

Launching Of Ships Are Always Accompanied By Tense Moments

These Events Listed As Among The Most Spectacular Occurrences

Ship construction can well be divided into three stages. The first takes place on paper—the highly technical designing period, requiring the ultimate in human experience and in mathematical calculations of every type of stress and strain known to the laws of mechanics. These elements must all be known with relation to their effect upon the size and type and power of the ship. They must all be compensated for, and brought to a point of perfect balance.

It must always be remembered that a ship is a detached body, subject to unbelievable buffeting and sudden shock upon any part of its structure. It has no fixed foundation from which to derive solid support, or strength of resistance. The automobile, and the railroad train contacts the ground or a fixed solid substance upon which to move. The skyscraper building and the bridge are so firmly fixed to and in the earth that they are almost a part of it. Only the airplane approaches the ship of the sea in its problems of design because they both

have to combat the element in which they function with forces and resistances self-contained.

The second stage is that of the actual building of the ship's structure, and is the assembling of the many parts, fabricated to the plans furnished by the designers, into one complete unit. This is not so very different from any other construction project requiring skilled labor and constant inspection, and does not present the element of human risk which follows in the wake of skyscraper or suspension bridge building. This construction stage extends to, and continues after the launching of the ship.

The third stage is perhaps the most wonderful of all; it is certainly the most spectacular, requiring as it does a combination of both the most careful calculations, and skilled construction and execution. This is the act of the transferring of thousands of tons of dead weight, from the foundation upon which it has been built, to the element in and upon which it has been created to fulfill its destiny. This third stage is the launching period, actually accomplished in a few seconds of time, but which has been envisioned, planned for, and worried about since before the first keel plate was placed in position. The engineer's line, and the placing of the keel blocks to this line were the first steps in the construction part of the launching. If this transfer of the hull does not succeed down to the very last minute detail, all the design and construction work could be wasted. A stoppage of the sliding ways, a failure of a part of the ways or cradle to carry their burden, might result in injury to the ship running into hundreds of thousands of dollars, or even the almost total loss of the entire vessel.

As has been said before, ships are usually launched stern first, although some foreign yards and perhaps occasionally here, launch bow first. Stern launching is considered the safest as the enormous weight of the stern casting and the rudder, tail shafting and propellers are quickly water borne in place of being carried throughout the length of the ways, and exerting the terrific downward crushing force produced by the lifting of the ship's length from the angle of slide to the horizontal of surface water support. For the space of a second or so the leverage of several hundred feet of ship is extended in just one spot, that of the cradle at the bow and the part of the ground ways beneath it. Speed of passage alone saves them from being crushed as it is. The third method of launching is broadside. This is only used when the body of water upon which the ship must be launched is so narrow that she would run into the opposite shore before she could be stopped. Those who read the accounts of the launching of the Queen Mary will remember how she was snubbed by drags and anchors in order to turn her away from the shore the moment she was clear of the ways.

As soon as possible after bottom construction of the hull is finished the ground ways are placed in position. These consist of heavy timbers bolted together and resemble a massive wooden railroad track, rabbeted on the upper face, with the flange on the out board edge. They extend the full length of the ship, a track on each side of the center keel blocks at a distance apart governed by the beam of the ship and the shape of the bottom. At the stern they extend into the water to a distance of about the depth the bow will require to become water-borne. Upon the surface of the ground ways, which remain stationary, rests the sliding ways their edges inside of the flange of the ground ways; thus being held

Spring Sign—Mack Goes South



Connie Mack with Mrs. Mack and grandson

Perennial harbinger of spring is the trip south for Connie Mack, manager of the Philadelphia Athletics. The veteran baseballer is pictured shortly before leaving Philadelphia, holding his grandson, Frank Cunningham, III. Mrs. Mack is with him.

in line on the track during their passage with the ship. In some yards these ground ways are built concave while the sliding ways are convex on the bottom, thus fitting into the groove of the former.

The ship herself is now resting with her keel upon the keel blocks, and is supported on the bottom and sides by a forest of timber props. The actual launching preparations start with hauling of the sections of the sliding ways into position upon the ground ways—when the sections are but strapped together. Next at bow and stern "cradles" are built upon the sliding ways to support the ends of the ship. When these ends are "fine," that is, sharp and narrow over some distance from the bow and stern, these cradles are very large structures, built of wooden baulks, their upper edges fitting the contour of the hull, but in no way attached to it. These cradles are made to withstand an enormous load, especially the ones at the bow, for if they should disintegrate when almost the entire weight of the ship is supported by them at the last second or so of the launch the ship's bow would fall to the ground and the "grief" around the yard would be something to tell one's grandchildren about. Those of us who know our townsman Homer Ferguson, president of the Newport News Shipbuilding and Dry Dock Co., can imagine what he would say and how he would say it. There wouldn't be a ship's carpenter left about the banks of the "Jim River."

The next step in getting ready for the launch is to transfer the weight of the ship from the keel blocks to the launching ways. A small space has been left between the cradle and the launching ways for the insertion of wooden wedges. Similar packing has been left between the packing and ways at points along the ship's bottom. Just before launching day the cradle and sliding ways are shored up and the bottom of the sliding or launching ways, and the tops of the ground ways, are given a coat of a mixture of tallow, oil, and soft soap.

When the "Mauretania" was launched the ways were coated with 32,536 pounds of tallow, 113 gallons of train oil, and 3,464 pounds of soft soap. This carried her 16,800 tons smoothly into the water. Here is where the weatherman comes into the picture once more. For either the entire success or failure of the launch depends upon knowing to a safe margin just what the temperature will be at the time of the actual launch. For if the mixture of tallow, oil and soap is made thick enough to be serviceable at 50 degrees, and it suddenly got to 80 or a 100, the mixture will become so thin it will let the sliding ways squeeze it out. If it turns cold the mixture becomes too thick and will bind. Either of these conditions will postpone a launch, for if attempted it would result in a "hang fire," and much effort and expense would be necessary before the ship would reach the water.

After the ways are dressed, they are brought into contact again with the grease between. The launching ways are secured at the bow to the ground ways by heavy chains. The ship is released by sawing through these chained timbers outside, or next to the ship, from the chain binding. The more modern way, especially with the launching of large ships, is to hold the two sets of ways together with massive steel triggers forced into slots in the launching ways, and held there under enormous hydraulic pressure, ready to be released at the moment of launch. Heavy timbers are wedged against the after ends of the launching ways,

and remain there until the last moment. Usually a short length of greased ways is placed on the ground between the other ground ways at the waters edge to support the ship's fore foot when she tips the bow down with the lifting of the stern by the water.

At the bow a launching stand is built for the occupancy of the sponsor and her escort of officials of the line or of the navy, and the big bosses of the yard. This stand is flag draped and the ship is strung with signal flags and house flags of the line to which she belongs. The ship yard band turns out in uniform to entertain the guests during the final preliminaries. Just before high tide the order is quietly passed to "wedge up."

Gangs of men armed with battering rams or heavy sledges are stationed at the wedges and for several minutes at the sound of the blows they deliver is heard from one end of the ship to other. As soon as the hull is lifted from the keel blocks they are removed. Next, the shores and spurs which have supported the ship during the building are knocked out. The shores against the outboard end of the sliding ways are now removed, and the ship resting in the cradles, which in turn are supported by the chained ends of the sliding way timber, or the triggers underneath. At the ends of the sliding ways under the bows hydraulic rams have been placed to give the ways a kick if it is necessary to thus start her. But so accurately has everything been calculated that it is very seldom these rams are needed. They are just put there in case—

Over the bow has been hung a ribbon bedecked bottle of wine, or water, encased in a net to prevent flying glass. The sponsor, a lady selected by the owners or the Navy Department, always carrying a huge bunch of roses, takes her place under the overhanging bow with the suspended bottle of wine in her hand. All is quiet under and around the ship while the inspectors make a final check to see that all is clear. Its high water and a signal is sounded from the inspector—"All is clear." If the ways are to be sawed loose, the order is now given to "cut," and carpenters with cross cut saws start to work. If the sliding ways are held by hydraulic triggers, a "stand by" and

a "stand clear" signal is blown and shrill voiced compressed air whistles at the hand, or a spoken order of "Let her slide" or the hiss of the escaping air releasing the triggers, an almost perceptible movement of the ship is felt rather than seen. Then, though she suddenly became conscious of her freedom the ship springs to life, and starts down the ways the first real movement, the ship more or less accurately into the water with the bottle of wine splashing bits, and good wine splashes on the steel plates, and sometimes on the hand plays, and she is down out of the water, and the City of Waynesville, and luck sail with you."

Supposing that we had no other nation, with plenty of hydraulic triggers, a "stand by" and

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