World's Greatest Guns on New U. S. Battleships Will Make Naval Warfare Inconceivably Dreadful

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By Rene Bache.

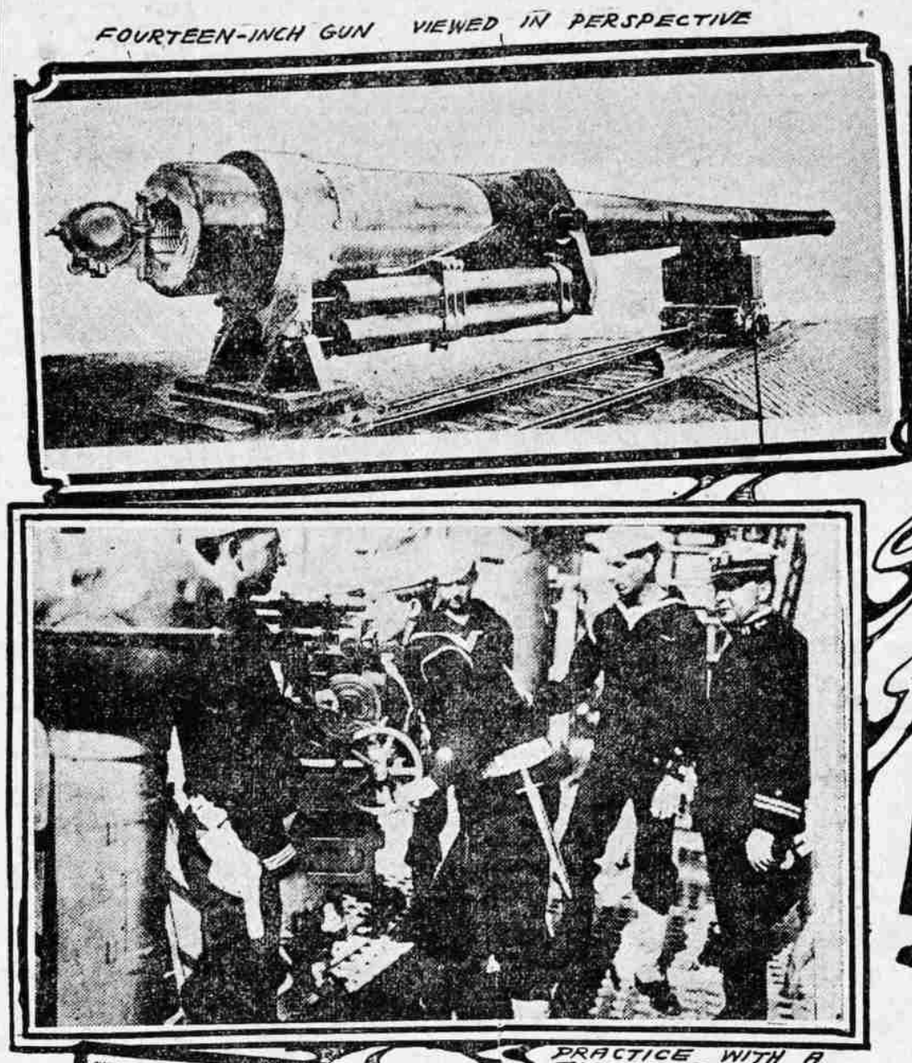
PORT NEWS, Va., Sept. 16.—The most wonderful vessel ever built has just had her keel laid in the dock yards here. She has been named the Texas, and, afloat, she will be the most formidable fighting ship in the world. However, with the qualifying fact that her sister, and twin—called the New York—is in a similar stage of construction at the yard in Brooklyn. They will make a glorious pair, as may be judged from facts respecting them presently to be set forth. For one point, they will carry bigger guns than any vessel afloat.

Some months before the outbreak of war with Spain, our navy possessed in addition to other more formidable ships (such as the Oregon and Indiana) two second-class battleships. One of these, the Maine, is now being dug out of the muddy bottom of the harbor of Havana. The other was the old Texas, which today is junk—having been ignominiously sold as a target, to test the power of up-to-date projectiles.

What Might Have Been

How we are to have a new Texas to take her place. But what a difference between the two! It is no exaggeration to say that if Spain had possessed one ship like that now building she might easily have defeated us in the memorable struggle of 1898. The vessel, speedy enough to choose her own distances, could have knocked out our naval fighting machines literally in detail, while keeping beyond the effective range of their guns.

The Texas (like the New York) will be armed with eight of those wonderful 14-inch guns which are now to be placed for the first time on board of fighting ships. There is nothing like them in the navies of today, foreign nations having contented themselves thus far with 12-inch guns. The projectiles they throw are 4½ feet long, weighing 1,400 pounds, and are hollow, the vacant space being packed with forty pounds of a high explosive which is the most powerful in existence, its composition being a government secret.



Guns in Five Turrets.

Now the efficiency of either one of these vessels as a fighting machine may be judged when it is explained that the half-score gigantic breech-loading rifles will occupy five turrets, the latter being arranged in a straight line from bow to stern, so that in battle all of the guns can be fired as a broadside either to port or starboard. Two of the turrets will be somewhat higher than the other three, in order that their guns may fire over the others in cases where shooting has to be done directly ahead or directly astern.

The two ships represent an entirely new type of "superdreadnaught." One of their most remarkable features will be a secondary battery of twenty-one 5-inch breech-loading rifles which, though in themselves very formidable weapons, are not meant for use in battle at all. Under such circumstances, indeed, they would not even be fired—their business being merely defense against torpedo boats. At night they would be utilized for this purpose in connection with powerful searchlights.

Fire at Six Miles.

What the Texas (like her twin sister) will depend upon is the delivery of smashing blows at long ranges with her great 14-inch guns. Under present conditions the normal fighting distance, where battleships are engaged, would be from 6,000 to 12,000 yards—that is to say, from three to six miles, roughly speaking. They would start firing at about six miles. Ten years ago the fighting distance was only 2,000 yards; but it is being steadily pushed out with the improvement of guns and other elements of fighting power.

The 5-inch guns are of no use at such distances, their proper fighting range being from 3,000 to 4,000 yards. Besides, if it were attempted to employ them in battle, they would make more or less smoke and interfere with the fire control. When it comes to their proper business, they are deadly enough, each one of them being able to throw twelve 50-pound shells a minute, loaded with high explosive. Collectively they are called the "torpedo-defense battery," and the twenty-one of them will be distributed all around the vessel, so as to cover as many points of the compass as possible.

The 14-inch rifle is just a trifle over 53½ feet long. Its cylindro-conical projectile, driven by the explosion of 360 pounds of smokeless powder (which is the load), leaves the muzzle with a velocity of about half a mile a second. Its striking energy at the muzzle is reckoned at 45,000 foot-tons—enough, that is to say, to lift 1,000 tons 65 feet into the air. Hitting a target two miles distant, its energy is something like 50,000 foot-tons.

Imagine the effect of such a blow delivered upon the side of a ship! Nothing afloat could successfully resist so mighty an impact. But this is only one shot from one gun. With all ten of its guns concentrated upon the target (the range being once correctly obtained), the Texas, at a distance of five miles, could literally annihilate a battleship less formidable than herself inside of ten minutes. Such a "salvo" (as it is now called in naval parlance) would deliver enough striking energy to lift 10,000 tons fifty feet in the air—and this, be it noticed, twice every minute.

The up-to-date method of sea-fighting is to concentrate simultaneously all the guns of a number of warships upon a single vessel of the enemy, thus rendering her quickly hors de combat, and then to turn the attack in similar fashion upon another member of the hostile fleet. Suppose that four such vessels as the new Texas (we shall start building two more like her next year) were to concentrate their gunfire in this way upon an enemy's battleship—how long could the latter, even though herself a formidable craft, withstand the assault?

Guns Outrival Armor.

How long, indeed, could anything afloat stand up against such blows? For many years there was great rivalry between armor and guns, and it was a question which would win out. But, as things stand today, the gun seems to be far and away the winner. Offense has become stronger, apparently, than defense can ever hope to be. How are human hands to fashion any floating object that will resist the impact of a projectile capable of piercing 26 inches of solid steel—a projectile that strikes with an energy equal to that of a ton of steel dropped from a height of twelve miles?

Such a projectile, in striking a battleship fairly, may not penetrate, but it is likely to "dish" the armor plate it hits and to start leaks. This is what is technically known as a "racking effect," or the mighty shell, if it chances to hit a turret, may easily jam its machinery, preventing it from revolving, and thus putting its pair of big guns out of business. Or, again, it may strike the conning tower (from which the management of the vessel is directed), and crack it in two.

Dreadful Carnage Likely.

All of which does not take into account the frightful effects of the explosion of the projectiles on landing. Impact sets off the high explosive packed inside of them, and they are rent into a thousand fragments weighing anywhere from an ounce to 50 pounds. These fly in all directions, and are liable to kill a great many people. The carnage in sea fights of the future will be inconceivably dreadful.

The big naval guns of today are strikingly different in shape from those of a few years ago. The latter were strengthened by enormous steel hoops at the breech, to withstand the sudden explosion of the old-fashioned gunpowder. But the modern smokeless powder burns very slowly, and in consequence the rifled cannon of late pattern have "spindled out" in a surprising way, becoming very long, and thus giving the powder plenty of time to resolve itself into gases before the projectile leaves the muzzle. When one comes to think of the matter, it seems surprising that the world should have been satisfied to get along with substantially the same kind of gunpowder from Biblical times (when the Chinese used it) up to the twentieth century, or very nearly. Then came the smokeless powder, which made necessary a change in guns.

Nature of Projectile.

As already stated, the projectile fired from the 14-inch gun has a muzzle velocity of 2,600 feet a second. The shell fired from a 12-inch gun leaves the muzzle at 2,900 feet per second. But it weighs only 870 pounds, as against 1,400 pounds. This difference in weight signifies that much less energy is delivered in striking the target. Greater energy means more penetration. Furthermore, the heavy shell ignores wind and variable air-densities.

These great guns which will compose the formidable armament of the Texas and the New York are deemed by the navy department the most efficient weapons ever made. They can hit harder blows, and strike with greater accuracy, than any other rifled cannon now existing in the world. If it be asked how the ships carrying them will be able to withstand the shock of their own gunfire, the answer is that the explanation lies in their huge size and in the enormous weight of the gun-mounts. These twin vessels will each have a displacement of 23,000 tons, and, of course, the chief idea held in view in their construction is that they shall serve as gun platforms.

FOSSIL WORMS MILLIONS OF YEARS OLD

CHARLES D. WALCOTT, secretary of the Smithsonian Institution at Washington, is the author of a recently-published paper on the fossil worms of British Columbia, based upon specimens collected during investigations commenced in that province years ago. The paper is entitled "Middle Cambrian Annelids." In plain English means the worms that ate earth and sea from one of the earliest periods of geologic time. Not all of them resemble the plain homely earthworm, or "rain worm," but many of them, living in the sea are covered with fine and beautiful irridescent hairs, or have scales like fishes and still others are concealed in tubes, from which project long frills of brilliantly-colored gills.

The average reader may imagine that not especially useful except as a friend to the gardener in loosening the soil, but to the disciples of Isaac Walton, who like the early bird to break his fast, geology they have an important study, enable the scientific student to learn time and to study the conditions of life in the past ages.

In the paper, Dr. Walcott makes his first report on the annelids of British Columbia. As a rule, these worms have been known only by their trails and borings in the mud and sand deposited in the various periods of geologic time. Very few of the actual animals have ever been preserved, the most noted discoveries being those in Bavaria and Monte Bolca. In fact, Dr. Walcott searched for several years for such fossils in the shales of British Columbia, but not one of these animals was found until the summer of 1910, when he came across them in a form of mudstone called by geologists Burgess shale. These worms and other fossils are pressed flat, so that the animal is represented by only a thin film, which is fortunately darker than the shale or rock, and, being unusually shiny, is thus distinguishable.

Despite the fact that these animals are all worms or leeches, the forms vary greatly. Some are truly worm-like, with varying rings or segments; others have nearly the appearance of tadpoles, with heads, tails and fins; some have a tubular construction and tentacles, while others, with feathery spines or scales as exposed in the rocks, present the petal-like appearance of a chrysanthemum.

The different forms of the annelids as well as their external and internal characteristics are clearly shown by six plates made from photographs of the actual fossils taken by a system of reflected light. The description includes several new families and genera, together with eighteen new species covering a most exhaustive list of specimens taken from points along the Canadian Pacific railroad, near Burgess Pass and Field, British Columbia. Nearly all the specimens come from the Burgess shale, 3800 feet above Field, or about 7800 above sea level.

Dr. Walcott's researches relate to Paleontology, which is the historical branch of geology, and covers the collection and study of animals and plants found fossilized in rock. The object of this science is to unfold the past history of our world as it is thus revealed to us by the remains of ancient life imbedded in the layers of the earth's crust. Dr. Walcott shows where a new point of view is opened by the study of annelids or fossil worms. The fact that from one locality eleven genera belonging to widely-different families were found indicates that the fundamental characteristics of all the classes were developed prior to the middle Cambrian period, which is the oldest in the paleozoic era and, is known to scientists as the age of invertebrates.

It is absurd to venture a statement of the age of these animals, but knowing that they belonged to the middle Cambrian period we can estimate an age of many million years—a great age for any specimen, but nature has preserved them so well that biologists are now able to compare them with the life prevailing today.

THE VOICE OF SILENCE.

Gazing upon the street—
In pensive mood I watch the hurrying throng;
Striving to read Life's riddle in the faces that go by.
Faces masked with indifference, giving no sign of existence;
Faces fired with lust, hurrying swift toward death;
Faces calm and benignant, speaking of peace after sorrow;
Faces that spell ambition and determination to conquer—
Ceaselessly surging and passing—the tumult dies to a murmur—
Clear and sweet to my soul comes a message—
The Voice of the Silence.

—*J. B. Miller.*

Sept. 12, 1911.

LAST OF MYSTERIOUS AMERICAN RACE CAPTURED

LOS ANGELES people may have an opportunity the first week in October to look upon Ishi, the last of the most ancient tribe of aborigines native to what is now California. As the sole survivor of the once vast and powerful people who are older than the oldest of contemporary Indian tribes, Ishi, captured near Oroville one month ago, is today the most absorbing figure among ethnological students. Since he has been vouched for as the great anthropological find of the twentieth century by the leading savants of the University of California, the scientists of all the world have become interested in him and efforts will be made to bring him to this city the first week in October for the great gathering of the American Institute of Archaeology.

This conclave of American scientists is the outcome of an invitation of the Southwest Society of Archaeology extended last month at the New Mexican meeting by Dr. Hector Alliot and Charles F. Lummis. It was promptly accepted on account of the appreciation in which the Southwest society is held because it originated the idea of humanizing ancient research by relating it to present times.

Since nothing appeals to all classes more than an animated subject, Ishi is recognized as the man of the hour and if the University of California can be induced to part with him for one week he will unquestionably be the hero of the local meeting of learned men.

As the university does not hope that the almost prehistoric creature will long survive the limitations of civilization, the faculty has taken phonographic records of his unknown tongue. If this man had not been captured and his vocabulary had not been preserved by phonographic enunciation, the language would have been extinct at his death.

It is believed here that the university professors will be glad to loan their wild treasure to so great a body of students. Every session of the meeting here will be open to the public and if Ishi is brought here everybody will have a chance to see if not to hear him. He is said to look like an Indian or a Zulu, except that his hair is slinged. He has rawhide thongs through his nose and through his ears. These were put in when he became of age and his people believed that some great calamity would befall him if the leather ornaments were ever removed.