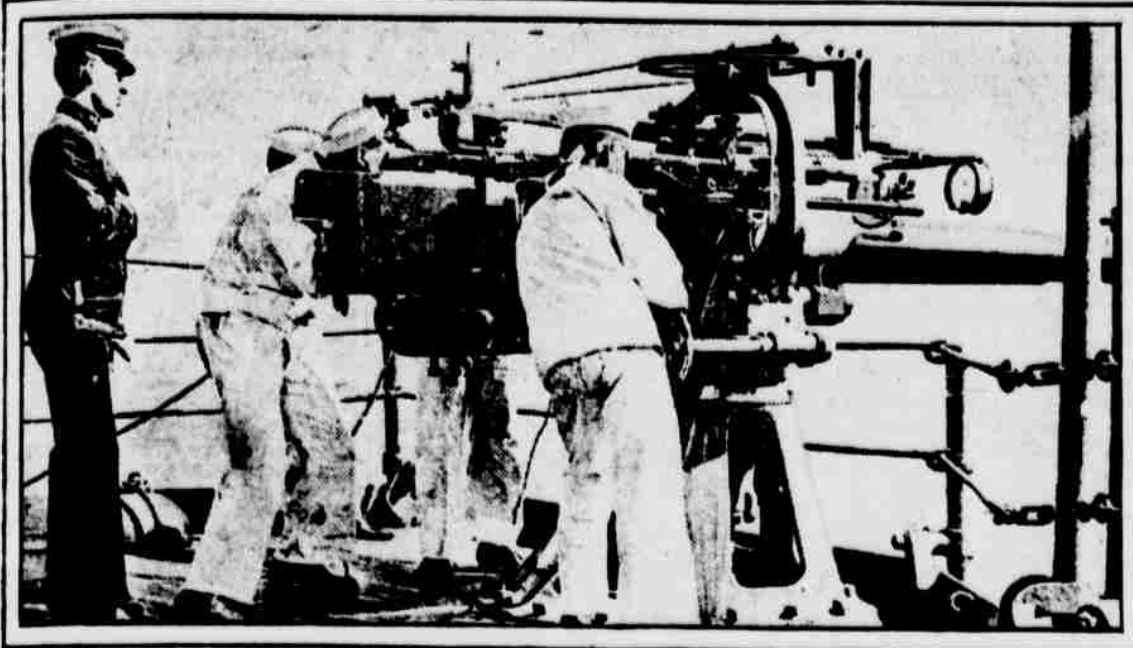


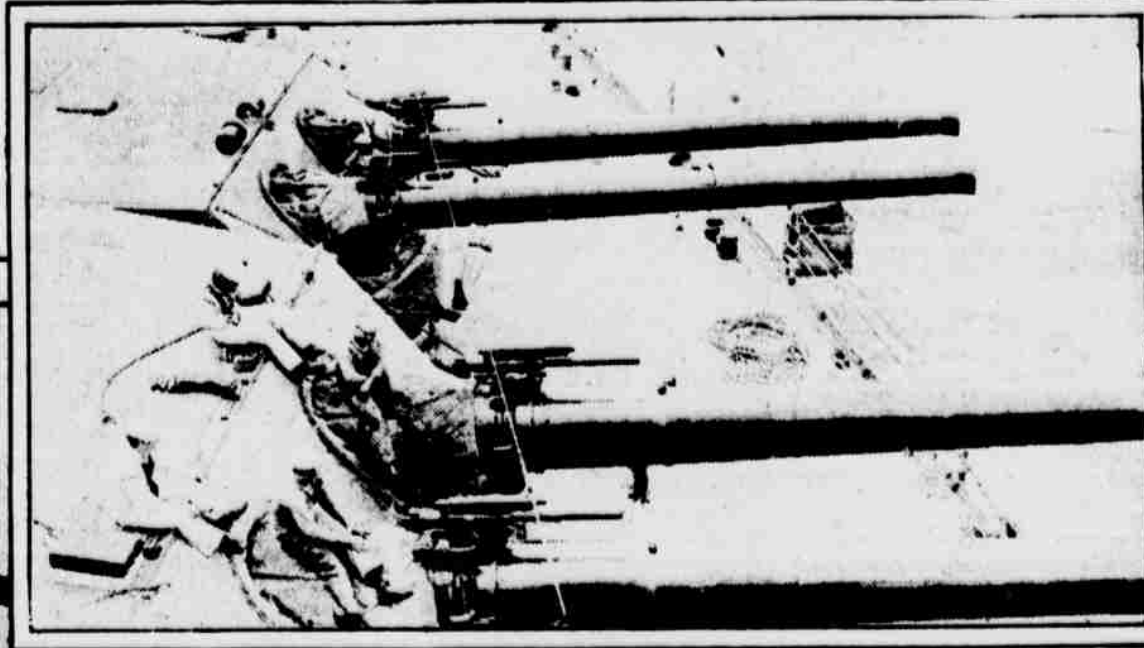


HURLING DESTRUCTION 11 MILES

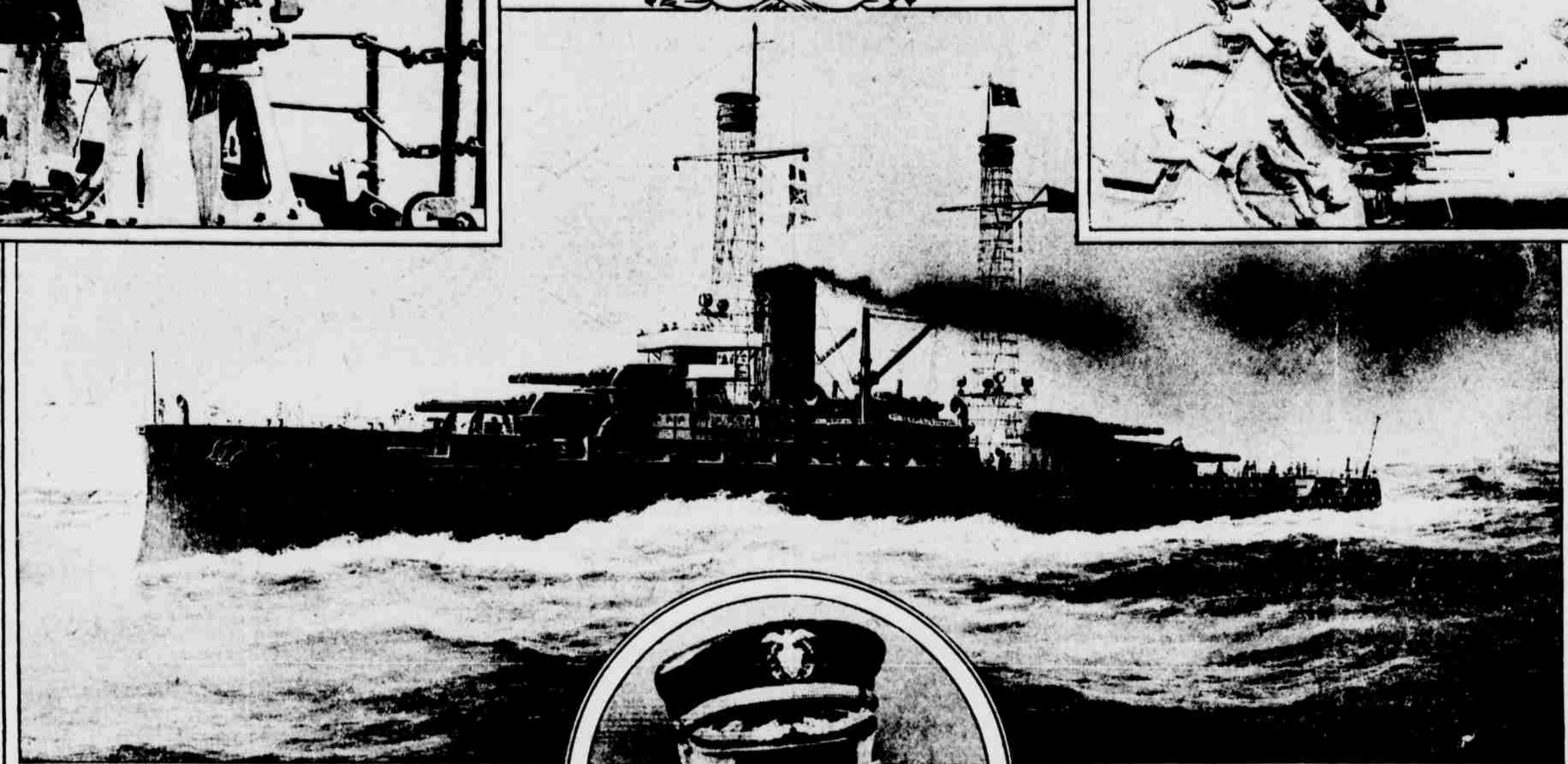


DRILLING THE GUN POINTERS.

What the Superdreadnought, Pennsylvania's Hitting Power, Displayed in World's Record Feat of Naval Gunnery, Means to the Nation



TRAINING FOR BATTLE PRACTICE WITH SUB-CALIBER GUNS.



The U. S. S. PENNSYLVANIA

GREATEST OF SEA FIGHTERS.



CAPT. H. B. WILSON
COMMANDER OF THE PENNSYLVANIA

"WE'VE straddled it! We've straddled it! Five clean hits! And the others close up! Some shooting, eh?"

"Bully for the Pennsylvania! Nothing else ever like that score!"

"Enthusiasm? It was enough to make a gravestone grin!"

"Why, man alive, the sight made me tingle from head to foot. My hair stood up on end in sheer exultation. It seemed almost as if we were banging away at an enemy. Those of us that could see the target actually stood on our tiptoes in suspense."

"There was that wee speck nearly even and a half miles away just dimly outlined against the sky. Only the people on the bridges and aloft could see it through their binoculars. To the men in the turrets the mark was invisible, but their work was done the less sure."

"The four turrets turned like Titans in parade. The twelve great weapons swung aloftward on a single broadside and in unison were brought to bear upon a spot their hidden pointers could not see. A brief pause; then these dozen grim muzzles thundered as one and belched flame and lurid smoke."

"The big ship heeled under the enormous thrust of the recoil, but nothing of her sturdy fabric yielded. A dozen taper nosed shells, each weighing 1,400 pounds, went screaming upon their reversing flight toward that faraway speck. For a while that ominous flock could be followed in their flight, and then they were lost in the aerial blue."

"For the better part of half a minute the projectiles sped onward. All eyes were breathlessly expectant. Suddenly they questioned. Would they come? At the end of what seemed an agonizing interval, mounted upward and the target was hidden in a voluminous curtain, and we knew where the shots had landed. The tally was witnessed a few moments later. Five of them—dead you, five—went right through that blasted bit of a target; and the seven others fell near by."

"Those seven slugs meant a good deal, too. For they struck so close to the mark that they could not have missed a ship, for bursting that near they would probably do a deal of damage with their hurtling fragments and would certainly disconcert or demoralize an enemy's personnel. It was indeed a wonderful sight, and none of us would have missed it for a month's pay."

"So has spoken an official eyewitness of the navy's greatest achievement in long range firing. Does the layman

realize what all this means? Does he know what it registers of money well spent? Does he know what it tells of team work and ceaseless training? Does he realize how these astonishing results are attained? Does he grasp what the dreadnought's score signifies in the way of national security?

To get an idea of the nature of that performance on the part of the Pennsylvania's gunners just remember that the target represented only the central area of an enemy ship's vital. It did not duplicate the length and height of a foe's entire broadside. Instead it stood for a small part of the probable battle target, and therefore put the gun pointers' skill to its utmost test.

Modern dreadnoughts measure 600 feet from bow to stern and tower above the waterline. Yet the mark for the Pennsylvania's men was only a speck over 100 feet long and something less than 20 feet high. Even so, at a range of 20,000 yards five shots out of the salvo struck within that contracted area. Here is evidence in proof for enthusiasts on the part of those fortunate enough to be present.

The story is one that should thrill Americans, for it shows what the men of the navy are doing despite any adverse conditions. It also makes clear how training upon the sea has been revolutionized in the course of these years and illustrates at the same time what mechanical progress

and efficiency engineering now make possible. To grasp the meaning of it all let us for a moment hark back to the days of our splendid frigates and for the sake of an example take the grand old Constitution.

The biggest guns carried by her were 32 pounders and the total weight of her broadside was 684 pounds, less than half that of a single 14 inch shell. Back of each 32 pound shot was a propulsive charge of five pounds of black powder, only half of which was really effective in speeding the projectile on its flight.

The 14 inch shell, on the other hand, uses smokeless powder, of which substantially every grain does useful work, and the weight of the charge is approximately half that of the projectile. No wonder each hurtling shell starts upon its mission with pent up energy nearly equal to that of a great express locomotive speeding along at fifty miles an hour.

When Capt. Hall guided the Constitution to victory against the Guerriere his gunners fought within pistol range, and the distance did not exceed 300 yards. And some idea of how strenuously his guns were worked can be gathered from the fact that 2,376 pounds of powder were consumed—just about enough for a salvo from one of the Pennsylvania's turrets. And yet that fight justified enthusiasm too and did in fact excite it, for Lieut. Aylwin writes:

"I would not have missed the chance—no, not for the richest prize that ever floated. It has given our officers and men the only thing hitherto wanting—confidence in themselves."

Again, let us slip years of comparative inaction, and recall that epoch making struggle between the first of our ironclads, the Monitor, and the Merrimac, not so far away from that part of the Chesapeake where the Pennsylvania has so lately set a new world's record for long range hitting in sheltered waters.

The Monitor carried two smooth bore guns of 11 inch calibre. Each shot weighed 160 pounds, and only one gun could be fired at a time. Even so, her projectiles could not batter their way through the enemy's defence despite the fact that the ships fought in contact with each other. At a range of something like 15,000 yards the case hardened points of the 11 inch shells can drill their way through more than twelve inches of the roughest steel armor.

But these figures would signify but little if the guns were not handled with an ease well nigh like that of a fowling piece and made to perform with the precision of a frontier marksman. Just think of it: The Pennsylvania's great weapons can be loaded and fired twice a minute—much better speed than was possible with the Constitution's 32 pounders and infinitely superior to the time required in the case of the Monitor's guns. Such was not the case always since the birth of the

new navy. It took a deal of slugging up to effect all that the navy's target practice represents today, and the marvel of it is that so much has been done in so brief a span, a matter of not more than fourteen years.

When the smoke of the battle of Santiago cooled away and Currier's shattered steel was examined, it was found that our larger guns had scored about 32 per cent. of hits at comparatively short range, and no trace could be discovered of a 12 inch or 13 inch projectile reaching its mark. These big weapons fired about once in five minutes. Manifestly a change was needed despite the fact that we had been able to crush Spain upon the sea.

Thoughtful men in service asked: "But what if we engaged a first class maritime power? To them the outlook was anything but rosy. Thanks to Theodore Roosevelt, a naval team meaning opposition to improvement was turned topsyturvy in the navy and the day of scientific gunnery began."

Then to that time, the rifle effect was pointed at the mark and, as the ship bearing it rolled, the weapon was fired as its muzzle swung up or down just the target. Admiral Sir Percy Scott of the British service had demonstrated that this method was antiquated and wrong and devised mechanical means for holding the gun nearly steady upon the target in spite of his vessel's motion. That was the germ of much of the improvement that has since followed.

Capt. W. S. Sims, then a lieutenant in the navy, learned of Scott's work and brought it to the attention of President Roosevelt, so convincingly that gunnery and target practice in the fleet were profoundly revolution-

ized. By 1902 Lieut. Sims began to speed things up, but it took a deal of time to develop the necessary electrical apparatus by which the big guns could be swept from side to side and quickly elevated or depressed in order to hold them on the mark. Then came the task of training the men.

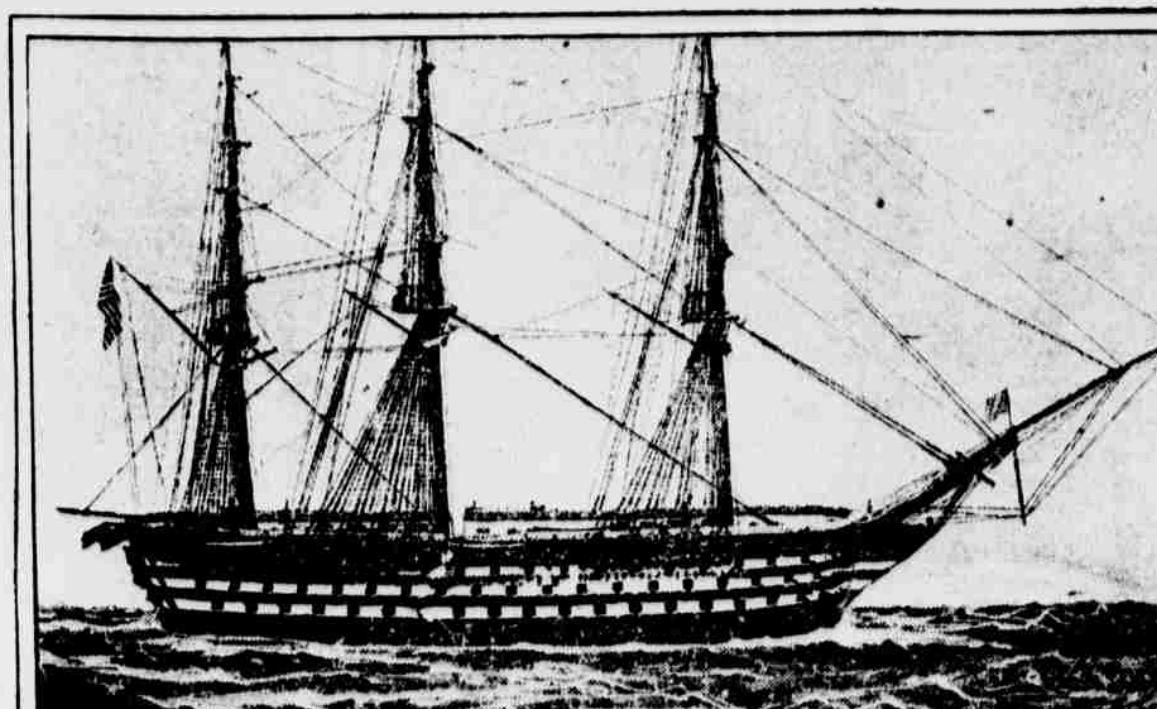
Patently Sims persisted and gradually his brother officers became imbued with his enthusiasm and tireless efforts. Out of chaos order grew and from make believe under favorable conditions battle practice evolved that was realistic in all but the shedding of blood.

To stimulate the men and to lend more color to some of their work a battleship was substituted for the conventional target of canvas and netting. The old Texas, renamed San Marcos, was anchored on the range in the Chesapeake and as the fleet steamed by at battle speeds they hammered away at that steel clad craft. For once the men behind the guns got a true notion of what their practice was leading up to and they saw for themselves just how their shells would rip and tear and wound a foe when fired in anger.

It was a revelation of incalculable value. This took place in 1911, and at a range of 19,000 yards the percentage of hits with 12 inch rifles reached the figure of 33.13, substantially 1,200 times better than the score had been with lighter weapons when the Spanish armored cruisers were the navy's quarry.

Like the recent performance of the Pennsylvania, the preceding record was made in smooth water and not out in the open sea, and due allowance must be made in judging of the superdreadnought's capacity to hit hard and often when the foe is nearly full down and waves are running high. Our ships, however, in their battle practice in the open sea, both night and day, and from the scores heretofore registered under those conditions the theoretical standard has been established which forms the basis in grading our gunners. According to the public, the order of merit expected of the turret guns is as follows:

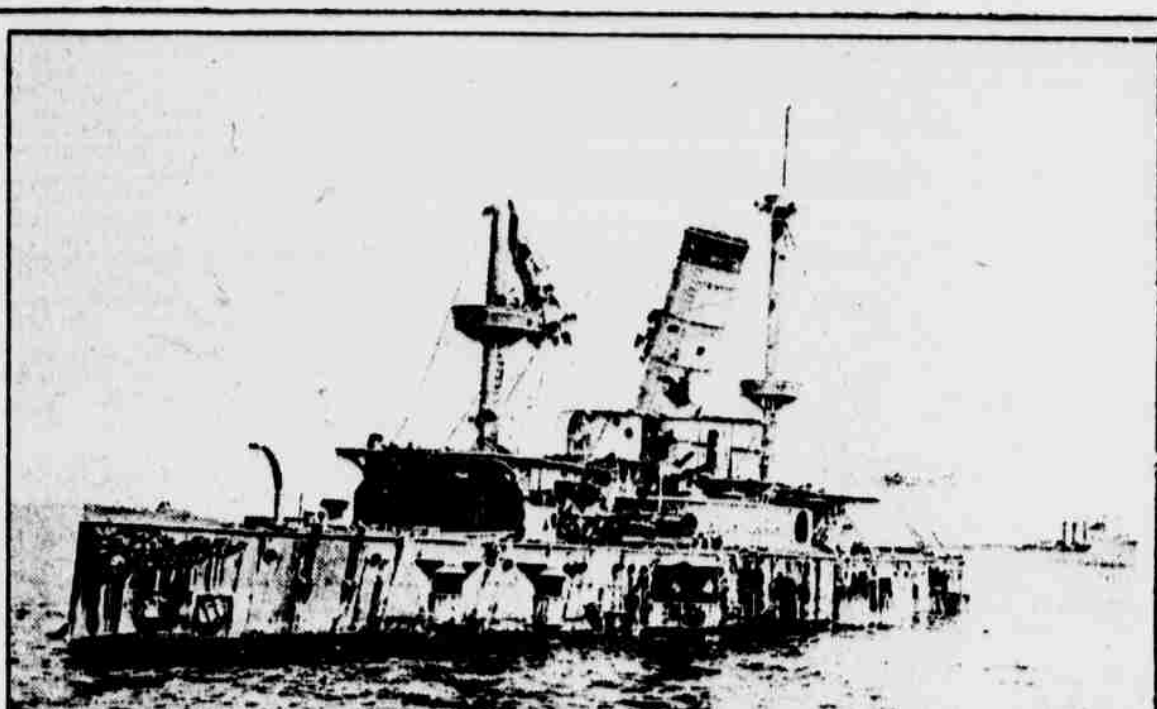
At 12,000 yards... 15 per cent. of hits
At 11,000 yards... 8 per cent. of hits
At 10,000 yards... 5 per cent. of hits
At 9,000 yards... 3 per cent. of hits
At 8,000 yards... 1.5 per cent. of hits
At 7,000 yards... .75 per cent. of hits



The FIRST PENNSYLVANIA—SHE CARRIED 120 GUNS AND THREW 2200 POUNDS OF METAL IN HER BROADSIDE, BEGUN 1822, LAUNCHED 1837.



GETTING A TARGET READY FOR THE BATTLESHIPS.



The "SAN MARCOS" THE NAVY'S BATTLE TARGET.