

THE HOLLAND SUBMARINE BOAT.

One of the Most Wonderful Pieces of Naval Architecture in Existence.

At the present time engines of war are exciting unusual interest in the United States, and among those which seem to have great possibilities is the latest example of the Holland submarine torpedo boats, which was lately launched and has been put through a



JOHN P. HOLLAND, THE INVENTOR.

series of trials in the waters near New York. This boat is the sixth one invented and built by John P. Holland, of New York, since 1877. The first of these vessels was only 14 feet long; the second, built in 1879, was 31 feet long and 6 feet in diameter; the third was a working model, 16½ feet long by 30 inches in diameter; the fourth was the Zalinski boat, built at Fort Lafayette, and 40 feet long by eight feet in diameter; the fifth is now under construction for the Government at Baltimore, Md., and is 85 feet long by 11½ feet in diameter, and has 168 tons displacement; and the sixth is the one here illustrated. This last boat is 53 feet long, 10 feet 3 inches in diameter, and has a displacement of 75 tons.

The hull, as will be seen from the illustration, is cigar-shaped and is made of ½-inch to ¾-inch steel plates riveted to steel frames. The top is flat, with two hatches and a central telescopic conning tower 2 feet in diameter and three feet high. Steering is done by two sets of rudders, one vertical for steering on the surface and the other horizontal for regulating the depth of submergence. There are three sources of power for propelling the boat above and below the water, expelling water, discharging torpedoes and dynamite guns, and lighting the ship internally and externally, namely: compressed air, gasoline and electricity. The most important agent is compressed air, without which it would be impossible to operate the boat under the sea.

The most important use of the compressed air is for the respiration of the crew. The boat is quickly submerged by admitting sea water to a series of steel tanks connected with the compressed air system. To bring the boat to the surface air is forced into the water tanks under high pressure, and as the water is expelled the boat rises swiftly to the surface. The air tanks have been tested to stand a pressure of 3000 pounds per square inch, and are calculated to hold out for a submergence lasting ten hours, but if the supply should fail after nine or ten hours, the tanks can be replenished by means of a tube projected to the surface as a suction pipe.

The armament of the boat consists first of an aerial torpedo ejector, at the bow, capable of throwing to a distance of one mile, a projectile weighing 180 pounds and carrying 100 pounds of a high explosive. Immediately under this is an explosive tube for a Whitehead torpedo, with the usual charge of 200 pounds of gun cotton; and pointing to the rear is a dynamite gun capable of throwing 100 pounds of a high explosive 100 yards or more through the water. When equipped for service the "Holland" would carry three Whitehead torpedoes, six shots for the forward gun and five for the after gun.

The most important test the boat has undergone was when she made four dives of a mile each, went through a series of surface evolutions, tried her aerial dynamite gun and expelled a dummy torpedo from her submarine tube in Baritan Bay.

The experiments were conducted for the benefit of the board appointed by the Secretary of the Navy to witness the Holland's trials and report upon her efficiency. Lieutenant-Commander C. S. Sperry, Chief of the Bureau of Equipment; Lieutenant-Commander Swift, Chief of the Bureau of Ordnance, and Lieutenant Rock, Naval Constructor, who comprise that board, witnessed them from a tug provided by the Holland Company. Elihu B. Frost, Treasurer of the Holland Company; ex-Assistant Secretary of the Navy McAdoo; General Murtryway, the special agent of the War in this country; Lewis Nixon, who constructed the Holland at Elizabeth, and Captain C. A. Morris, Superintendent of the Holland Company, were on the same tug. General Murtryway came from Washington for the special purpose of witnessing the experiments, and after they were over he told Mr. Holland that his boat was the most wonderful piece of naval architecture in existence.

The programme arranged beforehand was that the Holland should make a two-mile run under water,

coming to the surface three times at intervals of one minute each. The Holland did more than that.

She started from the black buoy at the eastern end of Baritan Bay, about four miles southwest of the Old Orchard light, ran westward toward the Jersey shore for a mile, showed her conning tower on the surface for about thirty seconds, ran another mile under water, came up again, turned around, and went back to the black buoy in the same way.

Aided by her automatic steering gear, she held her course perfectly beneath the surface. The average depth of water over her conning tower during her submerged trips was about fifteen feet. In her surface experiments after the diving trials were over she obeyed her helm more quickly than she ever did before. She did not have to stop and take on more ballast as she has in all her previous trials. This difficulty was overcome by using her compensating tanks. There was no delay. She went at her work promptly and behaved as though she were on dress parade.

Her gun experiments were as successful as her evolutions in the water. She expelled a dummy torpedo from her submarine tube without difficulty and hurled a 75-pound wooden projectile 400 yards through the air from her forward dynamite gun, using compressed air in both instances.

Baritan Bay was chosen by Mr. Holland for the trials because it was



BOW VIEW OF THE "HOLLAND." (The mouth of the aerial torpedo gun, the superstructure deck and conning tower are shown.)

comparatively free from the harbor boats that pestered him so much in his experiments in Staten Island Sound, and a depth of water sufficient to develop the full diving powers of the little whaleback could be had.

The Holland behaved perfectly in the seaway. She ploughed right through the waves, which tumbled the two tugs about and dashed clouds of spray up to their pilot houses like a water-soaked log. The waves simply rolled over her, alternately submerging her completely and exposing her sides until the lights in her broadside windows could be seen. Her superstructure and about twelve inches of her body was out of water. The stars and stripes, on a four-foot staff, floated aft. She had about 3000 pounds of pig-lead ballast inside of her, and her tanks fore and aft, which have capacity for about nine and a half tons of water, were full. Her trimming tank amidships was empty. Her crew consisted of Mr. Holland, who was in the conning tower; F. T. Cable, the elec-



AT HIGH SPEED WITH CONNING TOWER ABOVE SURFACE FOR OBSERVATION.

trician; Henry Meyer, his assistant; Nathaniel Addison, the engineer; W. W. Scott, the draughtsman, and W. F. C. Nindemann, the gunner. Mr. Holland clamped down the lid of her conning tower and filled her trimming tank. The little whaleback settled until her decks were awash and nothing

showed above the surface except her turret and her flag. A whistle announced that she was ready to dive, and the tugs backed away to give her sea room. Before the dive Mr. Holland sent the little whaleback along the surface for a 200-yard run. She developed a speed of eight knots. Her nose was pointed out toward the Sand Hook light.

Assured that everything was in



INTERIOR OF THE HOLLAND BOAT.

working order, Mr. Holland showed the little boat up and pointed her nose in toward the Navesink Highland, which loomed up smoky and indistinct on the Jersey shore four miles to the southward. Then, at right angles with the course he told the naval officer he would take, which lay from the black buoy almost due westward to the Great Bed Lights, at the head of the dredged channel he sent the Holland forward at full speed and forced her fin rudder down. The Holland reluctantly buried her blunt nose and tilted up her tail until the blades of her screw were visible as they churned the water. She ran along in this fashion for fifty yards, and then suddenly swinging about and pointing her nose toward the Great Bed light she slipped out of sight. There were a few ripples aft and a little patch of foam, but that was all. Two hundred yards from where she disappeared the Holland came up like a huge porpoise and a most immediately vanished from view again.

Every man on the two tugs took out his watch and counted the minutes she was under. Many of them had never seen a submarine boat perform before and were a little skeptical as to

which will be used in the gun in actual service, but its weight was about 100 pounds less. Immediately after this trial the submarine torpedo tube was successfully tested.

Mr. Holland was taken aboard the tug which carried the naval experts and was questioned by Lieutenant-Commander Sperry and his associates. He explained to them that the reason the Holland could not be seen when she rose to the surface was that she poked only her nose and conning tower up, and the sea was so rough that so small a part of her was not distinguishable two miles away.

"If you managed to keep out of our sight when we were scanning the whole surface of the bay for you, I don't know what a hostile battleship that did not suspect you were after her would do," one of the men remarked.

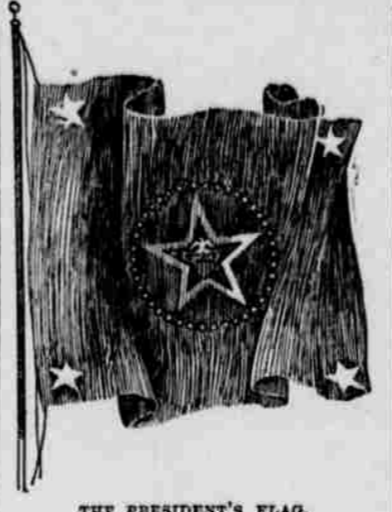
The water in which Mr. Holland dived had an average depth of thirty feet. The last time she was under she bumped along the bottom for half a mile, and her crew could hear the oyster shells scraping against her iron sides.

When the Holland is equipped for war it will not be necessary for her to take any metal ballast on board at all. The weight of her projectiles will make her heavy enough, and she will be operated solely by her ballast tanks.

FLAG OF THE PRESIDENT.

The New Design Which Mr. McKinley Has Chosen.

By direction of the Secretary of War, paragraphs descriptive of the flag of the President have been added to the Army regulations. The President's



THE PRESIDENT'S FLAG.

flag shall be of scarlet bunting, measuring thirteen feet by eight feet hoist. In each of the four corners shall be a five-pointed white star, with one point upward. In the center of the flag shall be a large fifth star, also of five points, which lie in the circumference of an imaginary circle of two feet nine inches radius. Inside of the star thus outlined is a parallel star, separated from it by a band of white two inches wide. This inner star forms a blue field, upon which is the official coat of arms of the United States as determined by the State Department, the device being located by placing the middle point of the line dividing the chief from the palewise of the escutcheon upon the point of intersection of the diagonals of the flag and thus coinciding with the corner of the large center star. On this scarlet field around the large star are other white stars, one for each State, equally scattered in the re-entering angles, and all included within the circumference of a circle three feet three inches radius, whose center is the center of the large star. The colors of the President shall be of scarlet silk, six feet six inches by and four feet on the pike, which shall be ten feet long, including ferrule and head. The head shall consist of a globe three inches in diameter, surmounted by an American eagle, alert, four inches high. In each of the four corners shall be a five-pointed white star. The design letters, figures and stars are to be embroidered in silk, the same on both sides of the color. The edges of the color are to be trimmed with knotted fringe of silver and gold three inches wide, and one cord (having two tassels) eight feet six inches long, and made of red, white and blue silk intermixed.

When the Horse is Useful. Residents of New York City are likely to look upon cab and carriage horses as curiosities one of these days, for the horseless carriage bids fair to make the animals unnecessary. Recently a company made a practical test with a horseless cab, and found it so successful that the company has, it is said, determined to put 1000 of the cabs into service in New York. The vehicles are operated by electricity, the power being furnished from a storage battery that is under the body of the cab.—Chicago Record.



The Dollar Mark in the Jungles.

AGRICULTURAL TOPICS.

Best Dairy Utensils. Other things being equal, the more accessible the inside surface of an article for dairy use, the more valuable. All dairy utensils should be of hard material and have smooth surfaces. Wooden pails should never be used for holding milk.—New England Homestead.

Horse Radish For Home Use. All of the horse radish should be got out of the ground so soon as the frost is fairly out. That for home use is best preserved by grating finely white fresh, putting the pulp in bottles with wide mouths, and corking closely to keep out air. It is very difficult to keep the roots in warm weather. Those kept dry will become dry and worthless. Those put in sand with any moisture will start to grow, and the root will become acrid and of poor flavor.

Improved Dandelions For Gardens. The dandelion is so popular an herb for greens that it is well worth while to cultivate it in the garden for that use. There are special varieties which have much larger and thicker leaves, and these are sometimes planted in greenhouses in winter so as to have greens earlier for use in spring. At this season something fresh from the garden or greenhouse is liked by all. One of the advantages of the dandelion greens is that they have a tonic effect on the stomach, and are very highly regarded by many old-fashioned people as a medicinal food.

Spraying. The unproductiveness of some orchards is caused by the attacks of insects and fungi. Such orchards may be greatly improved by spraying with a combination of Bordeaux mixture and Paris green. The Bordeaux stops the growth of the fungi (especially the apple scab) and the Paris green kills the larvae of the bud-moth and codling moth.

The first spraying should be done when the fruit buds have begun to show their color, but before the flowers expand. A second application should be made just as the last blossoms fall. In some years when insects and fungi are particularly abundant, a third and even fourth application may be necessary.

To insure success the spraying must be done thoroughly. Every limb and every leaf must be wet with the mixture. Insects do not hunt around for the poison—it must be put where they will be sure to get it.

Composting Fertilizing Material.

There is always a vast amount of good fertilizing material on the farm, material of but little value in itself, but when combined with other material furnishes an enriching element one cannot afford to lose. Taking the autumn leaves as a basis, adding to them barn ashes and then a layer of barnyard manure, and we have a foundation for a compost heap on to which can be thrown old lime or plaster, soil from road ditches, manure, the greasy water from the kitchens and other refuse from the house which cannot be disposed of in any other way. Even weeds will add to the value of the compost heap. Add to it at every opportunity anything which in combination with the other material will make plant food, using lime in sufficient quantities to keep in subjection any odor arising from a surplus of greasy materials.

There is enough material which may be gathered from time to time on the farm to start several compost heaps, each of which may be forked over in the late fall and the material applied to the soil then, or if not sufficiently well rotted, the following spring. It will cost but little to gather them but will add many dollars to the crops, to say nothing of added cleanliness about the farm. If farmers were as careful about their waste products as are manufacturers, they would soon find a way of making money by their use surprisingly easy.

Growing Potatoes Profitably.

One of the most successful potato growers in the country is an Ohio man who recently gave his methods publicity before a meeting of horticulturalists. He claimed that by turning under two or three clover sods and thus securing a large amount of humus in the soil, he could grow a crop of potatoes without the aid of a drop of rain from planting to harvest. He grows only medium early sorts, thus enabling him to sow the land to wheat after taking off a crop of potatoes. Plantings are made four inches deep, in drills thirty-two inches apart and from twelve to twenty inches between the pieces, using from six to eight bushels of seed per acre. It might be well to say just here that this quantity of seed would be much too little unless the soil was rich and well prepared such as is the Ohio man's. Before the potatoes are up the soil should be worked twice with a smoothing harrow to loosen the surface soil and kill any starting weeds. As soon as the rows can be made out a cultivator should be used, the teeth being run four inches, but later when the tops are four to six inches high the cultivation should be shallow, not more than two inches deep. At least once a week, and as soon as the ground is in condition after a rain, a shallow cultivation should be given up to the time the vines cover the ground. Much of the cultivation may be done with the weeder, thus keeping the weeds down as well as giving the necessary cultivation. If the soil is rich in humus and a proper amount of plant food furnished, the frequent stirring of the surface soil will result in a good crop even in a dry season.

It is suggested that blackboards be abandoned for schools, that a light colored board be substituted therefor, and that colored chalk be used instead of the usual white crayons.

KEYSTONE STATE NEWS CONDENSED

TO THE FRONT.

Seven Pennsylvania Regiments Ordered to Chickamauga Last Week.

The following order reached Camp Hastings at Mt. Gretna last Friday: "To the Governor of Pennsylvania: Seven regiments of Infantry of your State having been mustered and ordered to proceed to Chickamauga, it is desired that the State authorities furnish all supplies possible in the way of clothing, camp and garrison provisions and all requirements for soldiers in the field, including tents, which are much needed. On arrival at Chickamauga of the troops, with those of other States, they will be equipped and moved to the front. This was found to be better than equipping regiments at State rendezvous. Ordnance Quartermaster and commissary officers will report at Chattanooga. Supplies to meet the situation.

R. A. ALGER, Secretary of War.

This means that these regiments will move in the order named—Fourth, Sixteenth, Third, Fifteenth, Fifth and Ninth. Major Thompson says it is just possible that the order will be changed to the extent that the Fourth and Sixteenth regiments will go forthwith to Tampa.

The following pensions were issued last week: Morris Hess, Clayville, \$3; Joseph R. Ross, Waynesburg, \$6; John F. Deratine, Bellefonte, \$8; Benjamin D. Morrell, McKees Rocks, \$8; Thomas Graham, Pittsburg, \$8; John T. Jamison, Indiana, \$8 to \$10; John C. Harkon, Blairsville, \$6 to \$5; John Hesch, Rochester, \$10 to \$12; Joseph B. Goben, Soldiers' Home, Erie, \$8; Lucinda J. Van Winkle, Rome, Bradford, \$8; Henrietta Matson, Canton, Bradford, \$8; Michael Clark, Orbisonia, Huntingdon, \$5; Eliza M. Fieson, mother, Allegheny, \$12; Edward J. Humphreys, Ebensburg, \$6; William J. Warden, Pittsburg, \$6; Benjamin Stroble, Irwin, \$8; William H. Reardon, Shippensburg, \$6; Samuel Morrow, Allegheny, \$6; George Simons, Brush Valley, \$8; Alexander F. Hartford, Crafton, \$10; Oliver P. Wilson, Hubersburg, \$10; Emma Edinger, St. Petersburg, \$12; Mary J. Smith, Troy Center, \$8; Emma Nicholson, Allegheny, \$8; William W. Headley, father, Ferryville, \$12; Martha J. Wyman, Sligo, \$12; Richard D. Henry, McDonald, \$8; John H. Linderbaugh, Library, Allegheny, \$8; James Corman, Rebersburg, Center, \$6; John Hook, Rebersburg, Center, \$6; Milton Bartley, Polk, \$6; Thomas J. Frow, Lewistown, \$6; Lemons Scrudler, Penn Furnace, Huntingdon, \$6 to \$10; Stewart Durbin, Connellsville, \$12 to \$17; J. A. Small, Nebraska, Forest, \$6 to \$8; Jacob W. Ottlinger, Soldiers' Home, Erie, \$8 to \$10; Elizabeth Clements, New Castle, \$12; Catharine Nearhood, Center Hall, \$8; Mary E. Jackson, Girard, Erie, \$12.

Paul Meshok, a Slav miner, repulsed an attack from three others and dealt Joe Tenaki a deadly blow on the head with a club at California a few days ago. The injured man died. Meshok, his wife and two children were walking on the railroad near Roscoe late Saturday night, and the ruffians fell upon him, knocking him down and using him up badly. He got a club and struck Tenaki.

Joseph Habitsky, who shot and killed his brother Michael, at Averton, last January, was acquitted of the charge of murder. The defense was that the shooting was accidental. John Hazy, convicted of criminal assault, was sent to the penitentiary for two years and five months.

Joshua W. Landis, a fire insurance agent of Berlin, fell from a buggy in which he was returning from Meyersdale to his home the other day, morning and broke his neck. Landis was 50 years of age and leaves a wife and a number of children.

The Washington county commissioners awarded to William Miller & Sons, of Pittsburg, for \$39,900 the contract to erect the new court house and jail. Sandstone is to be used. An amended contract calls for granite for the court house only at \$346,300.

William Wertz, aged 18, had his back broken by a stone blasted from the Juniata stone quarry and died Thursday in the Altoona hospital. With companions he was playing poker near the quarry when hurt.

David Ramsey, member of Company I, One Hundred and Third Pennsylvania Volunteers in the civil war, fell dead in his garden at New Castle recently while planting potatoes. He was 73 years old.

William E. Lloyd of West Middlesex, is back from the Klondike. He has paying claims and will return. He reached Chikoot passed the avalanche and found 67 dead bodies there.

Centre County grangers have set the date for the mid-summer encampment at Centre Hall on September 12-17. Leonard Rhone is chairman of the Committee of Arrangements.

Mrs. Elizabeth Arnold, who was shot by her son-in-law, Albert Daub, on April 27, at Lebanon, died Monday, and the wife of Daub, who was also wounded, is not expected to live.

John W. Irwin, a traveling salesman, was found dead in his room at the Commercial hotel in Franklin a few days ago. He was 55 years of age, and resided at Slippery Rock.

Governor Hastings granted a respite to Walter E. Goodwin, of Wellsboro, to have been hanged Wednesday for the murder of his wife, until June 5.

Mrs. Michael Tott and a 6-year-old daughter of John Polish burned to death in a fire that destroyed three dwellings at Minersville, near Pottsville last week.

After dressing in his best clothes, William Graver went to the barn on his farm, near Allentown, the other day and hanged himself from a rafter.

Herbert Griffith, engineer of the steel mills, of Bristol, scaled the big smoke-stack, 130 feet high, and flung to the breeze an American flag.

While walking on the Bellefonte Central railroad, near State College, Crawford Switzer was killed by a train the other day.

Cyrus Zieger, a veteran of the civil war, met death under the wheels of a Shamokin & Mount Carmel trolley car last week.

Four prisoners got out of Sunbury jail recently by means of a rope ladder.

Daniel McKinley, a traveling salesman for a Philadelphia drug house, was found dead in his chair at his room in a Lima hotel a few days ago. His son is a Catholic priest in Germantown, Pa.

The mansion of Major E. Steinbacher, at Akron, was damaged by fire and the loss will reach \$8,000, fully covered by insurance.

Mrs. Christina Fisher, the oldest resident of Steubenville, celebrated her 103d birthday anniversary last week.

While out fishing John Meyer, aged 45 years, fell into the water and was drowned at Akron a few days ago.

Free Mosely, convicted of killing James Alston of Irondale, got two years to the penitentiary.