

New German "Surprise Ships"

Engineering

The cruiser debate now raging in Congress has had a new angle suddenly introduced by the disclosure of details concerning a new type of German ship now building, which has just become known here. The *Ersatz Preussen*, first of a group of four to be built, represents enormously more hitting power than has ever been crowded into a 10,000-ton ship by the naval architect of any other nation. It is not unlikely that a complete revision of the specifications of the 10,000-ton "treaty cruiser" type will have to be made in answer to this latest stroke of the German Admiralty.

The *Ersatz Preussen* carries as her main battery six 11-inch guns in two three-gun turrets, supplemented by eight 5.9-inch guns to repel torpedo attacks and four 3.4-inch anti-aircraft guns. She also carries six 19.7-inch torpedo tubes on two triple mounts.

The appearance of a ship carrying guns as heavy as 11-inch, in a class where the conventional armament has been 8-inch or less, is a peculiar result of treaty restrictions. By the terms of the Versailles treaty Germany was forbidden to build any battleships or battle cruisers, and the size of such warships as she might construct was limited to 10,000 tons—less than a third of the displacement of modern capital ships. But nothing was said about the caliber of the guns such ships might mount. Their small displacement would of course preclude an armament of 14 or 16-inch pieces, such as post-war superdreadnaughts carry.

Then, at the Washington conference, the signatory powers agreed not to build any cruisers of more than 10,000 tons. They limited themselves also to guns of 8-inch caliber. These restrictions will remain in force until 1931.

The typical post-conference cruiser, as built by Britain, Japan and France, mounts eight 8-inch guns, though tentative plans for the American ships provided for in the 15-cruiser bill call for nine. By sacrificing armor, fuel or machinery, enough weight might be gained to raise the battery to ten 8-inch guns. But that would be about the limit for a 10,000-ton cruiser.

The new German ship will be able to throw from her six 11-inch guns a broadside totaling nearly 4,000 pounds, for each 11-inch shell weighs 662 pounds. Eight 8-inch guns, with shells weighing 260 pounds apiece, could answer this with a broadside of not much over 2,000 pounds, and a ten-gun cruiser would have only a 2,600-pound broadside.

Thus, broadside for broadside, the German ships would have the post-conference cruisers outgunned nearly two to one. The 8-inch gun can be fired faster, thus cutting down the discrepancy somewhat; but against this must be balanced the long range of the German 11-inch gun, which is reported to have an extreme reach of 30,000 yards. The chances are that in an engagement between one ship of this new type and two post-conference cruisers the German could

hammer her opponents to pieces while they were endeavoring to close in to a range where their own 8-inch guns would be effective.

The engineering features of the *Ersatz Preussen* are said to be as remarkable as the power of her battery. Weight was saved wherever possible by the use of light-metal alloys and the highest grade steels. This effected an economy of some 550 tons, a saving of 5 per cent. on the capital of 10,000 tons displacement. The new ship will be driven by internal combustion engines of a new and radical type, developing a unit of horsepower for every 17½ pounds in weight, as against one horsepower for every 55 pounds in the best type of internal combustion marine engines now commonly known. Details of the new type of engine have not yet been made public.

The speed of the *Ersatz Preussen* is to be 26 knots, and the German Admiralty states that she will carry enough fuel to make a continuous voyage of 10,000 miles at 20 knots. The most efficiently engined of present cruisers can travel that far, but only at the much lower speed of 13 knots. What the German ship could do at that speed is not known, but it has been estimated that she might cruise 18,000 miles, or almost three-fourths of the circumference of the earth.

The naming of the new type of warship is presenting a puzzle. She is much too small to be called a battleship and too heavily gunned to be called a cruiser. The German Admiralty has called her simply an "armored ship," and let it go at that.

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Ship Feels Bumps Over Quake

Seismology

Sailing over an earthquake that was sufficiently severe to be felt by seismographs throughout the world was the experience of a British ship, the *Magalda*, that has just been reported to the Hydrographic Office of the U. S. Navy.

Capt. W. S. Smales, the steamer's commander, reported that on December 1, while enroute from Talcahuano to Tocopilla, Chile, they felt three heavy bumps as if the vessel had struck bottom. Their position was latitude 35 degrees 33.5 minutes south and longitude 72 degrees 54 minutes west, where the charts show a depth from 400 to 600 feet. Careful examination showed that no damage was done.

As announced by Science Service at the time, the center of the quake was 35 degrees south and 74 degrees west, not more than 60 miles away from the *Magalda's* position. According to Commander N. H. Heck, in charge of the Coast and Geodetic Survey's earthquake investigations, the ship must have been very close to the center, or it would not have been felt as it was. The three bumps, he thinks, were due to three separate shocks, of which probably only one was severe enough to set up the earthquake waves which traveled around the earth and permitted the seismologists to locate it when they were received on the seismographs.

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Eight Mountain Lions

Zoology

Chief Ranger Donal J. Jolley of Zion National Park recently surprised a group of eight mountain lions up on the east rim of Zion Canyon, coming as close as 40 feet to some of the animals before he saw them. The ranger was quite as surprised as the lions, which lost no time in disappearing into the thick brush.

Superintendent E. T. Scoyen of Zion Park, who has spent practically all of his life in one national park or another, states that he has never yet seen a mountain lion running at large. He considers Mr. Jolley's experience in meeting not one but several of them very unusual.

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