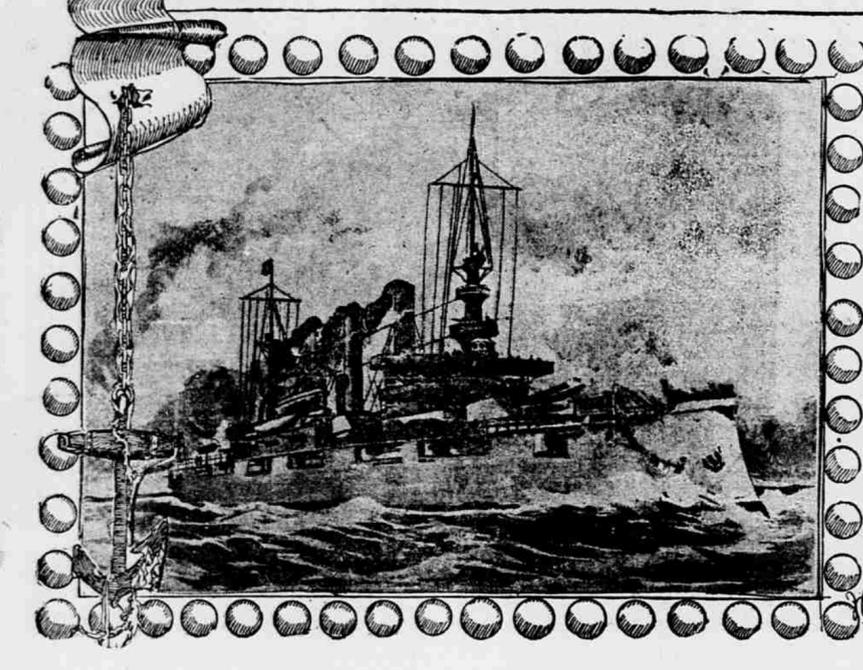


# THE NEW GROUPS OF ARMORED WAR VESSELS PROGRESS IN GUNS, PLATES AND POWDER—GREATER DISPLACEMENTS



THE BATTLESHIP CONNECTICUT, AS SHE WILL APPEAR IN ACTION.

BY COMMANDER J. D. JERROLD KELLY, U. S. N.  
WRITTEN FOR THE SUNDAY REPUBLIC.

The development of offense and defense in war constructions finds its highest expression in the battleships of the Connecticut type.

This is attributable mainly to the large displacement, in which the various elements have found room for larger extension, and to the improvements made in structural material.

In the earliest battleships most of the essential qualities had to be defined their greatest value owing to the compromise that was forced by the necessary association of such antagonistic factors as speed, battery, armor, protection, coal capacity, ammunition supply, habitability and sea-going and seakeeping powers.

What had to be produced was not the best attainable, but the best all-round efficiency.

The principles of all constructive design are controlled by considerations of "weight" and by its scientific distribution.

And to be unduly favored, through the assignment of extra weights to motive power, this would be at the expense of some other quality, such as protection, battery, or coal capacity. In special types, of course, such a highly favored distribution is often adopted, in order to satisfy the particular employment for which the type is intended.

But in a battleship it is impossible; there must be room, and margin for many qualities, as it is a rounded production, wherein the total available weight must be distributed to produce not the very best, but the best possible, results.

Leutenant Commander Black, U. S. N., has put this question in a paper read at the last meeting of the Society of Naval Architects and Marine Engineers. "The battleship," he said, "is the epitome of sea power. Reducing to its simplest terms, it is a floating gun platform.

As a unit of defense it contains on the gun displacement of concentrated destructive power—first, for battle on the high seas, for which it is principally designed; second, for coast attack, which is its secondary and seldom-used purpose.

"The difference between the tactical value of battleships and of cruisers, torpedo boats, submarines and rams are those of degree rather than of kind, for each merely chooses some weapon or some quality of the battleship and sacrifices everything else to it. The special tactics suited to each are then from the character of the weapon.

Hence it may be profitable to inquire into the considerations that have governed our designers of their treatment of the battleship question, especially as the question of displacement—whether large or moderate—is still in dispute.

The first-class battleships of the navy may be separated into six groups, according to the period in which they were authorized, or into four groups if displacements and speed be taken. If, however, the latter standard be accepted, the grouping would be inaccurate, as the gun energies and battery disposition thus assembled vary so greatly.

To the first group belong the Indiana, Massachusetts and Oregon, of 10,500 tons, authorized in 1893; the same class may be assigned the Iowa, of 11,500 tons, authorized in 1892. Antedating these were the two well-known ships, the Texas, now rated as a second-class battleship, and the first Maine, intended originally as an armored cruiser, but later classed as a battleship.

In the second group (1895) are the Kentucky and Kearsarge, of 11,500 tons; in the third (1896), the Alabama, Wisconsin and Illinois, of 11,500 tons; and in the fourth (1898), the Missouri, Maine and Ohio, of 12,200 tons.

Excluding the Missouri and Ohio, the above-named ships are in commission—the Kearsarge and Kentucky in Atlantic waters, and the others on the North Atlantic station.

NEW ONES PROVIDED FOR BY CONGRESS.

The fifth group (1899) consists of the Georgia and Nebraska, and (1900) of the Virginia, Rhode Island and New Jersey, each of about 11,500 tons. Finally, we have the Connecticut and Louisiana and the new ones as yet unnamed, all provided for by the present Congress.

of numbers that, in its opinion, enables the work to be done.

Formerly we heard a great deal of dismal prophecy from this minority. It feared and proclaimed that, with large displacements, we were putting all our eggs in one basket, and that the loss of a ship meant the destruction of an army corps. Fairly considered, the objections cited by the minority are more fanciful than real.

Indeed, when the two types are submitted to the test of comparative battle efficiency what opposition could the imperfectly protected four 6-inch guns of the Oregon offer to the heavily protected armor, single casemated twelve 7-inch guns of the Connecticut class?

And at the end of this fight, which should prove to be the cheaper group? ALL BATTLESHIPS UNHANDY ON OCCASIONS.

It is usually claimed that the 16,000-ton ship must be less handy than the latest craft; that its maneuvering qualities must be inferior; but, then, all battleships can be unhandy on occasion, and if the model tank experiments can be relied upon, the Connecticut promises, through its proportions and adjustments, to be at least equal in handiness to the earlier ships.

Its draft will certainly be greater, but this will not forbid its entering an American harbor on the same stage of the tide that the Oregon or any other of our battleships, so far designed, will have to use.

II. This increase in size of warships has been common to all navies in recent years, and is coincident with the increase in merchant vessels. Such increase in size may involve decrease in handiness and it may not—there is no compelling necessity—but it surely involves practice in an increase in cost.

In comparing the Connecticut with the latest American design, with her predecessors, Chief Constructor Bolles, United States Navy, draws instructive and illuminating parallels, some of which may be paraphrased here. He declares that, first of all, the problem of the naval architect should be to produce the best military unit for the least cost.

It remains for those who command naval vessels to say what limit of military power shall be placed upon the individual unit of the fleet.

A distinguished foreigner recently asked why our battleships were so large or of so great displacement, and was told that the conditions of our service seemed to make it necessary for them to go anywhere and be ready to fight when they get there. While our recent battleships are undoubtedly large, the Virginia class of five vessels being 14,800 tons normal displacement, and

the Connecticut class 16,000 tons normal displacement, there are unquestionably great advantages obtained in the individual power of the battleship as compared with its smaller predecessor.

To show justly the advantages of increase in size, comparison should be made between ships which are tactically comparable; that is, practically the same speed and whose motive power and battery are of substantially equal modern design.

COMPARISON BETWEEN ALABAMA AND MAINE CLASSES.

To demonstrate the effect of the increase in size of our own battleships, a comparison in figures and percentages easy of comprehension can be made between the Alabama and Maine classes (our most recently completed classes), these last being considered together as of about 12,000 tons displacement, while the Connecticut class is of 16,000 tons.

The cost of the Maine and Alabama, complete, is about \$5,000,000 each. The cost of the Connecticut is about \$7,500,000. The displacement has been increased 32 per cent in passing from the Maine and the Alabama to the Connecticut, and the cost of four Connecticut will equal the cost of five Maine or Alabama. The weight devoted to battery and ammunition in the Maine or the Alabama is 1,003 tons and in the Connecticut 1,340 tons. Therefore, by increasing the displacement of the Maine or the Alabama 32 per cent, there has been a corresponding increase in the weight of armament carried.

The weight of the discharge of one round from all the guns of the Maine or the Alabama over six-pounders is 5,312 pounds; the weight of the discharge of one round from all guns over six-pounders of the Connecticut is 7,526 pounds, or an increase of 42 per cent.

Therefore, for an increase of one-third in size there has been a gain of nearly one-half in effective battery power. Thus, if the battery power of the Maine or the Alabama is considered as the unit, the Connecticut will be 1 1/2, and for \$3,000,000 four Connecticut can be built, with a battery power of six, and five Maine or Alabama, with battery power of five.

In the Maine and the Alabama the weight devoted to armor protection amounted to 2,770 tons, and in the Connecticut to 3,992 tons, thus showing an increase in protection of 44 per cent for an increase in size of 32 per cent.

These illustrations of the enormous gain in offensive and defensive power of these vessels corresponding to the increase in size, and well-known parallels in the higher cargo efficiency of the great steamers in the merchant service, which is due to the fact that the larger vessel requires a less pro-

portion of hull and machinery weights than the smaller for equal results in strength and speed.

ADVANTAGES OF THE INCREASE IN SIZE.

The advantages of the increase in size and length of the Connecticut are clearly shown with reference to the elements of speed and power.

Model basin trials prove that at a speed of eighteen knots the power required for the Connecticut is about 5 per cent less than that required for the Maine; whereas at nineteen knots the power required for the Connecticut is nearly 30 per cent less than that of the Maine.

III. The gun is still the supreme sea weapon, for, though it may not be able to destroy, it can render a ship helpless by putting out of action its battery and personnel. "The individual gun," writes Lieutenant Commander Niblack, "is the unit of offense in one sense; but the combined fire of as many guns as possible, directed according to a definite scheme by means of a well-organized fire control, alone means victory."

"The key to modern fleet actions is concentration of gun fire. To achieve this we must install our guns properly, and Fleet formations should be based on gun fire, and in battle we should limit tactical movements to those which least distribute it."

The difference between the heaviest naval ordnance of 1882 and 1902 is shown in the diagrams, which were among the illustrations of a paper read by Rear Admiral Charles O'Neil, chief of naval ordnance, before the Society of Naval Architects. The sketches tell their own story; but it may contribute to a more definite appreciation of the revolution in shape and in power if the data of the guns be compared.

In the old ordnance, of which we were justly so proud, the weights of the projectile and charges are not the normal ones, but are those authorized for extraordinary circumstances—"at ironclads at short range."

Fifteen-Inch Cast Iron Smooth Bore Muzzle Loading Rifle—Weight, 18.7 tons; length, 15 feet 1 inch; powder and charge, 100 pounds black powder; projectile, 49 spherical shells; velocity, 1,100 foot seconds; muzzle energy, 7,967 foot tons.

Twelve-Inch Steel Bull Up Breech Loading Rifle—Weight, 12 tons; length, 12 feet 1 inch; powder and charge, 100 pounds black powder; projectile, 49 spherical shells; velocity, 1,100 foot seconds; muzzle energy, 4,246 foot tons.

The flash frigates of the Civil War carried as their favorite broadside gun the 5-inch smooth bore. It feet in length, that with a ten-pound charge and a seventy pound shot developed an energy of 347 foot tons. The muzzle energy of the latest 12-inch rifle is therefore fifty-four times as great, so that one shot from one new turret gun will develop as much energy as both broadsides of a fighting fifty-four gun frigate of the days of sail or of sail and auxiliary steam.

OLD ORDNANCE SYSTEM STILL IN FAVOR.

Our present ordnance system dates in essentials from 1882. Tentative efforts had been made before this to replace or to revamp the old ordnance, but without suc-



4.5 IN RIFLE GUN IN TURRET OF BATTLESHIP OF 1902



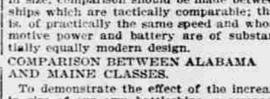
BRIDGE, UPPER AND MAIN DECK



GUN AND BERTH DECK



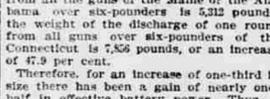
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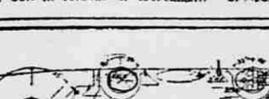
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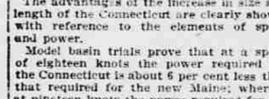
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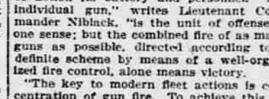
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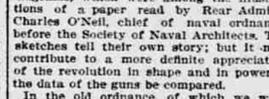
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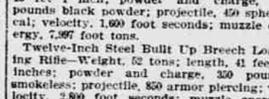
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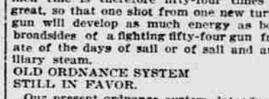
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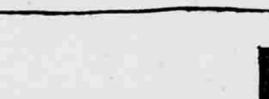
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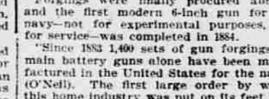
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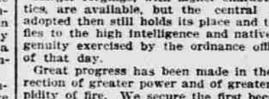
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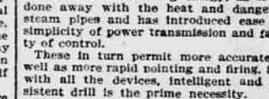
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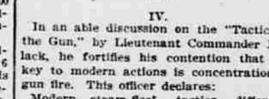
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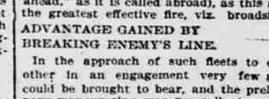
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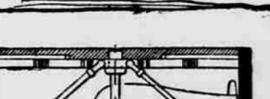
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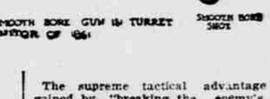
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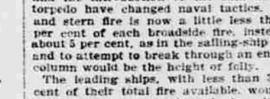
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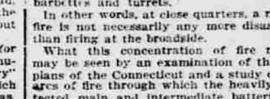
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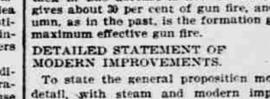
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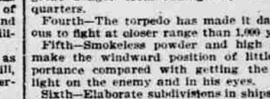
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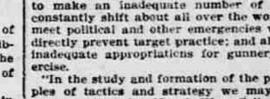
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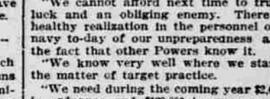
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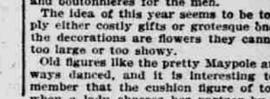
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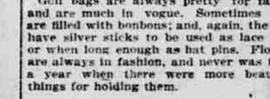
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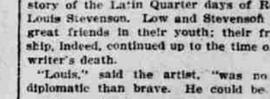
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The supreme tactical advantage was gained by "breaking the enemy's line" (column of vessels), throwing his formation into confusion, raking his nearest ships in passing through and escaping most of his broadsides while delivering your own successively and in its most effective form.

With modern battleships the installation of pairs of heavy guns in the ends of ships and the introduction of the ram and the torpedo have changed naval tactics. Flow and stern fire is now the rule, instead of about 5 per cent, as in the sailing-ship days, and to attempt to break through an enemy's column would be the height of folly.

The leading ships, with less than 30 per cent of their total fire available, would, in attempting to break through, be withered by the powerful concentrated broadsides of the waiting column or destroyed by his torpedoes or sunk by his rams. Then, too, raking fire has lost its terror because the bow and stern presentation of a modern battleship is very strong owing to its concentration of heavy armor in the casemates, barbets and turrets.

In other words, in these quarters, a raking fire is not necessarily any more disastrous than firing at the broadside.

What this concentration of fire means may be seen by a comparison of the plans of the Connecticut and a study of the area of fire through which the heavily protected main and intermediate batteries of the ship can sweep their destructive energies of discharge.

We thus have in modern steam-fleet tactics a sort of half-way, or a compromise, on sailing ships and military tactics, for "to turn the enemy's flank" as in the army, is a good maneuver; the approach to the attack in line abreast is now feasible, as it gives about 30 per cent of gun fire, and column formation gives the formation giving maximum effective gun fire.

DETAILED STATEMENT OF MODERN IMPROVEMENTS.

To state the general proposition more in detail, with steam and modern improvements:

First—Bow fire has become a great factor in modern tactics.

Second—The ram is more than ever a dangerous and fatal weapon.

## HOW THE BENTON-LUCAS ± ± DUEL CAME TO BE FOUGHT.

Continued from the Preceding Page.

In a lengthy article published in the Missouri Gazette of September 29, 1817, Mr. Lawless states that Mr. Benton was "about to withdraw his demand for a second meeting when he was assailed by a second and the most offensive nature to his feelings and reputation."

It was reported, seemingly, among other statements ascribed to Mr. Lucas's authorship, that Mr. Lucas had said that should he again meet Benton, Benton being the most accomplished duelist, that the distance should be shortened to give him, Lucas, an even opportunity with his adversary.

In consequence of this specific report, a declaration was drawn up by Mr. Lawless, submitted to Colonel Benton, and signed by Lucas.

The terms of this declaration are as follows:

In consequence of reports having reached Colonel Benton, of declarations coming from me, respecting the shortness of the distance at which I intended to bring him at our next meeting, I hereby declare that I never said anything of that subject, with a view to its becoming public, or its coming to the knowledge of Colonel Benton, and that I never said or intimated that Colonel Benton was not disposed and ready to meet me at any distance and at any time whatsoever.

(Signed) CHARLES LUCAS.

Lucas evidently thought much of substantial honor and his youthful pride probably forbade his refusing to accept a second challenge from Benton, who was known then as a great duelist, for fear his failure to do so would be regarded as a disgrace.

After the episode in the courtroom, cited by Lucas as the direct cause of the dueling between Benton and himself, the first challenge was sent him by Benton and refused in the following positive manner:

St. Louis, Nov. 15, 1816—Sir: Your note of this afternoon received. On proper occasions or for proper causes I will give the kind of satisfaction you appear to want, but for such causes as the one you complain of, under all the existing circumstances, I would not feel justified in placing myself in such a situation as to be under the necessity of taking your life or jeopardizing my own.

the redress, or satisfaction you ask for, or to any person who may feel wounded by such exposure of truth. Yours, etc.

CHARLES LUCAS.

The story of the attractive personality and many character of Charles Lucas has been handed down from father to son and to grandsons. The consistency of the portrait, however, of Charles Lucas in existence. An old painting loaned the Missouri Historical Society some years ago is supposed to be that of the artist, but not definitely identified. It is the picture of quite a young man, and from a strong resemblance to members of the same family it is evidently the portrait of a Lucas, and, presumably, Charles.

BENTON A MAN OF COURTELY GRACES.

Missouri history is too full of all the details of Benton's life and career to call for any additional, or reiterated, observations here. Benton's record of achievements has placed him before the world as one of the most influential men in shaping the destiny of the West. He was a man of iron will and courtly graces and one who feared not the hardships of life.

There is a homely little legend among the descendants and relatives of Benton that recites that when the old Senator found a pause in his career with nothing to call for endurance or put him on his mettle, he daily subjected his flesh to a severe rubbing with a coarse towel, and he said, "there was danger of a man's getting too used to being comfortable."

This little eccentricity was an indication of the Spartan character of Benton the stupendous fighter that he was from early manhood to old age.

The only portrait of Benton in St. Louis is the one that hangs in the rooms of the Missouri Historical Society. This shows a man advanced in years, with strong and prominent features, a face at once commanding and kind, and a head that is a study in character.

MODESTE H. JORDAN.

Font, Not the Altar.

## Fannie Bloomfield-Zeisler to Be a Soloist at Union Recital.

Leszczeky, the Viennese Master, Was Her Teacher.

WRITTEN FOR THE SUNDAY REPUBLIC.

Fannie Bloomfield-Zeisler, the pianist virtuosa, has been engaged as the soloist of the artist recital to be given at the Union Musical, February 2.

This is not Mrs. Zeisler's first visit to St. Louis, but it is some time since she has been heard here, and in the interim she has taken on fame and distinction.

For a little more than a decade now, Mrs. Bloomfield-Zeisler's virtuosity on the most difficult of all instruments has been the marvel of her audience. Unlike many other American musicians, she first was heard in her own country. Having come to this country with her parents at the age of 2 years from Austrian Silesia, the pianist considers herself a thorough American.

Leszczeky, the removed Viennese master, was her teacher for several years. A tour of this country followed the artist's emancipation from Leszczeky.

Then came a tour of the principal cities of Europe with the same artistic success that had characterized her American travels.

Ever since the war of 1870-1871 Frenchmen could see no good in any German name. While that sentiment is somewhat modified now, there is yet an inclination to look askance at German talent.

Mme. Zeisler, however, had the courage of her conviction, went to Paris and announced her concert recital. Her appearance was the occasion for an anti-french demonstration. A guard was stationed in the auditorium. Her first number changed the feeling of animosity against the American artist with the German name into one of genuine approval.

Before she had finished her programme, the catch number of which was a composition by Saint-Saens, she had made an impression among critics, musicians and the fickle lay element of a Paris audience.

Fannie Bloomfield-Zeisler is called a "temperamental" pianist, whose nervous organization is the substantial basis of her extraordinary fascination as a player.

she which she says must be sung with the voice, or stand out like a solo instrument at all times.

PRETTY FAVORS AND QUAIN FIGURES FOR THE DANCE.

White Paper Dresses Worn by Men—Costumes Fashioned Like Frogs—Tinsel Butterflies for