

According to newspaper reports, President Theodore Roosevelt slipped away from his home at Sagamore Hill during a driving rainstorm to take a ride on the *Plunger*. The demonstration included diving to a depth of forty feet and remaining submerged for half an hour while the President examined the boat. This was followed by an exhibition of porpoise diving. At one point, all the lights were extinguished and the crew worked the boat in total darkness. By all accounts the boat rested motionless at a depth of twenty feet while a storm raged on the surface.

The following article was published in the Hartford Courant Magazine on Sunday, September 4, 1977. Although based on fact, the author has embellished the story and introduced inaccuracies. According to Frank Cable, the steering, diving and pendulum mechanisms described in this article never installed in the *Plunger*. Rabbi Brownstein, writes "the air compressor must have worked itself into a paroxysm of panic as it strained to blow out enough air to empty the submerging tanks before they were quickly opened again to be filled for the next dive" when, in fact, the air compressor was used to recharge the air flasks when the submarine was running on the surface with the hatches open. The "porpoising" maneuver described was accomplished using the diving planes alone. Nonetheless, his account of President Roosevelt's exploits is entertaining.

TR takes "bully" dip in a sub by Rabbi Marc Brownstein for The Courant

Near the turn of the century, Theodore Roosevelt was one of very few men whose imagination was stirred by the submarine. In Roosevelt's day, most European navy men appeared to have an aversion to submarines. Some thought them to be a sneaky and ungentlemanly way of waging war. Others feared the submarine would supplant the primacy of surface ships and threaten their careers. Indeed, the famous submarine inventor of the day, John Holland, bitterly said of them. "The navy doesn't like submarines because there's no deck to strut on." But most of all, naval men considered the submarine a death trap. And they were right! The submarine had a long and disconcerting history of disasters.

No doubt navy men at the turn of the century were still talking about the quixotic voyages of the Confederate Civil War submarine, Hunley. The Hunley, a vessel propelled by the muscle power of eight men hand cranking a long shaft to which was attached a propeller, was given the improbable mission of sinking the powerful Union frigate, *New Ironsides*.

With the head of Lt. John Payne peeking out the open hatch, the Hunley boldly set out from Charleston harbor to engage the enemy. But the craft was soon sunk by the bow wave of a passing paddle-wheeler that swept Lieutenant Payne into the sea and cascaded through the open hatch he left behind. Except for Payne, all hands were lost.

Undaunted, the intrepid lieutenant raised the craft, mustered another crew and tried again. This time the submarine capsized! Payne again escaped as did one other seaman. Payne then wisely gave up the venture.

However, Captain H. L. Hunley, none other than the inventor of that precarious submarine, thought to give it a try himself. He salvaged the vessel and began to train another crew. During a practice dive the submarine went down handily enough but never came up. A week later the Hunley, her suffocated inventor and crew were recovered from the sea.

Unbelievably, another crew tried again! This time the target was the Union warship Housatonic and the strategy was to remain on the surface and ram a spar torpedo, protruding a few yards from the bow, into the hull of the enemy ship. This the Hunley managed to do. The torpedo detonated with a great explosion and the Housatonic heeled over and sank. But the exploding torpedo sent a wave back over the Hunley's chronically open hatch and sent the sub and her crew to the bottom - forever.

But such tales did not frighten Teddy Roosevelt. When, just prior to the Spanish-American War, Holland offered his submarine to the Navy, Roosevelt, then assistant secretary of the Navy urged the department to purchase it. However, the navy turned it down. Nevertheless, some months after his coming into the presidency following the assassination of McKinley in 1901, the navy began to take possession of its first submarines with the enthusiastic approval of the new president. Indeed, in 1903, his cabinet had all they could do dissuading him from going down on one of those early submarines at Annapolis. But he had no such cautious advisors on a memorable day at Oyster Bay in August, 1905.

Saturday Aug. 26, 1905, brought driving rain and heavy seas to Oyster Bay on Long Island Sound. Teddy Roosevelt was comfortably tucked away at his Sagamore Hill mansion and the submarine Plunger, commanded by Lt. Charles H. Nelson was tied up beside her tender, Apache, awaiting the next day's trials to be witnessed by the President and a party of friends.

The Plunger was a noisy, smelly, ingenious 63 foot submarine akin in mechanical spirit to the "Model T." Could she be resurrected today, we would stand enchanted before her marvelous antique ingenuity and marvel at the fact that some 68 years ago men actually took her to the bottom! Plunger was sister-ship in a group of quintuplets fathered by the little, bespectacled, cocky, straight-laced, walrus mustached inventor, John Holland.

She was put together by a very young Electric Boat Co. which delivered Plunger and her four sisters-ships to the U.S. Navy during 1902 and 1903.

Apparently Lt. Nelson, commander of the Plunger, with the enthusiasm of a pioneer submariner was not satisfied at the prospect of the President merely watching the Plunger taken through her paces from the safe distance of the deck of an observation ship. So, on that day before the official demonstration, it appears that the lieutenant went up to Sagamore Hill and invited the president to an unofficial trip aboard the Plunger. Thus, in the midst of a driving rainstorm, Roosevelt and Lt. Nelson slipped away unobserved from Sagamore Hill.

Driving to the dock through sheets of rain, Nelson led the President to a launch. A northeast wind was blowing so violently that waves came crashing over the pier, and in order to avoid being drenched on his way to the launch. Roosevelt had to put on an oilskin coat. It was obvious to all, except for the enthusiastic Lt. Nelson and the adventuresome Roosevelt, that this was not a day for a submarine excursion. Nevertheless, they boldly made their way through a heavy sea to the submarine tender, Apache.

Climbing aboard the Apache, Nelson led the President across her rolling deck to the side where the Plunger tossed-like a bobbing cork in the turbulent sound. As Lt. Nelson directed his Commander-in-Chief to the conning tower hatch, he must have been

blissfully naive about the potentially grave danger into which he was leading the president.

Indeed Nelson was an impetuous, daring young officer who had a reputation as a daredevil. Just a year before, he was in command of a similar submarine, the Porpoise, in which he had almost lost his life. During a routine dive in Narragansett Bay the Porpoise's diving tank valves failed to close and the submarine sank to the bottom of the bay. There was but a half hour supply of air and no way to come to the surface except to force the water out of the submerging tanks by hand pumps. But as they tried to work the hand pumps against the force of water pressure at 120 feet, it seemed a hopeless task. Only Nelson's incredible indifference to danger saved the crew from panic and inspired them to super human effort at the hand pumps. They finally surfaced with but 10 minutes air supply remaining.

Thus when Roosevelt climbed down into the Plunger's hull on that stormy day the Navy had no more than a few years experience with this strange new vessel. The Plunger was yet very much an experimental device manned by a crew still awed by the novelty of their submersible contrivance and commanded by a daredevil.

Besides sea cocks that didn't always close, there were other dangers that apparently were ignored or unknown. Certainly the Plunger's power plant did not deserve being taken for granted. It was a four cylinder gasoline engine similar to the temperamental source of power that drove Mr. Ford's "Tin Lizzy" and just as noisy. The engine did double duty, propelling Plunger along the surface and running a generator to charge the batteries for electric propulsion when submerged. Yet, even with their mechanical genius, John Holland and the Electric Boat Co. could do little to remedy the halitosis of their clever engine. While in operation it exhaled volatile, toxic fumes which polluted the air in the submarine.

The only safeguard against the danger of the gasoline fumes was a rodent warning device! That is, mice were kept in a cage near the engine and so long as the rodents remained active, it was assumed that the engine fumes were at a tolerable level. When the mice ceased to romp, the crew was sent scurrying to the deck to escape the same asphyxiation.

Plunger's other devices also recall other early submarining dangers as potentially fatal as the toxic and volatile fumes emitted by Plunger's gasoline engine. Of great importance was accurate and constant control of the depth of the submarine as it submerged. Apparently, Holland believed that it was not safe enough to rely upon a member of the crew to manually control the diving planes while keeping an eye on a depth gauge, for there was the terrible possibility that through human error the submarine might be driven into the mud and trapped in the ooze of the ocean floor or taken to a depth beyond the ability of the hull to withstand. To safeguard against this awful fate, the Plunger was equipped with a kind of automatic depth regulator. The key to this apparatus was a diaphragm that reacted to the outside water pressure. When a preset depth was reached, the movement of the diaphragm set in motion a linkage to the motor controlling the diving planes and caused the craft to level out.

It was also essential that the submarine be kept on even keel while submerged. However, the Plunger was small enough to be dangerously sensitive to the shifting of weight of its crew as they moved about and one too many at port or starboard, bow or stern could flip the craft out of control. To neutralize the effect of shifting weight, the

Plunger was equipped with what later generations might have misconstrued as a "Rube Goldberg" device. When the desired depth was reached, a pendulum like contrivance was linked up to the diving planes. The force of the motion of the pendulum acted as a counter balance to shifting weight within the hull and activated the diving planes in such a way as to keep the ship level.

In retrospect, it would seem that these "automatic" devices in all their delightful model T-ish innocence could well have precipitated the very dangers they were meant to guard against. An undetected salty erosion of the delicate diaphragm in the depth control device could have sent the Plunger into a collision with the bottom of Long Island Sound, or some imbalance of the pendulum in the leveling mechanism could have turned the Plunger into a spinning steel coffin making the bottom of the sound the muddy eternal resting place of its crew.

Ironically, trust in Squalus' "Christmas Tree," a euphemism submariners bestowed upon a bank of red and green lights that were supposed to indicate when the ship was watertight, took the lives of its 62 officers and men. The "Christmas Tree" signaled all systems go for diving by an authoritative show of green lights. Squalus trustingly began to submerge and suddenly was fatally stricken by a flood of water rampaging through her main air induction valve which had failed to close. The automatic devices had not indicated this critical situation, and the green and red monitor lights gave no warning. Then, what hope for Plunger's primitive gadgets?

Another potential danger inherent in the mechanism of the Plunger was the battery used to power her electric motor for submerged running. Equipped with a lead-acid type of storage battery, there was always the danger of escaping hydrogen. This "battery gas" in the confined space of the Plunger could have produced a highly volatile situation. If the escaping hydrogen from the Plunger's battery had risen to a mere four percent of its atmosphere while T.R. was aboard, there might well have been an explosion! Indeed, but a few years before the submarine Fulton had been torn apart by just such a battery explosion.

Yet, another source of danger was the possibility of salt water penetrating Plunger's battery and mating with its sulfuric acid. The result of the wedding of these two chemicals, salt and sulfuric acid, would give birth to chlorine - a very poisonous gas. Considering the swamp-ability of those early submarines, the chance that this unholy marriage between salt and sulfuric acid would take place was not remote.

However, in the technological innocence of the day, inventor and crew had a charming, naive faith in the gadgets to which they entrusted their lives and with abiding faith took their craft beneath the sea in the firm belief that what went down would come up. So, the rash Lt. Nelson in the innocence of daring-do urged President Roosevelt into the submarine.

The entry hatch was but two feet in diameter and the ample Roosevelt just about squeezed through. Touching down on the flooring below the conning tower, the president paused to give his eyes a chance to adjust to the gloomy interior. For, the Plunger was meagerly lit by "deadlights" - small thick windows set in its sides and ceiling. These were feebly assisted by some little electric bulbs. Being a stormy, overcast day the "deadlights" indeed offered but ghostly illumination.

Taking a moment to wipe the salt water mist blown onto his spectacles by the storm, Roosevelt had the first impression of standing inside a blunt cigar. For so was the

submarine constructed with a wide midsection gradually tapering off at bow and stern to narrow ends. Certainly the next impression to emerge from the shadowy interior was the lingering odor of gasoline fumes ever present in those early submarines. He could not see them but beneath the flooring where he stood were those capricious storage batteries whose habits it was to leak explosive hydrogen and conjure up poisonous chlorine gas.

Lt. Nelson soon scampered down the hatch and began to explain the layout and working of the submarine. Directing T.R. to the forward part of the boat, Lt. Nelson gravely pointed out the loading end of the torpedo expulsion tube. Then, turning up to the stern, Roosevelt was led into a thicket of machinery. He first saw an air compressor that forced the sea water out of the flooded submerging tanks in order to remain buoyant and return to the surface. The compressor could also be used to supply fresh air to the crew. Taken beyond the compressor Roosevelt came upon the Plunger's "power plant," that noisy, fidgety, foul-breathed, four cylinder gasoline engine. Nearby was the cage of mice who might involuntarily be called upon to suffocate in order that he and the crew be warned to quickly escape before they too were felled by the engine's fumes. Beyond the gasoline engine and its entourage of rodents, T. R. next saw the electric motor for submerged running and a drive shaft to the propeller.

Lt. Nelson may have then explained the "automatic" devices to the President. Led to the starboard side and asked to look up, Roosevelt was shown a diving mechanism fastened to the ceiling with discs the size of dinner plates. The discs were vulnerable diaphragms which, reacting to the outside water pressure, would hopefully set in motion springs attached from them to the diving rudders. These, in turn, would level out the dive and keep the submarine from nosing into the muddy ocean bottom.

While looking at that amazing contraption on the ceiling, Roosevelt must have caught, out of the corner of his eye, the glimmer of a swinging metal radius. It was the pendulum upon whose delicate and exact balance he and the crew were to depend, while submerged, to counter balance the shifting weight of their moving about and keep the vessel from flipping out of control.

Lt. Nelson might have next explained to T.R. the working of various floor levers in the area of the pendulum. The levers, when raised and moved in certain directions, filled or emptied the submerging tanks.

He next turned the president's attention to the pumps, ventilating apparatus and the storage tank valves which released fresh air to the crew.

At last all turned to the supreme purpose of the journey that stormy day from Sagamore Hill to the waters of Oyster Bay - the dive of the Plunger!

Lt. Nelson ordered the submarine to take leave of its tender and head out to the depths of the sound. The Plunger quivered to life as its tin-lizzy engine sputtered and clickety-clacked the propeller into action.

As the Plunger churned its way through the gale lashed waves, Teddy Roosevelt immersed himself in every detail as he moved about the craft. And it was reported that "He behaved like a delighted school boy over everything he saw."

But one wonders if the spirits of the drowned crew of the swamped Hunley hovered about that stormy day in anticipation of new companions as they awaited the angry waves of Long Island Sound to break through the Plunger's hatches and seize its crew as once the waves of Charleston Harbor engulfed them.

When the Plunger reached its destination in the midst of the Sound, Lt. Nelson gave the order to dive. The gasoline engine came to a stop and the sub was suddenly quiet. A crewman was dispatched to check the condition of the mice and reported back to Lt. Nelson that they were alive. Thus reassured that the toxic exhaust of the gasoline engine was within tolerable levels, he ordered the electric motor started for submerged running. As the motor hummed to life the lieutenant beckoned to the President to join him at the diving levers and invited T.R. to operate them. Roosevelt eagerly eased the levers into position. The sea rushed into the void of the empty tanks and Plunger went under.

The depth gauge diaphragm began to collapse under the strain of increasing water pressure. A faint metallic creak might have been heard by the President as the movement of the diaphragm activated the springs linking it to the diving rudders. In sixteen seconds Plunger was at a preset depth of 40 feet and held there by that contraption of diaphragm and springs struggling to hold the rudder on an even plane against the pressure of the sea in a mechanical tug-of-war.

Moments after reaching the desired depth of 40 feet, Roosevelt heard Lt. Nelson order the pendulum device linked to the diving planes to hold the submarine on an even keel as its passengers moved about. And for the next half hour Plunger placidly cruised beneath the sound at 40 feet undisturbed by the storm raging on the surface. All the while T.R. returned again to inspect the machinery and perhaps under the direction of Lieutenant Nelson turned the crank of an air valve to release a swish of stored air to refresh the stale, fume saturated atmosphere in the submerged submarine.

Then the Plunger was ready to amuse the President with some aquatic stunts. Perhaps startling T.R. for a moment, the "Ka-puk," "Ka-puk," of the compressor echoed through the steel hull as it pressed air into the submerging tanks forcing out the water allowing the Plunger to surface.

As the Plunger came up Lt. Nelson suggested that the President might want to find a secure footing as they were about to begin "porpoise Diving." Nelson explained that although the Plunger was equipped with a periscope, it only had a field of view of 15 degrees making such a maneuver necessary to sight the target of a torpedo attack. Therefore, the submarine would run a short distance submerged and then come to the surface for a moment, as he peered through small windows in the conning tower to see the way to go - and immediately dive again. By such a process of bobbing up and down or "porpoising" the sub would make its way to the target, fire its torpedo and then disappear beneath the water. Thus having explained its purpose, Nelson commenced the maneuver. Indeed, it may have been that T.R. dispatched himself to the conning tower to peer through the windows and guide the imaginary attack himself.

The strain of "porpoising" on the quaint machinery of the submarine must have been considerable. For example, the air compressor must have worked itself into a paroxysm of panic as it strained to blow out enough air to empty the submerging tanks before they were quickly opened again to be filled for the next dive in that roller-coaster dash through the sound.

After the "porpoise" maneuver the Plunger was put into a 45-degree angle dive. Suddenly, at a depth of 20 feet, the electric motor was reversed and the submarine shot backwards to the surface! Following this, the Plunger went down again to make a rapid underwater U-turn. Finally, Nelson ordered the vessel to a depth of 20 feet, extinguished

the lights and demonstrated to the President the crew's ability to control the craft in total darkness.

Fortunately, the Plunger did all that was asked of her when she was entrusted with the life of the President of the United States on that stormy Long Island day in 1905. And Roosevelt returned safely to the tender, Apache. He later said of the experience - "Never in my life have I had such a diverting day, nor can I recall having so much enjoyment in so few hours as today."

Nevertheless, when the President's advisers heard of the episode on his return to Sagamore Hill, they rushed to take precautions against the public learning of the President's death-defying trip on the Plunger. But unable to cover up the affair, official statements were issued denying that the President of the United States had intended to risk his life in a submarine! And the following day Roosevelt himself made the excuse that although he had at first thought better of going down in the Plunger, he changed his mind because he did not wish to deeply disappoint Lt. Nelson and his crew by declining their invitation to submerge with them.

The fact of the matter, of course, was that Roosevelt had been aching to go down in a submarine. And the temptation to do so may have become unbearable after his daughter Alice, with his enthusiastic permission, had two years before submerged in the submarine Moccasin at Newport. But now he had a greater tale to tell, for she had only been down for 10 minutes and the Moccasin never moved from its mooring, having been tied to the dock for the shallow six foot submerging. Perhaps it was his excitement to tell of his adventure in the Plunger that caused him to blow the cover story in an exasperated reply to someone who said that the chief of the nation had no right to take the risk of going down in a submarine. For he angrily replied, "I am the Commander-in-Chief of the Navy and I have the right to go where I wish to so as to see where I am ordering our men to go!"

But, Roosevelt's solicitous advisors need not have been so concerned for his reputation. For, the news of his submarine adventure on the Sound was enthusiastically received by Teddy's adoring public. And the next day the New York Times reported that "The President's experience on board the Plunger will usher in a new era of this important branch of the Navy which up to this time is said to have received rather step-motherly treatment at the hands of naval authorities." Indeed, that prophecy was soon fulfilled when T.R. ordered the Navy Department to give submariners an immediate raise in pay and to look generously to their promotion.

And what of that valiant little submarine and her daredevil commander? Both went on to serve many more years. Then in 1922, 17 years after her Long Island Sound adventure with Teddy Roosevelt, rusting and obsolete, Plunger was cast away and sold for scrap. Lt. Nelson continued to serve until 1933 when he retired at the rank of rear admiral.

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