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FROM ROBERT TRUMBULL

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REPAIR: I

PEARL HARBOR, December 13 (Passed by naval censor)---Two of the great stories of world naval history concern Pearl Harbor. First is the stunning blow dealt the United States Pacific Fleet in the Japanese sneak attack here December 7, 1941. The second, which may well be the more significant story when the world returns to the ways of peace, deals with the miracle of reclamation and repair accomplished here to undo the incredibly complex destruction wrought by the Japanese bombers.

Undoing of the Pearl Harbor damage is a story that continues today; as this is written its climax is still in the future. Its first full telling in this series of articles reveals the greatness of American industrial ingenuity, which has reached at Pearl Harbor a historic flowering.

What has been done here to put back into fighting trim the once proud warships that were unmercifully rent and shattered by bomb and torpedo, the ships pounded and broken into an unholy mess and then jammed by their own great weight into the muck of the harbor bottom, could scarcely be grasped by anyone who has not seen it.

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Two newspapermen, the writer and Keith Wheeler of the Chicago Times, have seen it in detail. We tell now for the first time how the Pearl Harbor naval constructors accomplished a job of such magnitude as no engineers had ever faced before. To get the story, we interviewed Rear Admiral William R. Furlong, Commandant of the Yard, who has been directly responsible from the outset for getting the vast job done. We talked to other officers who head various divisions of this complicated project, and as the last step we inspected personally some of the ships under repair.

We saw a completely reconditioned auxiliary ship that had been on the bottom a year ago, and will sail soon to join the fleet. Another, a battleship, was in the intermediate stage, the immediate and most baffling problems behind but the really dirty work just beginning. Then we boarded the still remaining hulk which represents the very genesis of the total project involved in undoing December 7, and surpasses them all.

Guided by Commander F. H. Whitaker, Admiral Furlong's Chief Salvage Officer, we put on compressed-air masks and spent a half hour in the fantastic labyrinth inside the capsized hull of the battleship Oklahoma, where we had to orient ourselves, as the professional divers do, to a dark and slime-covered world where everything was upside down except us.

To understand adequately the staggering problem that faced

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the naval engineers December 7, 1941, one must go back and survey Pearl Harbor as she lay in the silence of death and ruin after the attack.

The battleship Nevada, staggered by a number of heavy bomb hits and punctured by a torpedo that struck near the bow, was able to get under way and leave the hell that was Battleship Row. She beached herself in the channel and sank back to rest with water lapping her quarter deck.

The California, her bow burned and her insides horribly scrambled by torpedoes amidships, sank at her moorings, settling in the mud with a list of five to seven degrees. Only her high turrets poked above the water, which swirled over her stern and quarterdeck, and rushed inside the torn hole to add its own vast weight to the mass pressing into the soft harbor bottom.

Also sunk at her moorings in Battleship Row was the West Virginia, terribly wounded by both bombs and torpedoes. Like the California, she remained in an upright position. This circumstance made reclamation more readily workable, although discouragingly complicated problems remained.

The Arizona, the only battleship listed as lost--and rightfully so, as will be seen---rested on the bottom near Ford Island, devastated by fire within as well as wrecked by bombs and torpedoes.

The one-time battleship Utah, long used as a target ship and as an experimental vessel, was turned over like the Oklahoma,

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her bottom facing the sky. Her loss was not then and is not now considered serious. She still lies along Ford Island, embalmed in salt water and her own oil until the appropriate time arrives to salvage such of her skin and vital organs as can be grafted onto a living vessel. The Utah, like the Arizona, has been abandoned only as a ship of war; she will, like the Arizona, yet serve her country well as a reservoir of valuable scrap metal and still usable machinery.

On the opposite side of Ford Island from the Utah, and in the same unseemly attitude, the Oklahoma lay capsized, 150 degrees from the vertical, her ravaged port side turned under. She was anchored to the bottom by her own masts and superstructure, which were pushed down through layers of harbor mud that closed over the masts with uncounted tons of downward pressure.

Sunk by a heavy bomb hit was the big floating drydock, which contained the destroyer Shaw at the time. The minelayer Oglala was sunk on her side at her dock, and the two destroyers Cassin and Downes were lost in the drydock. The Downes was literally blown in two by the explosion of her magazine. The Cassin, which lay alongside of her to starboard in the drydock, also caught fire and, her hull mottled like wetted paper, fell off her blocks and leaned over wearily against the Downes.

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It might be said here parenthetically that the Nevada, California and West Virginia, though horribly mangled and actually not afloat, were left unmentioned in the navy's first report of sunken ships because it was believed that they could be raised and put under way. And they were.

If to the lay mind the navy's first estimate appears optimistic, it must be admitted now that this optimism was justified. The early navy reports were sketchy through military necessity; it would have been the sheerest folly to tell the enemy how badly crippled the Pacific Fleet actually was. Such a course could easily have been suicide.

But now it can be told, for the ships that were on the bottom December 7, 1941, but were not mentioned as such by the navy, are actually afloat today; indeed, many of them are fighting.

The story of the destroyer Shaw has already been widely publicised, because the Japanese made much of her sinking. With a false bow replacing the one that was completely burned away in the drydock, she returned to the Pacific Coast under her own power. Today she is once more a combat ship with the Pacific Fleet.

The floating drydock, badly needed by the Yard, was raised quickly by attaching to her open wound a patch lowered in an arrangement like a gigantic window-frame. Admiral Furlong

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showed Wheeler and me this drydock, doing admirably the work for which she was built.

Another sunken ship raised early was the minelayer Oglala, beaten down at her dock by a torpedo after merciless bombing and strafing. She was raised by immense, specially constructed bouys, submarine rescue pontoons, was patched, and has now re-joined the fleet.

The two destroyers Cassin and Downes were unequivocally lost, and were admitted as such by the navy from the first. However, they were patched and floated for the purpose of getting them out of the drydock. Then they yielded 50 per cent of their value back to the fleet. Their main and auxiliary machinery will power the two new destroyers that are their namesakes.

Three cruisers were damaged, the Helena by a torpedo that passed under the lighter-draft Oglala, which was outboard of the Helena at their dock. The Honolulu and Raleigh suffered only bomb damage. The Helena and the Honolulu have since hit back at the Japs in the South Pacific.

The repair ship Vestal and the seaplane tender Curtis also suffered only bomb damage, about which navy reconstructors are by now rather casual. The Curtis was additionally injured by the crash on her deck of a Japanese plane. Both of these vessels have returned to the fleet. Months ago I stood aboard

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the Vestal with other correspondents while Admiral Chester W. Nimitz, Commander in Chief of the Pacific Fleet, presented a Congressional Medal of Honor to Captain Cassin Young, her commander on December 7.

Captain Young, since killed aboard the cruiser San Francisco in the Solomons, was one of the great heroes of Pearl Harbor. The Vestal was set ablaze by the fires from the adjacent Arizona. The explosion of the Arizona's magazines blew Captain Young (then a commander) from his bridge. His crew then prepared to abandon ship, but Captain Young swam back and clambered aboard. He summarily stopped the abandon-ship operations, got his vessel under way and off from the dangerous position she was in beside the Arizona. Then he grounded her in comparative safety. The day Captain Young got the Congressional Medal for this, there were no scars showing on the Vestal, at least to my unpracticed eyes.

Somewhat in the same class as the Cassin and Downes in value to the fleet after December 7 was the battleship Arizona. Wheeler and I boarded her to watch the Salvage crews unload scrap metal and machinery which will go into other ships. Some of her guns, mounted on a Liberty Ship, spoke against Axis marauders in the Mediterranean. Her heavier armament was removed, covered with barnacles like snow, and after reconditioning it was disposed to strategic gun positions about the Island of Oahu.

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The Arizona today lies in about 40 feet of water, with only her upperworks showing. She is no longer a ship, for her back was broken, but she flies the flag, for she is still a commissioned battleship.

A curious and little-known fact about Pearl Harbor is that the Arizona, the Oklahoma and the Utah are still carried on the naval rolls as warships in commission, with commanding officers who must attend to numberless details attendant to the disposal of a floating city, even one that is no longer inhabited.

Three other battleships in Pearl Harbor December 7 suffered damage which was comparatively minor and has been repaired. They were the Pennsylvania, hit forward by one heavy bomb while in drydock where the Japanese thought a carrier would be on that morning. The Maryland and the Tennessee were also bombed, but were repaired in a matter of days. The Tennessee was tied up starboard of the West Virginia. The West Virginia, her port side torn away by eight torpedoes, wallowed over and her starboard bilge hooked against the Tennessee. The contact put an unimportant wrinkle in the Tennessee's hull, but it kept the West Virginia upright. Incidentally, it became necessary to blast away the great quay blocks to which the Tennessee was moored, before she could be gotten away from her stricken companion.

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Admiral Furlong, grey, stocky Pennsylvanian, was commander of the Fleet mine force on December 7, 1941. He rose early, as is his custom, that Sunday morning. He was on the deck of his flagship, the ungainly Oglala, which was nestled against the Helena at the dock where the Japs thought the Pennsylvania lay.

Admiral Furlong's amazed blue eyes saw the first Japanese bomb dropped in the Pearl Harbor phase of the attack strike a seaplane ramp on Ford Island. He saw the second bomb hit a Ford Island hangar, setting it afire. This plane, having done its share in the Japs' primary objective of nullifying the Fleet's air power, circled, turned and flew back by the Oglala at eye-level to the admiral. "I could have hit the plane with a potato," Admiral Furlong said.

Then came the deadly torpedo planes and the high-level bombers over Battleship Row, a wave over the Pennsylvania in drydock (thinking she was a carrier, as captured Japanese maps showed) with the Cassin and Downes side by side ahead of her. Admiral Furlong saw the Japanese bombs whizzing down toward the Pennsylvania, saw them go beyond and blast the two destroyers.

A Japanese bomb struck a torpedo aboard the Downes, and the explosion that resulted blew out her side and started ravaging fires which spread to the Cassin.

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Then the Pennsy got a bomb in her forward end. The missile wiped out a five-inch gun crew which included four men whom Admiral Furlong had sent over to aid the battleship's hard-worked company.

Meanwhile, the Admiral was having trouble at home. The Oglala was under continuous strafing and bombing. "I could see three torpedoes coming at us," the Admiral recalled. "Only one hit, though, but that one sank us."

Thus Admiral Furlong saw the terrible damage done. Shortly, as Commandant of the Pearl Harbor Navy Yard, he was assigned to get it undone. He had the entire Pearl Harbor establishment at his call for a job that was heroic in its broad proportions, and which in detail was often seemingly impossible, frequently discouraging, and always, out on the ships where office planning, was being put into effect, was physically arduous, filthy, stinking and dangerous.

Every man from the Admiral down knew that each new phase of the task was to present unforeseeable difficulties. The obstacles that arose were met as they came. They were hurdled in some cases by improvement of known devices, in others by sheer invention in which American engineering genius shone at its best.

The smaller jobs, the repair of the ships damaged least and therefore most quickly convertible from yard liability to

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battle fleet asset, were tackled first; but behind them like a mountain yet to be crossed after the plodding foothills, lay the dead battlegons. The enormity of the battleship project can be realized by comparing that salvage job with the righting and re-conditioning of the Normandie, lying on her side in New York harbor.

Each of the sunken battleships far surpassed the Normandie as a salvage problem. Nothing has happened to the Normandie that was not done by clean-cutting fire, and easily removable water. Her bottom has no enormous, ragged punctures. Her superstructure has not been twisted and reduced to ash which fouls the deck below, through gaping apertures made by bombs. Her side is whole. Tremendous explosions within her hull have not made her innards, stem to stern, a fetid brew of every conceivable animal, vegetable and mineral material that goes into the construction and manning of a skyscraper.

If all these things were true of the Normandie, and if the nightmare hulk were then squirted thoroughly with stinking black oil and pumped full of deadly gas and noisome odors theretofore unknown to man---then the fitting of the Normandie would be comparable to the job done and still being done at Pearl Harbor.

Admiral Furlong gathered his crew of naval constructors, engineers, and yard workmen---artisans and machinists of every

variety---into a compact though vast reconstruction unit. The naval constructors did the fundamental planning, since these were military ships and up their alley. Civilian contractors were assigned specific tasks and they can legitimately claim their share in the amazing success of the project as a whole.

It was a civilian engineer, Fred W. Crocker of the Pacific Bridge Company, who designed the wooden patches which fitted onto the steel hull of a battleship over a torpedo slash and enabled the wound to be permanently healed.

Among the navy men, there was the succession of salvage officers, head men under Admiral Furlong, Captain J. M. Steele was the first. Then came Captain Homer N. Wallin, who was awarded a Distinguished Service Medal for his work. Now Commander F. H. Whitaker is the salvage officer.

More than a thousand men organized as a salvage and repair unit in the States for duty elsewhere (not in Hawaii) were brought to Pearl Harbor immediately after the disaster December 7. They were used principally on the Cassin, Downes, Oglala and the floating drydock, where some of the groundwork techniques were tested for the later projects of greater magnitude. This expert corps also supplied many of the divers who played a vital role in the reclamation of the capital ships.

Nowhere in the world, according to navy officers here, have navy and civilian workers toiled together in such close

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coordination and harmony on a monumental task. Their joint achievement has never been equalled, either as a feat in mechanics or as an example of cooperation between military and non-military men.

The credit goes down through the ranks, and it would be impossible to mention anyone by name. There was Lt. Bill Painter, the field officer in charge on the scene for the raising of the California and the West Virginia, while Commander Lebius Curtis, and old sailing ship expert, was invaluable in the salvage of the West Virginia. Jack Graham, Hawaii manager for the Pacific Bridge Company, was an important civilian executive. Two of Graham's men Les Freeman, Superintendent of Salvage, and Bert Rice, Rigger Foreman, who designed the tackle to flop the Oklahoma over, must be in any list of credits. Then there was T. C. Suggs, Chief Diver.

But this is only a cross-section. Admiral Furlong named many others who gave long and strenuous months to the work.

Salvage and repair of the damage done December 7, 1941, is by no means the only function administered from Admiral Furlong's office. The Navy Yard has three functions: salvage and repair, servicing of the battle fleet, and defense of the Yard itself.

Any one of the three is a complex job. Servicing of the battle fleet is a function that requires little elaboration.

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Pearl Harbor is the heart of American naval operations throughout the broad Pacific area. The motto of the Pearl Harbor workers who take over the ships returning from battle is, "We Keep 'Em Fit to Fight." On that basis they won the Navy "E".

Security of the naval establishment is a continuing responsibility in which the sunken ships of December 7 played a part. Some of their guns now mounted ashore will hurl hot steel back at the Japs if the chance ever comes.

The two functions of service and defense are routine. The salvage job was unprecedented, and may never be approached again. It is with this aspect of Pearl Harbor during the past year that this series will deal in detail.

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