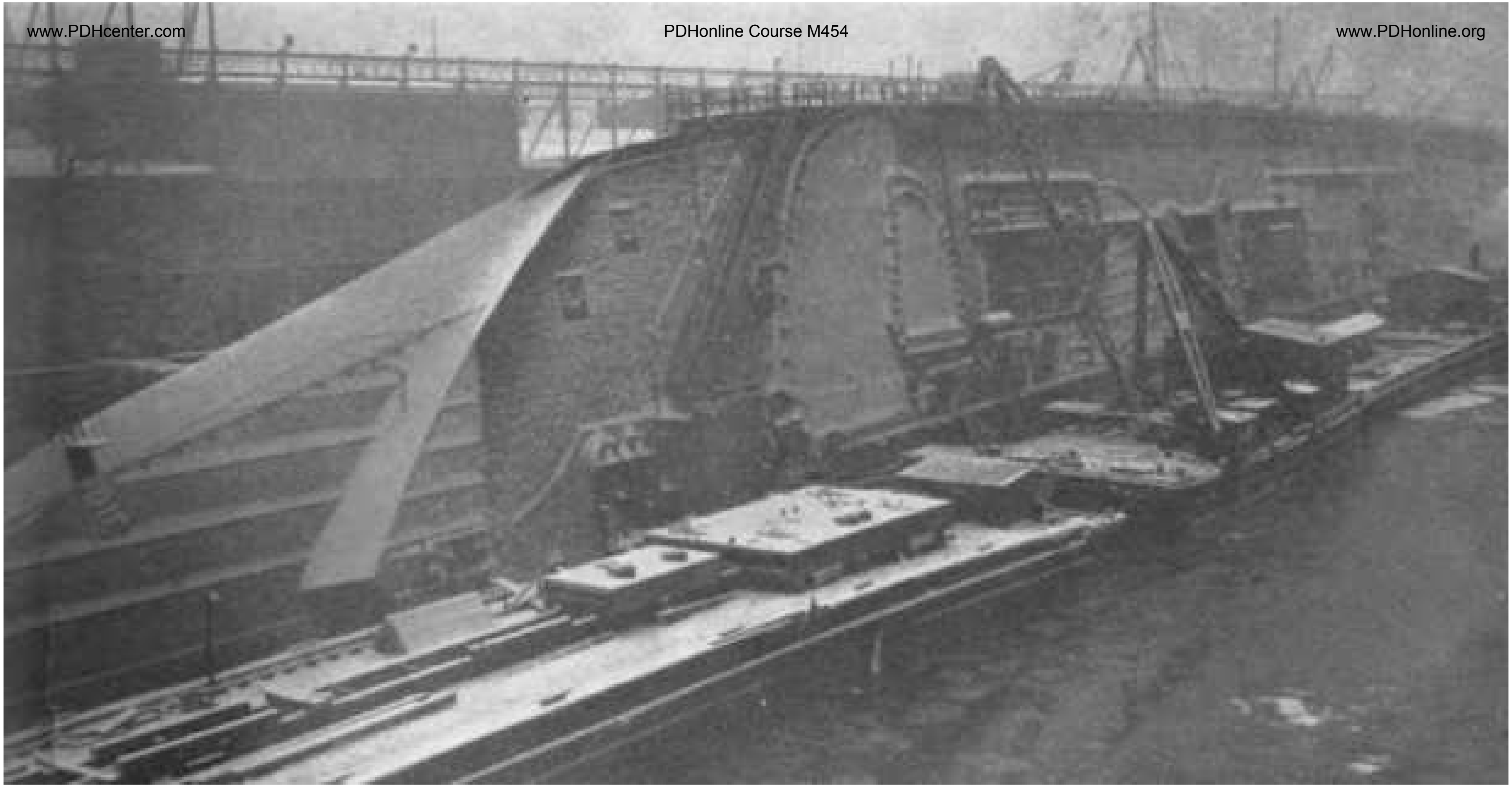


Starboard Outboard Engine

Elevator shafts also provided deep access into the ship

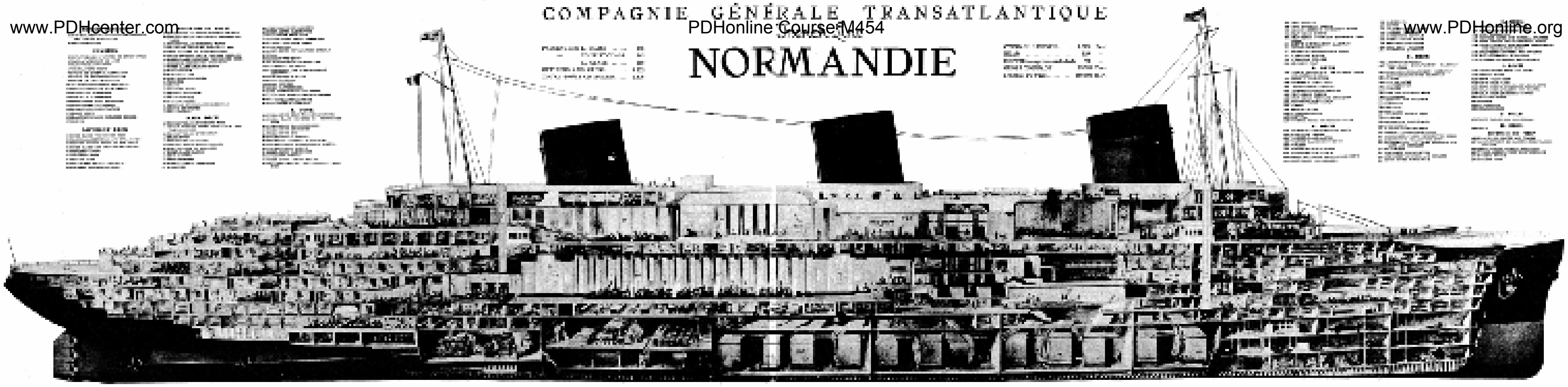


View of stern and starboard propeller set during salvage operations



Winter 1942/43

A Cut and Dried Job



Placed in charge of the salvage operations was Navy Commander *William A. Sullivan*. On a tour given to reporters on May 26th 1942, he stated it was a "cut-and-dried job" – it would prove to be the complete opposite. Placed at his disposal was a work-force of over 500 civilian workers. Their first order of business was to clean out the ship's interiors allowing the submerged portions of the hull to be made watertight. Subsequently, the interior would be subdivided into a network of watertight compartments allowing them to be flooded and/or emptied at will during the righting operation which would use the "controlled pumping" method. This method would allow the ship to slowly rise to an even keel. Over 350 portholes and sixteen large cargo ports were either forced open by pressure during the roll-over or left open (unintentionally). The only way to seal them properly would be by divers working in a nightmarish maze of mud, sewage, oil, gas and, to top it off: zero visibility.

Three hundred and fifty-six airports, submerged an average of 60 feet below the surface and in 8 to 10 feet of mud, had to be patched and braced with reinforced concrete in order to withstand the water pressure that was to be exerted on them when pumping commenced. See figure 19. Almost all of the airports and cargo doors which required patching, were found to be covered with mud which had been squeezed into the ship. In many cases, divers found that the staging, hung on the port side prior to the fire, had been crushed under the side of the vessel with many large timbers protruding at sharp angles through open ports, making the patching of these ports extremely difficult. In some cases, both doors of cargo ports were open and mud to a depth of 20 feet had been squeezed in. It was necessary for divers to enter these compartments, sometimes sinking over their heads in mud, to clean out debris and direct mud discharge.

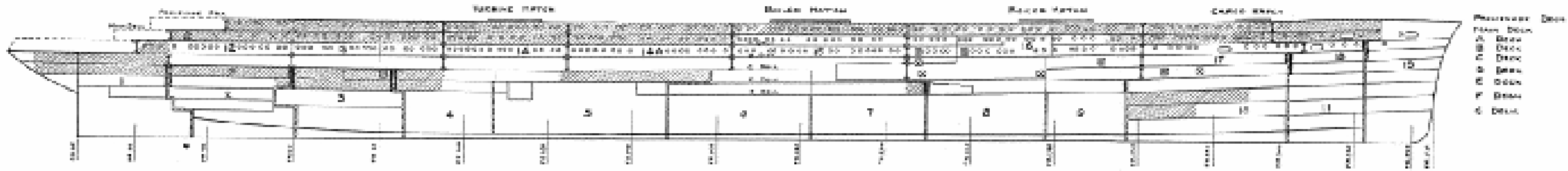
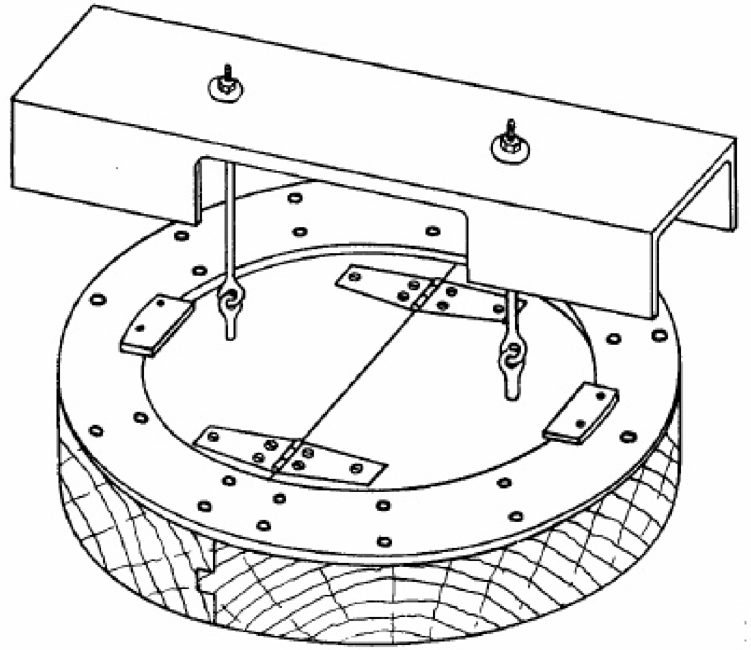
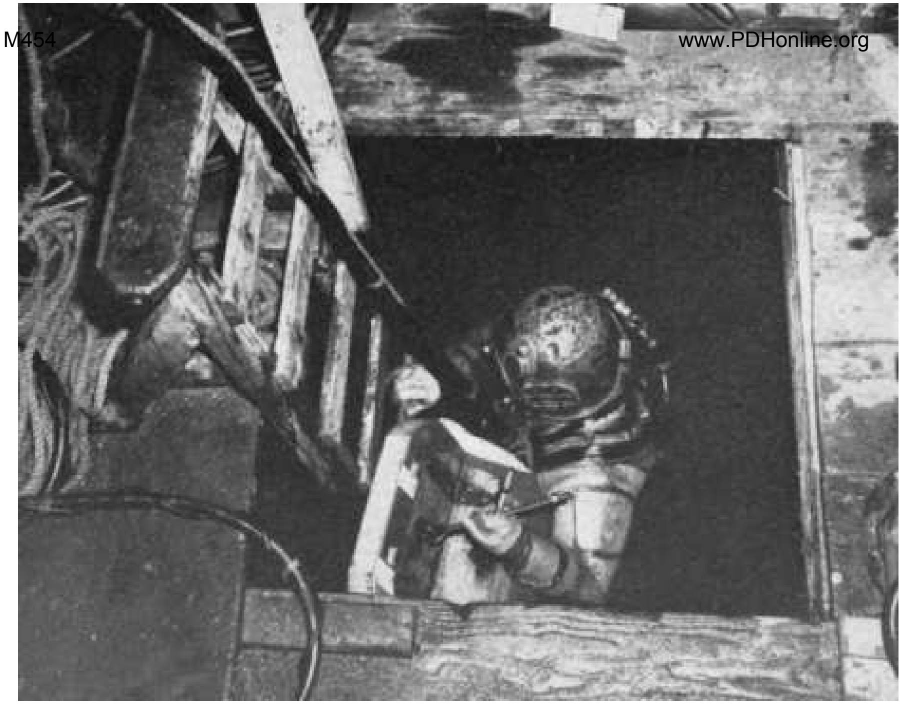


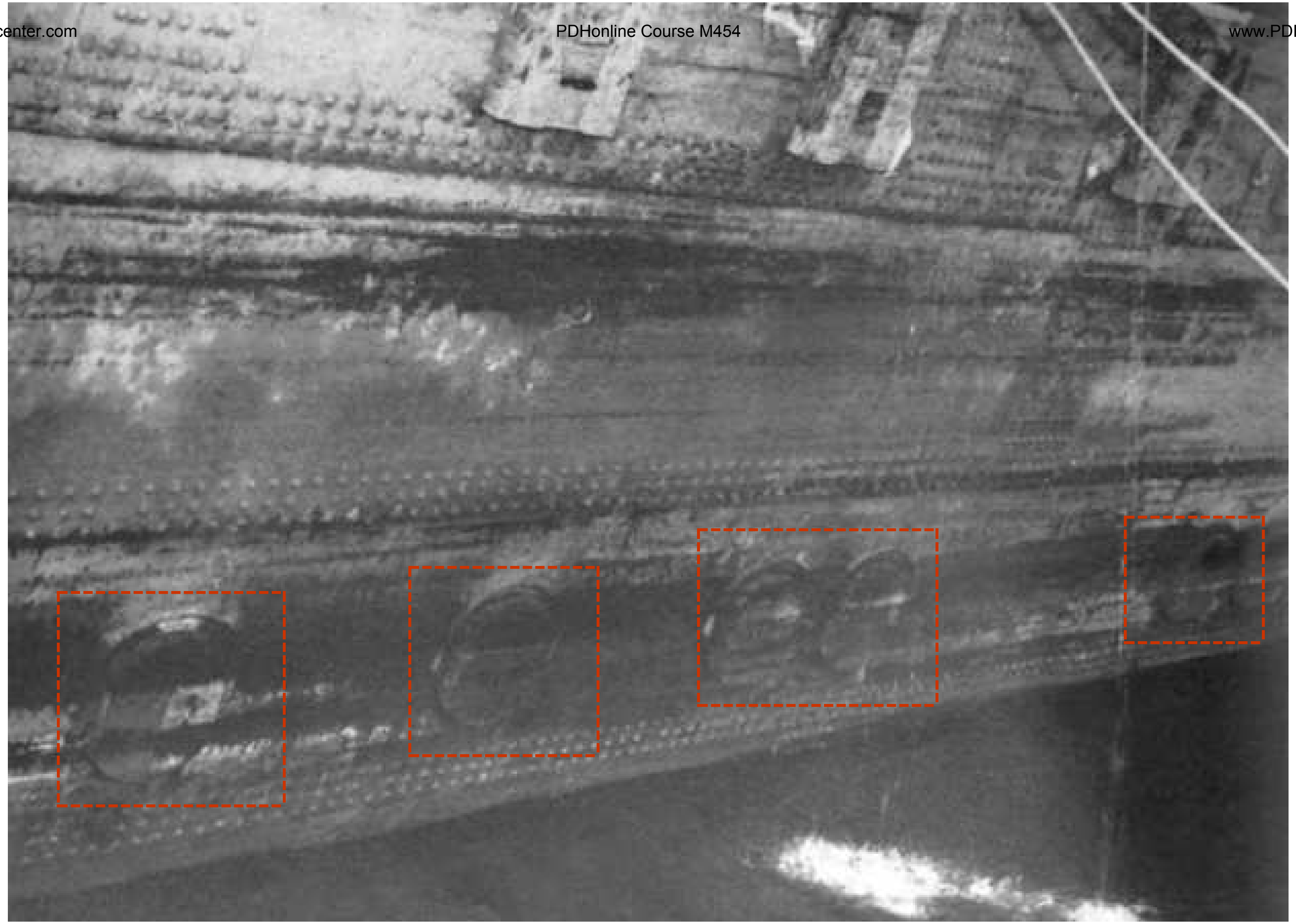
Figure 19

Sectional view of USS Lafayette (showing major construction areas)

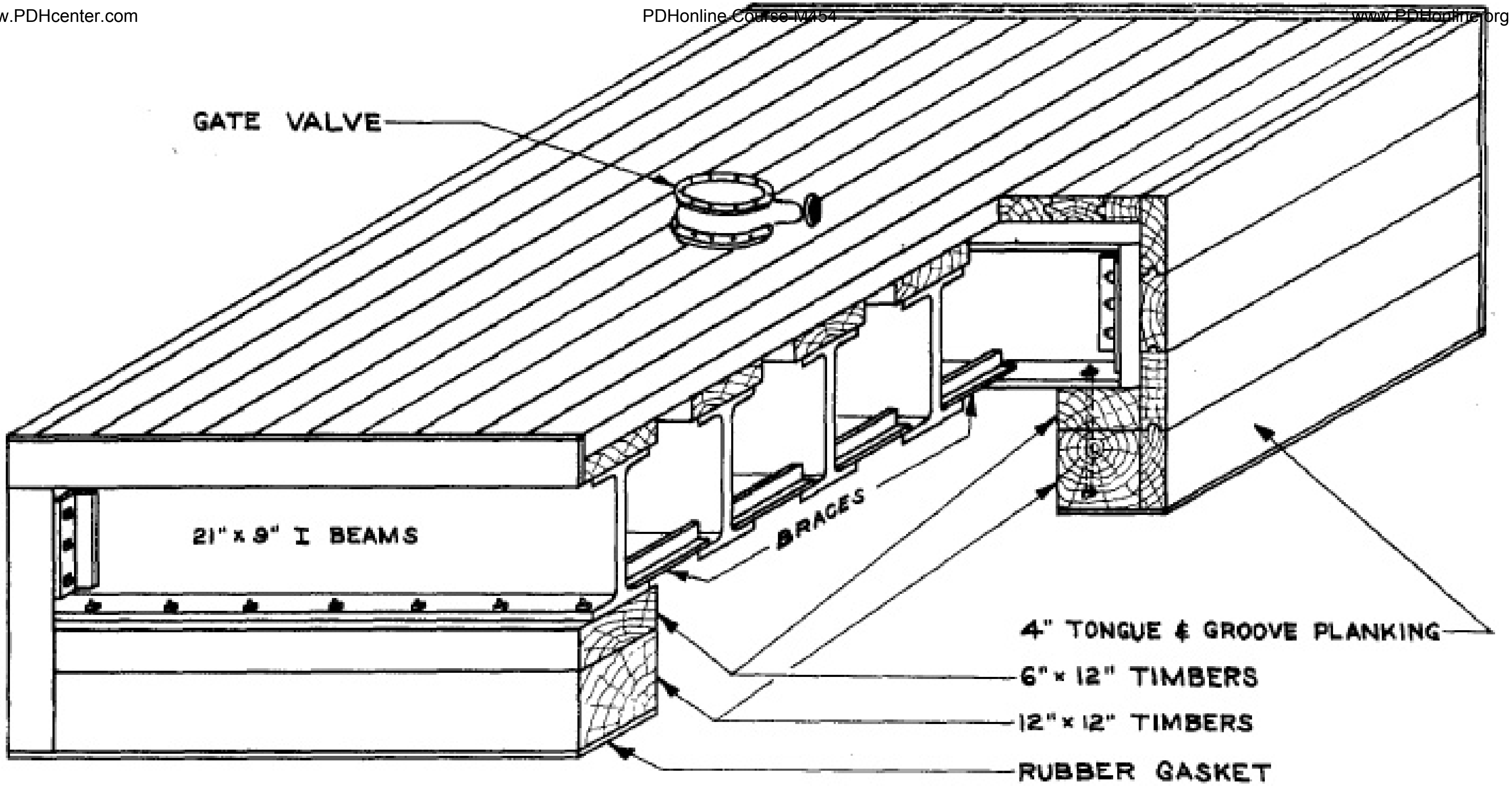




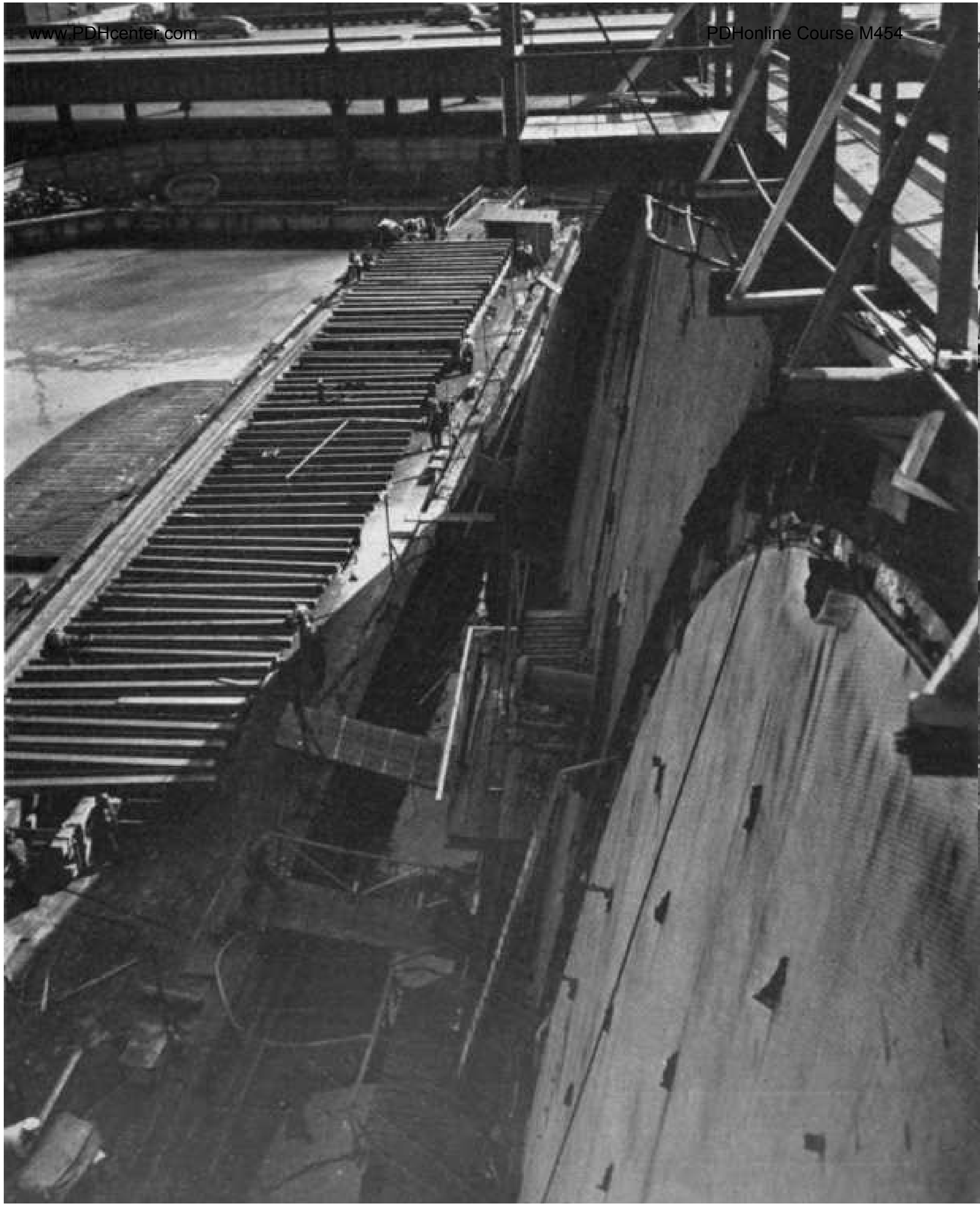
In order to plug the portholes watertight, a newly designed plug called a *Tooker Patch* (left) was used for the first time on the salvage of the *Normandie/Lafayette*. It was invented by *Merritt, Scott & Chapman* salvage master *John I. Tooker*. It was made of a three-inch thick piece of wood cut in the shape of a porthole with a +/- 0.25-inch thick rubber gasket along the inside edge. A barn-door hinge and four long toggle bolts (two to each side) held it all together. A diver would drop down inside the ship with the patch (right) and feel his way (typically from memory) to the correct porthole. A total of 356 *Tooker Patches* were installed. Sometimes, it took an entire week to install just one. The divers practiced on models of the ship and there were "tender stations" inside the hull where divers could rest from the strenuous, exhausting and extremely dangerous work.



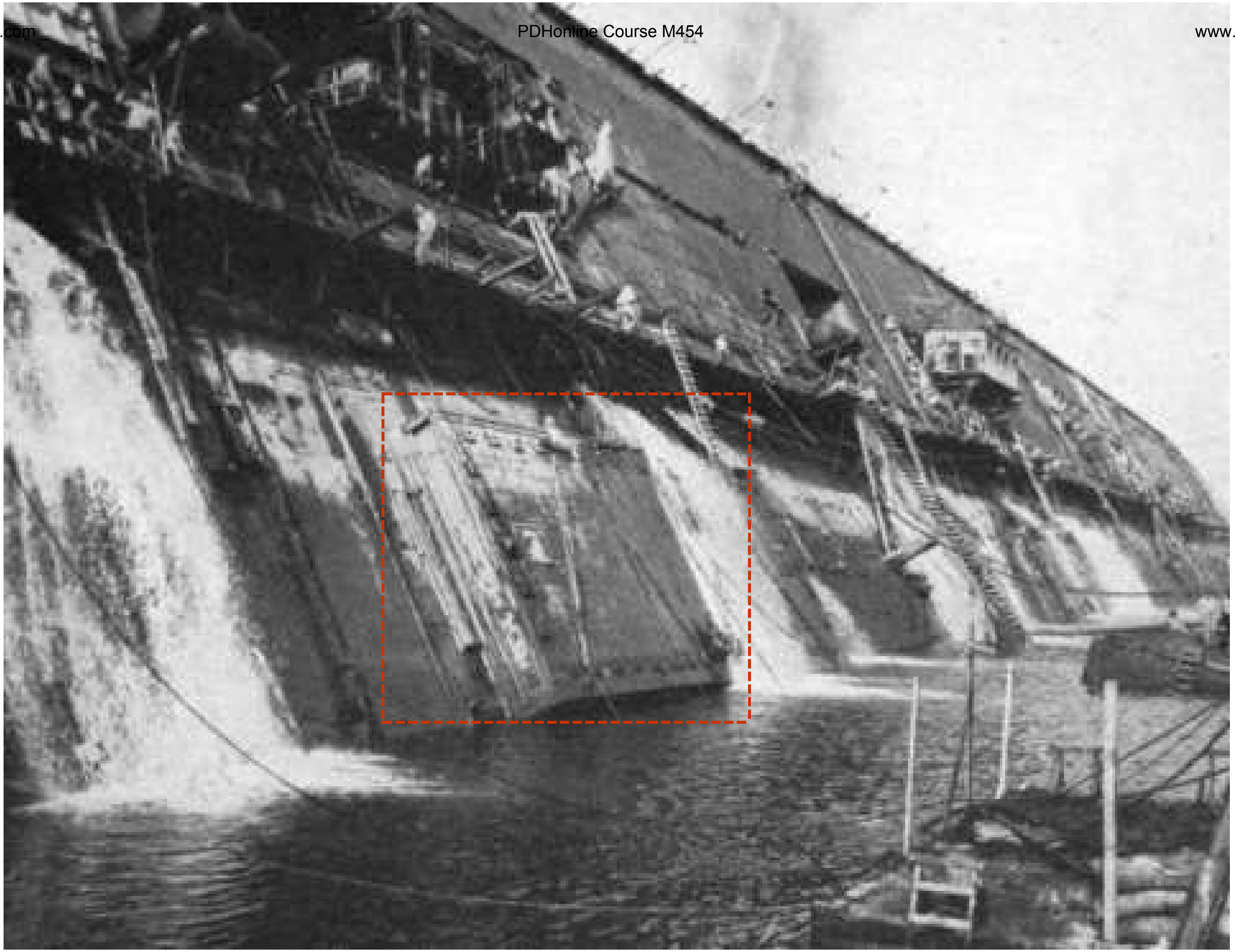
“Tooker Patches” in view
(after righting)



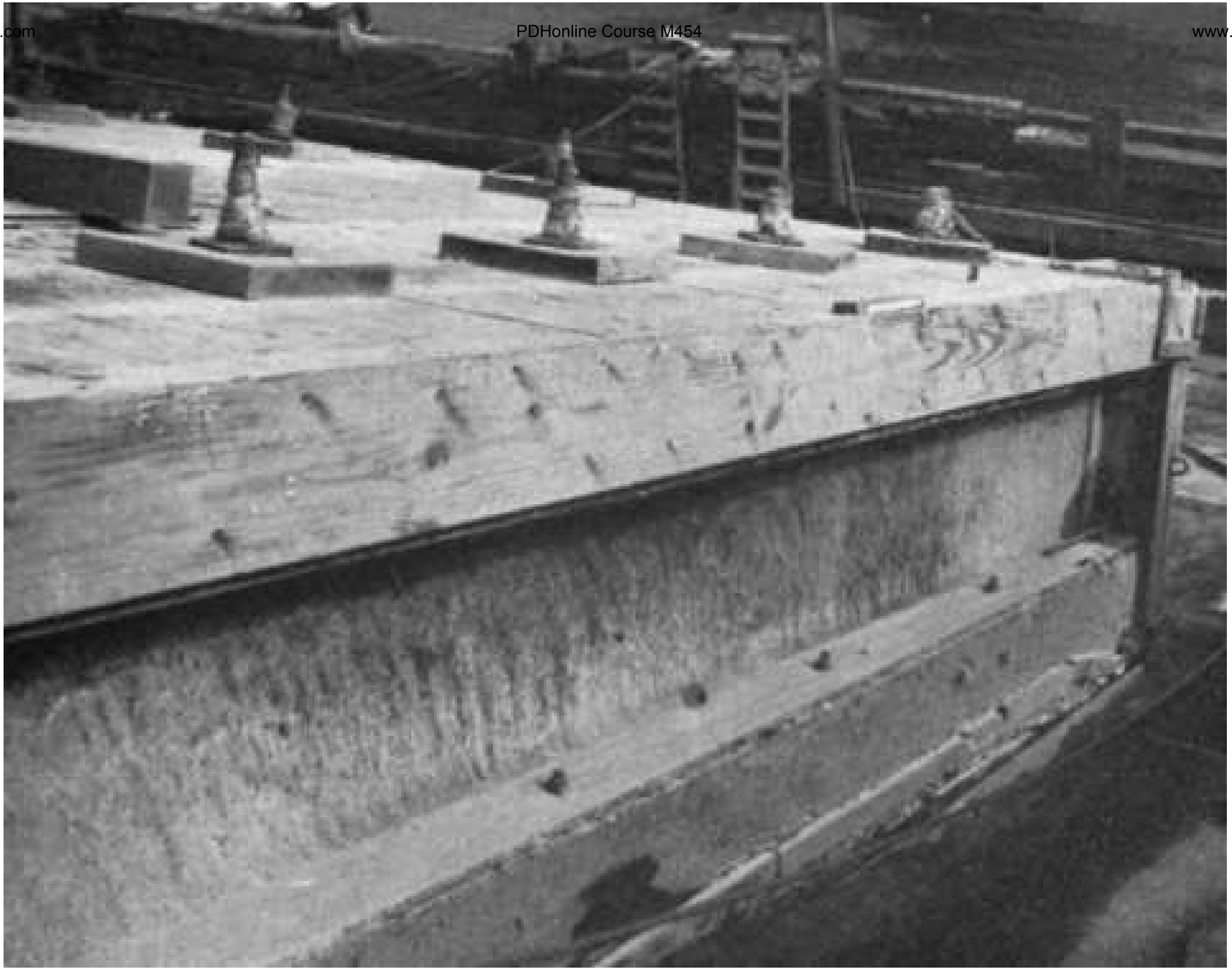
Aside from the many portholes, there were 4,500 other holes ranging from giant funnels to small cracks that needed to be sealed. For the latter, patches were wedged into cracks and sealed with concrete. For the former, it got more complicated. Large openings such as for the funnels, hatchways etc. required a wooden plug (above). The largest plug made/installed (for a cargo port) was 54-feet long by 22-feet wide by 3-feet thick and weighed-in at 52-tons.



<u>Left</u>: Barge aside the *Promenade Deck* where the large cargo port patch was constructed
<u>Top</u>: completed cargo port patch
<u>Bottom</u>: four completed patches awaiting installation



Large uptake patch
(coming into view during the righting operation)



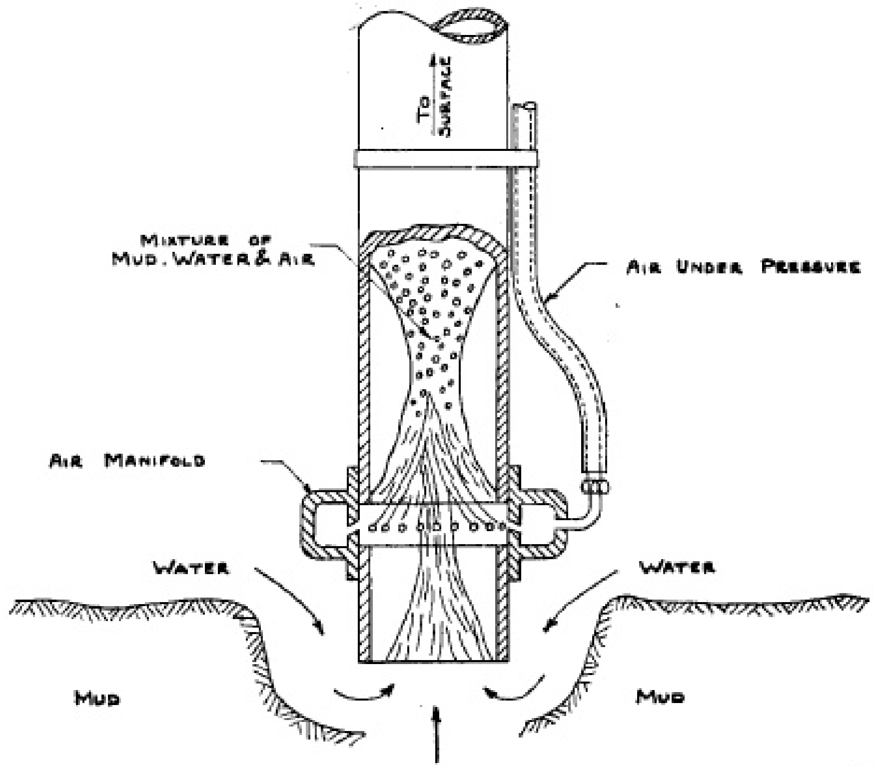
Close-up view of large uptake patch

Development of the Salvage Plan

1. The cheapest, fastest, and most certain method of accomplishment was felt to be one of righting and refloating the ship in one operation by pumping. This method required making the underwater hull tight, and subdividing the interior of the ship into watertight compartments so as to permit control of the vessel's movement and stability at all times. Detailed estimates of time and cost indicated that salvage of the *Lafayette*, by this method, would be completed in less than 2 years' time at a cost of about $5,000,000.

2. However, before it was possible to make any definite decisions as to salvage, it was necessary to do something to check the settlement of the stern of the ship in the almost liquid mud that supported the weight of the after portion. The ship was known to be resting at frame 237 on a ledge of rock that transversed the slip at this point between Piers 88 and 90. Daily observations made during the period immediately following the capsizing of the vessel showed the ship to be pivoting on the ledge with the stern steadily sinking and the bow to a lesser degree rising. This caused great concern for there was danger of serious damage to the hull where it pivoted on the ledge and there was also danger of the stern sinking too far into the soft mud. Attention was therefore concentrated at first on reducing the dead weight of the after portion of the ship and in restoring some of the lost buoyancy in compartments near the stern. After some considerable work a state of equilibrium was reached between the weight of the ship and the bearing capacity of the mud. The total settlement obtained by the stern was 3½ feet. The bow rose 2 feet.

3. A further difficulty which was also caused by the fluidity of the mud in which the vessel settled was the problem presented by the large quantities of mud which had poured into the ship through open cargo and air ports. To pump the ship these open ports had to be sealed with patches and the patches had to bear on the external periphery of the ports to satisfactorily resist the external pressures that would be obtained as the ship was unwatered. Ordinarily these patches would be fitted by divers working on the outside of the ship but due to the depth below the mud level of these open ports on the *Lafayette*, this operation by divers would be most difficult. Further, working in this mud would tend to disturb the stability of the mud under the ship and so reduce its bearing capacity as to cause further settlement of the stern. It was therefore decided to attempt to remove the mud inside the ship with air lifts and, when this was done, to send divers down inside the ship and fit the patches on in sections by inserting the section through the open ports. It took 4 months of continuous work with air lifts before this could be accomplished. During the early stages mud leaked in through the ports almost as fast as it was removed, but gradually the mud outside the ports caked up and formed inverted clay domes which prevented further mud flow sufficiently to permit the patches to be placed.



Detail of the air-lift pump used to discharge mud and small items of debris

4. It was also necessary to determine that the relationship between the center of gravity and the center of buoyancy was such, or could be so manipulated, as to permit righting as well as floating by pumping alone. As indicated in figure 17, with the superstructure and all decks above the promenade deck removed, the vessel was approximately one-half submerged and at an angle of a little more than 79°. Capsized, its total displacement was approximately 103,000 tons; ample to float the bare vessel, weighing about 50,000 tons, by pumping. Since the center of buoyancy was about 2 feet further from the keel than was the center of gravity, it was calculated that pumping would right the vessel as it floated.

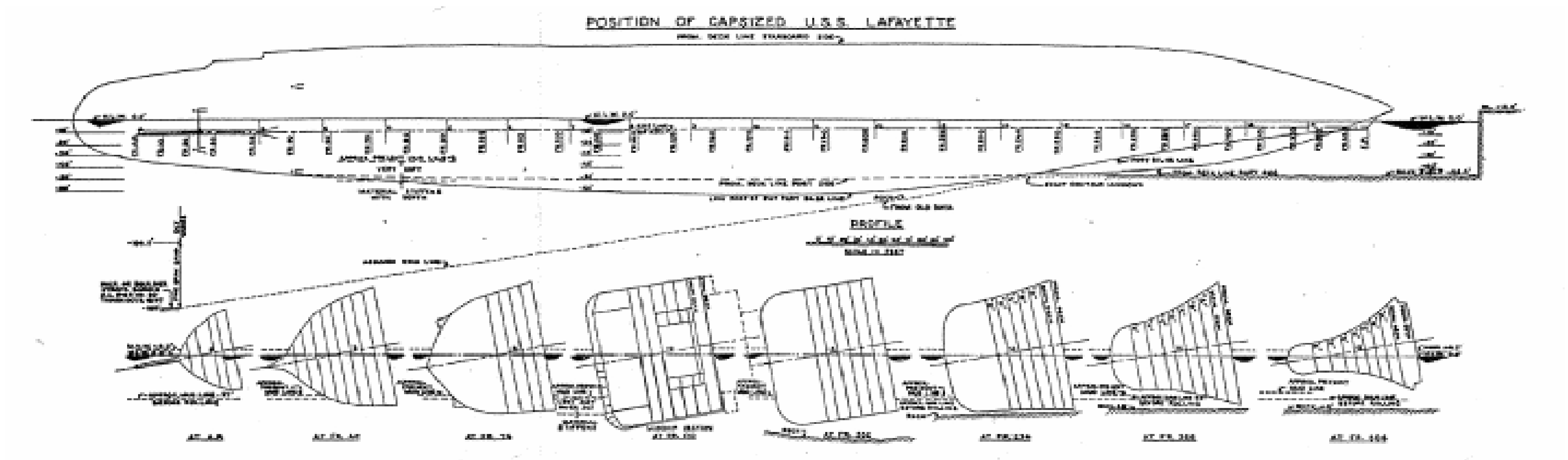


Figure 17

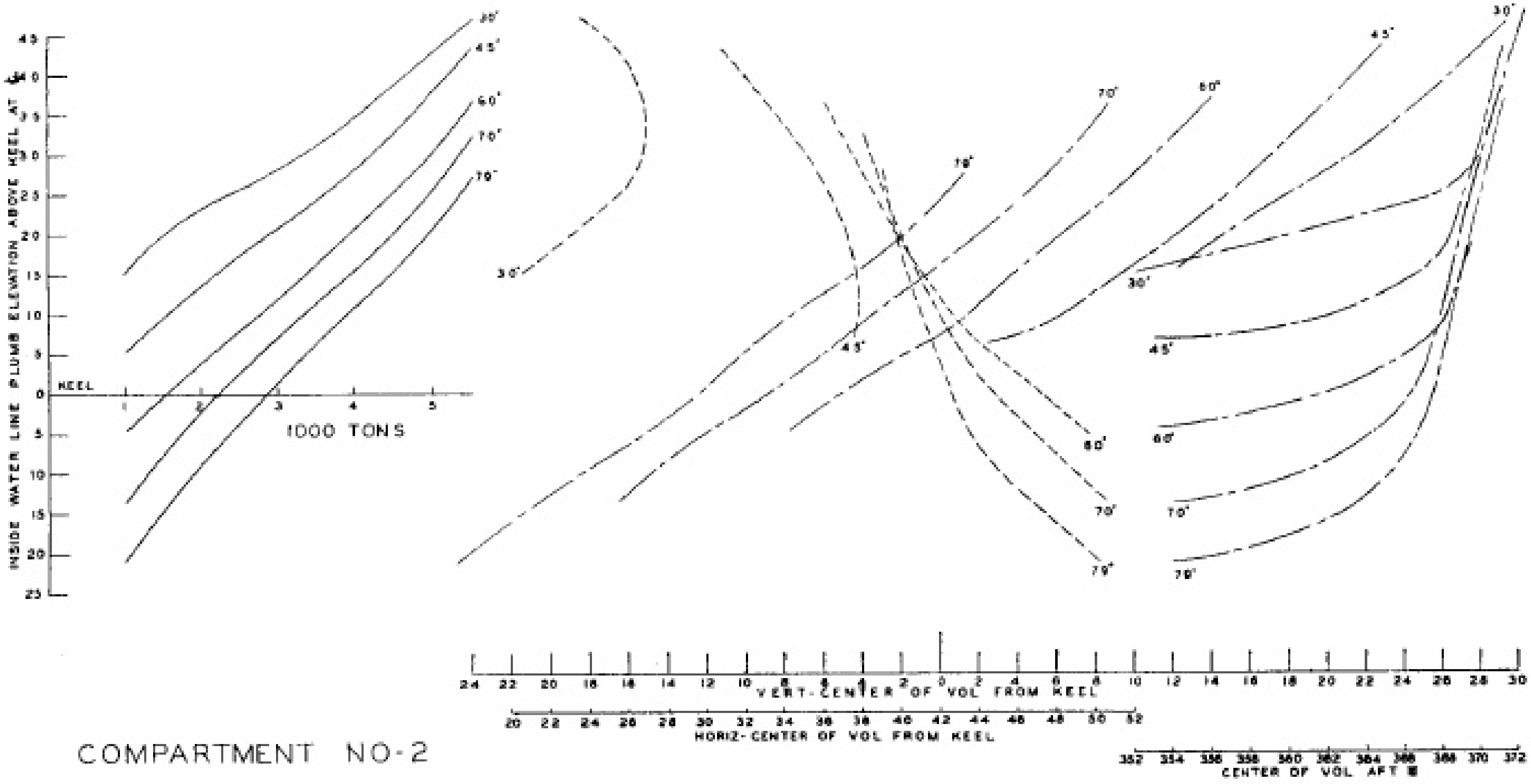
USS Lafayette in capsized position between Pier/s 88 and 90

5. There was some doubt as to the actual location of the center of gravity at the time of the fire, inasmuch as the ship had not been inclined for many years prior to the disaster. It was felt that the best value of KG was the one obtained from the District Matériel Office, Third Naval District, under whose cognizance conversion work was being conducted. In order to determine the movement of the center of gravity resulting from removal of the superstructure, steel and wood from within the hull, and the installation of concrete and wood incident to salvage operations, considerable effort was made to keep detailed records of weight added and removed. The table in figure 25 indicates the movement of the center of gravity during the preparations for the floating and righting of the ship.

	Weight, long tons	Component KG on centerline		Component KG to port		Abaft midships section	
		Feet	Moment	Feet	Moment	Feet	Moment
Original light ship (per D. M. O.)	56,200	50.3	2,826,860			24.6	1,382,520
Weight removed (31 Dec. 1942)	9,600	94.0	902,400			23.0	220,800
Additional weight removed (to 1 June 1943)	1,250	73.4	91,750			10.0	12,500
Estimated net—before adding bulkheads and miscellaneous	45,350	40.4	1,832,710			25.4	1,149,220
Established weights added—timber bulkheads and concrete (to 1 June 1943)	1,900	74.0	140,600	29	55,100	46.7	88,730
Deck bracing	200	61.8	12,360	24.9	4,980	135	27,000
Deck patches	150	89.2	13,380	22.5	3,375	44.3	6,645
Ports and doors	250	65.1	16,275	49.5	12,375	65	16,250
Mud and miscellaneous	500	50.0	25,000	50.0	25,000		
Total hull	48,350	42.2	2,040,325	2.1	100,830	25.7	1,242,055
Add for solid tanks:							
Port—D. B	3,480	3.8	13,224	20.0	69,600	37.0	128,760
Port—wings	4,480	22.0	98,560	46.2	206,976	8.0	35,840
No. 2—full	300	7.0	2,100			400	110,000
No. 41—full	200	7.5	1,500			355	71,000
Total	56,810	38.0	2,155,709	6.6	377,406	19.4	1,100,135

Figure 25 (Table)

Approximate weights and movements to center of gravity (to June 1943)



Graphs of centers of volumes from various reference planes

6. In order to determine the effect of pumping from the various compartments on the over-all center of gravity (see fig. 19, sectional view of the *Lafayette*), it was necessary to calculate, in detail, centers of volume for each of the watertight subdivisions of the ship for various levels of water and various angles of inclination. The development of a final pumping schedule could only be determined by a series of trial and error studies of the vessel at various assumed angles of list and loading. The shoring and stiffening plan in turn depended on the pumping schedule.

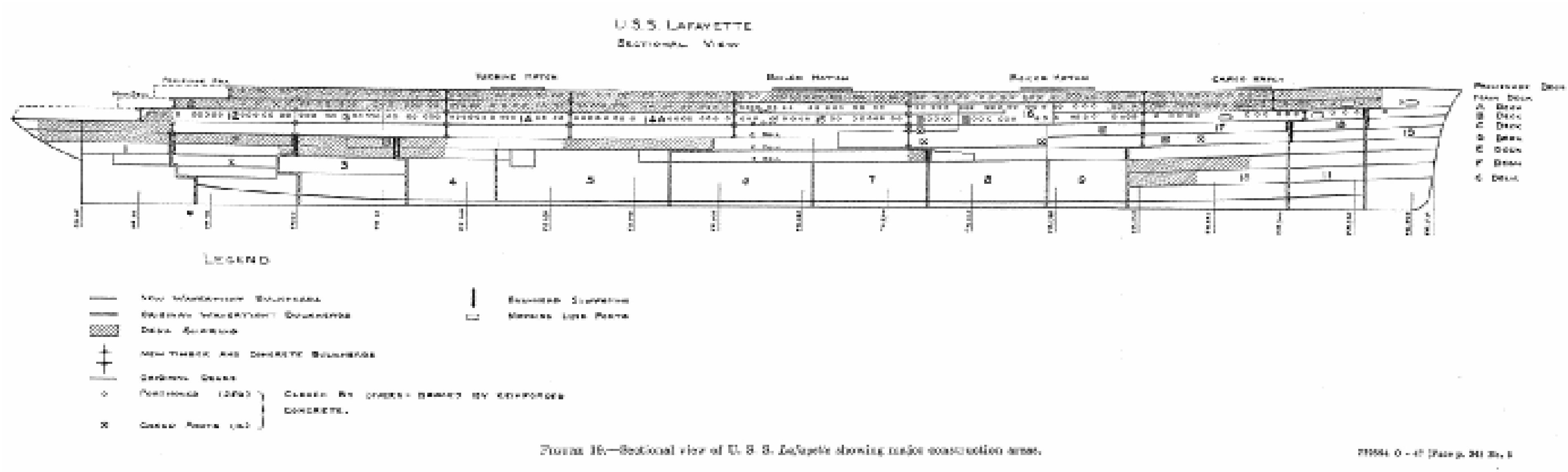


Figure 19

Sectional view of USS Lafayette showing major construction areas

7. It had been proposed and considered that the *Lafayette* be subdivided and pumped in such a way that it would lift off the bottom under equilibrium conditions at approximately its capsized angle of list, 79°. It would then have been an easy matter to haul her stern clear of Pier 88, following which complete dewatering would right her. Calculations indicated, however, that the amount of transverse subdivision necessary to cut up the free water area enough to give the ship safe positive stability at 79° would be impractical, if not impossible, and would increase cost and time estimates enormously.

8. Compromises between the engineering theoretical desirables and practical limitations of underwater construction were made continuously throughout the salvage operations. An example of this was the final degree of subdivision decided upon. With the final subdivision as shown in figure 19, the ship was calculated to be stable with a positive metacentric height of a little more than 2 feet when afloat at 60°. However, since the accuracy of the assumed location of the center of gravity was questionable, it was felt that the vessel should be rotated on the turn of her bilge to 45° before floating, where it would then have better than a 10-foot metacentric height.

9. It should be noted that in the above discussion the metacentric heights referred to do not relate to the metacenter of the ship in the upright position, but to the metacenters with the vessel afloat at the stipulated inclination, with the compartments so dewatered that the vessel is in equilibrium at those inclinations. This required calculations for the moments of inertia of the entire water planes and the water planes of each of the compartments (in order to determine free water effect) for each of the angles of heel considered, viz, 79°, 70°, 60°, 45°, and 30°, not only for one displacement but for a range of displacements through which the vessel might pass during the pumping.

10. To obviate laborious repetition in making these studies, the centers of total buoyancy for various displacements at 79° were found and plotted on a body plan. The same was done for 70°, 60°, 45°, and 30° (see fig. 21). These centers of buoyancy for the various inclinations and displacements were then combined on a single drawing and the points connected with faired curves. From this drawing the center of total buoyancy at any desired displacement of inclination could be found.

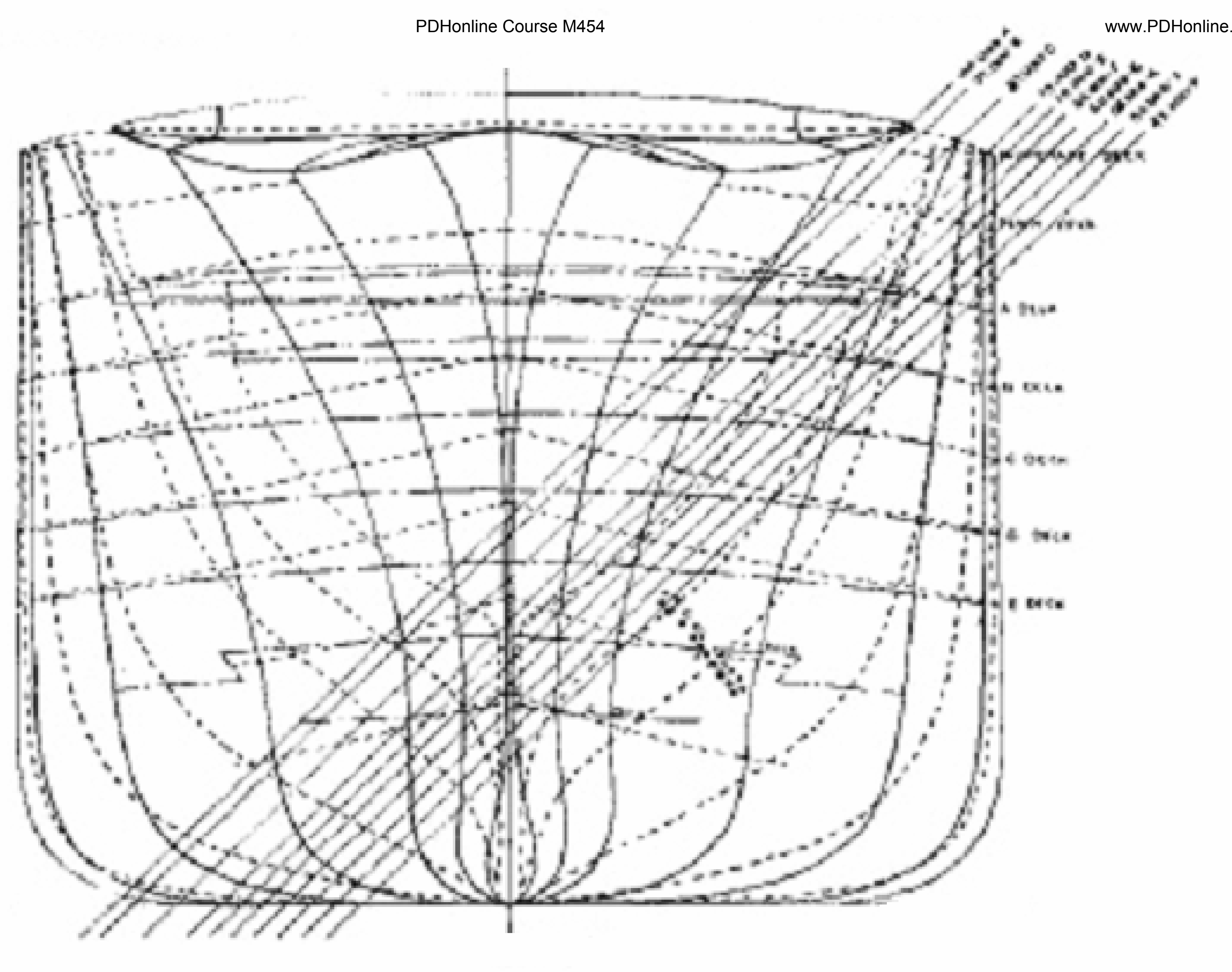


Figure 21

Volumes and centers of volume at 45-degree inclination

11. The center of gravity (i. e., center of gravity of ship and water inside) at any condition of dewatering of the compartments and any angle of heel was required both for preliminary studies and for use during righting operations. Time consuming calculations for the movement of the center of gravity of the ship were avoided by determining and plotting the centers of volume for each of the watertight compartments at a series of decreasing volumes and at various angles of heel. Figure 20 is a drawing showing the centers of volume of compartment 14–4–5. Also plotted and noted were the water lines and tons of water in the compartment to each water line. Drawings such as figure 20 were made for each of the compartments. The position of the centei of gravity of the ship, then, for any condition was obtained by selecting from the drawings the number of tons of water in each compartment and the location of the center of each of the volumes. In order that the trim of the ship could be controlled as well as the list, the fore and aft locations of the center of gravity and buoyancy also had to be plotted in a manner similar to the above.

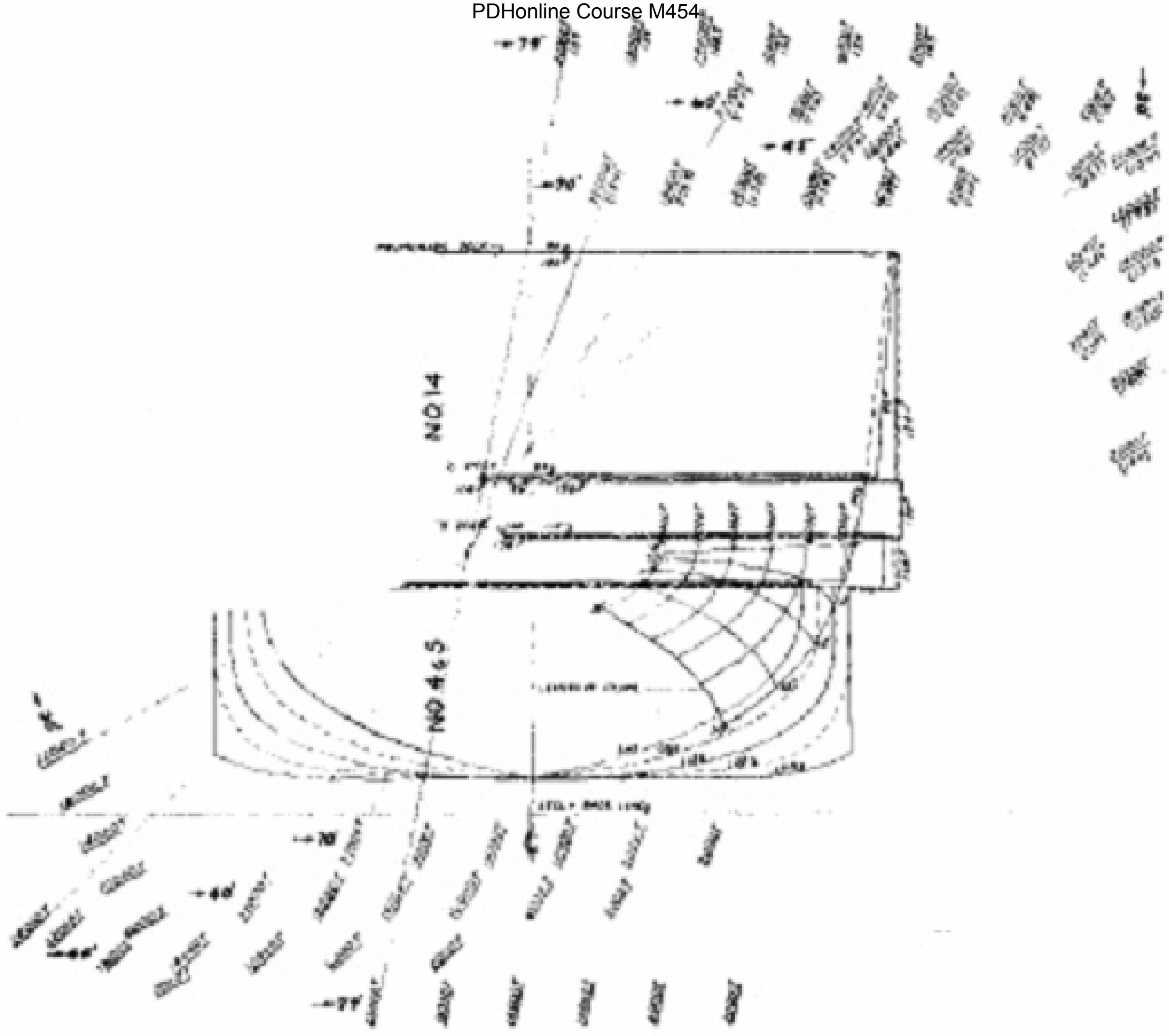


Figure 20

Sectional view of Compartment 14 showing centers of volume with various degrees of flooding and at various degrees of inclination

12. From the beginning, it was felt that the bearing of the ship presented a particular problem which would be difficult to deal with because of the impossibility of accurately determining all of the conditions. A considerable number of assumptions had to be made in the bearing studies. The position of the ship with reference to the rock ledge presented one of the greatest of the unknowns. It was strongly felt that a considerable portion of the weight of the ship was being supported by the rock ledge, especially in view of the fact that the settlement curve conclusively indicated pivoting about the edge of the rock shelf. It was not known whether bottom damage was sustained by the ship in way of the edge of the shelf during the capsizing.

13. The Raymond Concrete Pile Co. was employed to take soil samples close to the south side of the ship for test at Harvard University under the direction of Professor Karl Terzaghi. These tests were designed to indicate whether or not the soil had sufficient compressive strength to support the vessel without serious movement during the year and a half of preparation for righting, the effect dredging would have on settlement of the ship, and the probable effective soil-bearing plane. Samples were obtained by means of a piston-type sampler using 2-inch, 20-gage, seamless steel tubes, 48 inches long. These tubes were sharpened at the bottom and drawn in to provide an inside clearance of approximately 2 percent. With the piston fixed at the bottom of the tube, the sampler was advanced from 6 to 12 inches below the bottom of a cased bore hole. The piston was then released and the sampler pushed down a distance of 42 inches in a quick continuous motion.

14. Test results indicated that the ship rested on soil consisting of three fairly well-defined strata. The top stratum, roughly 25 feet deep, consisted of a black, highly organic river mud whose water content (percent of dry weight) decreased from about 150 percent at the surface to about 80 percent at its base. It had the consistency of a very thick liquid. Cylindrical samples with a diameter of 2 inches and a height of 6 inches, bulged and failed under the influence of their own weight.

15. The second stratum consisted of a gray, organic silt-clay whose thickness increased from zero at the rock ledge to about 40 feet at a point 800 feet from the stringpiece of the slip. Its water content decreased from about 80 percent at the upper boundary to about 40 percent at the base. The nonconfined, compressive strength of this clay ranged between 0.3 to 0.6 tons per square foot. If a cut in the clay were made by dredging, the clay could stand at a vertical slope to a height ranging between 20 and 40 feet.

16. The third stratum consisted of gray-fine sand which rested on the bedrock. (See fig. 17.)

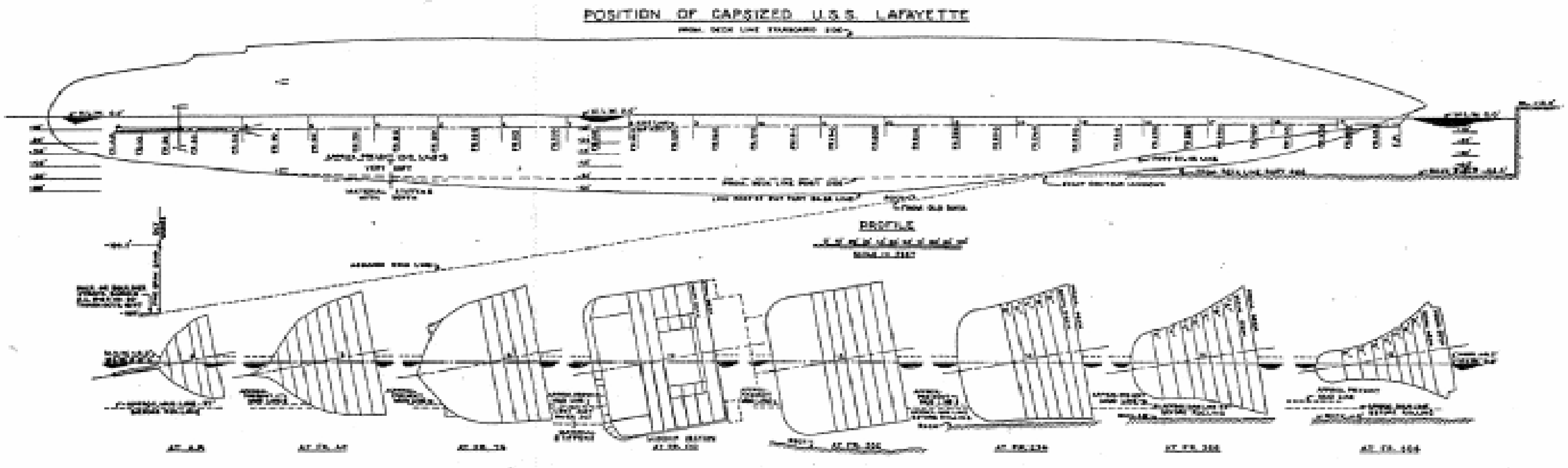


Figure 17

USS Lafayette in capsized position between Pier/s 88 and 90

17. From the soil studies, it was felt that the vessel rested on material of sufficient strength to preclude anything but minor settlement of the ship. This was borne out in the actual settlement. (See fig. 22.) After weighing the possibilities, an effective bearing plane of minus 49 feet (i. e., 49 feet below mean low water) was assumed for the bearing studies of the ship at rest and during the righting stages.

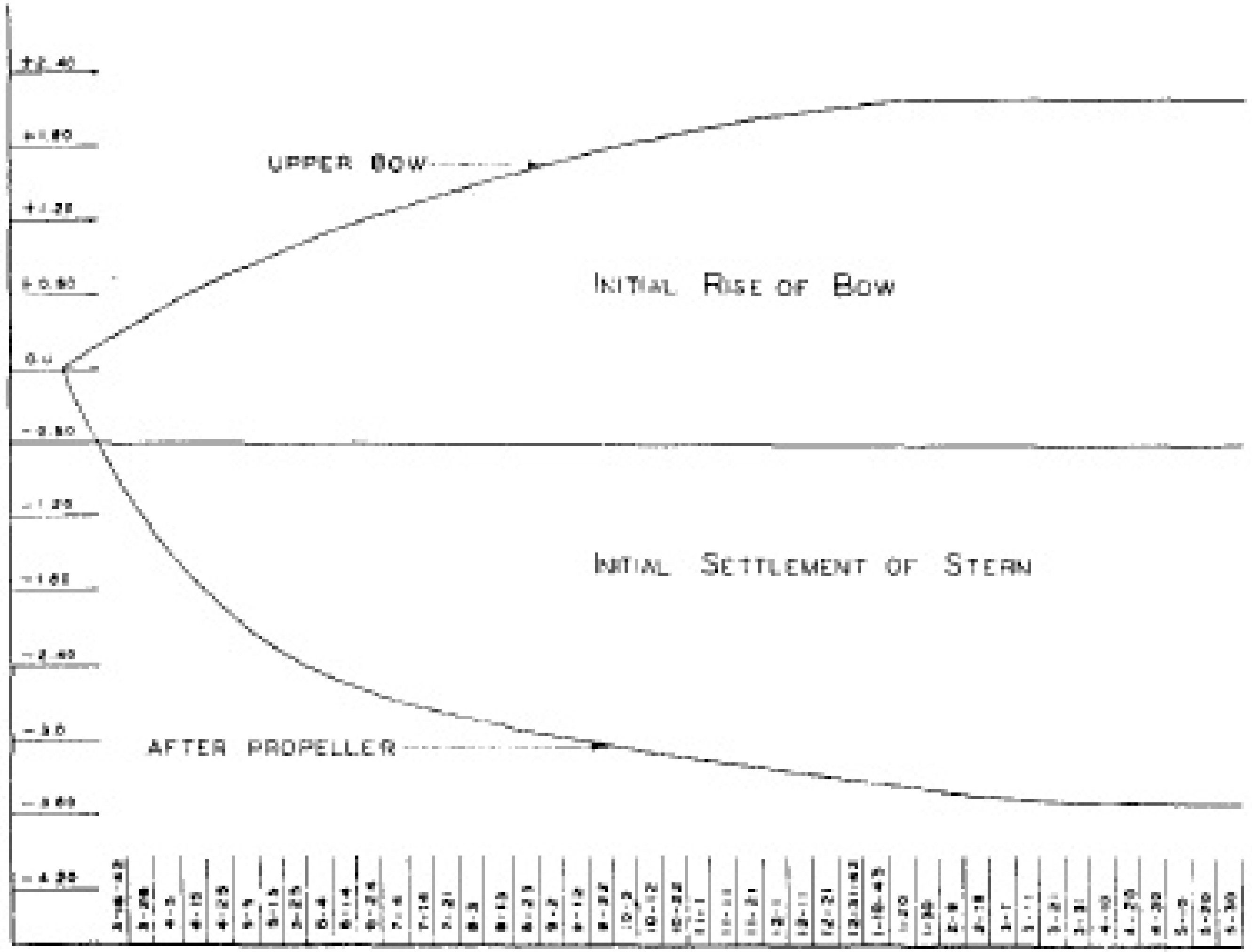


Figure 22

Chart of initial settlement of stern during first 6 months following disaster

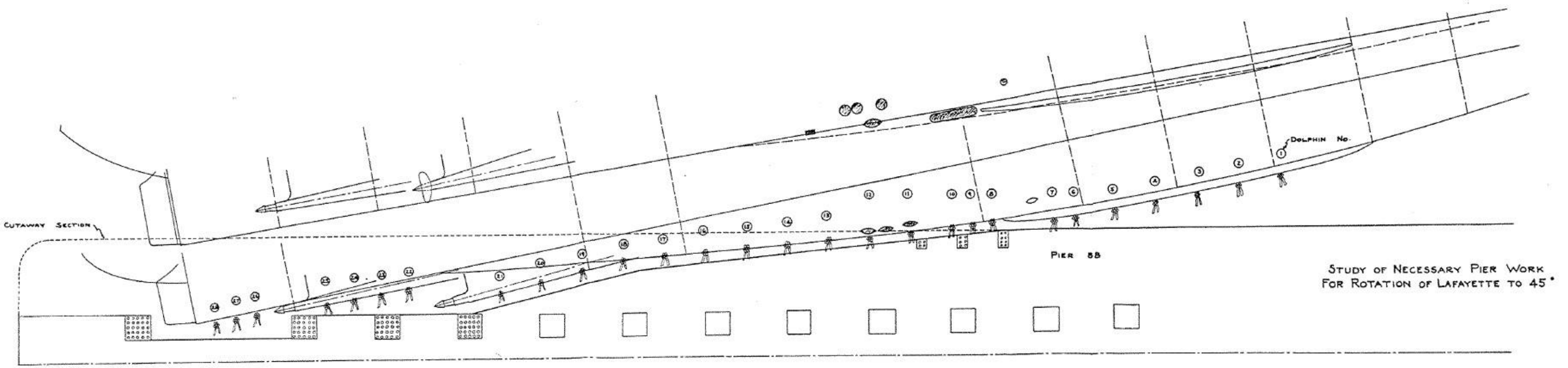
18. By locating the longitudinal centers of gravity of the ship and the bearing plane, and assuming the ship to be a beam supported at one point by the rock ledge and at another by the center of area of the bearing plane, the reaction at the rock was calculated to be approximately 5,000 tons. As far as the assumed bearing plane itself was concerned, the eccentricity of loading resulted in a calculated intensity of pressure at the keel edge of about 2 tons per square foot and at the opposite edge about 0.8 tons per square foot.

19. The pumping schedule, or dewatering plan, was affected by many conflicting factors. It was considered that the intensity of pressure of the low edge of the bearing plane should not at any time exceed 2 tons per square foot; also, that the ship should be rotated with the bow light to minimize the danger of sustaining damage in way of the rock ledge. Then, there was the possibility of mud suction. Should such a resistance to initial movement develop, it was conceivable that the sudden breaking or release of the suction might cause the ship to lurch. In addition, the allowable heads of water between compartments and between the inside and outside of the ship had to be restricted lest they require extreme shoring and strengthening of decks and bulkheads.

20. The final plan for dewatering the 14 watertight subdivisions was the result of a series of trial and error studies based on a compromise of conflicting demands. One study, for example, considered the effect on gravity, buoyancy, bearing pressure, etc., at 79° and various other angles of inclination resulting from pumping the water down evenly in all compartments 5 feet below mean low water; and then the effect of the 5-foot rise in tide. Other studies assumed water pumped down at different levels in various high and low compartments until at last a method or schedule was found which most favorably met the requirements of stability, bearing, water pressure, etc. From this point on, with minor exceptions, all shoring and strengthening was dictated by the pumping plan with enough factor of safety provided to allow considerable deviation in pumping should conditions necessitate.

21. In locating the centers of gravity and buoyancy and other important points, the conventional reference planes were used, viz., the centerline plane and the base plane through the keel. Although these reference planes were satisfactory at first, it was found later that to determine heads of water between compartments for different inclinations of the ship, reference planes through the keel parallel to and at right angles to the water plane were preferable. All measurements were taken perpendicular to the reference planes.

22. Under the plan to rotate the *Lafayette* to a 45° inclination before floating it clear of the bottom, rotational studies of various ship's sections were made. It was felt most likely that the ship would rotate about an axis with one end near the bilge keel amidships and the other end at the point of the rock bearing forward. This meant that a portion of Pier 88 would have to be cut away in order to avoid contact with the ship. Figure 28 is a plan view showing the portion of the pier removed and the expected position of the ship at 45°. Pile clusters or dolphins were driven in such locations as to commence bearing as the ship reached the 45° position. (See fig. 29, airview.)

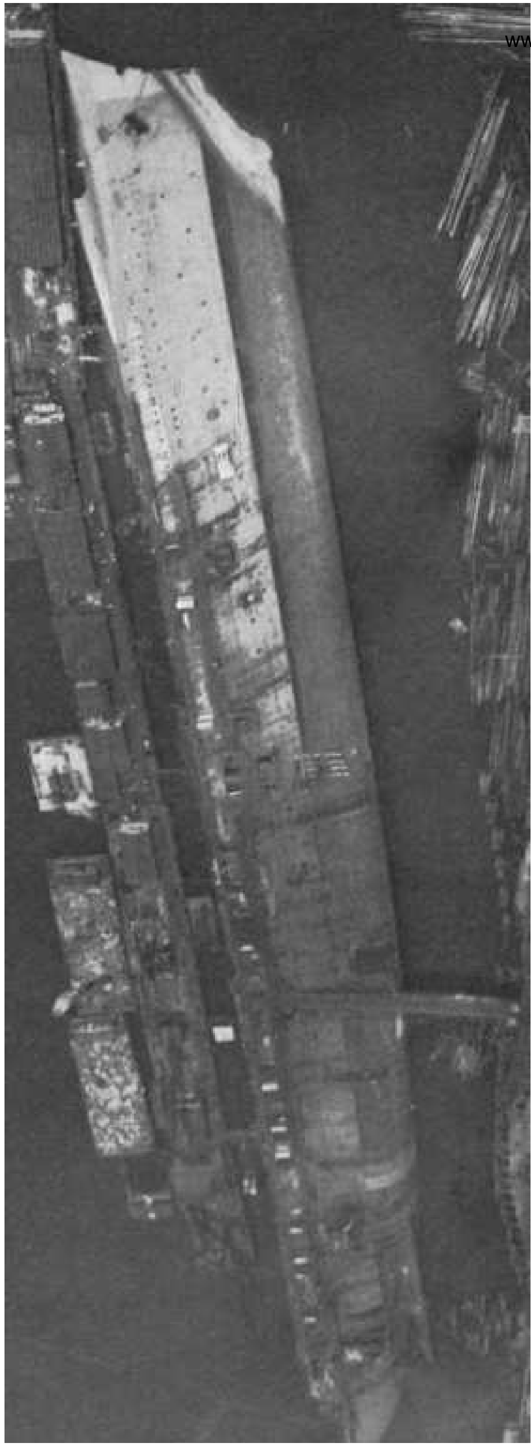


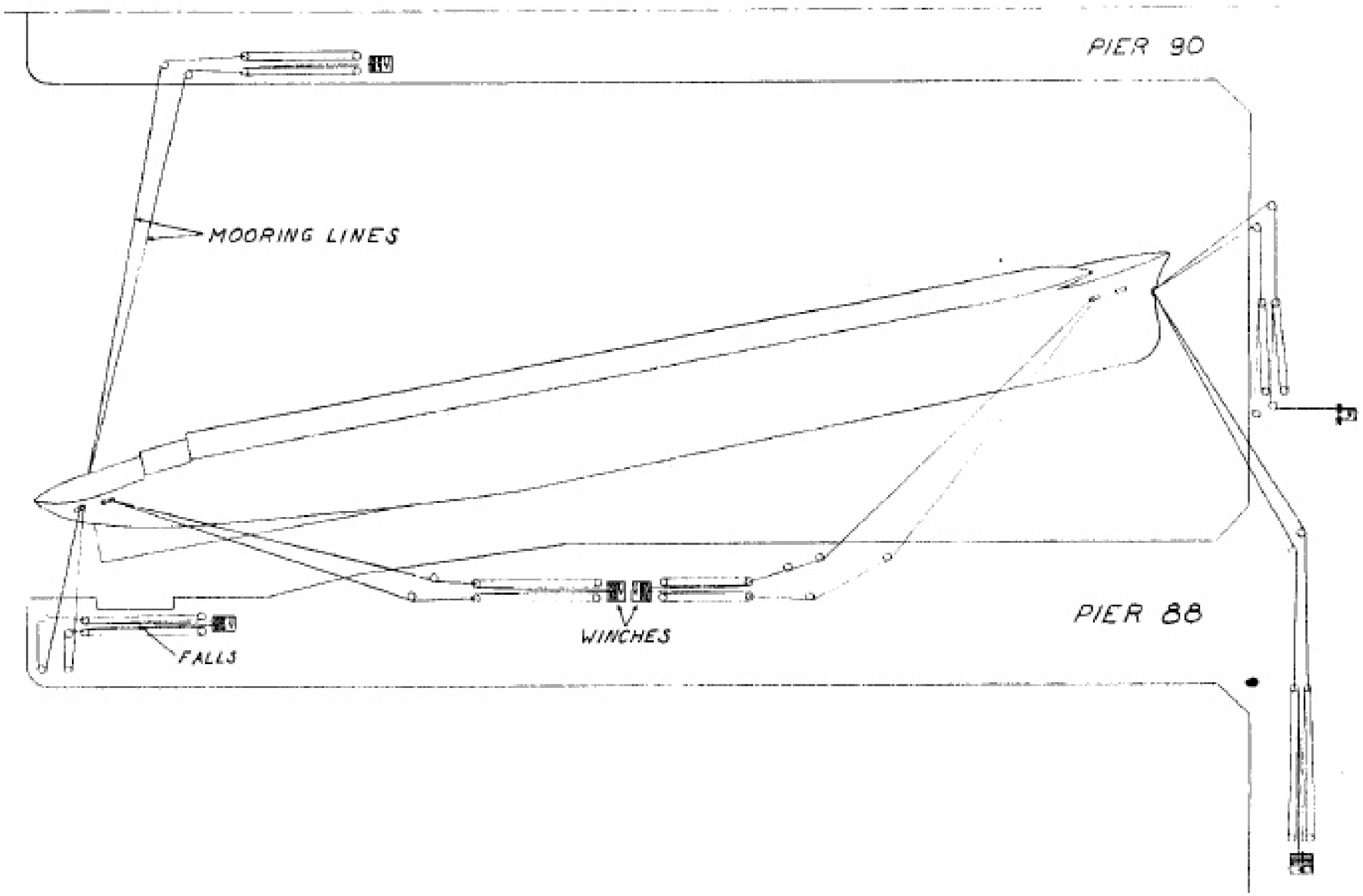
<u>Figure 28</u>

Study of necessary pier work in anticipation of the rotation of the ship

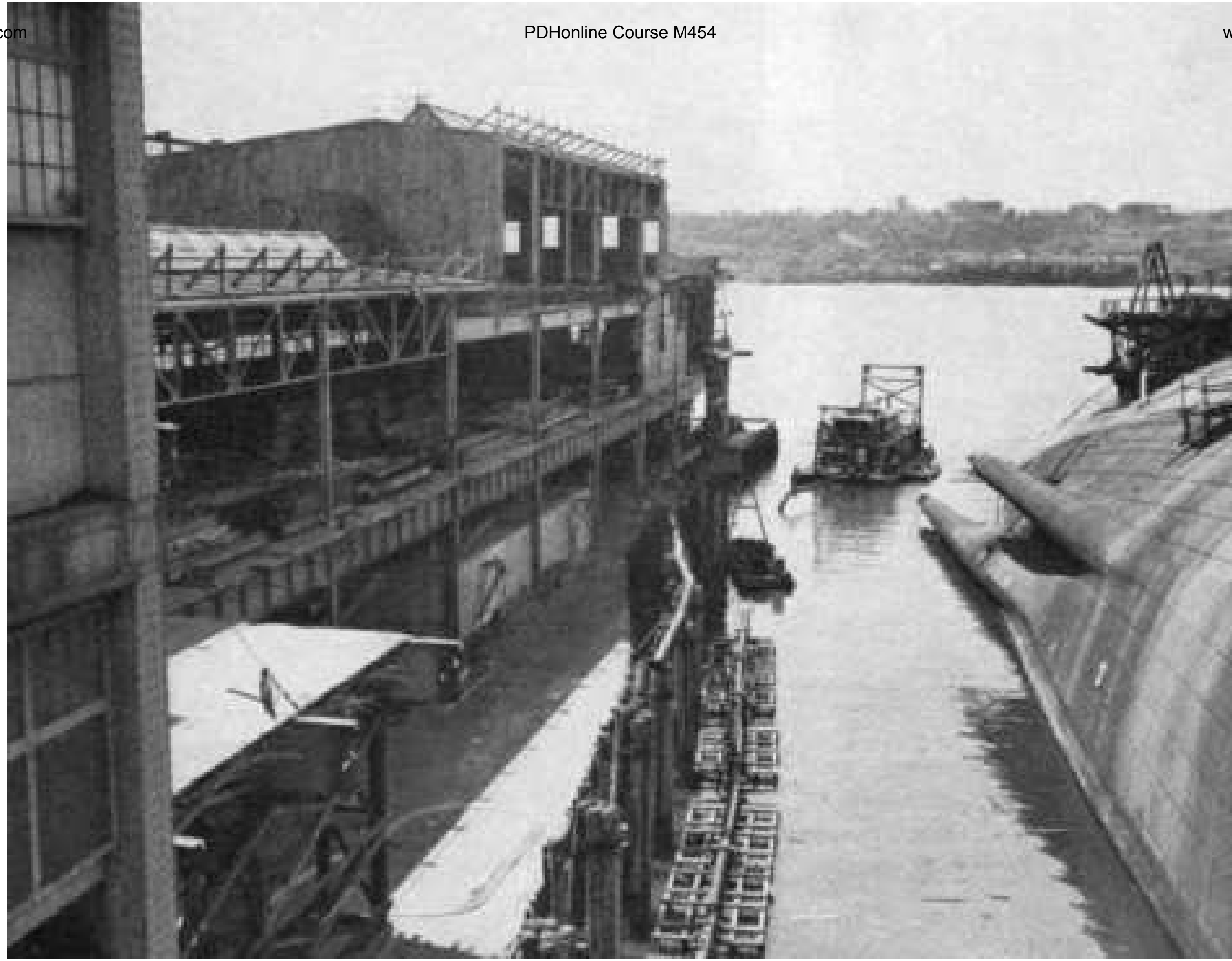
Figure 29

Air view/s of the ship just prior to pumping operations





Mooring Diagram



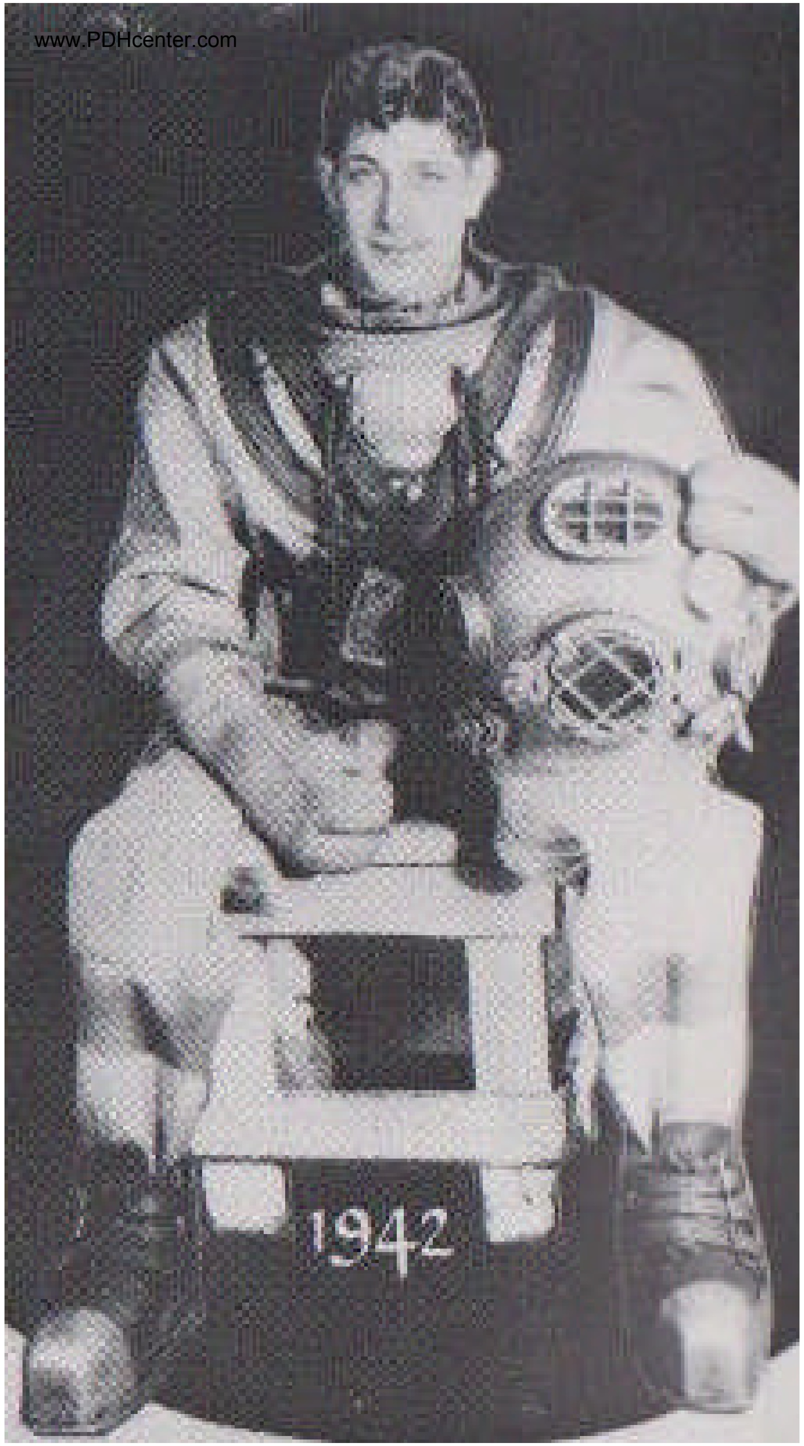
View of cutaway section of Pier 88 and the fender pile clusters

Hard-Hat Diving School

Without enough civilian "Hard-Hat Divers" (using a pressure suit and airline) to do the job, the Navy improvised and took advantage of the opportunity presented. Three diving schools were set up;

- **a diving school for civilians**
- **a diving school for navy enlisted men**
- **a salvage school for Navy officers**

The on-the-job training the diving school/s provided allowed for seventy-five divers to be working inside the hull at one time. About one-third flunked out (for a variety of reasons), but for those who remained they would be allowed to go on to more difficult jobs as they became more proficient. The work was very dangerous with the threat/s of fire (from all the oil and gas in the water), air-lines getting tangled in the debris and/or diving suits being punctured by sharp objects (such as the 4K-tons of broken glass that needed to be removed). In all, 6K-tons of debris was removed by divers.



"…whether it is night or day the water in the Hudson River is always the same: 'BLACK,' and the stuff we had to bury ourselves in on the bottom called mud (15-20 feet deep) was not mud it was sewage from the cities upstream and we worked in the stuff over our heads and the tools or materials we used when dropped did not sink very far - we could reach out and find them hanging in the stuff close to where they were dropped…"

RE: excerpt from a 1943 letter 20yo Navy salvage diver *Leonard Greenstone* wrote to his father concerning his experiences at Pier 88

The divers' working conditions were hazardous and, in most cases, extremely undesirable. Before divers could start work, submerged spaces had to be cleared of dunnage, debris, and miscellaneous stores and equipment with which they were filled. The submerged portion of the athwartship passageways between the cargo ports, through which much of the access to the spaces requiring attention by the divers was obtained, was completely blocked with debris. Footing through the honeycomb of compartments was unreliable and dangerous. Throughout the entire operations, divers were compelled to work beneath overheads which prevented their rising directly to the surface in case of trouble. This handicap was made even more hazardous when divers had to go through passages and doorways to reach their jobs. Because of the maze of piping, wiring, and compartmentation, divers were continually subject to fouling. See fig. 54. The water in the slip contained a dense colloidal suspension of mud and sewage, so that both inside and outside the ship divers were compelled to work in total darkness by their sense of touch alone. Underwater lights were tried but in most cases were found useless.

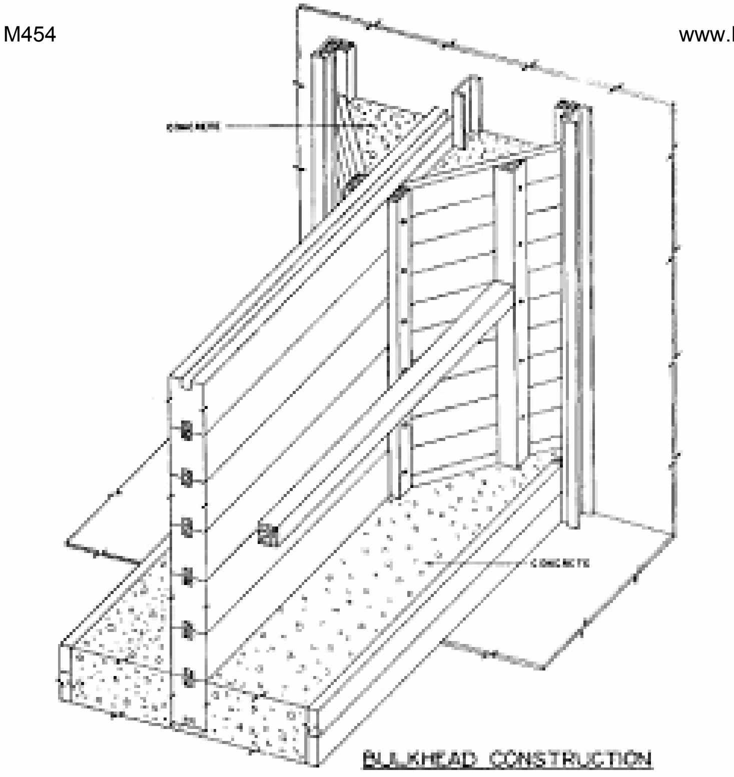
Diver with torch about to descend inside the ship

"When I look back at working on the salvage of NORMANDIE I really am shocked. I would never do <u>anything</u> like that today. When you're young you don't realize the danger or the working conditions. It was a terrible job. But for a youngster it was exciting."

RE: Diver Leonard Greenstone recollecting his experiences on the 50th anniversary of the *Normandie's* maiden voyage (May 1985). He went on to have a long and distinguished career as a salvage diver and teacher.

Aside from the effort to put *Normandie/Lafayette* into wartime service, invaluable lessons were learned and a great deal of training took place in the effort to salvage the great ship. Nearly 2,500 men were trained in the salvage schools created on-site at Pier 88 forming the backbone of the *Navy Salvage Service* both during and after the war. The cost of nearly $5 million for the salvage effort was quickly amortized given the fact that, on the east coast alone, ships and cargo valued at $750 million would be recovered in the coming years by these well-trained salvage divers. In the post-war years, around the world (in over fifty harbors) wrecks were removed and ships reclaimed and/or salvaged valued at over $2 billion by men like Len Greenstone and other graduates of the *Normandie/Lafayette* salvage school.

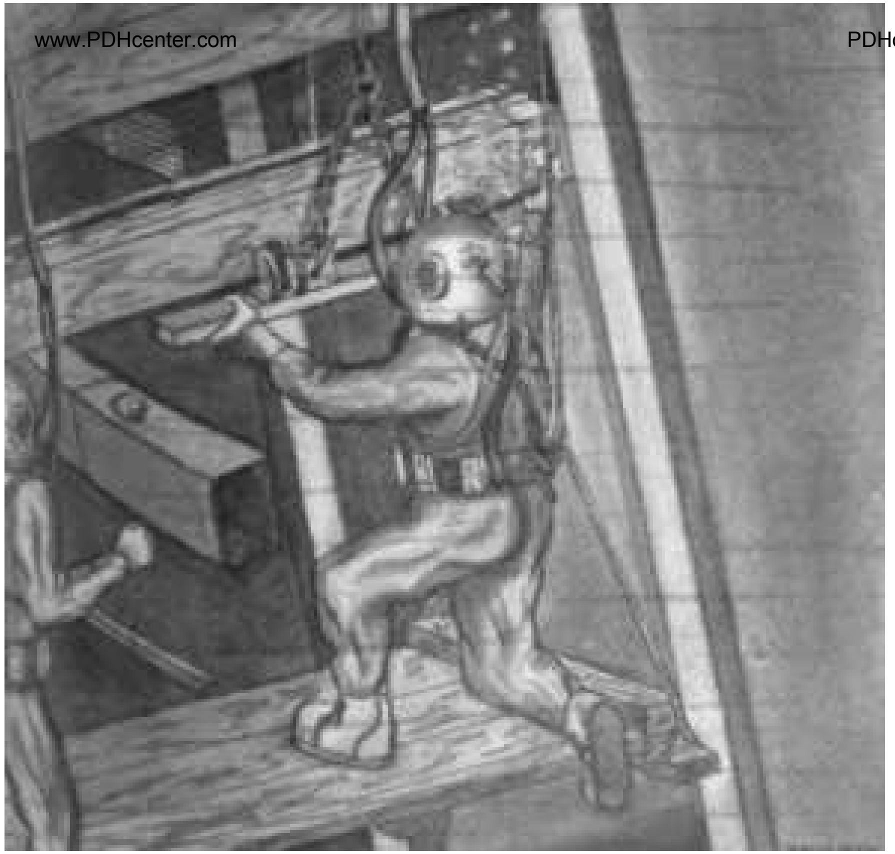
Sub-Aqueous Bulkhead Construction

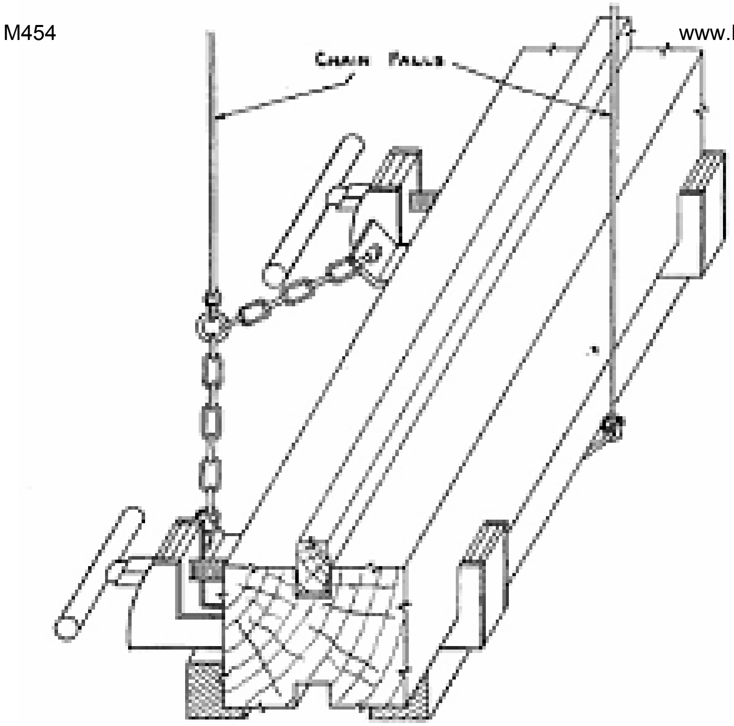


Above: drawing illustrating construction of deck bulkheads for subdividing the interior into watertight compartments

In the capsized position, the *Lafayette's* decks were nearly vertical. In order to divide the vessel into watertight compartments for pumping control, timber bulkheads embedded in concrete were built under-water between decks and down to the skin of the ship. The first step involved the cleaning out of all loose objects and material which had fallen to the port side. Large items such as chairs, beds, etc., were removed first and the removal of the smaller scrap material followed. In most compartments, 10 to 20 feet of mud had to be removed as well.

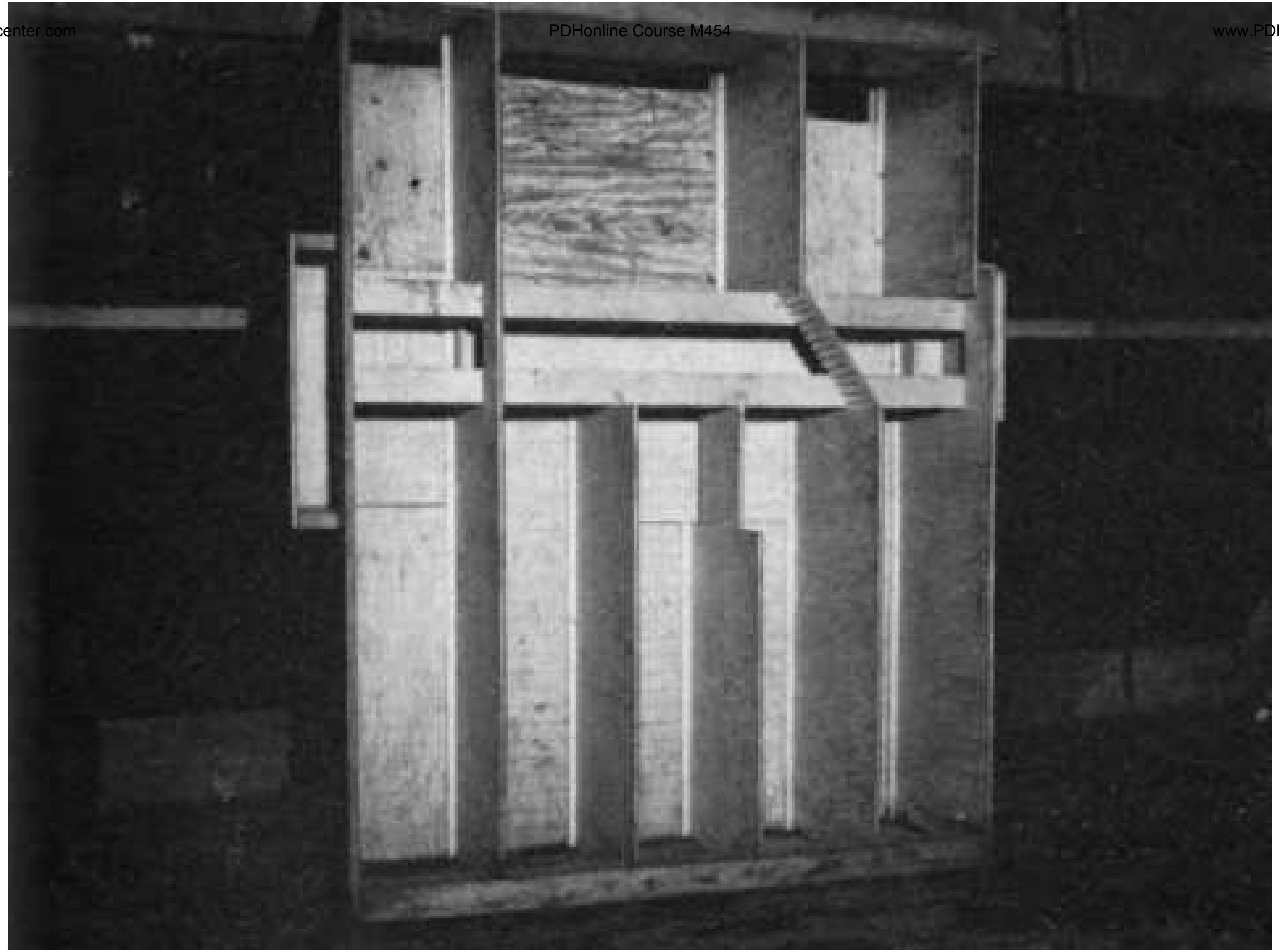
Following the general cleaning out, all of the material in the way of a proposed bulkhead was cut-out with hydrogen cutting torches. Cuts were made through steel compartments, ventilators, cables and all material except the ship's structural members until a clear swath existed from the waterline down to the skin of the ship. Because of the nature of the silt in the water, all under-water operations were carried out in total darkness. Divers worked by sense of touch alone.





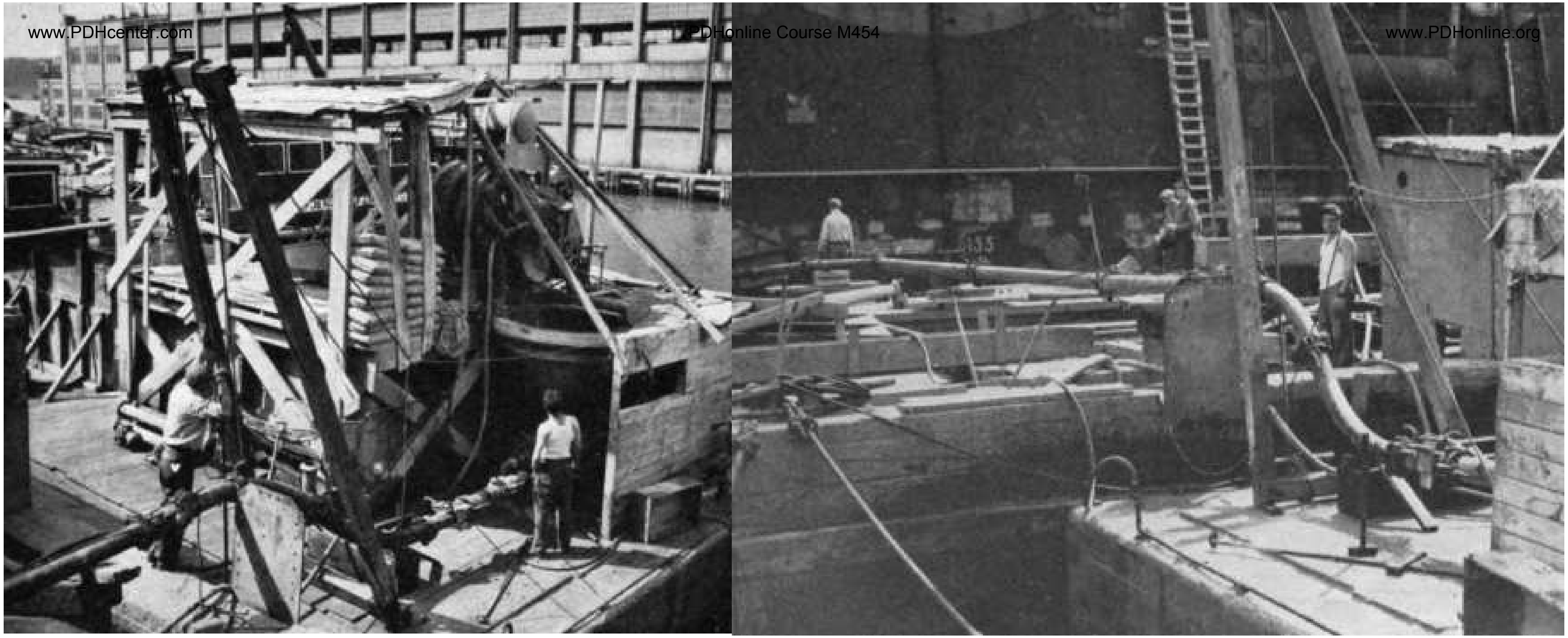
Above: timber and cradle used to lower bulkhead timbers to the divers

One end of each 12” by 12” timber was bolted to what previously was the underside of the deck. The other end was bolted to a long vertical angle bar which had been fastened to the adjacent deck and which extended from the waterline down to the skin of the ship. Bulkheads were built from the top down by lowering the timbers, weighted in clamps and slings, to the divers below who fitted each splined timber into the partial bulkhead. Timbers were fitted tight by hauling on the clamps from topside. Divers then bolted timber ends to frames or angle bars.

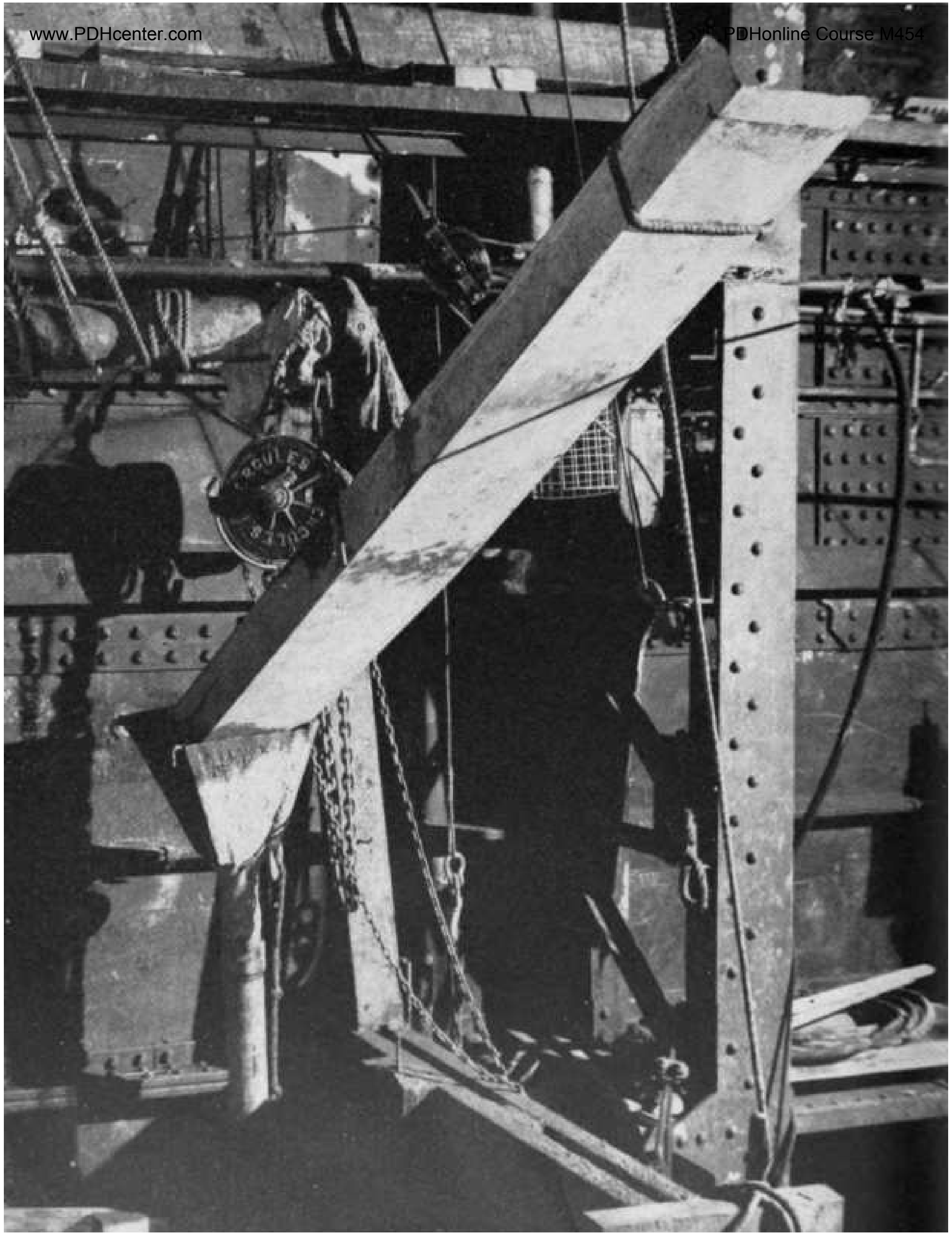


Model of a typical bulkhead barrier used to train divers

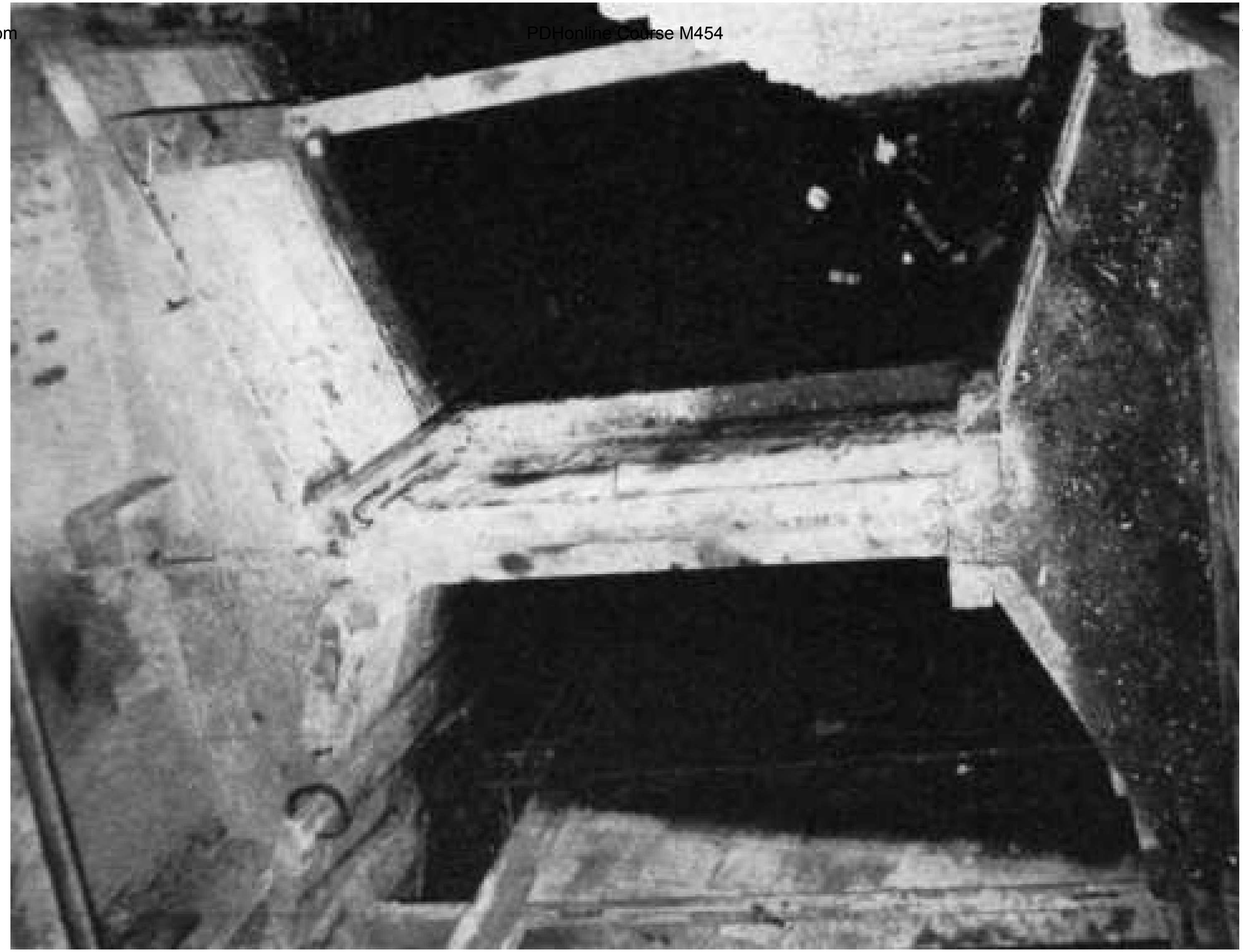
In order to embed the timber ends in cement, divers constructed retaining forms from the waterline to the skin of the ship. Concrete was then piped from the mixer into the ship and then to the *vertical sectioned pipe*. This rig allowed concrete to be poured into the forms without the concrete falling through water. The mouth of the pipe was always kept below the rising surface of the poured concrete. 757



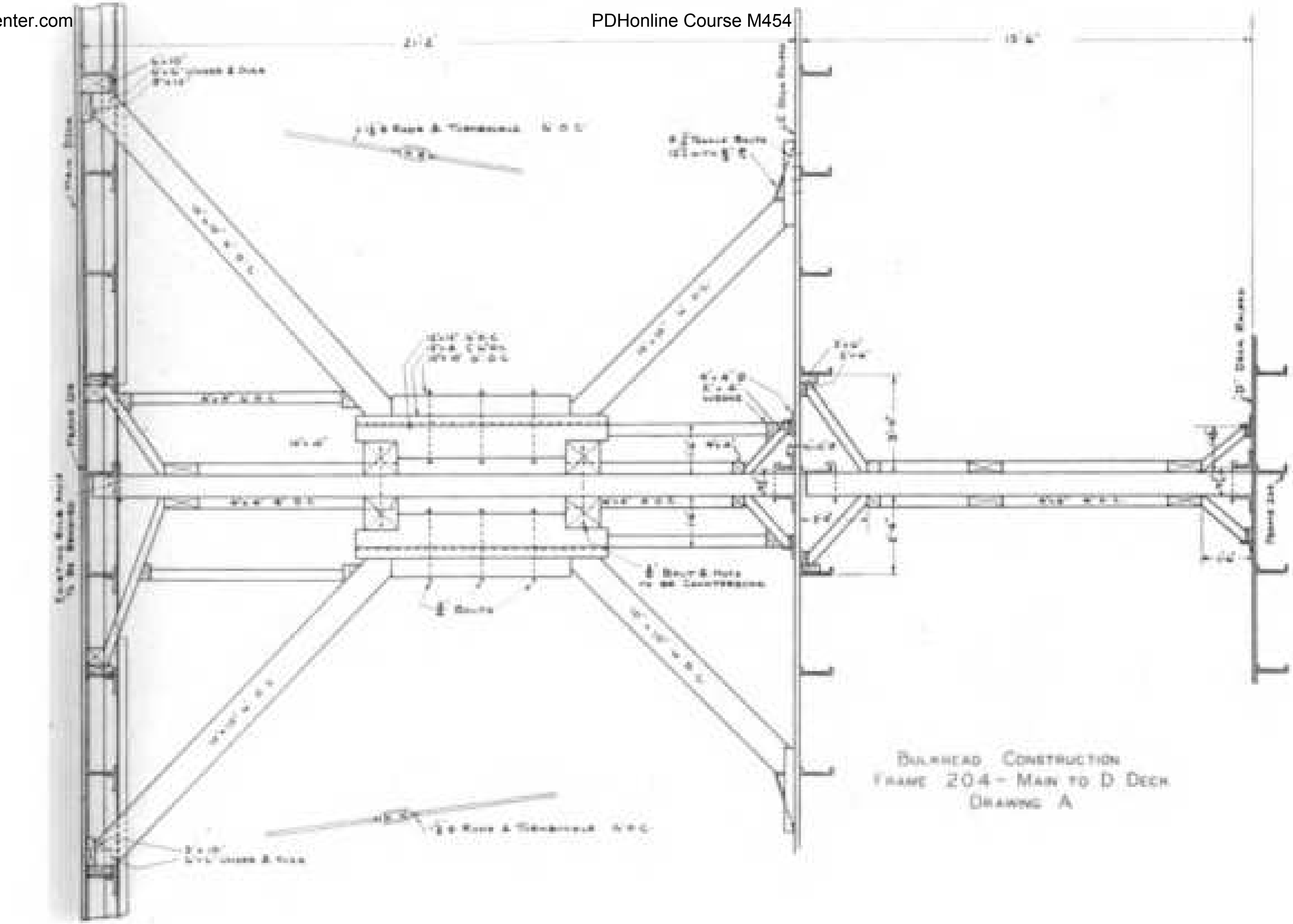
<u>Left</u>: concrete mixer and pump used to supply concrete for bulkhead construction
<u>Right</u>: pipeline from concrete mixer/pump to inside of ship



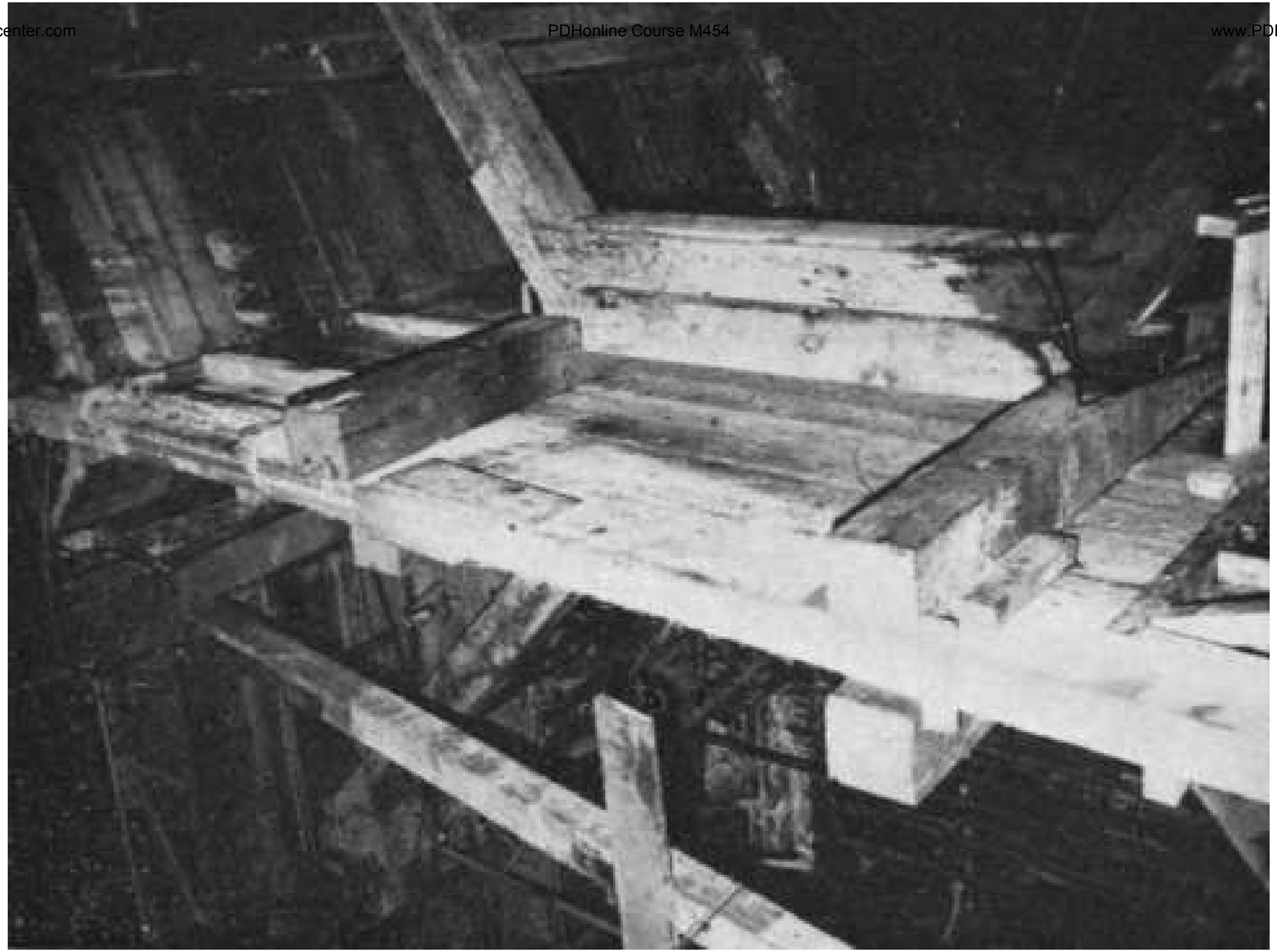
Tremie concrete pipe rig



Above water-line portion of a bulkhead between the Main and Promenade Deck/s. All such bulkheads were constructed underwater by divers.

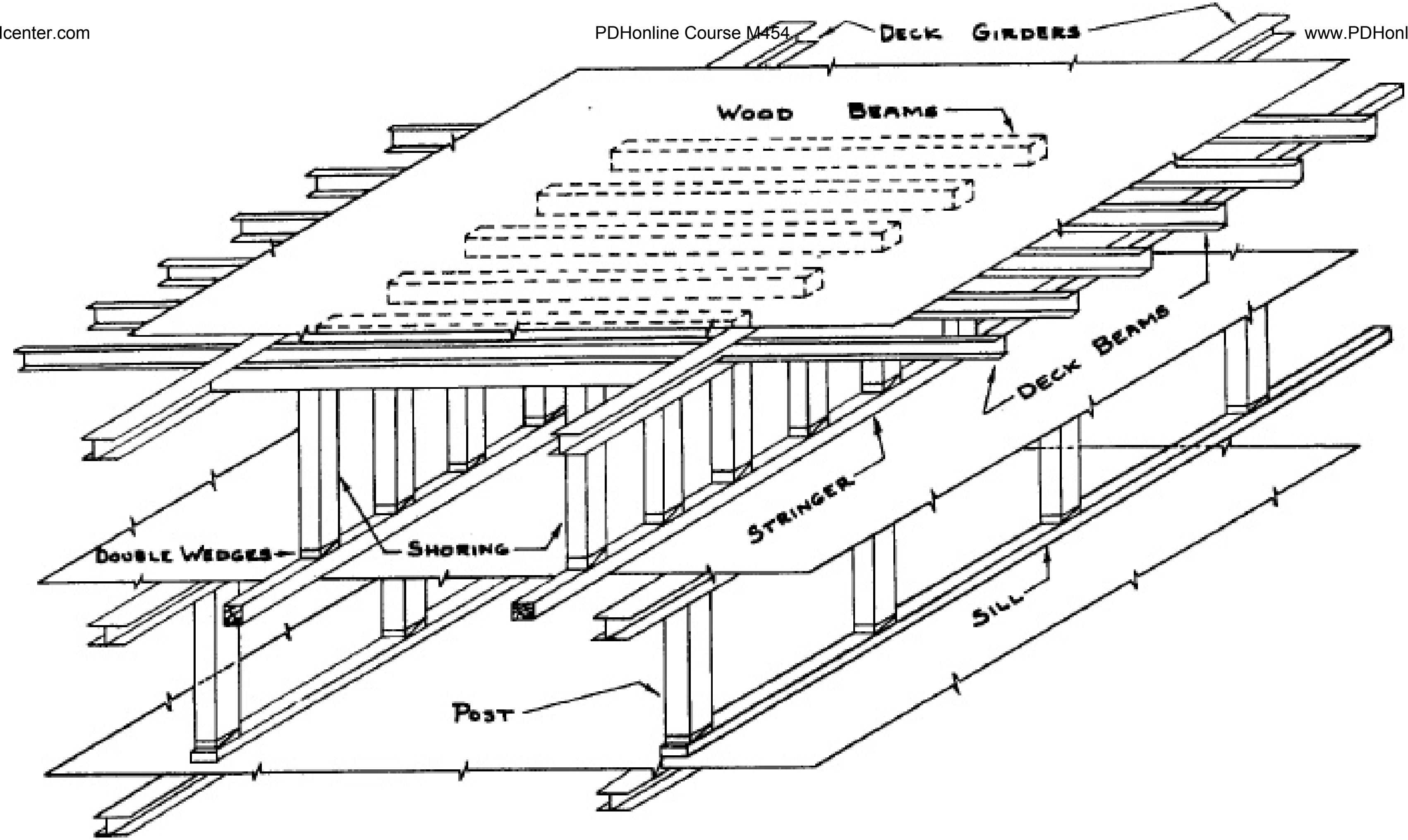


Details of barrier construction at Frame 204 – Main to D-Deck

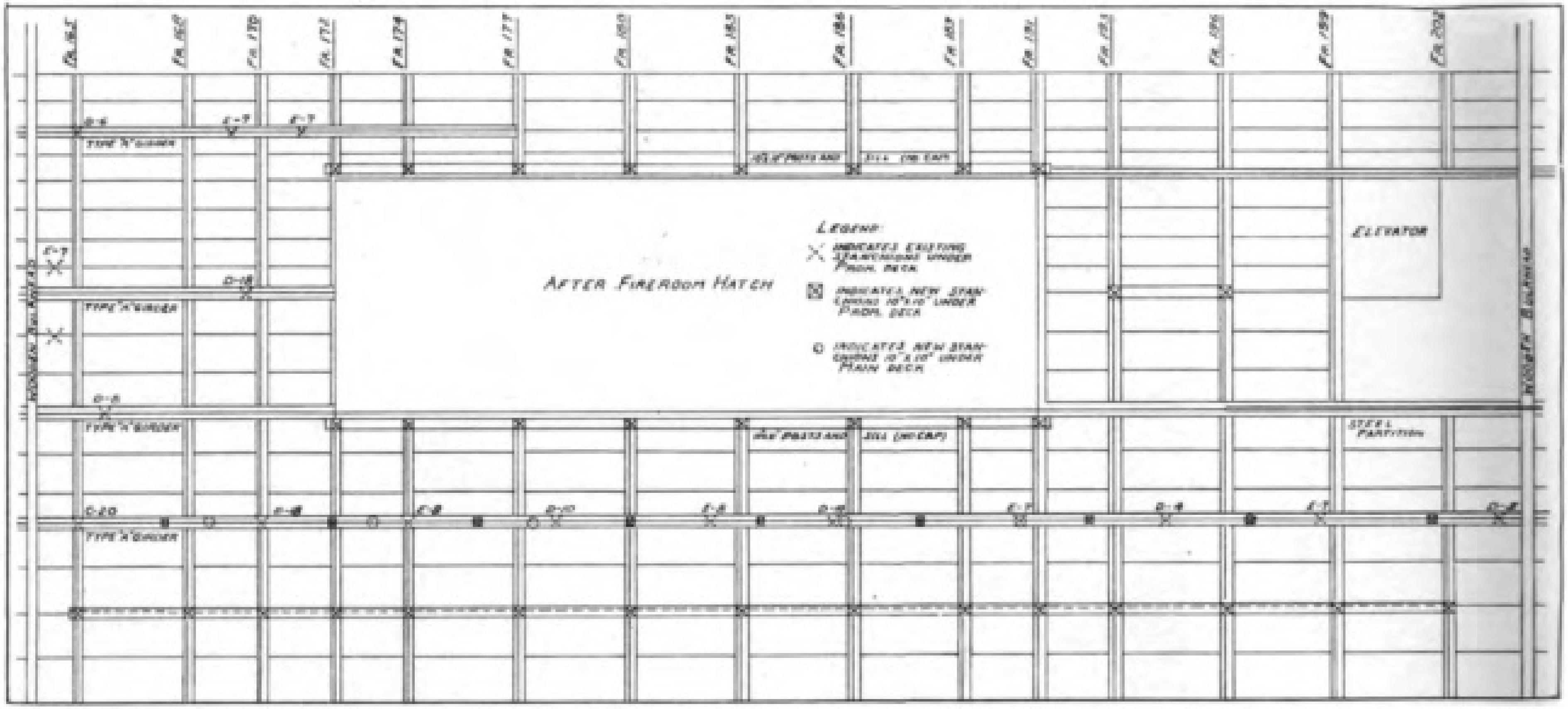


Bulkhead barrier construction at Frame 204 – Main to D-Deck
(after dewatering and righting)

Deck Shoring

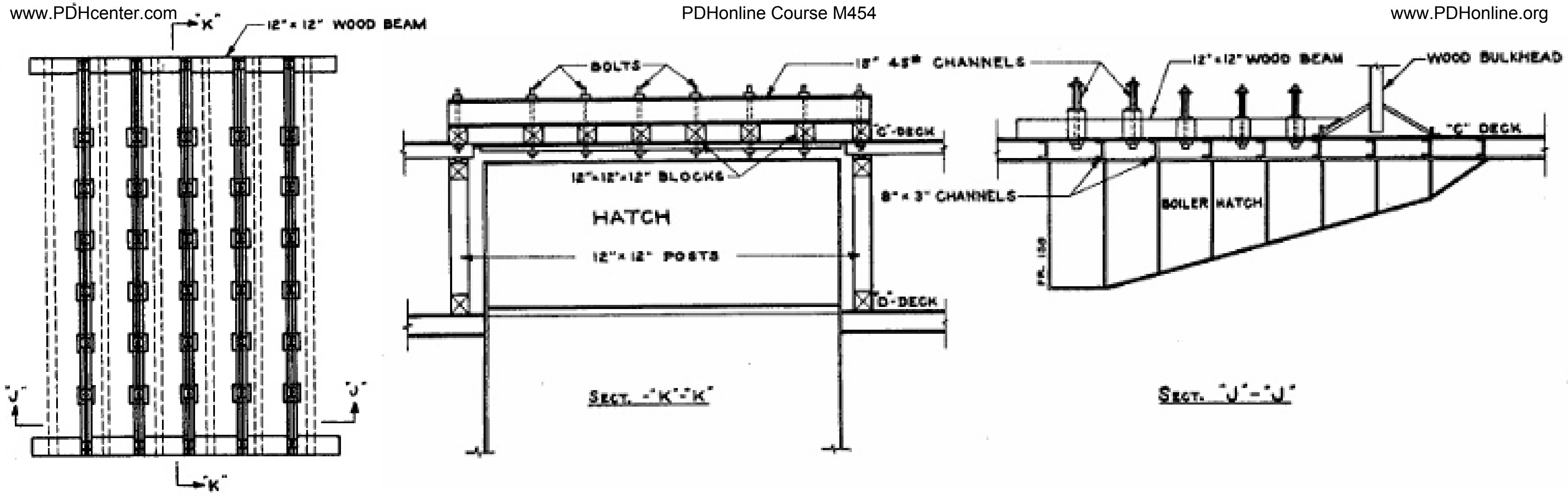


To be able to withstand the tremendous hydrostatic pressure during the controlled pumping operation, the ship's decks had to be shored-up with 1.5-miles of timber. All installed under pitch-dark conditions by the divers.



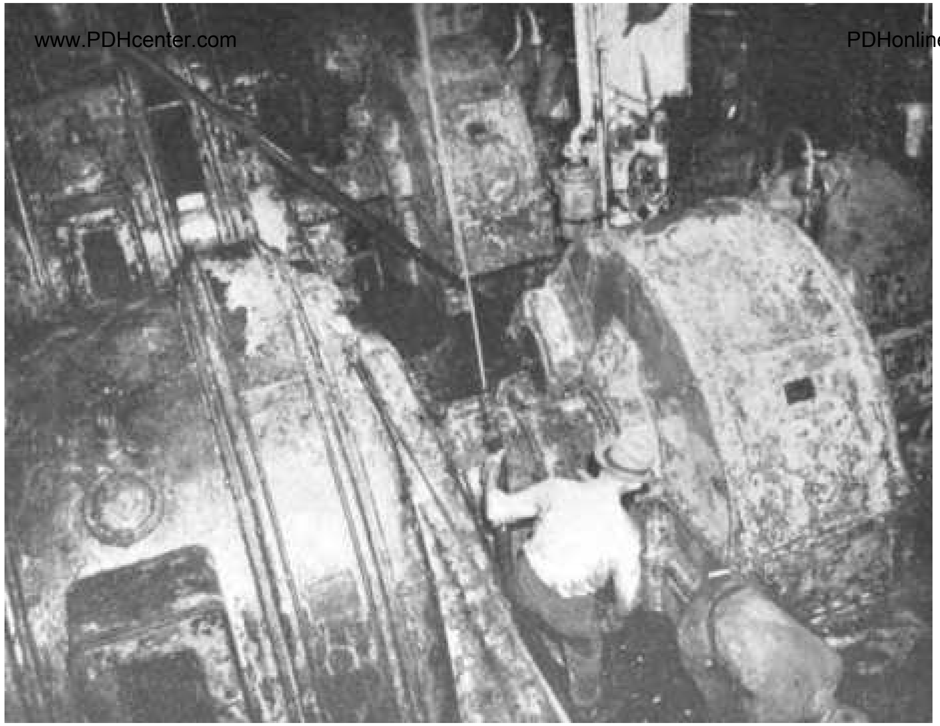
Details of shoring under Promenade and Main Deck/s
(Compartment 15)

Shoring placed by divers in Compartment 14 (after dewatering)



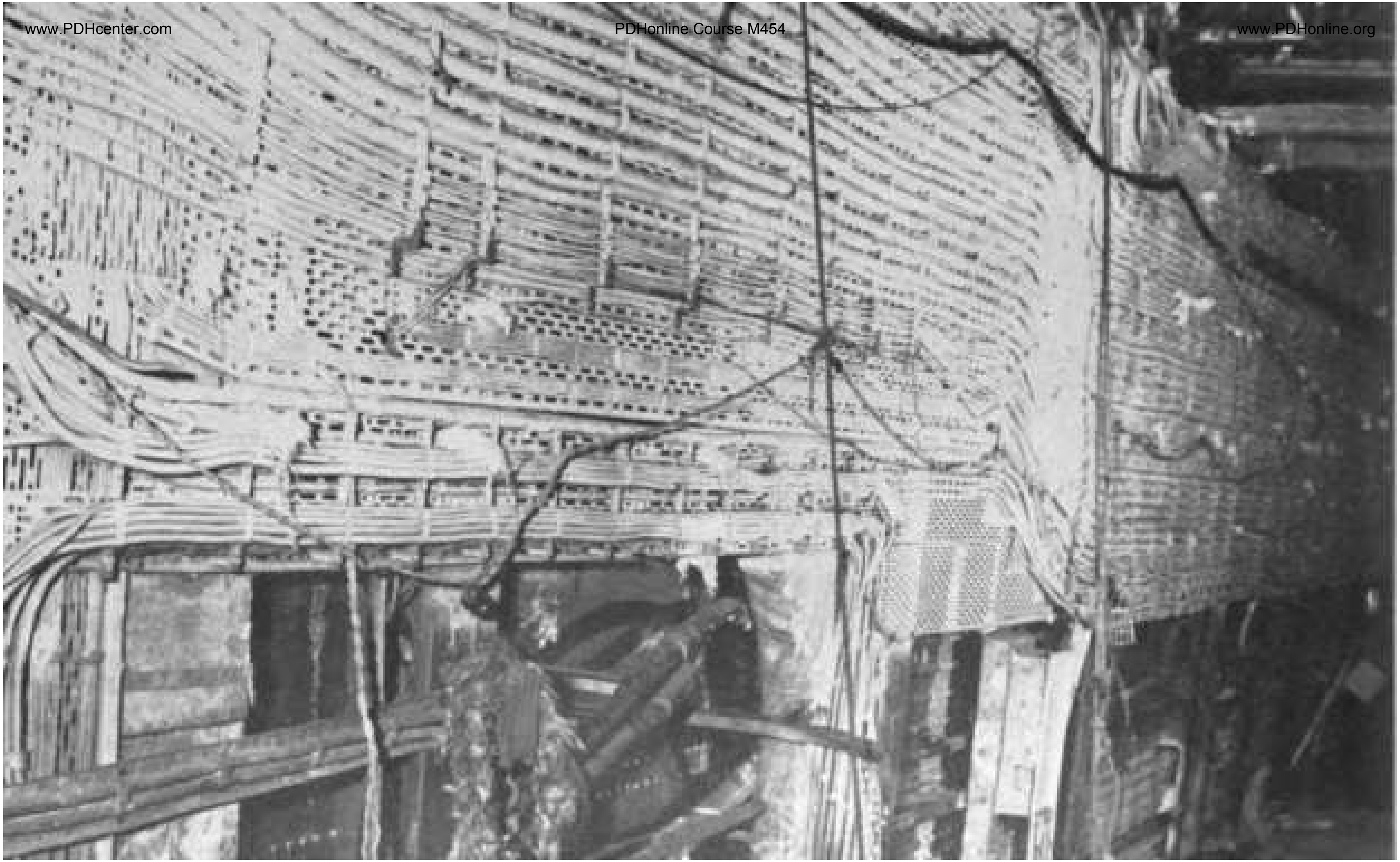
Boiler Hatch Plan

In order to strengthen the C-Deck (in the area of the boiler hatch), "bridge" construction was used (above). This was necessary in as much as there was not structure present of any strength (below the C-Deck) at this point. In this case, the load on C-Deck (in the area of the boiler hatch) was transmitted to the channels bridging the hatch structure and, in turn, to the 12" by 12" posts to the D-Deck.



Left: salvage crew washing and spraying machinery with rust preventive compound as waterline recedes during righting/pumping-out operation/s

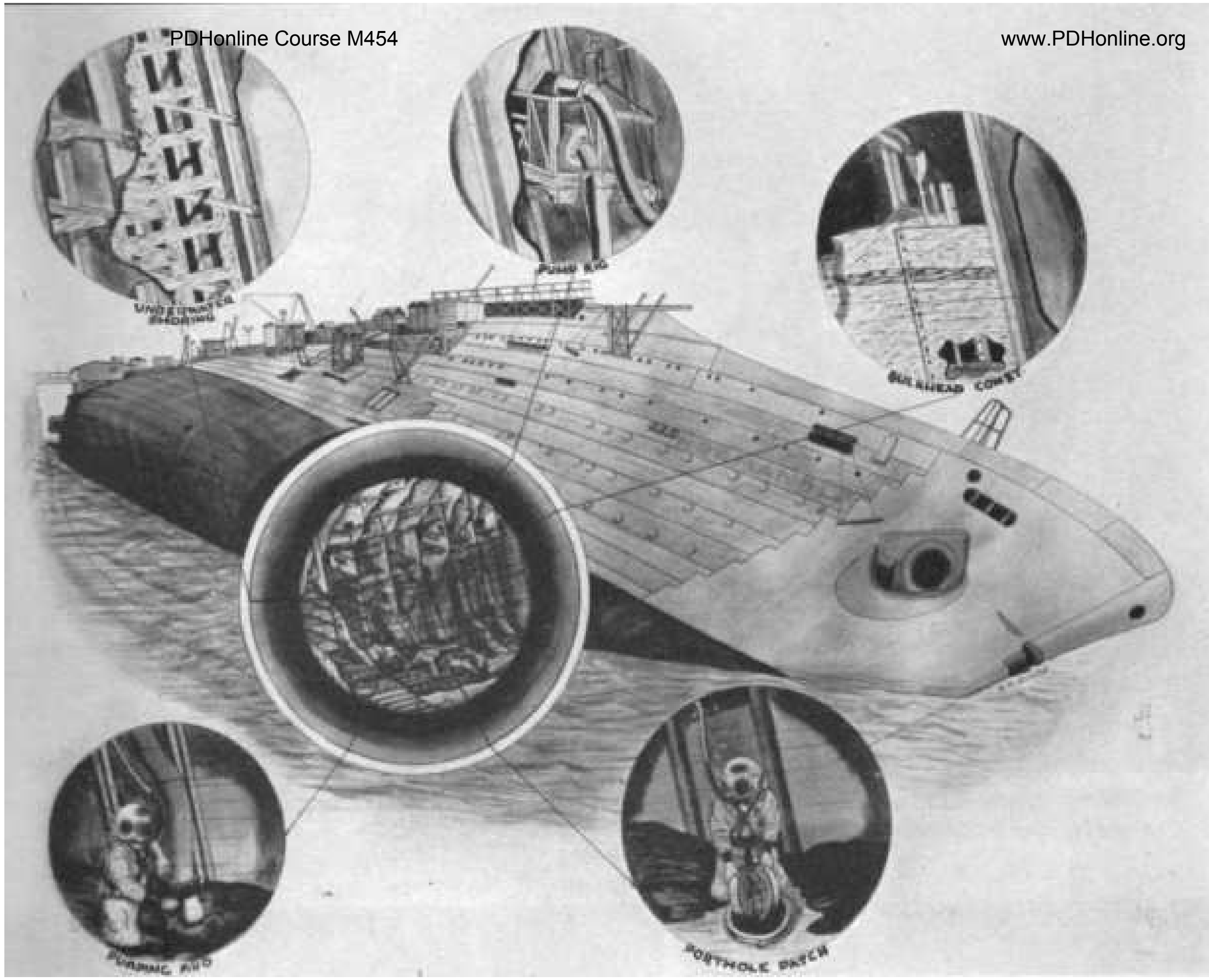
In total, 240,500 board-feet of grooved 8”x12” timbers (joined by 2”x4” timbers) and 1,685-tons of concrete were used in the bulkhead work. Bulkheads were now walls and decks had become floors and/or roofs in the upside-down world of the ship’s interior. At the same time the shoring, bulkhead and patch work was proceeding, an effort to inhibit rust was pursued by divers applying a rust-preventing compound (after cleaning). The electrical wiring was a complete loss and would have to be replaced.



Maze of electrical wiring below the Main Deck

The preparation of the vessel for righting and floating by pumping involved the following general operations:

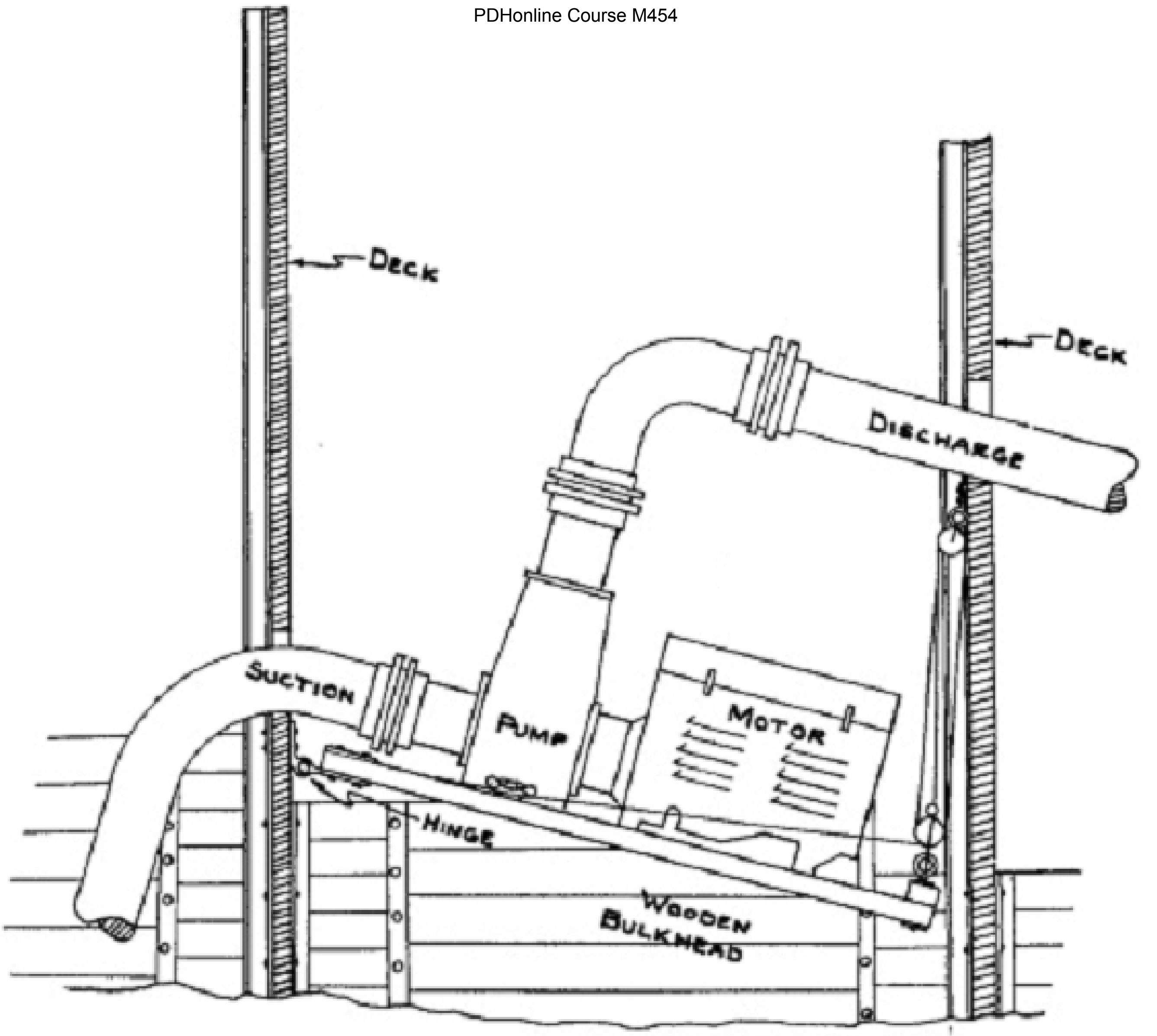
(a) Removal of the superstructure above the promenade deck above and below the waterline.
(b) Trimming of the promenade deck to prepare for the placing of patches on all openings.
(c) Removal of all partition bulkheads, furniture, woodwork and inflammable material inside of the vessel, both above and below the waterline.
(d) Closing 16 cargo ports on the port side. Concreting and bracing port cargo hatches.
(e) Closing 356 air ports on the port side. Patching and concreting the air ports.
(f) Removing approximately 10,000 cubic yards of mud.
(g) Cleaning out boiler rooms, rearranging floor plates, securing boilers to foundations.
(h) Cleaning out turbogenerator room and propulsion motor rooms.
(i) Patching all promenade deck openings below the waterline.
(j) Installing timber and concrete bulkheads.
(k) Shoring promenade and other decks as needed.
(l) Making intermediate deck tight; patching all openings.
(m) Checking pumping arrangements. Closing all pipe lines leading from one compartment to another.
(n) Checking all available plans of ship to determine strength of bulkheads and decks for dewatering operations.
(o) Installing and arranging forty-five 10-inch salvage pumps, twenty-eight 6-inch salvage pumps, and twenty-five 3-inch salvage pumps and piping for dewatering.
(p) Making detailed calculations of stability and strength for the righting operations.
(q) Removing portion of the pier and driving fender piles.



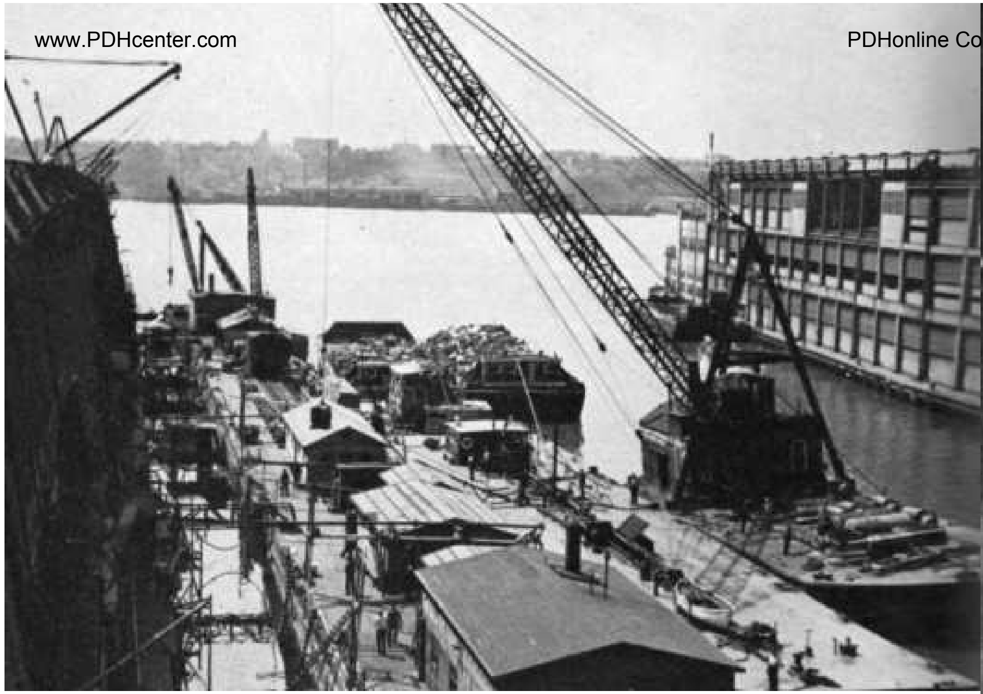
<u>Above</u>: Illustration showing some of the many projects involved in the preparations for righting *Normandie/Lafayette*

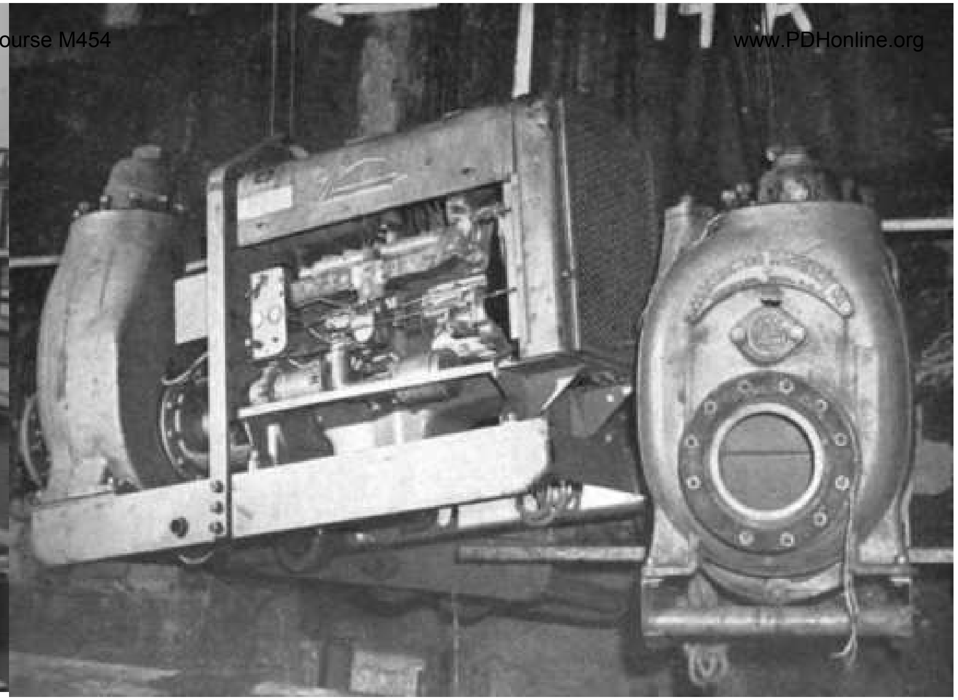
Making Things Right

On October 13th 1942, the Navy gave the press a tour of the ship in order that they bear witness to all that had been done to prepare the ship for righting. They were truly amazed at all that had been accomplished in just eight months. The controlled pumping operation was nearing and for that ninety-eight pumps weighing between 1K to 2,760 pounds were lifted by derricks into the ship. They were mounted on hinged *Pivot Platforms* that would remain level as the ship righted itself. The pumps had a capacity of 10K-tons per hour which meant all the water could be pumped out in less than ten hours. For fear of the ship snapping back and crashing into the adjacent pier, the pumping would occur at a much slower pace.



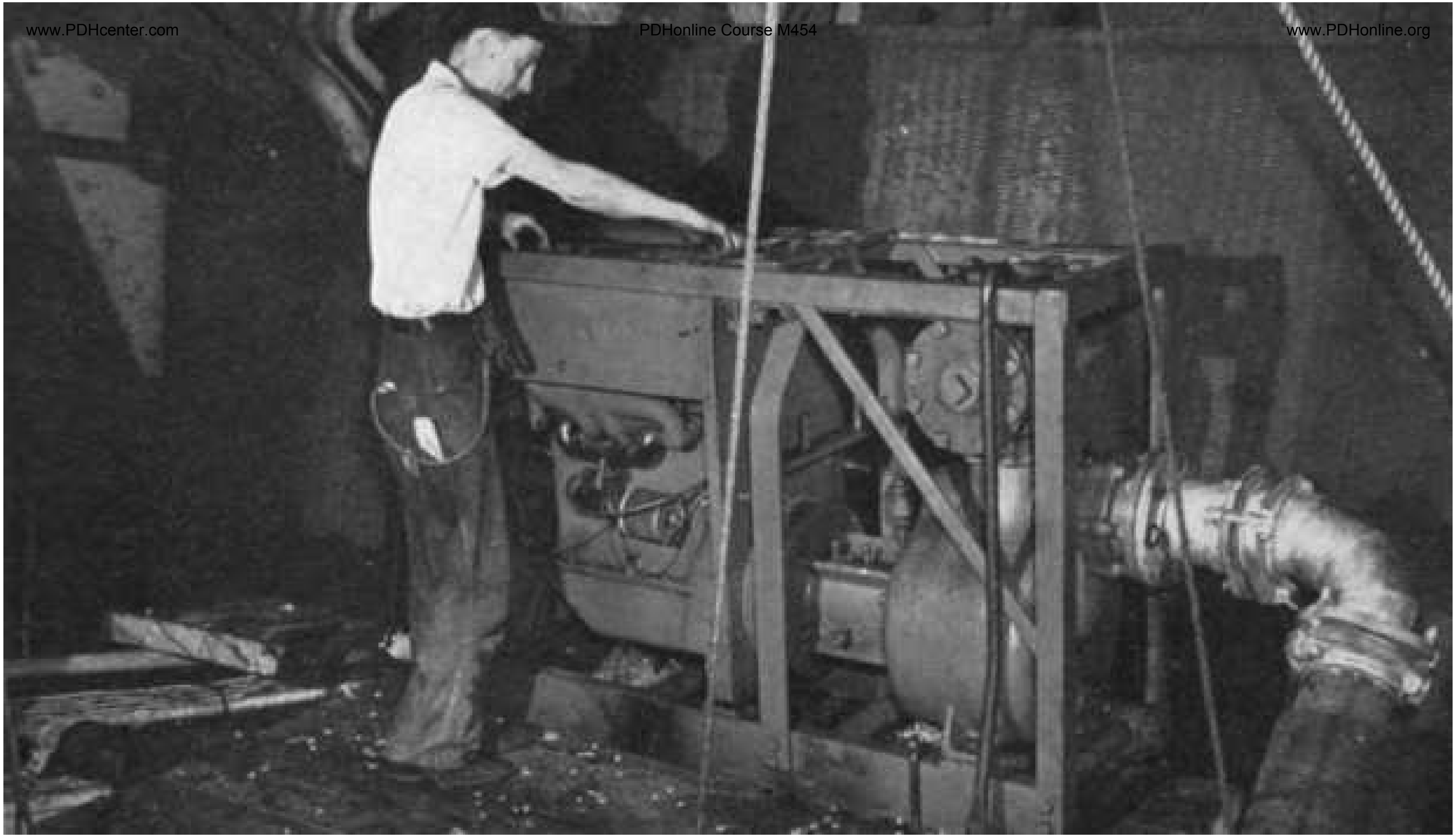
Detail of pump mounted on "Pivot Platform"





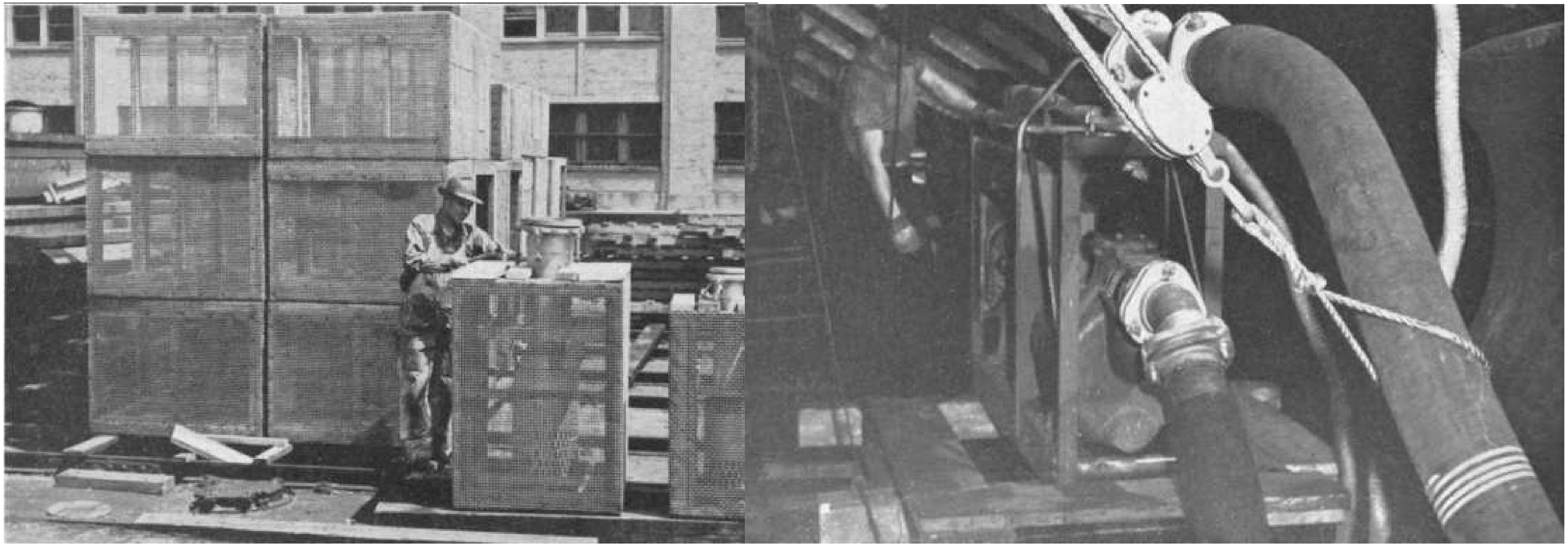
<u>Left</u>: derrick placing 10-inch salvage pump adjacent to Promenade Deck where rigging crews could juggle it into position once inside the ship
<u>Right</u>: close-up of 10-inch salvage pump

The pumps were tested on August 3rd 1943 and all appeared watertight. On August 4th, the water level in the hull was lowered by nine-feet and signs were apparent that the ship was trying to right herself. Water-jets were directed to the bottom of the hull in order to reduce *suction* (between the hull and the mud/silt) as the ship began to right itself.

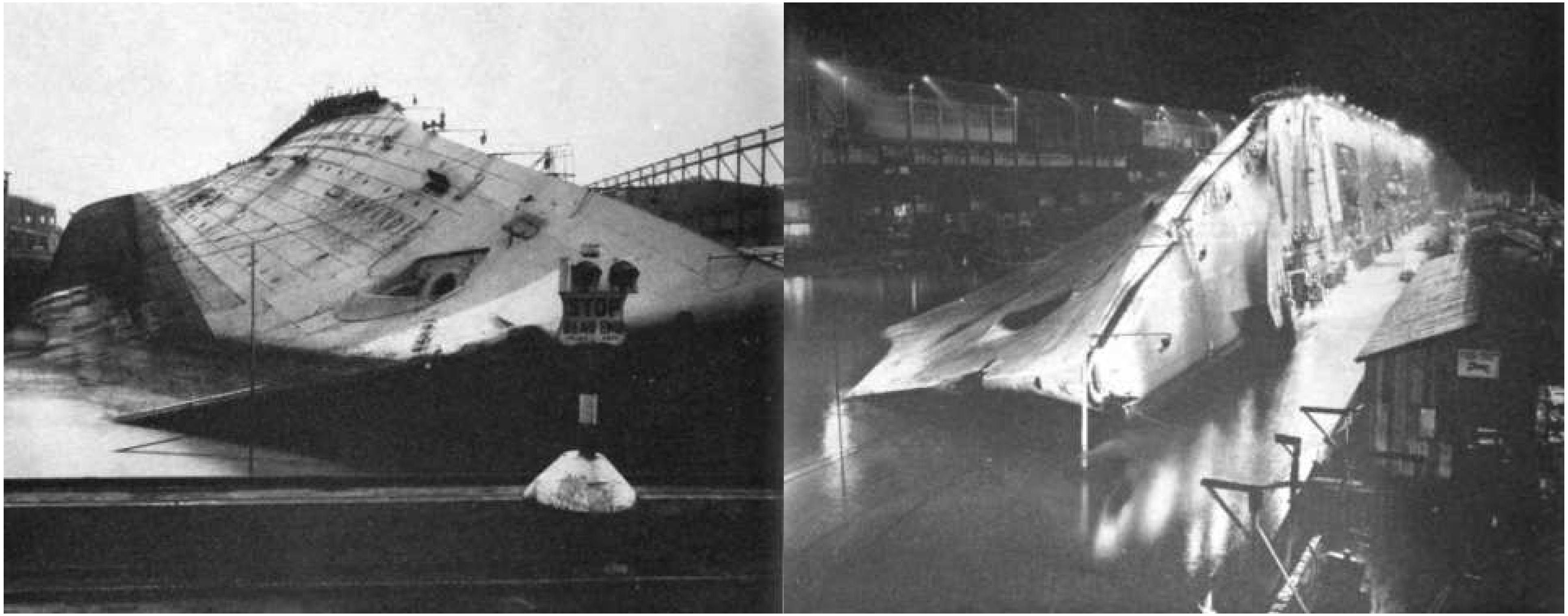



Six-inch salvage pump in position

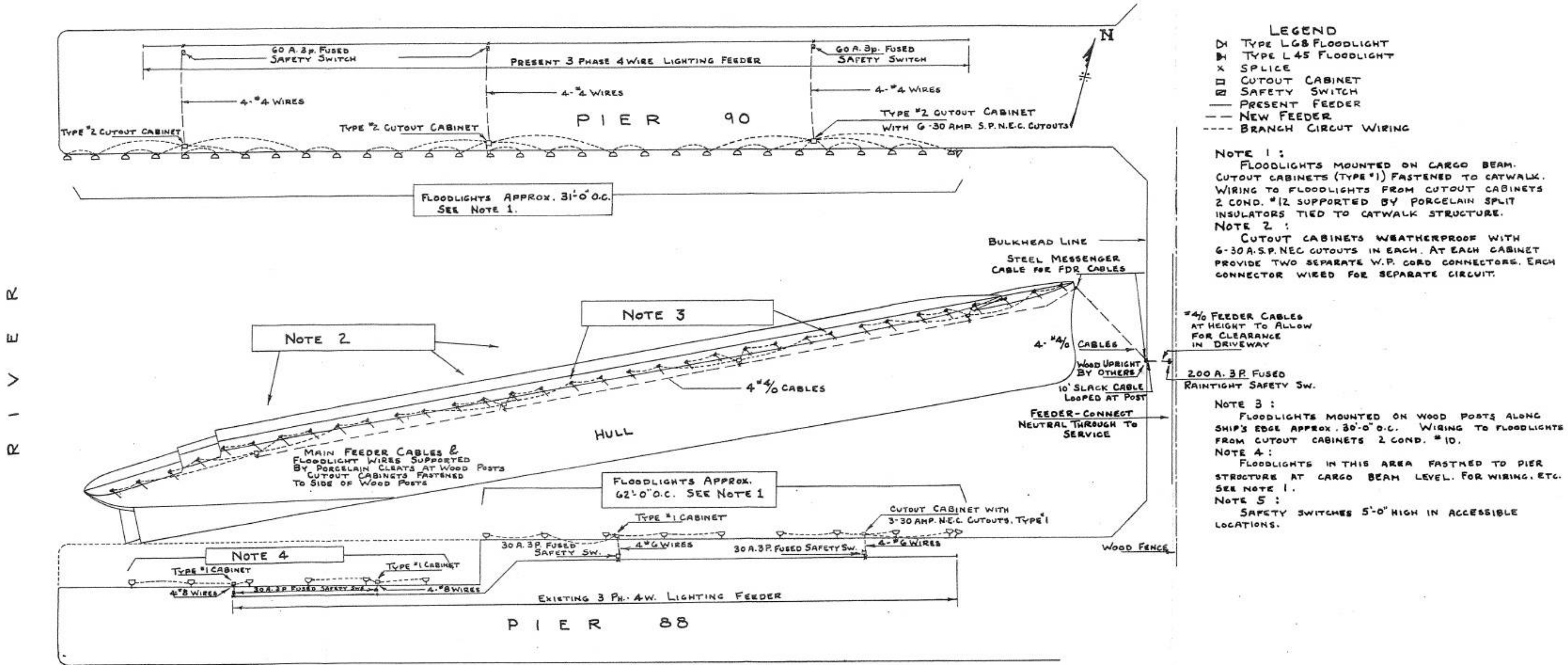
Note that the intake (suction) pipe is installed, but not the discharge pipe



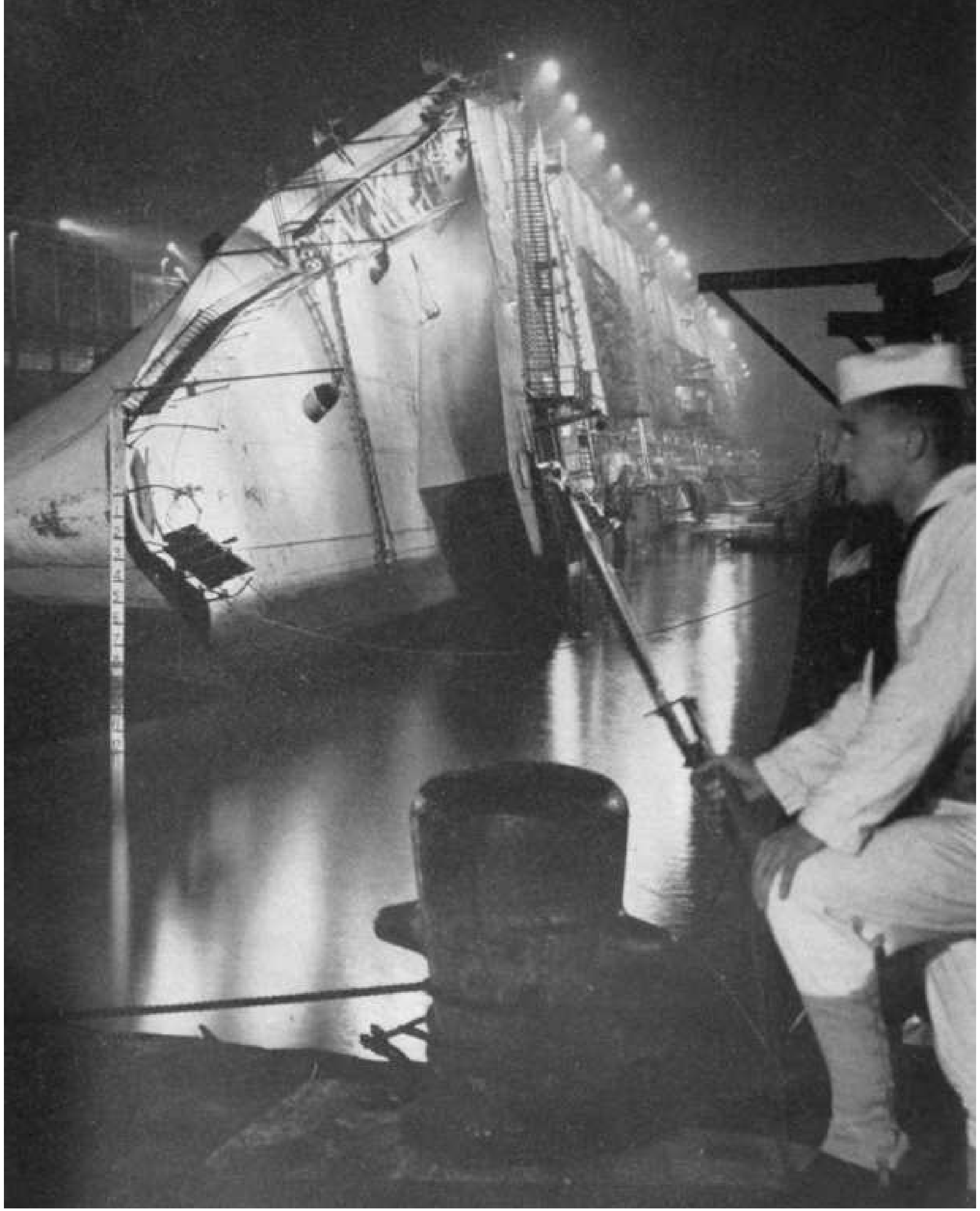
<u>Left</u>: *Crate Strainers* (built to protect pump suction/s from clogging)
<u>Right</u>: six-inch pump on Pivot Platform (ready for operation with intake/discharge pipes in-place)



<u>Left</u>: just prior to commencement of pumping operations
<u>Right</u>: salvage operations commencing (note floodlighting)



Details of floodlighting system for night operations



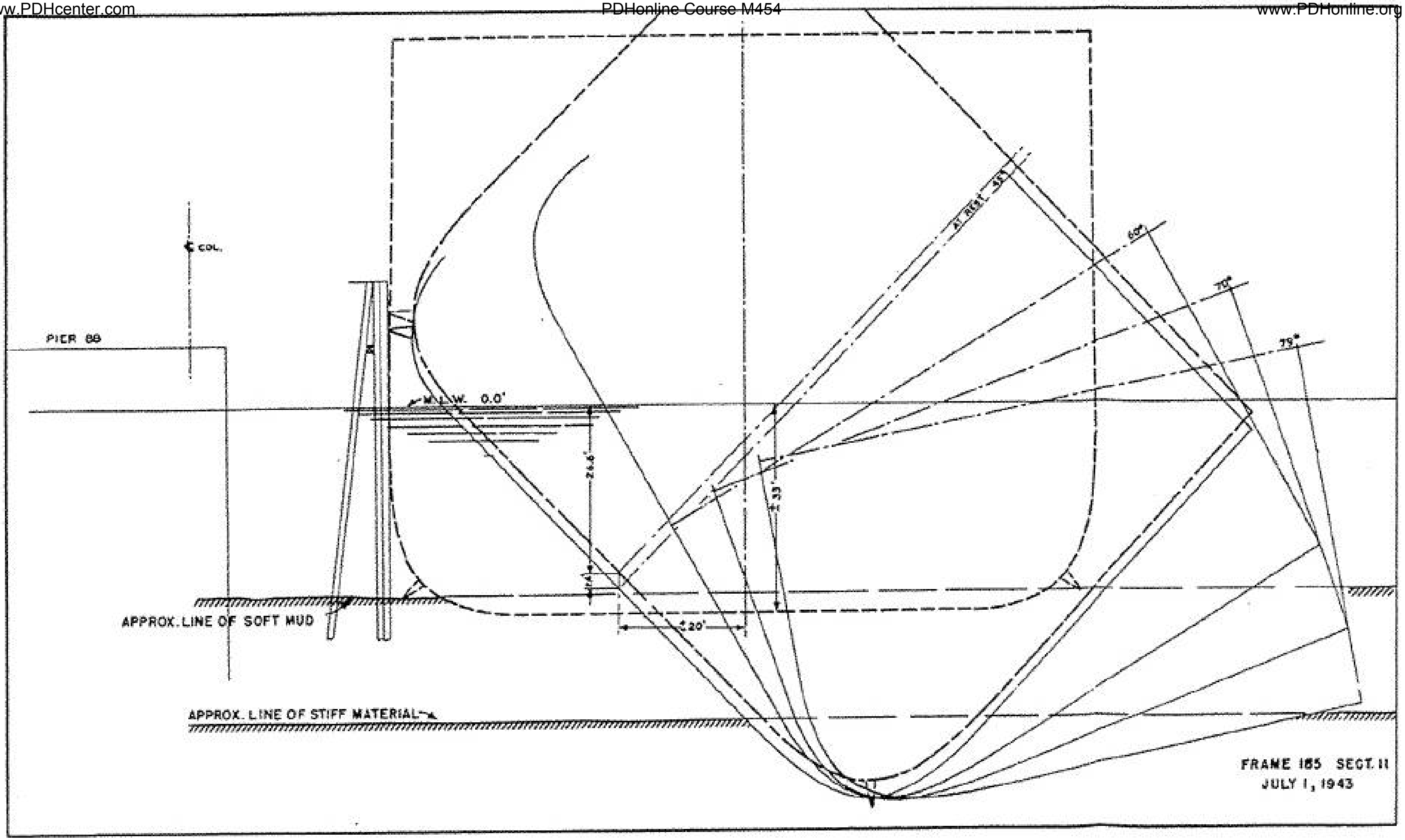
NOTE 1:
FLOODLIGHTS MOUNTED ON CARGO BEAM. CUTOUT CABINETS (TYPE #1) FASTENED TO CATWALK. WIRING TO FLOODLIGHTS FROM CUTOUT CABINETS 2 COND. #12 SUPPORTED BY PORCELAIN SPLIT INSULATORS TIED TO CATWALK STRUCTURE.

NOTE 2:
CUTOUT CABINETS WEATHERPROOF WITH 6-30 A.S.P. NEC CUTOUTS IN EACH. AT EACH CABINET PROVIDE TWO SEPARATE W.P. CORD CONNECTORS. EACH CONNECTOR WIRED FOR SEPARATE CIRCUIT.

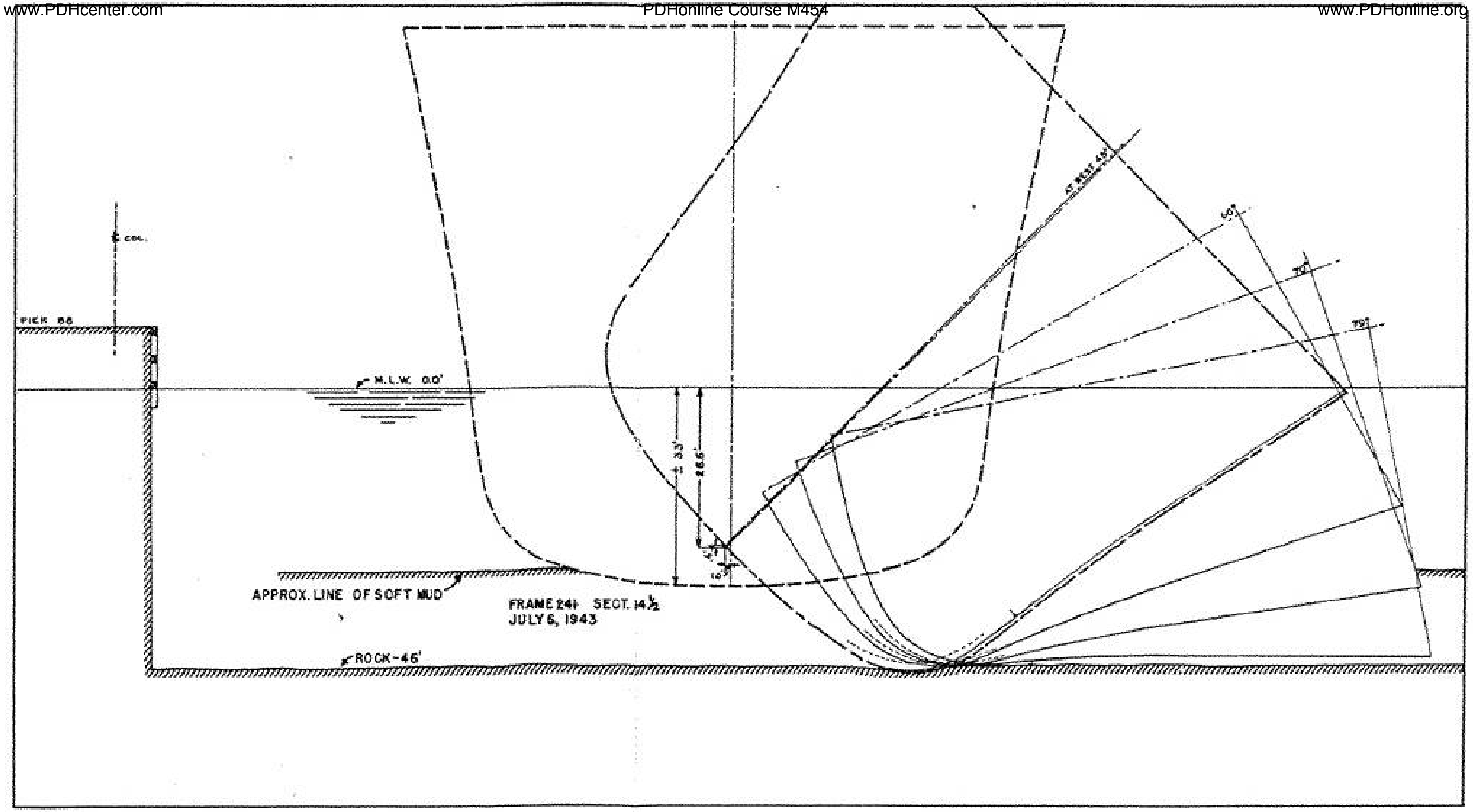
NOTE 3:
FLOODLIGHTS MOUNTED ON WOOD POSTS ALONG SHIP'S EDGE APPROX. 30'-0" O.C. WIRING TO FLOODLIGHTS FROM CUTOUT CABINETS 2 COND. #10.

NOTE 4:
FLOODLIGHTS IN THIS AREA FASTNED TO PIER STRUCTURE AT CARGO BEAM LEVEL. FOR WIRING, ETC. SEE NOTE 1.

NOTE 5:
. SAFETY SWITCHES 5'-0" HIGH IN ACCESSIBLE LOCATIONS.

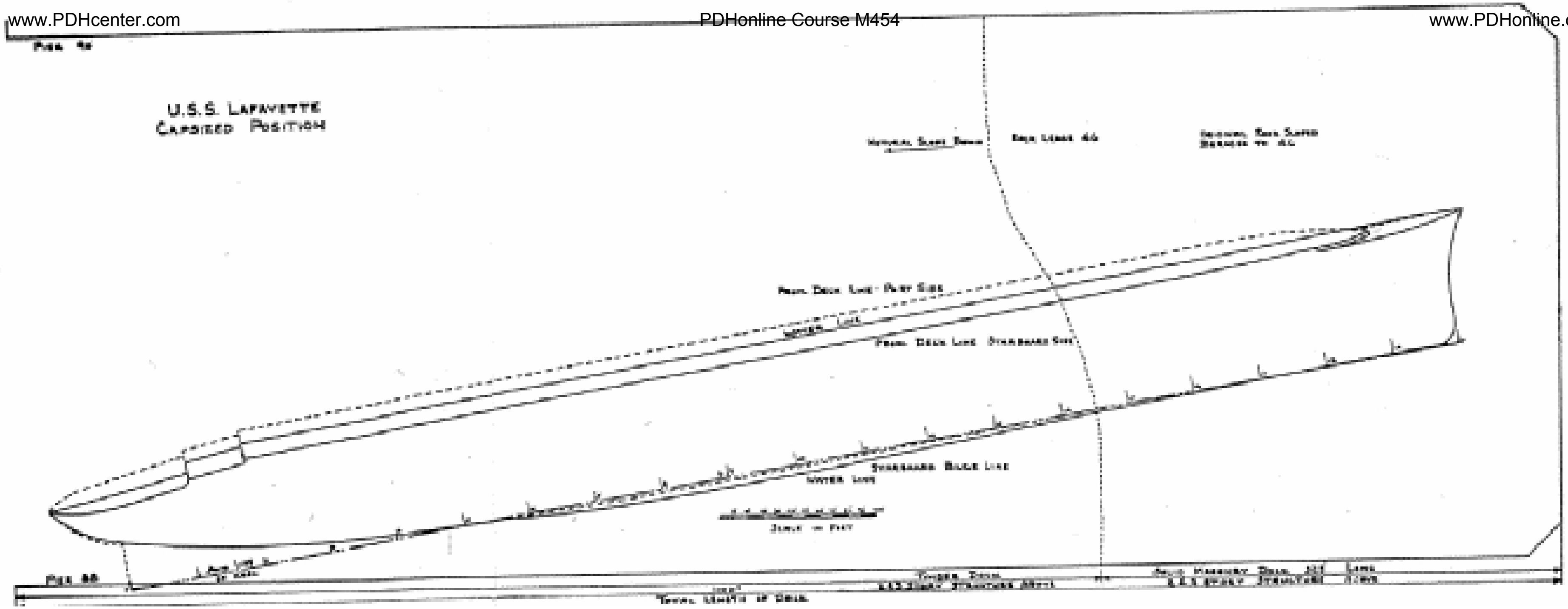


Anticipated rotating movement of section 11 of the ship



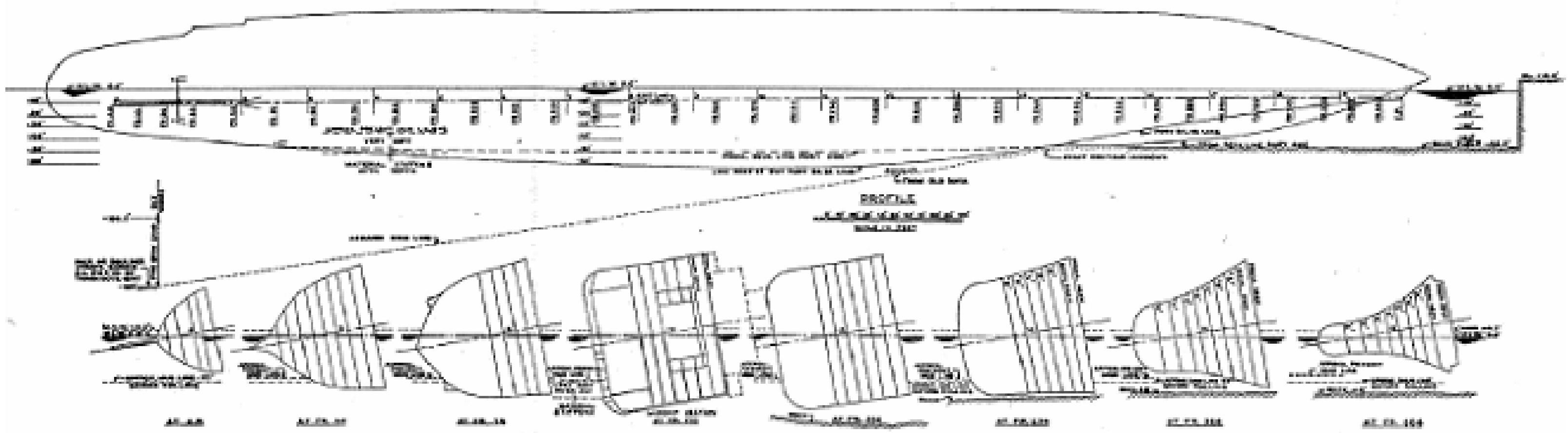
Anticipated rotating movement of section 14.5 of the ship

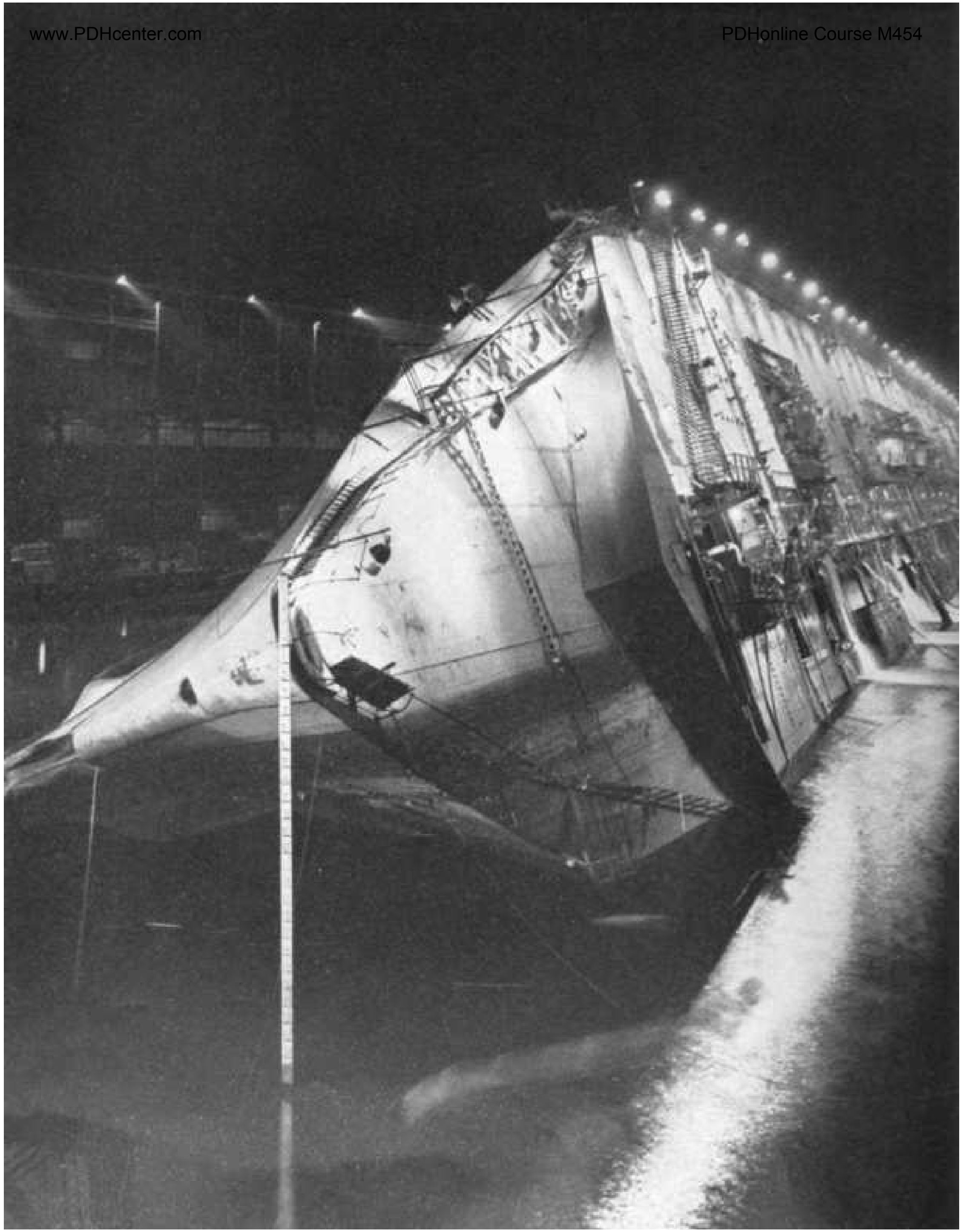
At 0430 on 4 August, the water was lowered to 7 feet in the high compartments and 8 feet in the low with reference to mean low water. At high tide, a small vertical movement of bench mark on the bow was perceptible but was attributed to change in trim or strain rather than rotation. It is well to note here that the entire pumping plan was designed to lighten the bow as much as possible to relieve the pressure that was believed to exist at the rock ledge in way of compartment 16. See figures 16 and 17.



<u>Figure/s 16</u> (above) and <u>17</u> (below)

USS Lafayette in capsized position between Pier 88 and Pier 90

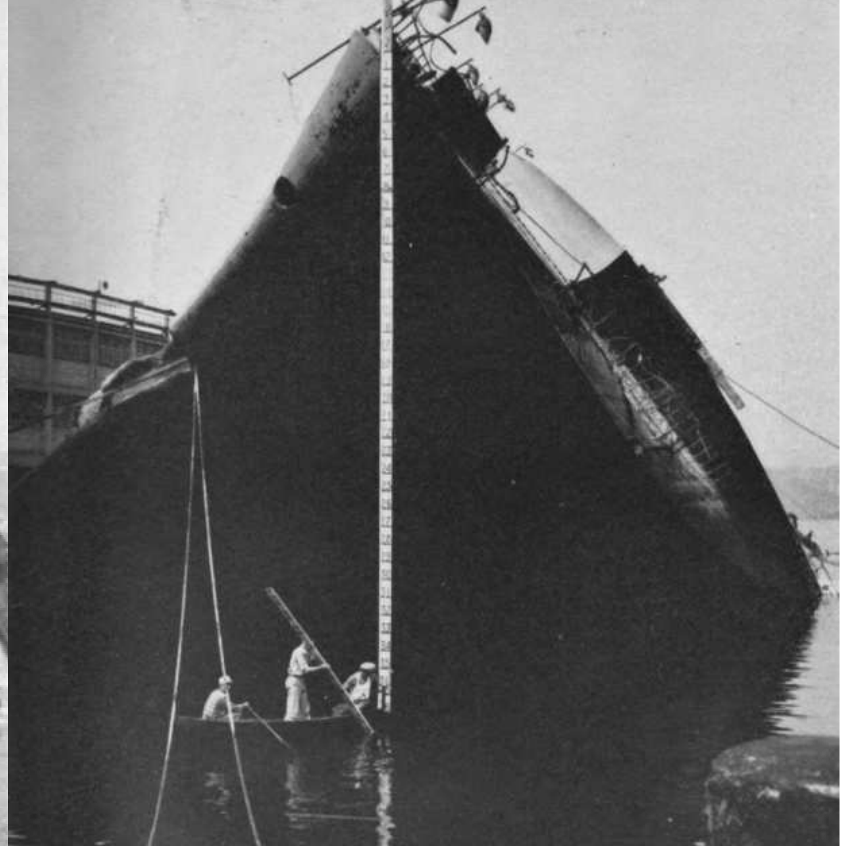




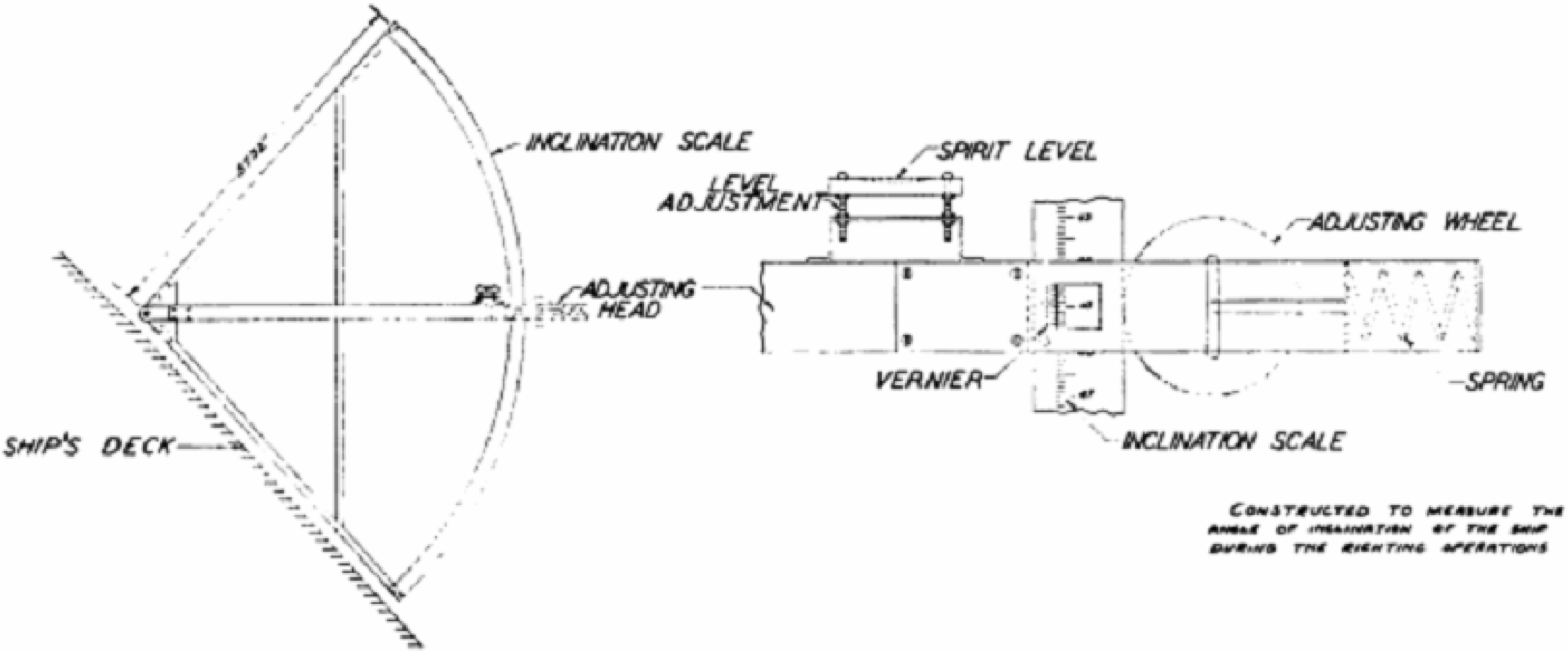
August 4th 1943

First signs that the ship is trying to right itself observed

Because there was no particular reason for speed and because it was extremely important to build up no forces or develop leakage which could not be controlled, pumping was continued and each rising tide was utilized to supply the additional buoyancy necessary to move the ship. At 1730, just prior to the rising tide on 4 August, the water in the high and low compartments was lowered to minus 9 and minus 9½ feet so that the 5-foot rise in tide would give a 14- and 14½-foot negative head inside. Air and water jets installed in various patches in the port side and along the port edge of the promenade deck were started and maintained continuously in order to relieve any mud suction which might exist. The midships movement-measuring devices indicated a horizontal movement of the promenade deck of a little less than 1 inch. It was felt that this movement was a definite sign that the tendency for righting existed and that all was well even though it could not be considered definite rotation, but again just a strain in the right direction.



<u>Left</u>: pumps in action. Port-side deck edge rising out of the river.
<u>Above</u>: checking for level of rise at bow



Details of *Dimometer*

(used to measure the angle of rotation)

During both tides on 7 August, pumping continued slowly and the ship rotated to 67 degrees. On the morning of 8 August, it was decided to move the ship from its 67 degrees inclination directly to 45 degrees by removing more than 11,000 tons of water chiefly from compartments 14, 15, and 16. The steep rise in the rotation curve (fig. 123) illustrates the results of this pumping.

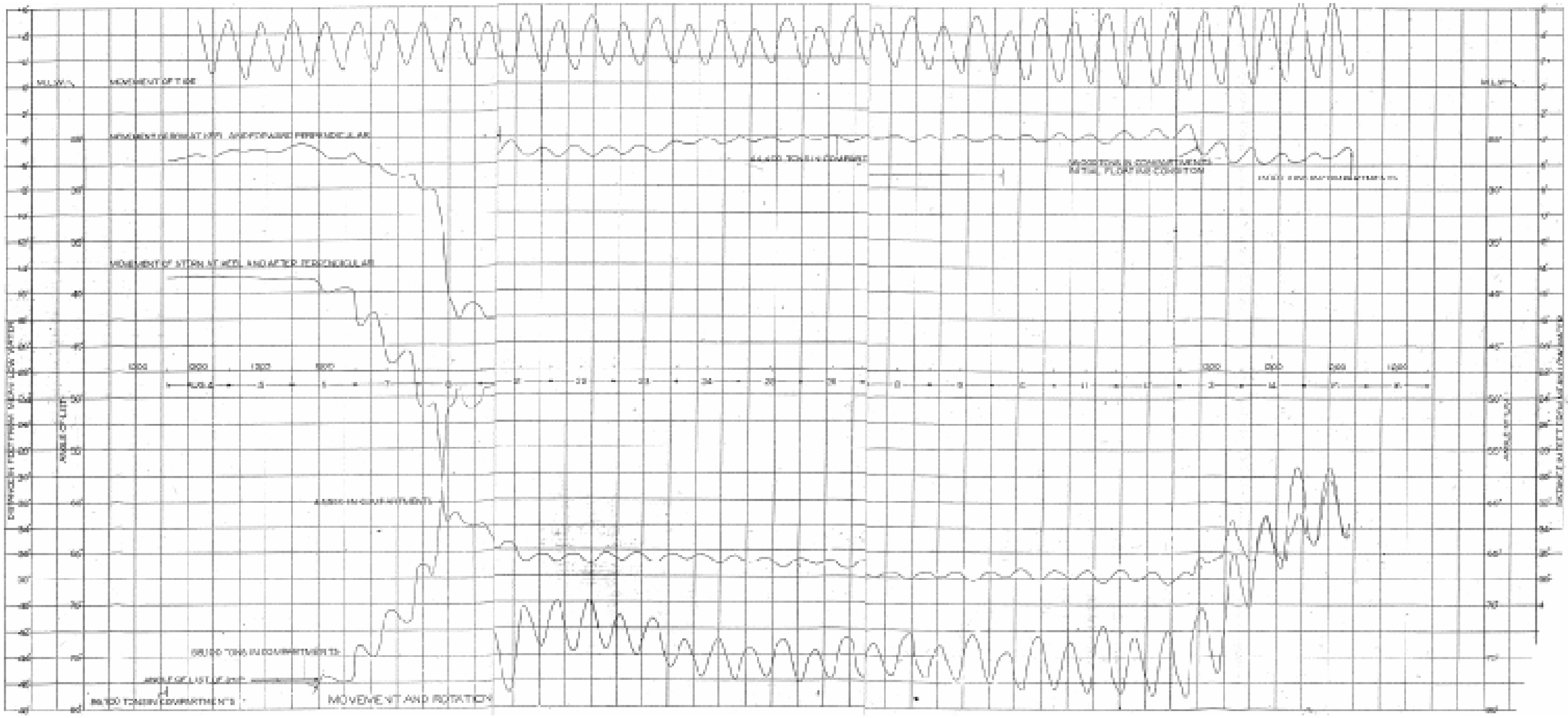
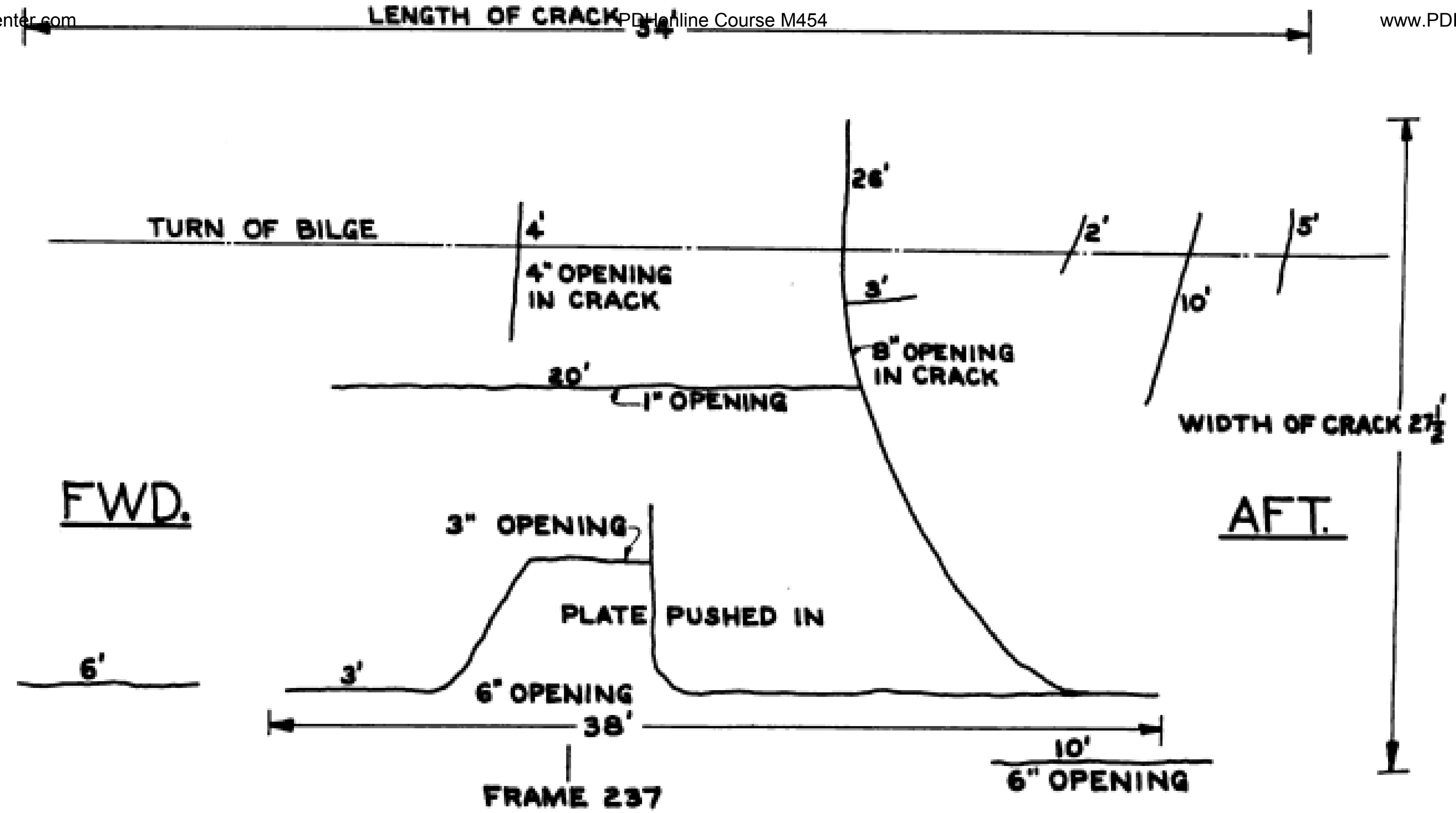


Figure 123
Movement and rotation grid

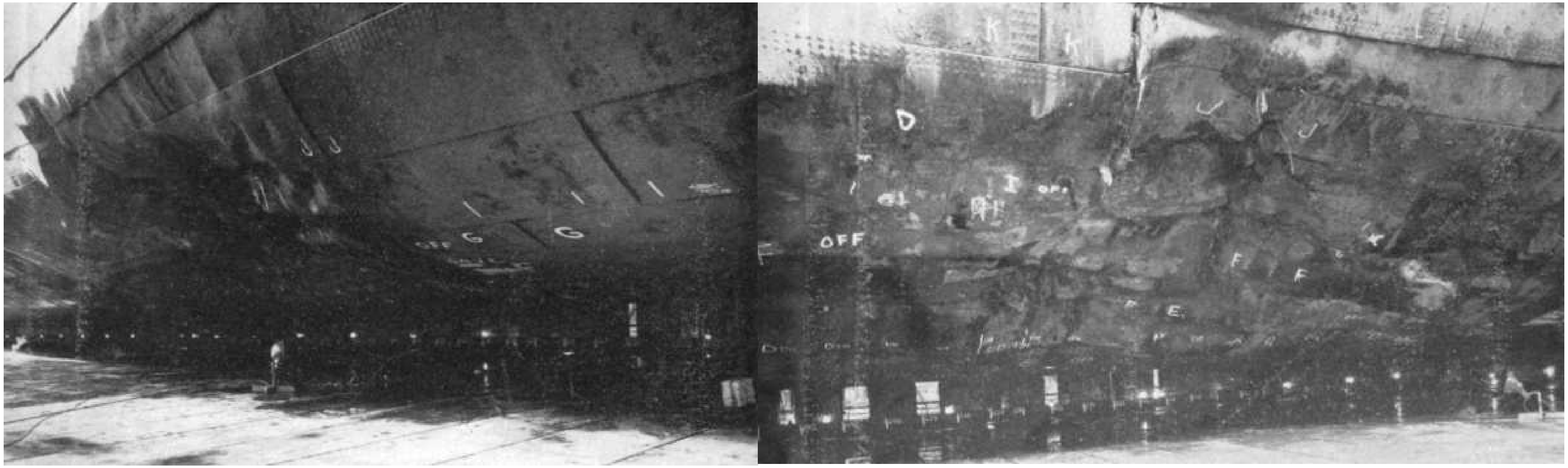
Ship at 45-degree inclination
(during pumping-out operation)

45-degree inclination. Note the port-side superstructure (foreground) that could not be removed by divers due to the depth of the mud

Removing remaining portion of superstructure



During the raising process, a rock ledge (about one-third back from the bow) damaged hull plates (at frame 237) and required extensive, on-going repairs (diver's sketch of hull damage above). Even so, by September 15th 1943, Normandie/Lafayette lay at her Pier 88 berth nearly at an even keel.



Damage to hull caused by rock ledge
(observed while in dry dock)

Early in the morning of 11 August, the first of a series of ruptures in the double bottom and wing tanks forward of the first row of boilers in No. 2 fire room was found. Divers were unable to get down through the mud and rock to locate the rupture from the outside at this time. There was no question but that the damage was sustained as a result of the ship's resting on a high pinnacle at the rock ledge while the ship was being righted and also undoubtedly during the capsizing. By the morning of 14 August, it was felt that all of the ruptures in the tanks in compartment 16 had been located and it was decided to lay concrete in the corner between the wing tanks and double bottom tanks at frame 236 with some 100 cubic yards of concrete. The concrete pour was to be made by the Tremie method and was to be bounded forward by No. 4 watertight bulkhead and aft by a dyke which divers built of bags of cement. During this period the ship righted about 6 degrees as a result of adding ballast in two starboard tanks and the removal of the remaining superstructure.

Tremie method concrete pour

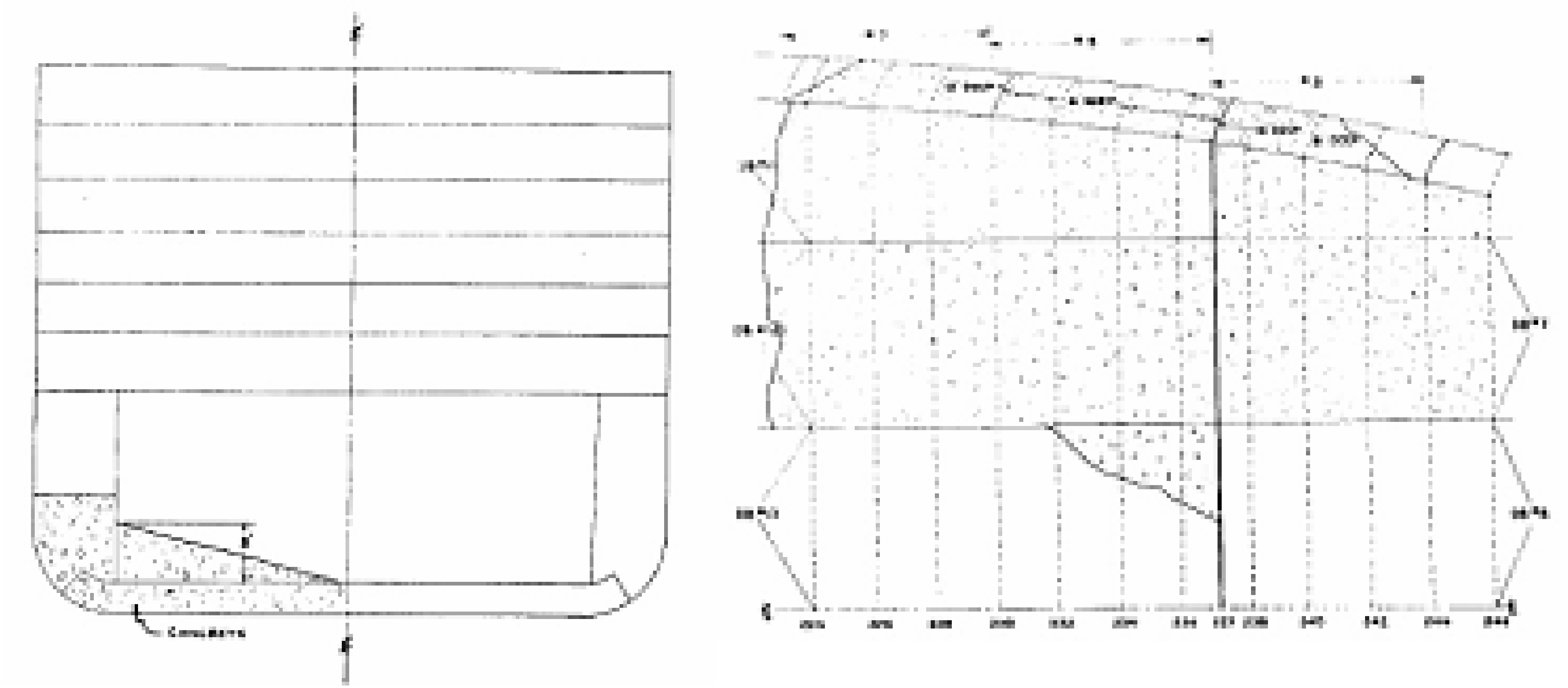
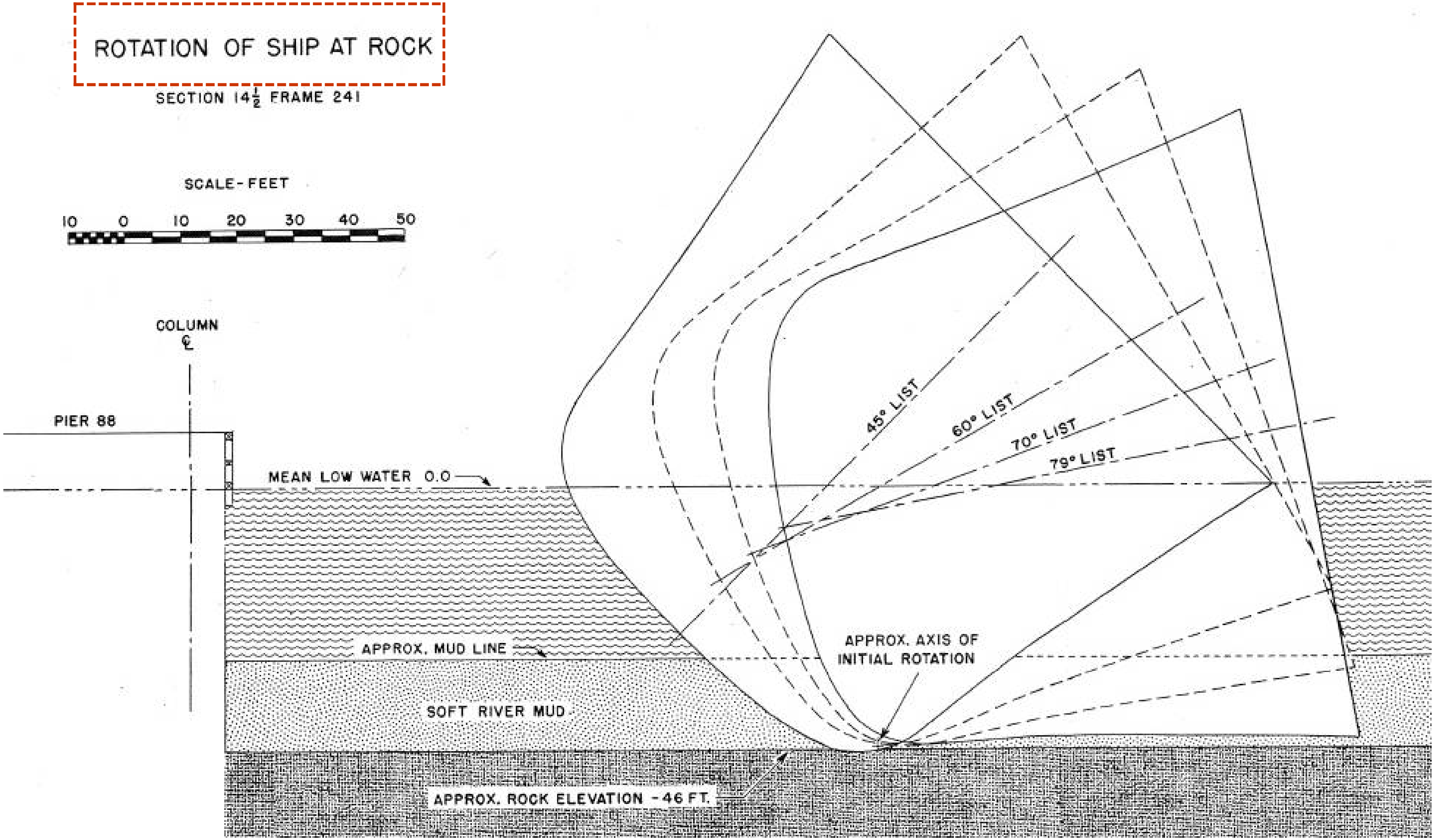


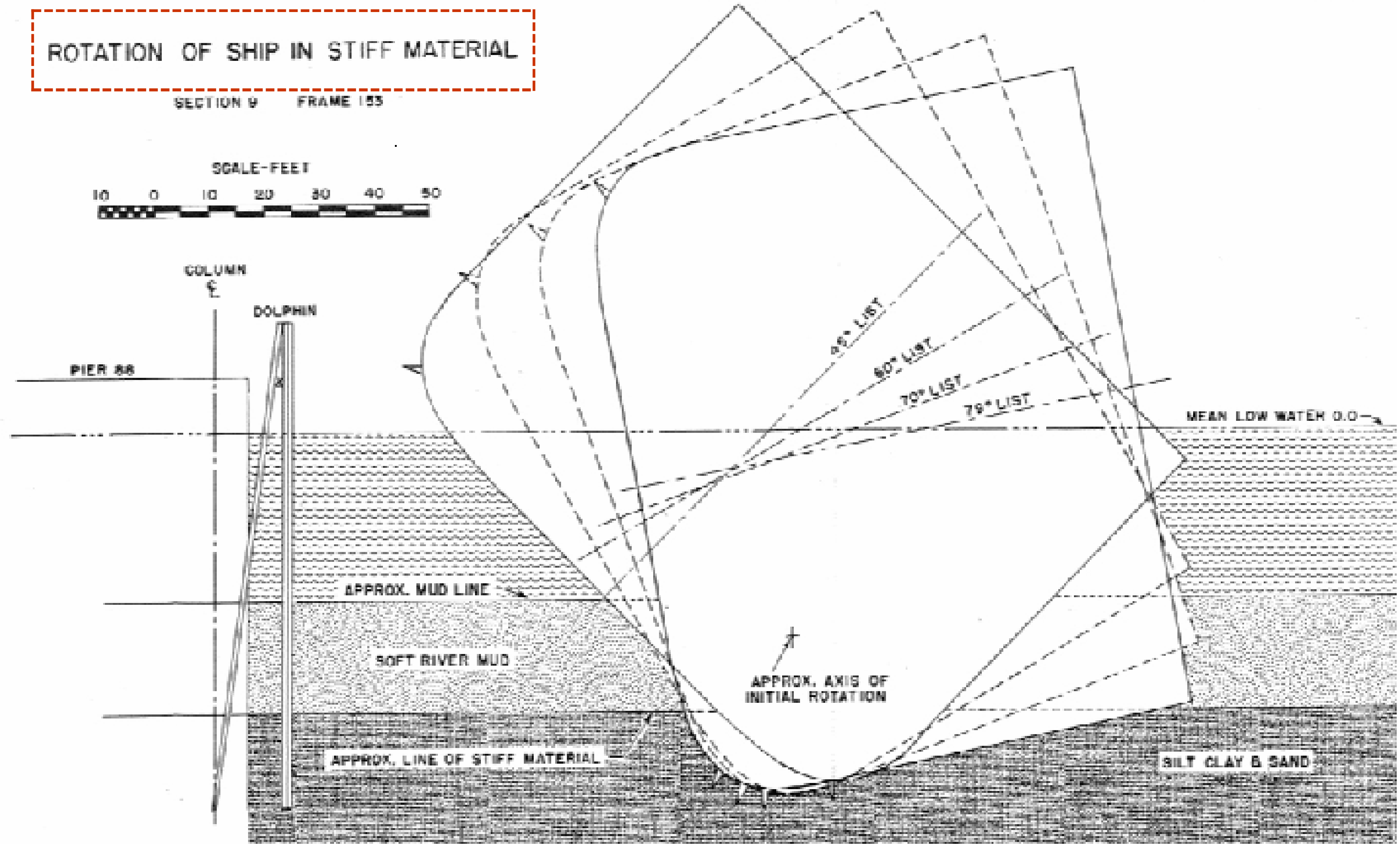
Illustration of concrete patch
(in frame 237)

By the morning of the 17th, the laying of the concrete had been completed. Twenty-four hours were allowed for the concrete to harden and pumping was once again resumed on the morning of the 18th. At first, compartment 16 held tight, but suddenly, with a negative head of 10 feet, the water in compartment 16 commenced to rise rapidly with all pumps going, and within about half an hour the head was reduced to 5 feet. Subsequent inspection by the divers indicated that a rupture in the tanks had opened abaft the concrete dam which had been previously laid. These new ruptures were found to be in way of the boilers; and, because the clearance between the boilers and the sides of the wing tanks was so small, divers could not actually reach them.


ROTATION OF SHIP AT ROCK
SECTION 14½ FRAME 241
SCALE-FEET
10 0 10 20 30 40 50
COLUMN ℄
PIER 88
MEAN LOW WATER 0.0
45° LIST
60° LIST
70° LIST
79° LIST
APPROX. MUD LINE
APPROX. AXIS OF INITIAL ROTATION
SOFT RIVER MUD
APPROX. ROCK ELEVATION -46 FT.

Following the failure on the morning of the 18th to dewater compartment 16, it was felt that if the vessel were righted to 20–25 degrees, it would be safe to attempt flotation by dewatering compartments adjacent to No. 16 as at that angle allowable heads would be greater. Consequently on the afternoon of the 18th, the first of 2,800 tons of water was pumped into the empty starboard wing tanks. The total 2,800 tons had been placed in the wing tanks by the morning of the 21st. This resulted in the righting of the ship to about 25 degrees. Additional water was then removed from compartments 14 and 3 and divers were busy scouring and using an air lift in the general vicinity of the hull damage. It was hoped that the new rotation would perhaps make the rupture in the hull accessible. Failing to get close enough to the rock pinnacle to actually locate the bottom damage, divers were instructed to place rag and sawdust bags near the outside ruptures with poles or any other means possible in hopes that some of them would be sucked into the ruptures and partially choke off the leakage. Simultaneously explorations of the rock ledge finally revealed that the bearing was very jagged and that further rotation would cause the bilge to roll into a sharp pinnacle, so further righting by counterflooding was abandoned.

ROTATION OF SHIP IN STIFF MATERIAL



When the hull was at 45-degrees, she was moved to the center of the slip for the final righting process. This allowed water in the port tanks to be pumped into the starboard tanks (to bring the ship to an even keel). 802

Following considerable study and search between 22 and 30 August, it was decided to again attempt to stop the leaks by filling all of the double bottoms and wing tanks in way of any of the ruptures with concrete. This involved considerable preparation, including burning and clearing out in the No. 2 fire room so that Tremie pipes could be fitted in place. Some 800 tons of concrete were poured into the tanks, as indicated in figures 114 and 115. This operation continued until the morning of 10 September, after which 48 hours were allowed for setting. Not much faith was placed in the probability of completely stopping the leakage by the use of concrete alone, but it was necessary to provide an obstruction of some sort in the bottom to prevent bags, mats, etc., which would ultimately be necessary to stop the leak, from being sucked clear through the openings.

Because of the large off-center weights and the flooded condition of the ship, it floated in equilibrium at about 26 degrees. After 16 September, work was directed toward removing the tremendous amount of timber and concrete construction from the port side of the ship, cleaning out cork and oil, ballasting the starboard wing and bottom tanks, and removing the remaining water and large quantities of mud and debris from the ship.

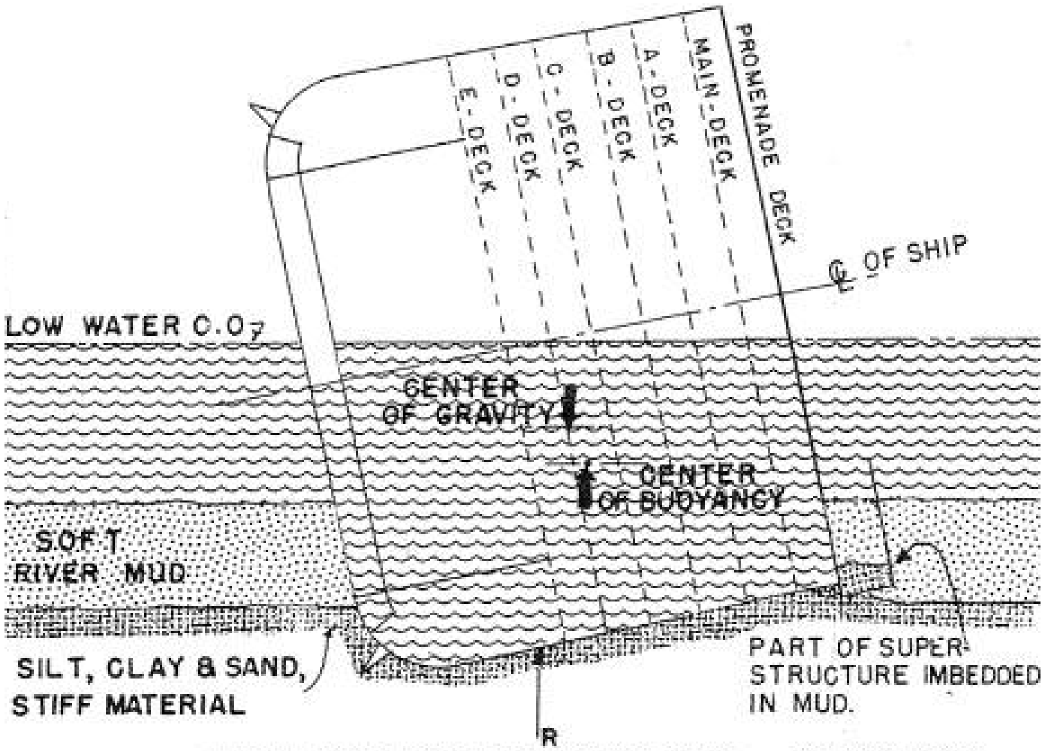
September 1943

September 15th 1943

Nearly on an even keel. Righting work continued until October 27th 1943, when the Supervisor of Salvage turned *Normandie/Lafayette* over to the commandant of the *Third Naval District*

October 27th 1943

Summary of Pumping and Righting Operation
(mid-ship section looking aft)

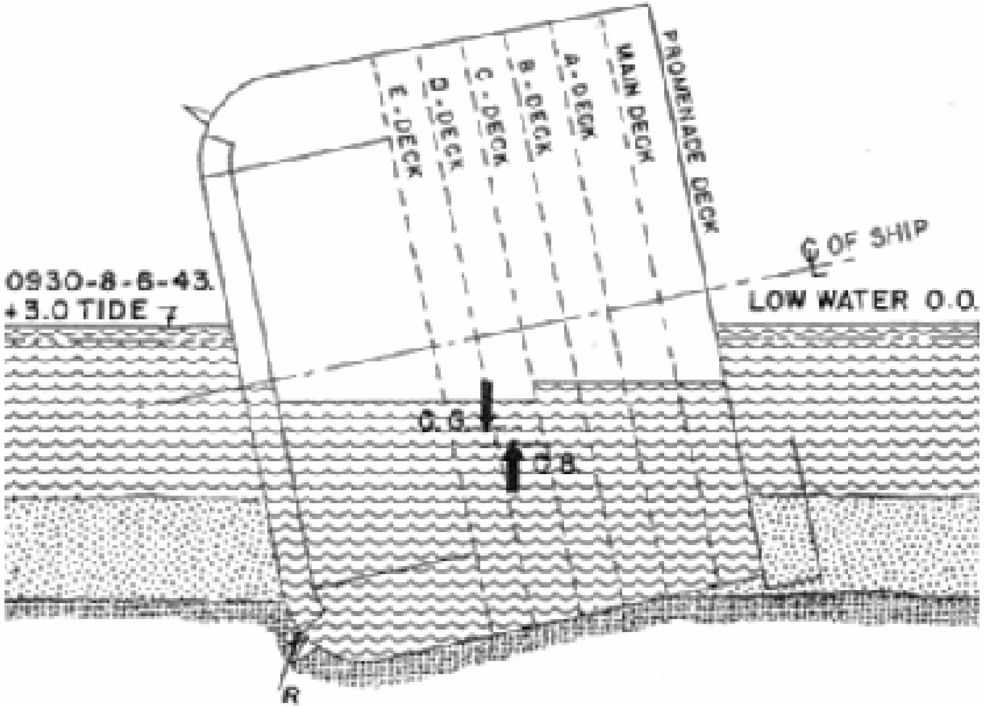


TOTAL DISPLACEMENT-CALCULATED	103,000 TONS
*TOTAL WEIGHT OF SHIP-CALCULATED	145,500 TONS
TOTAL VOL. OF WATER IN COMPARTMENTS	86,700 TONS
RESULTANT DOWNWARD PRESSURE	42,500 TONS
SOIL BEARING PRESSURE	37,600 TONS
BEARING PRESSURE AT ROCK	4,900 TONS

MIDSHIP SECTION
LOOKING AFT

79°-LIST

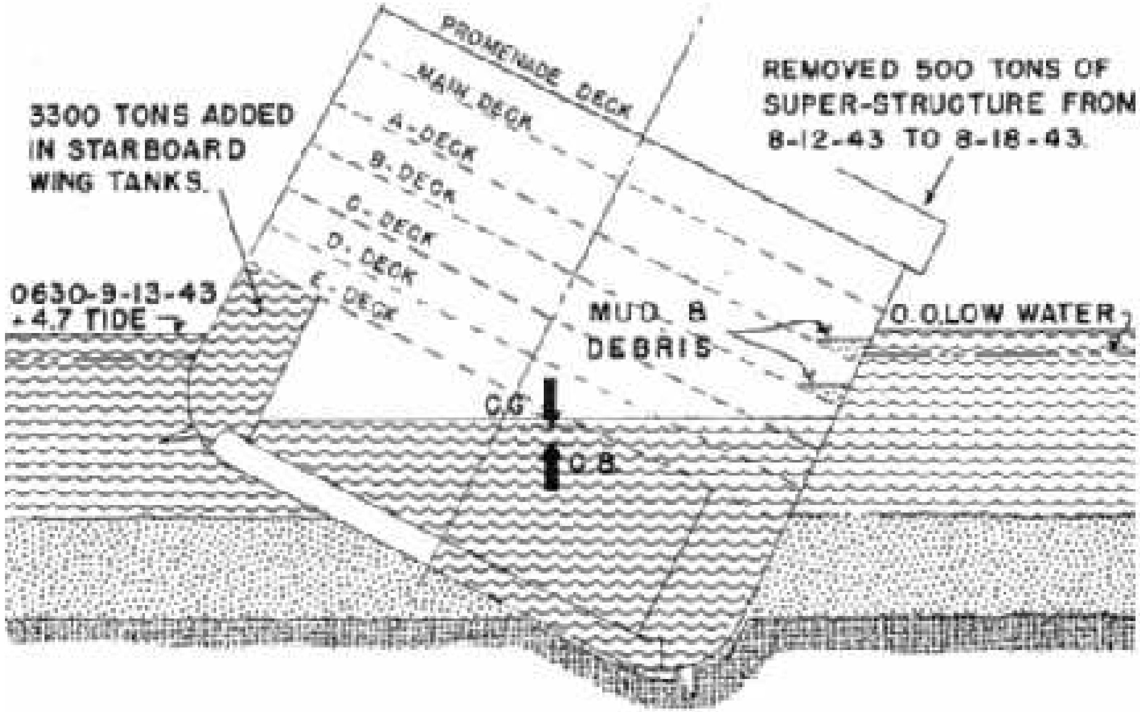
NO PUMPING



TOTAL DISPLACEMENT - CALCULATED	109,000 TONS
*TOTAL WEIGHT OF SHIP-CALCULATED	116,800 TONS
TOTAL VOL. OF WATER IN COMPARTMENTS	58,100 TONS
RESULTANT DOWNWARD PRESSURE	7,800 TONS
SOIL BEARING PRESSURE	7,800 TONS
BEARING PRESSURE AT ROCK	0 TONS
NET AMOUNT OF WATER PUMPED OUT OF SHIP	28,600 TONS

NOTE: TOTAL WEIGHT OF SHIP WEIGHT OF STEEL *
PLUS WEIGHT OF WATER IN SHIP

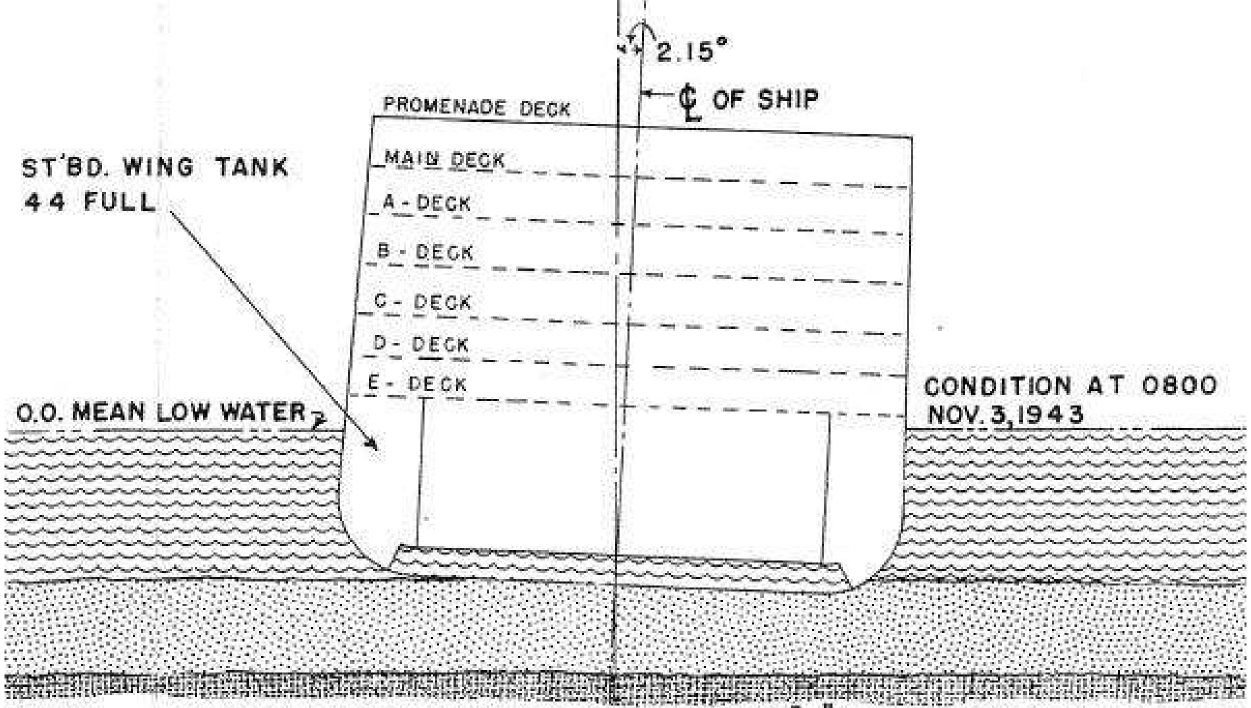
78° LIST
CONDITION THAT STARTED
SHIP ROLLING



TOTAL DISPLACEMENT-CALCULATED	97,300	TONS
*TOTAL WEIGHT OF SHIP CALCULATED	97,750	TONS
TOTAL VOL. OF WATER IN COMPARTMENTS	36,000	TONS
NET AMOUNT OF WATER PUMPED OUT OF SHIP	50,700	TONS

26° LIST AFLOAT

INITIAL FLOATING CONDITION



MEAN DRAFT	=	31'-4 3/8"	
DISPLACEMENT	=	55, 910	TONS
TONS PER FOOT	=	2,153	TONS
TONS PER INCH	=	179.4	TONS
GM_L	=	1647'	
MOMENT TO CHANGE TRIM 1'	=	7980	FT. TONS PER INCH
BM	=	31.0'	
GM	=	13.62'	- (FROM BROOKLYN NAVY YARD INCLINING EXPERIMENT)
KB	=	17.2'	
KM	=	48.2'	
DOUBLE BOTTOM TANKS FULL		7460	TONS
CONCRETE IN COMP. #16		1000	TONS
WATER IN COMP #16		400	TONS
ST'BD WING TANK #44		200	TONS
TOTAL		9,110	TONS
DISPLACEMENT		55,910	TONS
NET WEIGHT OF HULL		46,800	TONS

2.15 LIST AFLOAT
AT PIER 88 - TIME OF REMOVAL
INTO DRYDOCK

In conclusion, the following observations are noted:

(a) As the ship was pumped, the bow was not maintained light enough to keep the turn of the bilge from bearing on the rock ledge. Although in the original pumping schedule considerable emphasis was placed in keeping the bow off the rock, it eventually became impossible to keep the bow as light as was desirable due to the fact that considerable more water had to be pumped out of the ship before it rotated than was originally calculated. All of the forward compartments were dewatered as much as was practicable long before this rotation started.

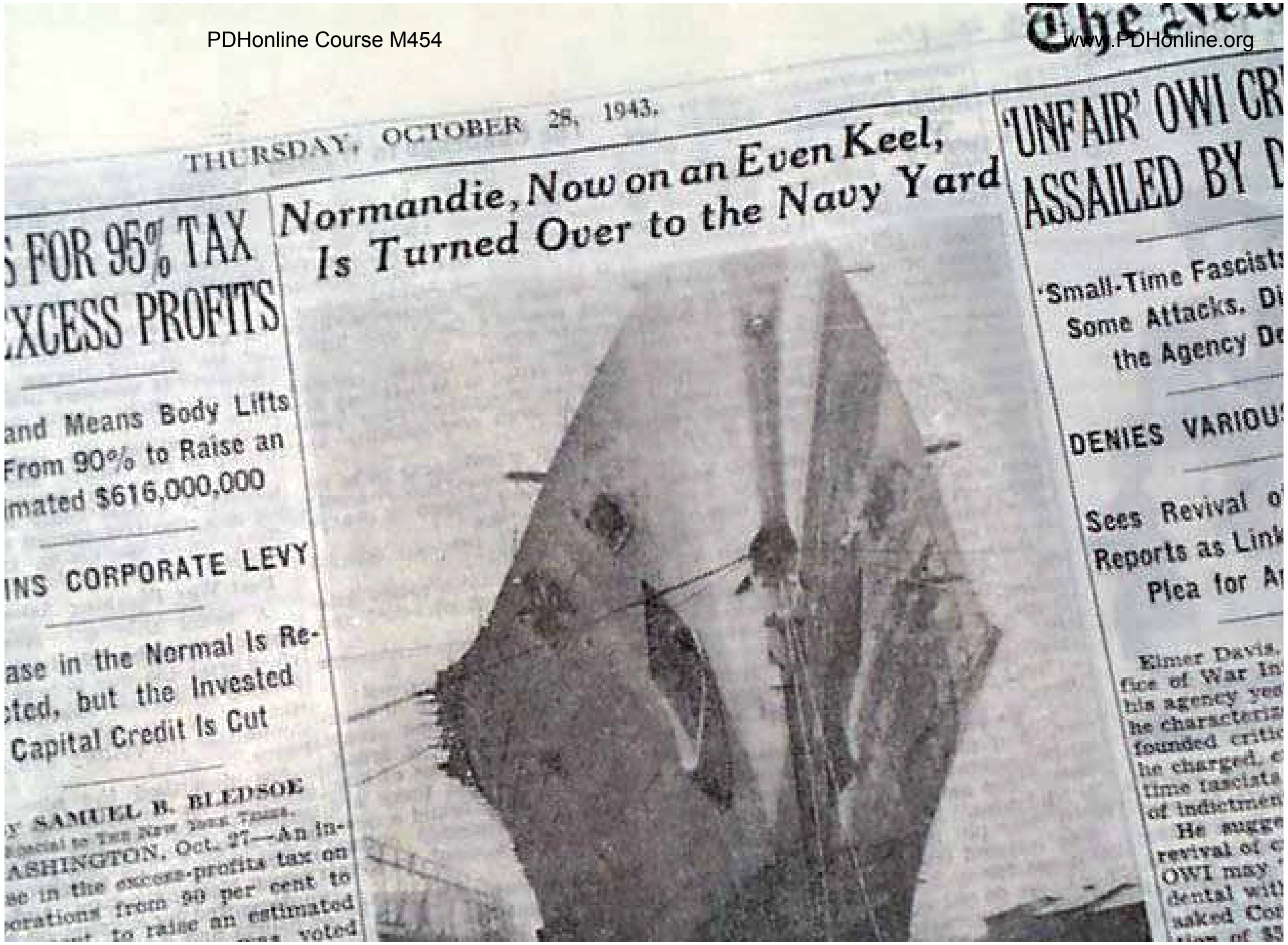
(b) Had there been enough shoring to carry any compartment (including compartment 16) in the event of uncontrolled leakage, the extensive damage would probably not have been sustained because the vessel could have been floated off the rock without the several weeks' work in attempting to plug the leak in that compartment.

(c) There was no evidence of mud suction retarding the ship's rotational movement. There was, however, considerable resistance to movement caused by the viscosity of the mud through which the uncut superstructure had to plow.

(d) Once the unknown conditions were more or less determined and complete control of the vessel had been obtained, dewatering should have been deliberate and quite fast without awaiting the rise and fall of tide to move the ship.

(e) Inasmuch as there were no lives lost and serious accidents were remarkably few during the entire job, a great deal of credit is due the Salvage Officer for this remarkable record.

(f) The cost of salvage, $4,750,000, was slightly under the estimate made in the beginning as was the 16 months' time required to complete the job after the order to salvage was received.


THURSDAY, OCTOBER 28, 1943.

...S FOR 95% TAX ...XCESS PROFITS

...and Means Body Lifts From 90% to Raise an ...imated $616,000,000

...INS CORPORATE LEVY

...ase in the Normal Is Re-...ted, but the Invested Capital Credit Is Cut

Normandie, Now on an Even Keel, Is Turned Over to the Navy Yard

'UNFAIR' OWI CR... ASSAILED BY D...

'Small-Time Fascists' Some Attacks, Di... the Agency De...

DENIES VARIOUS

Sees Revival o... Reports as Link... Plea for A...

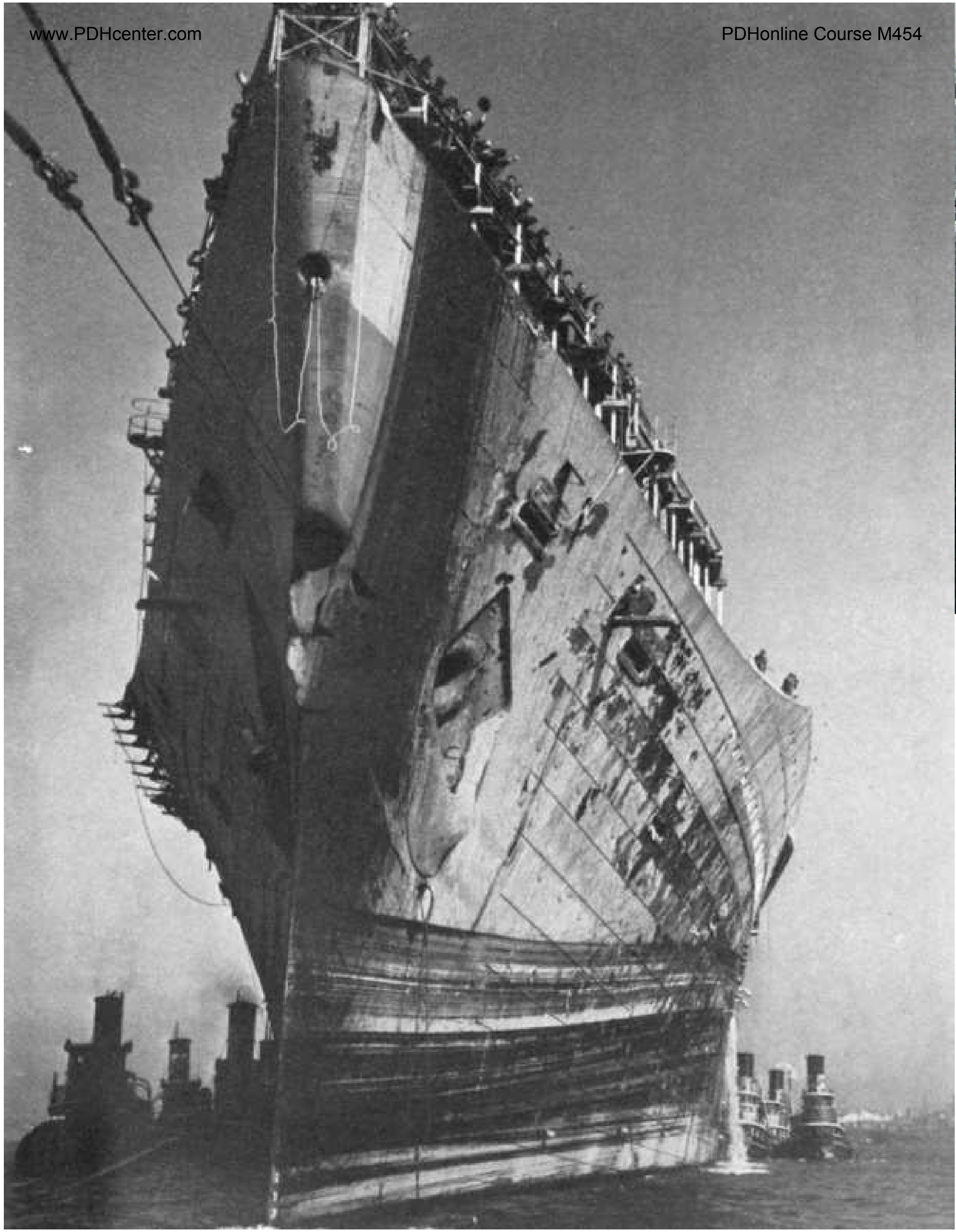
On October 27th 1943 (*Navy Day*), *Captain H.V. McKittrick* of the *Brooklyn Navy Yard* took possession of *Normandie/Lafayette*. Twenty months and eighteen days had passed and though her superstructure was gone, badly fire scarred and stained by oil, her redemption was now at hand, or so it seemed.

A Lady Fights Back

Produced in 1944 as part of film-maker John Nesbitt's *Passing Parade* series (left), the career of the liner *Normandie*, her subsequent conversion to troopship, fire and heroic salvage are documented in the short film entitled: *A Lady Fights Back.* The closing shot shows her being towed away suggesting future service in the war effort. Above, *Andre Armengaud -* technical advisor of the *French Ministry of Production,* speaks to the audience at a preview of the film shown at the *United Nations Club.*

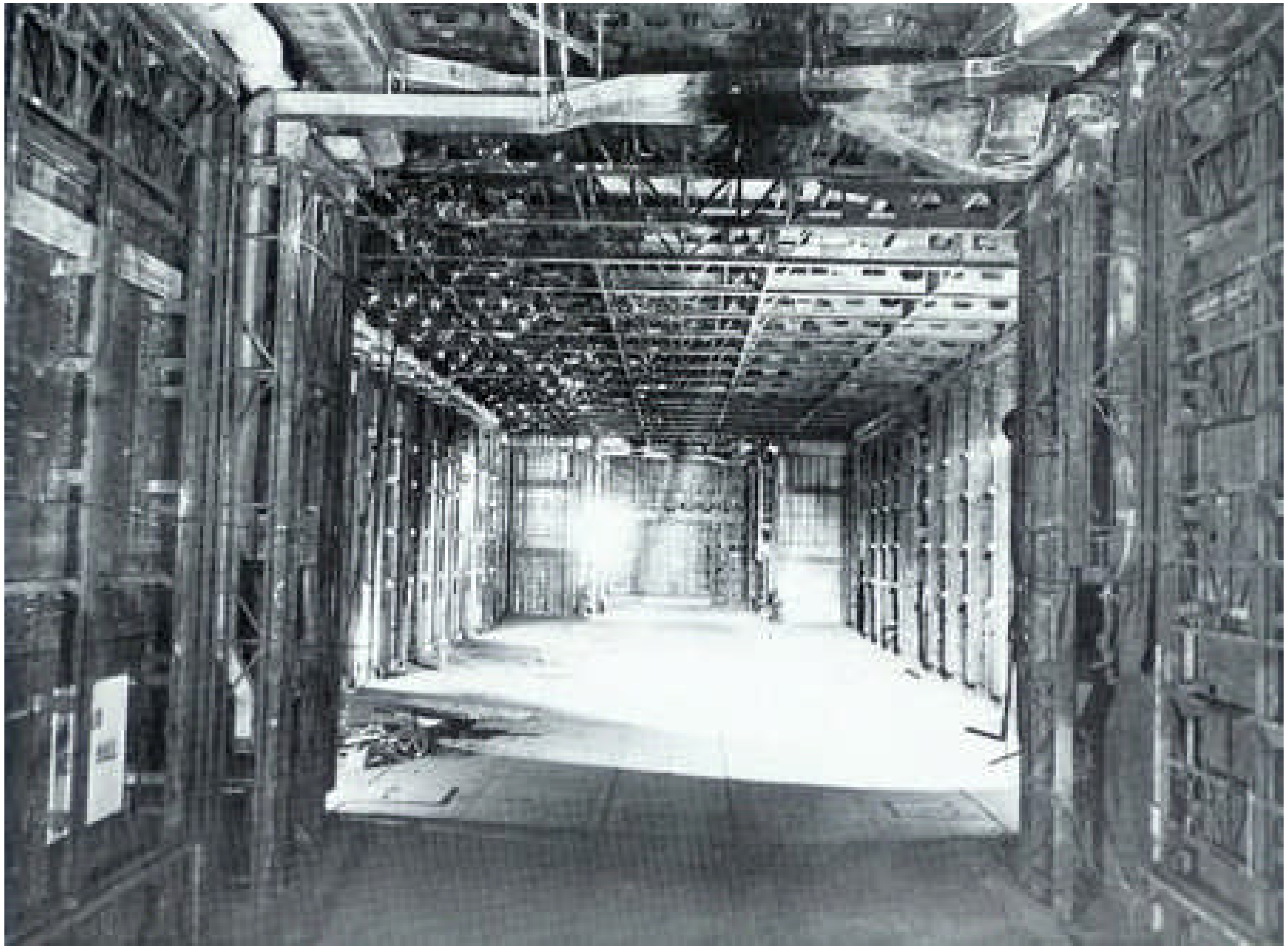
Last Voyage

On November 3rd 1943, *Normandie/Lafayette* was towed from Pier 88 to a dry dock in the *Navy Yard Annex* (east of Bayonne, New Jersey). There, some startling discoveries were made. The hull damage was extensive – greater than expected, and her engines were ruined. It was estimated that a refit would cost $50 million and take eighteen months. The cost/s in time, money and diversion of manpower, equipment and material to refit her was deemed unacceptable by the Navy.

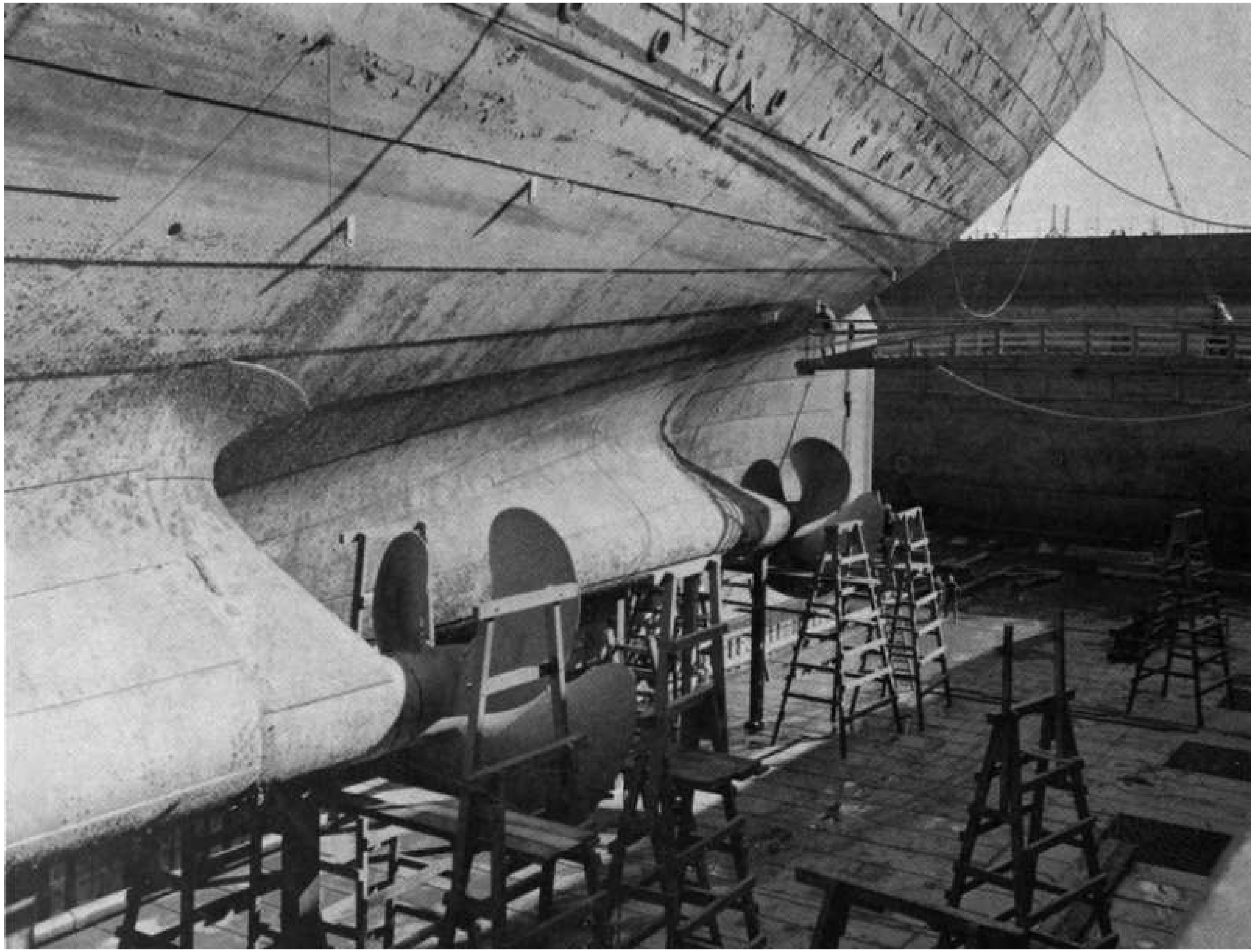


Heading to Dry Dock

Engine Room



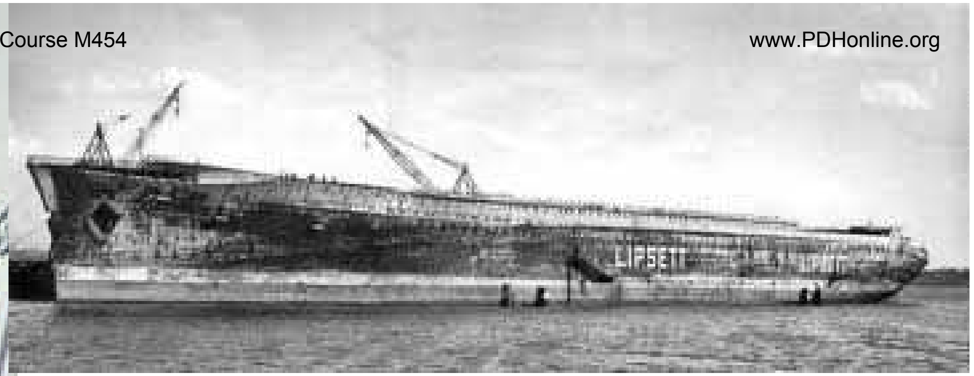
Entering Dry Dock



Sold for Scrap

Studies were made in the ensuing months on what could be done with the rusting hulk of *Normandie/Lafayette*. With the war winding down, she became a burden to the Navy/government and as such she was declared "surplus property." Vladimir Yourkevitch made a proposal to cut the ship down and convert her into a mid-size liner, but there was no interest in his idea. Her original owners – CGT and the French government, had no interest in buying her and insisted they be reimbursed in the amount of $13.5 million for the loss of their ship. Until the end of WWII, she remained in the custody of the U.S. Navy. By Executive Order, President Truman authorized her disposal on September 8th 1945.


NORMANDIE



With the war over, in September 1946 Normandie/Lafayette was officially put up for sale by the U.S. government. On October 6th 1945, a New York salvage firm: *Lipsett,* won the bid at $161,680. Beginning in October 1946, she was cut-up for scrap in *Port Newark, New Jersey*. By December 31st 1948, the ship of dreams was only a memory.

La Fin de la Normandie

The last piece of *Normandie*

NAVY DEPARTMENT
BUREAU OF SHIPS
WASHINGTON 25, D. C.

31 October 1946.

The Bureau considers that the successful culmination of this outstanding salvage job was due to the fine spirit and cooperation of those who, under the supervision of the Supervisor of Salvage, so ably assisted in the refloating of the vessel. Credit is especially due to the consulting engineer and the salvage master of the Merritt-Chapman & Scott Corporation for their work, and to the many Navy and civilian divers, mechanics and others who labored under trying and hazardous conditions. An outstanding result of this work was that it produced scores of highly skilled salvage officers and divers who later played an important part in the salvage and emergency repair of vessels damaged during World War II.

E. L. COCHRANE,
Vice Admiral, U. S. N.,
Chief of Bureau.

Part 10

Legacy

Art-Deco Icon

In the mid-1930s, *The French Line* (CGT) commissioned typeface designer and poster artist *Adolphe Jean-Marie Mouron* (a.k.a. *Cassandre*) to design a series of posters (for publicity purposes) for their new flagship liner *Normandie*. Like the ship's designer, he was a Russian (Ukraine) born emigrant to France (his parents were French). He designed many art-deco inspired posters for the *Normandie*, but most famous of all is the one shown at left. It became an art-deco icon with originals selling in high-end auctions for large sums.

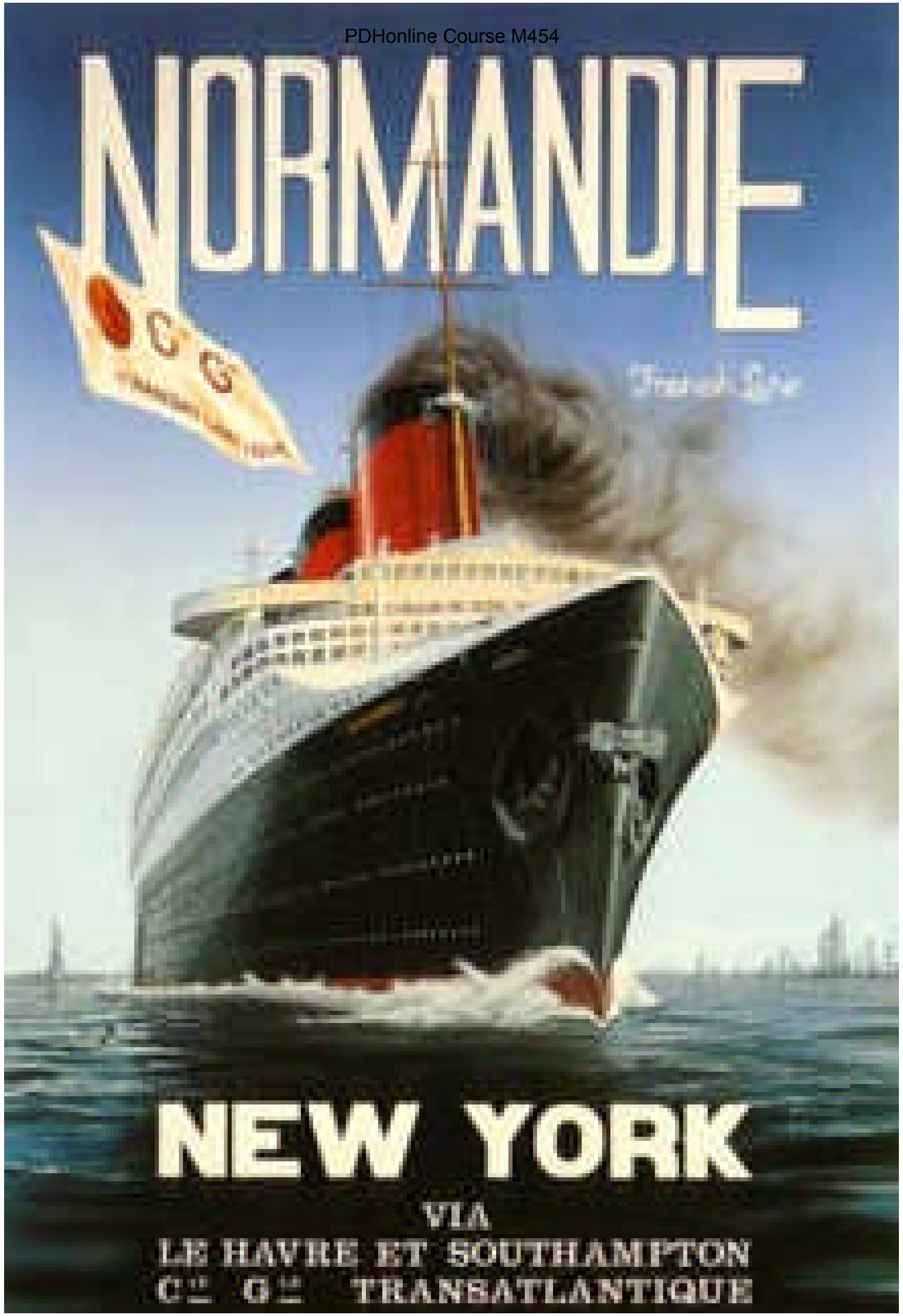

FRENCH
LINE
NORMANDIE
LE HAVRE-NEW-YORK


FRENCH LINE
FRENCH LINE
Revillon
Pour l'homme des grandes traversées

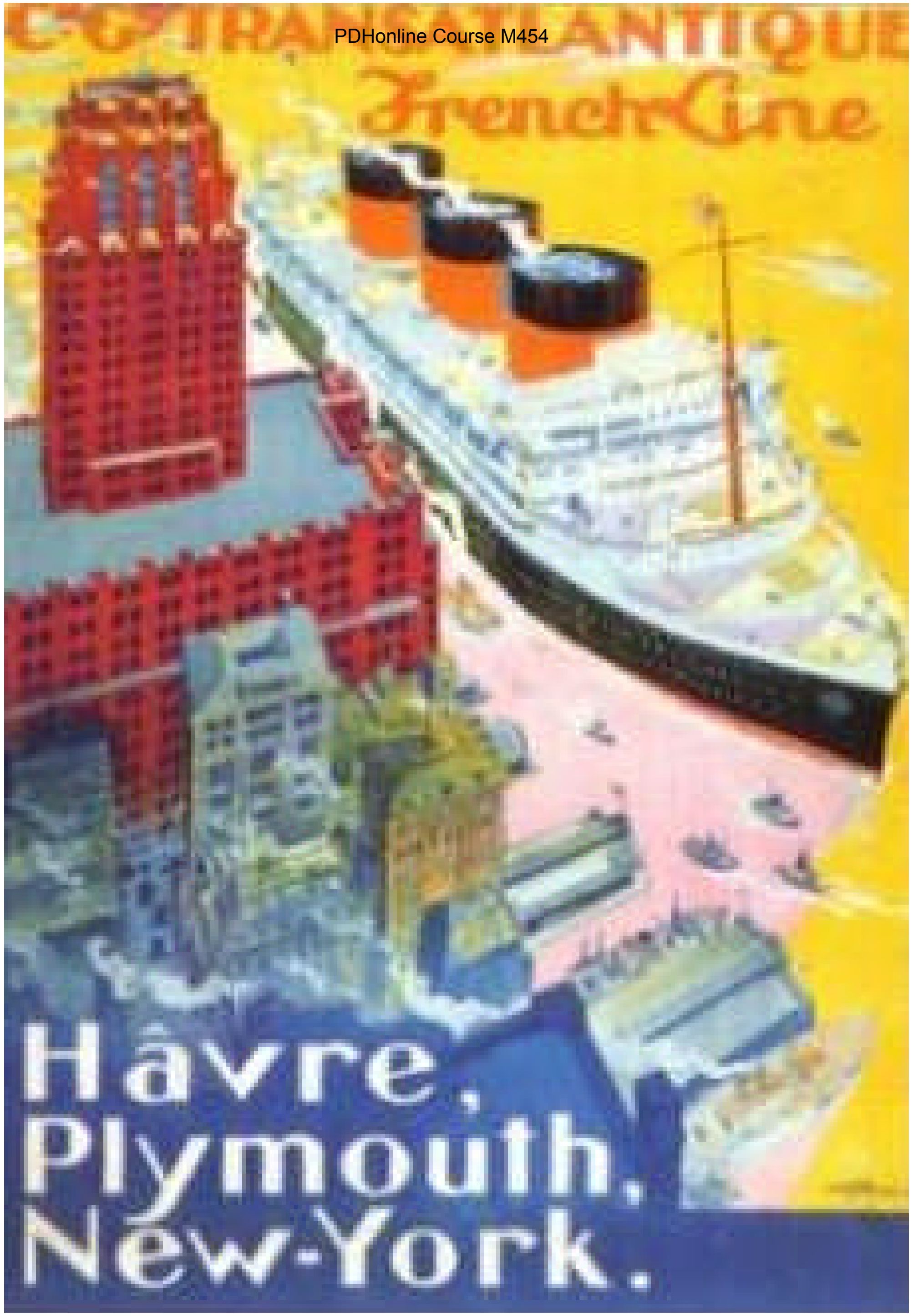

Cie Gle TRANSATLANTIQUE
French Line
NORMANDIE


Cie Gle TRANSATLANTIQUE
COUPE LONGITUDINALE
DU PAQUEBOT
NORMANDIE

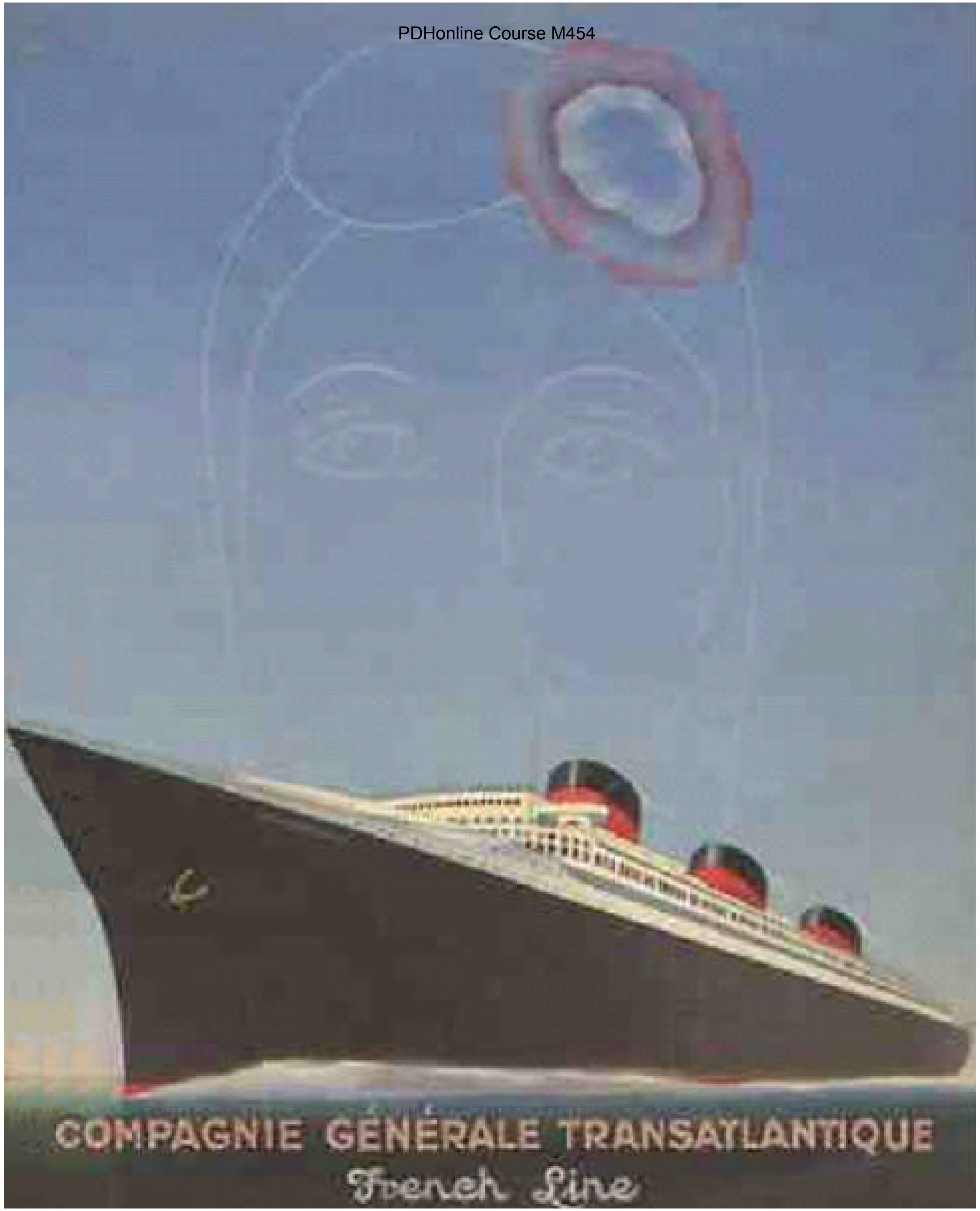

"NORMANDIE"
THE WORLD'S MOST PERFECT SHIP
French Line
INQUIRE WITHIN


NORMANDIE
CGT
French Line
NEW YORK
VIA
LE HAVRE ET SOUTHAMPTON
C^ie G^le TRANSATLANTIQUE


French Line C.G.T.
SOUTHAMPTON TO NEW YORK
EXPRESS LUXURY SERVICE
"ILE DE FRANCE" "NORMANDIE"


French Line
Hâvre,
Plymouth.
New-York.

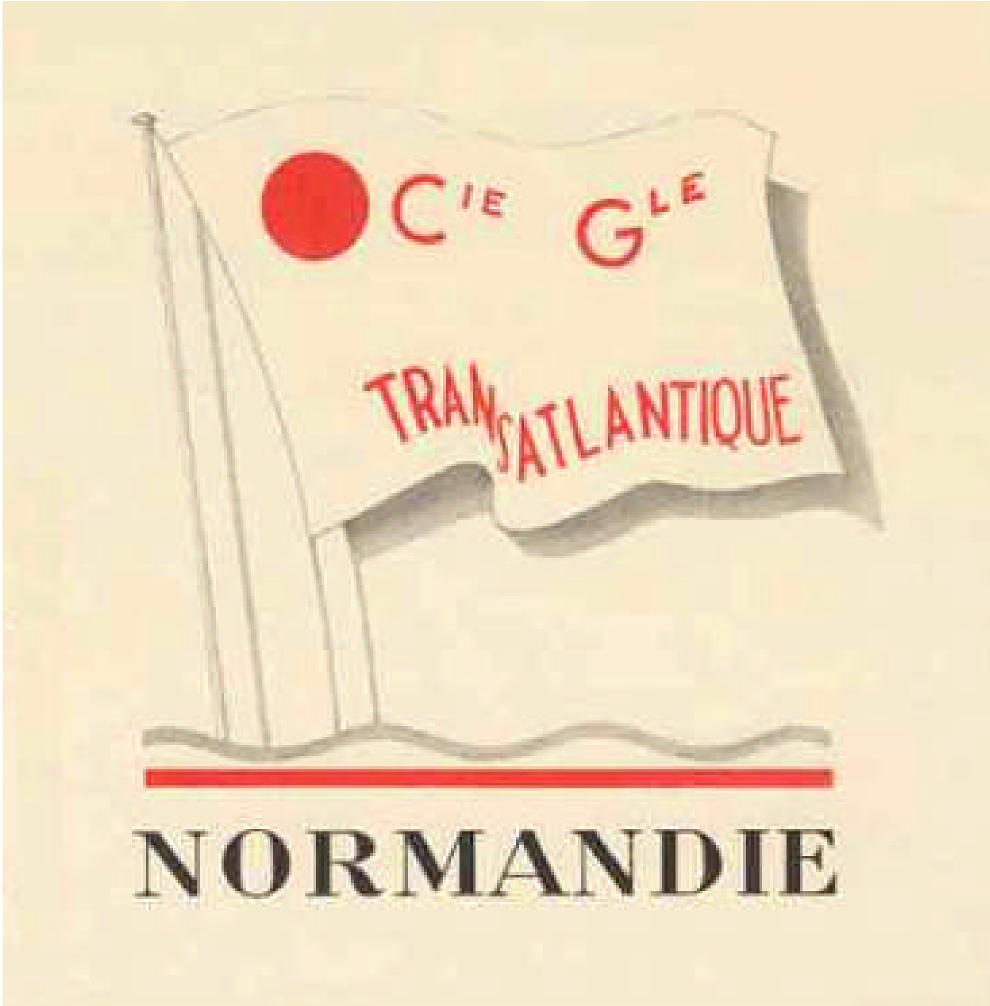

French Line C.G.T.
AN EXPRESS LUXURY SERVICE
FRANCE-ENGLAND-U.S.A.


COMPAGNIE GÉNÉRALE TRANSATLANTIQUE
French Line

"The arrival in New York Harbor of the gigantic super-liner Normandie will inaugurate a new era of transatlantic travel. She will set new standards of luxury and speed, steadiness comfort and safety...not merely the largest liner afloat (79,280 tons)...but in almost every respect a new kind of liner!"

CGT Advertisement


Cie Gle TRANSATLANTIQUE · FRENCH LINE
"NORMANDIE" LE HAVRE · SOUTHAMPTON · NEW YORK


Cie Gle
TRANSATLANTIQUE
NORMANDIE


LE HAVRE NEW YORK
PAR
NORMANDIE
COMPAGNIE GENERALE TRANSATLANTIQUE


RF
NORMANDIE
1f50
POSTES


Le Rire

Advertising


French Line

Crane's Fine Papers


Take a Tip from the Flagship
G&W
Good Whiskey


WORLD'S BIGGEST OCEAN LINER
USES WORLD'S FINEST OIL
Mobiloil


AU CŒUR
DU PAQUEBOT
NORMANDIE
Mobiloil


CHOOSE Carrier
WITH CONFIDENCE


OGDEN'S CIGARETTES
S.S. "NORMANDIE"—GRAND SALON


OGDEN'S CIGARETTES
S.S. "NORMANDIE"—THE BRIDGE

Postcards


HAVRE


NORMANDIE


S.S. 'Normandie'

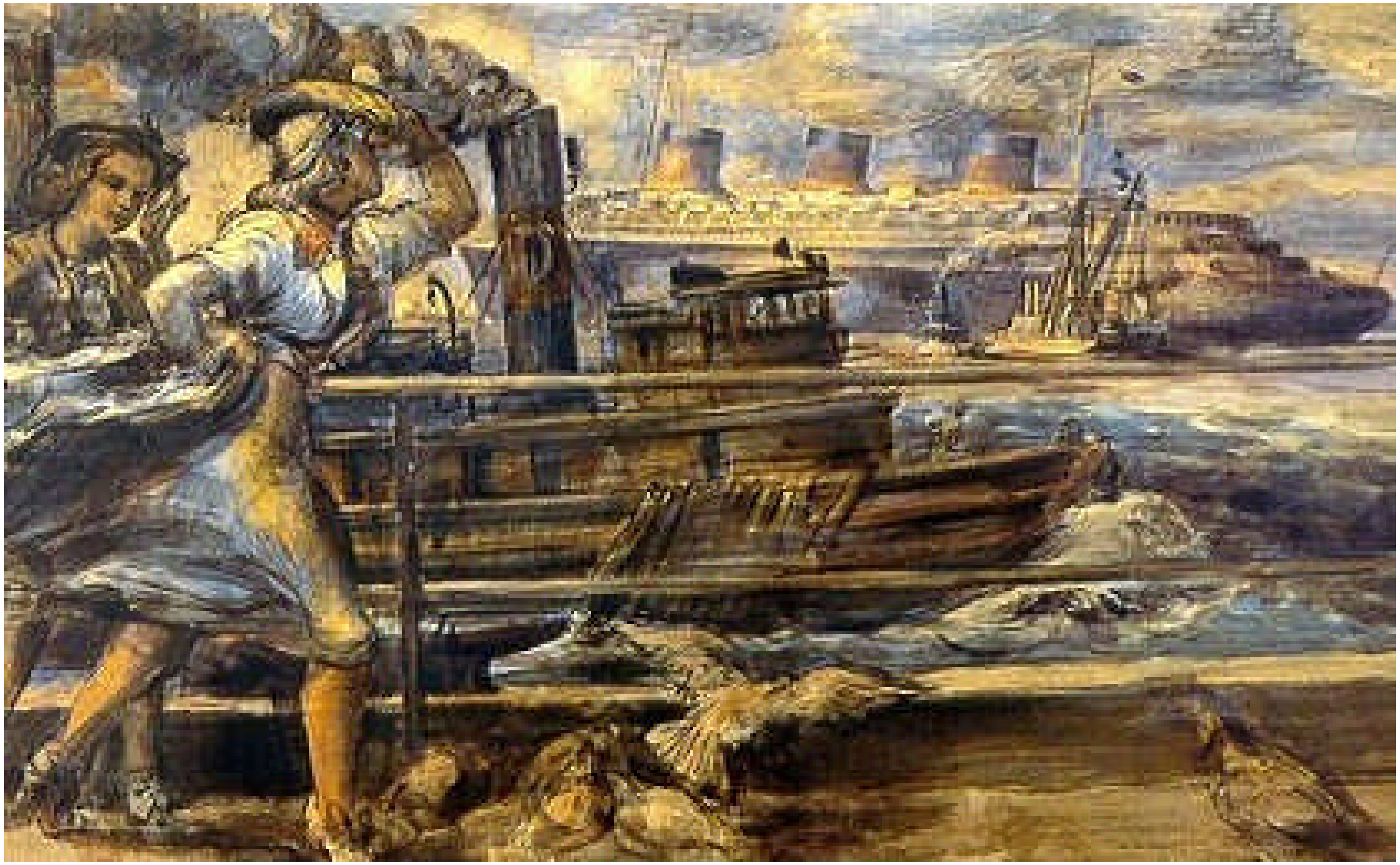

COMPAGNIE GÉNÉRALE TRANSATLANTIQUE
NORMANDIE
BLOC FRÈRES ÉDITEURS BORDEAUX
12 CARTES PHOTO
LES EDITIONS TITO

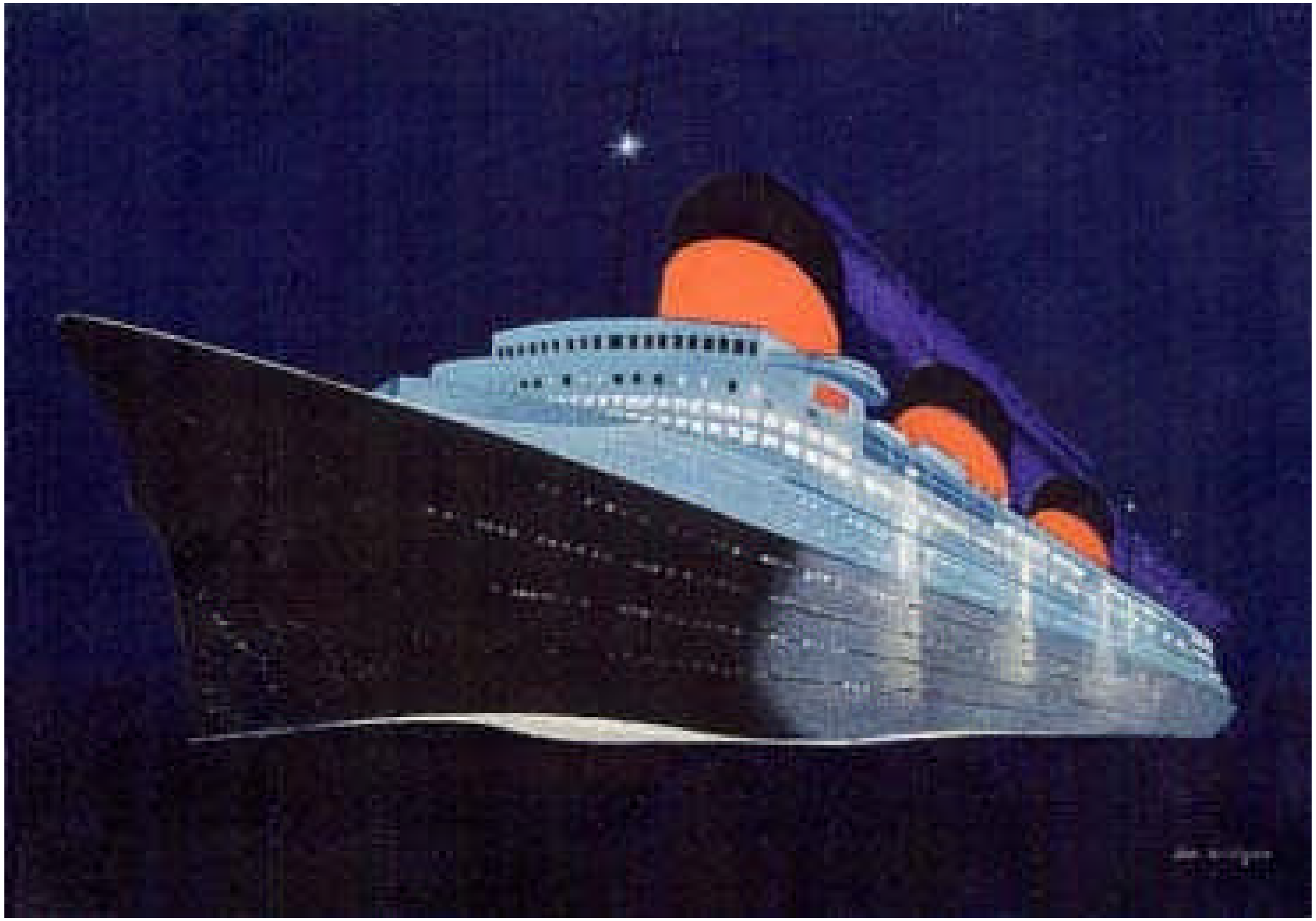

COMPAGNIE GÉNÉRALE TRANSATLANTIQUE
SOUVENIR DU PAQUEBOT
NORMANDIE
NORMANDIE
BLOG FRÈRES EDITEURS BORDEAUX
20 PHOTOGRAPHIES
LES EDITIONS TITO

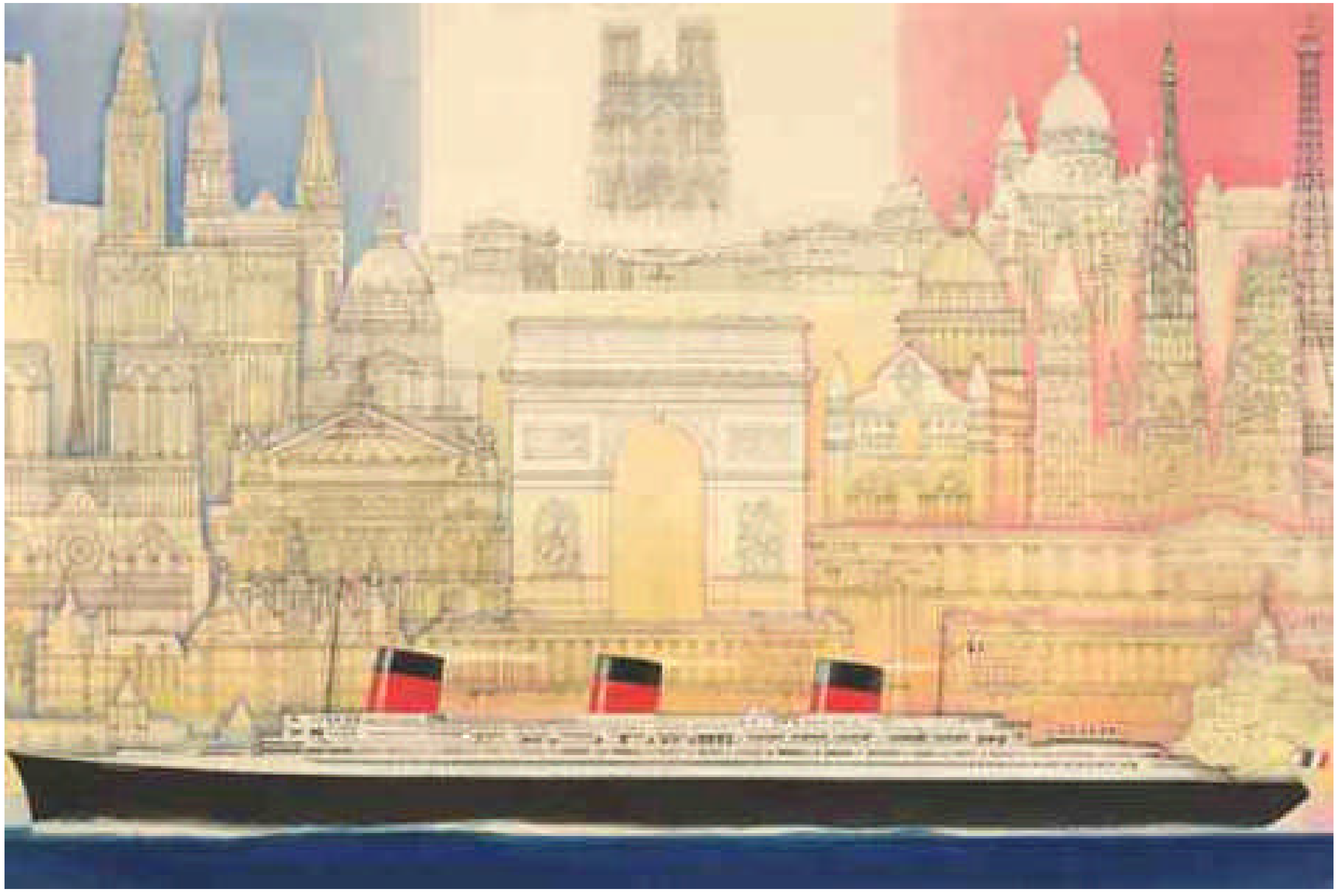

NORMANDIE


Le Paquebot NORMANDIE

Art







Culture

A young girl poses for a picture in front of a photographic image of the liner *Normandie*

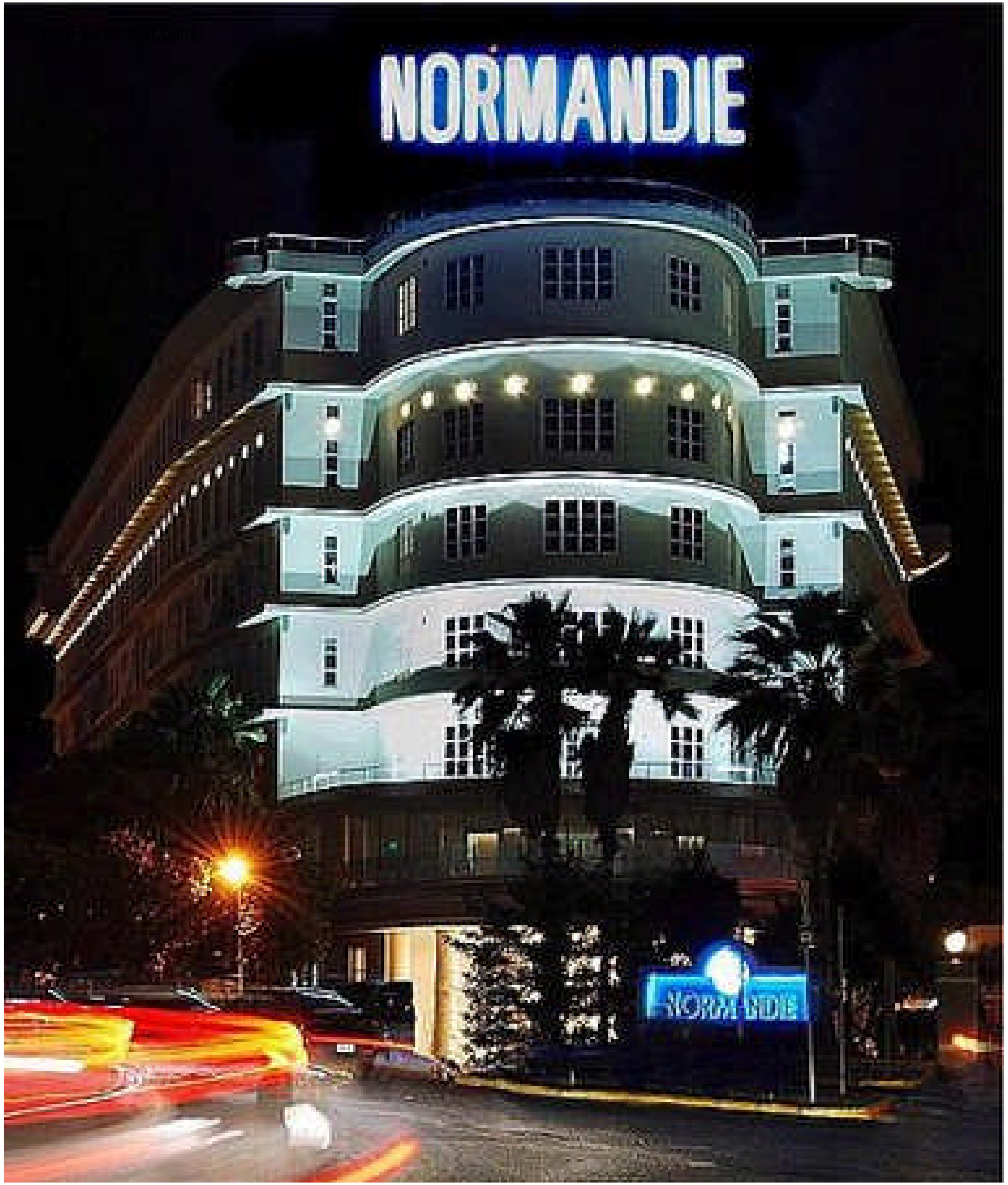
Normandie Artifacts

Artwork, artifacts, relics etc. that survive are highly sought after as art-deco/ocean liner treasures. *Normandie* is considered the greatest liner that was ever built and/or ever will be built, thus her treasures are highly prized. Statues, wall panels, Lalique torchieres/crystal, furniture, silverware, ashtrays; there's a ready market for anything associated with the great ship. After WWII ended, a German liner: *S.S. Europa*, was seized by the United States and given to France as reimbursement/replacement for the lost liner *Normandie*. She was renamed *Liberte* and received much of the furnishings that had been recovered from *Normandie* during her conversion to troopship.


Cie Gle TRANSATLANTIQUE
"LIBERTE"


LIBERTE


"NORMANDIE"
HAVRE



Normandie Hotel

San Juan, Puerto Rico

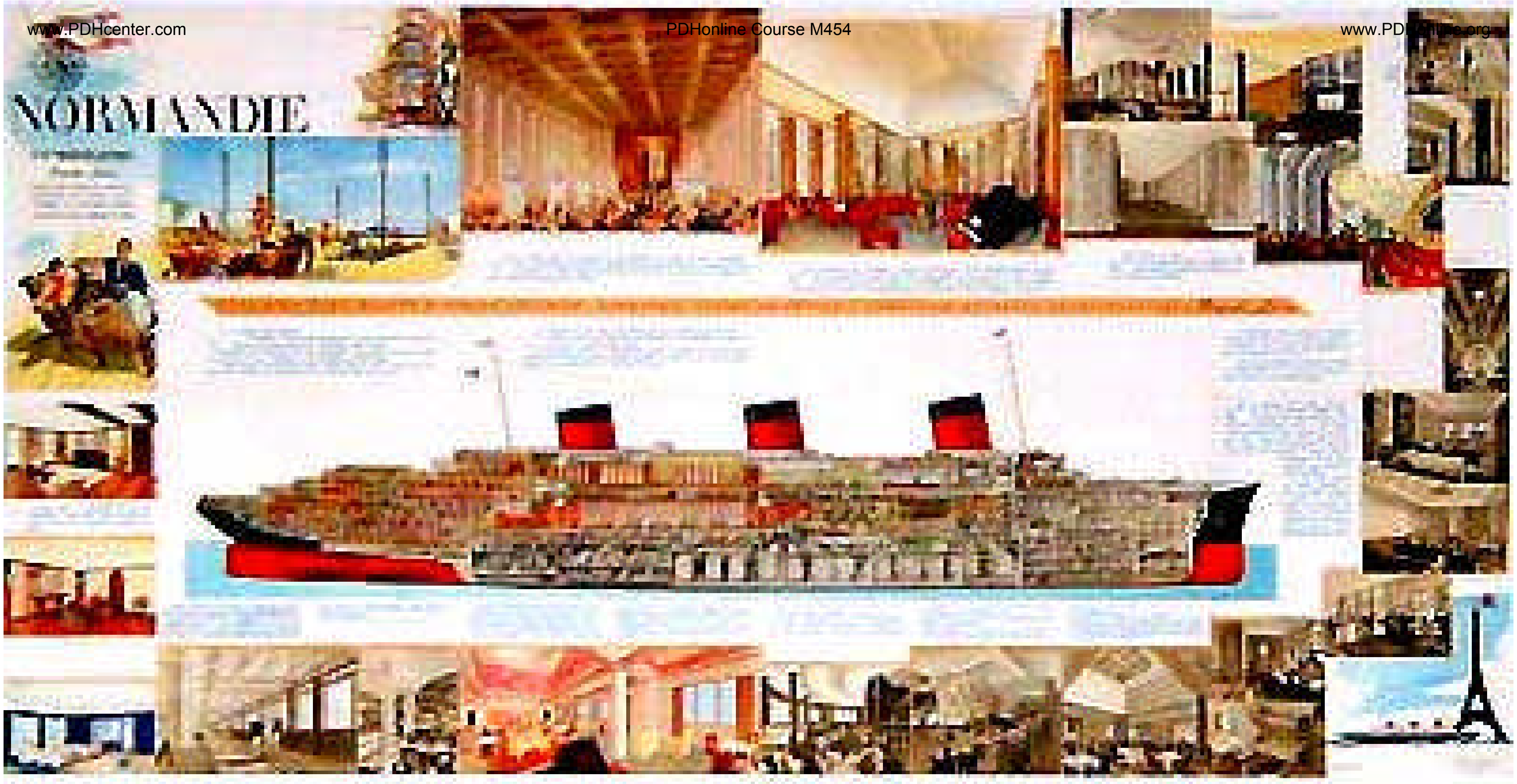
Designed by architect *Raul Reichard* in the *Streamline Moderne* art-deco style, it opened in October 1942. The hotel's exterior was designed to resemble an ocean liner; elongated and curved in front with portal-shape windows and lights. *Felix Benitez* – a prominent Puerto Rican engineer, had met his French wife on the liner *S.S. Normandie* and he wanted to pay the great ship (and her) a fitting tribute, thus he conceived the *Normandie Hotel*. The illuminated rooftop sign is one (of two) that were removed from *Normandie* during her retrofit.


Normandie Restaurant

GTS Celebrity Summit (2001)

In 2001, the *Celebrity* cruise line purchased from the *Fountainbleu Hotel* in Miami Beach, Florida the statue *La Normandie* that once stood atop the Grand Stairway (left) leading to/from the *Normandie's* Grand Salon. Like *Normandie*, the ship was built by the *Chantiers de l'Atlantique* shipyard in St. Nazaire, France. The eight-foot high, 1K-pound statue was discovered in a New Jersey scrapyard in 1954 and sold to the new (at the time) Fountainbleu where it was first displayed near the pool (in the *Parterre Gardens*) and then indoors, near the spa.


Original wall panels from *Normandie's* First Class Smoking Room (above) also adorn the walls of the Celebrity Summit's *Normandie Restaurant*



This cutaway diagram (longitudinal section) by *Albert Sébille* (fifteen-feet long) detailed the interior layout of *Normandie* and is displayed in the *Musée National de la Marine* (Maritime Museum) in Paris, France.

"…So, ships there are , but not transatlantic liners. Those are long gone, all of them. And once something has been gone long enough, we tend to romanticize it. Even those of us who never really knew or experienced the thing delight in its memory. We're entranced by every detail…We simply cannot get enough. And this is as it should be, for without this impulse, our past would slip through our fingers."

Harvey Ardman, **Author**


C^IE G^LE
TRANSATLANTIQUE


"NORMANDIE" 79280 Tx
Cie Gle TRANSATLANTIQUE
French Line
LE HAVRE·NEW·YORK
1935


"NORMANDIE"
Jean Vernon