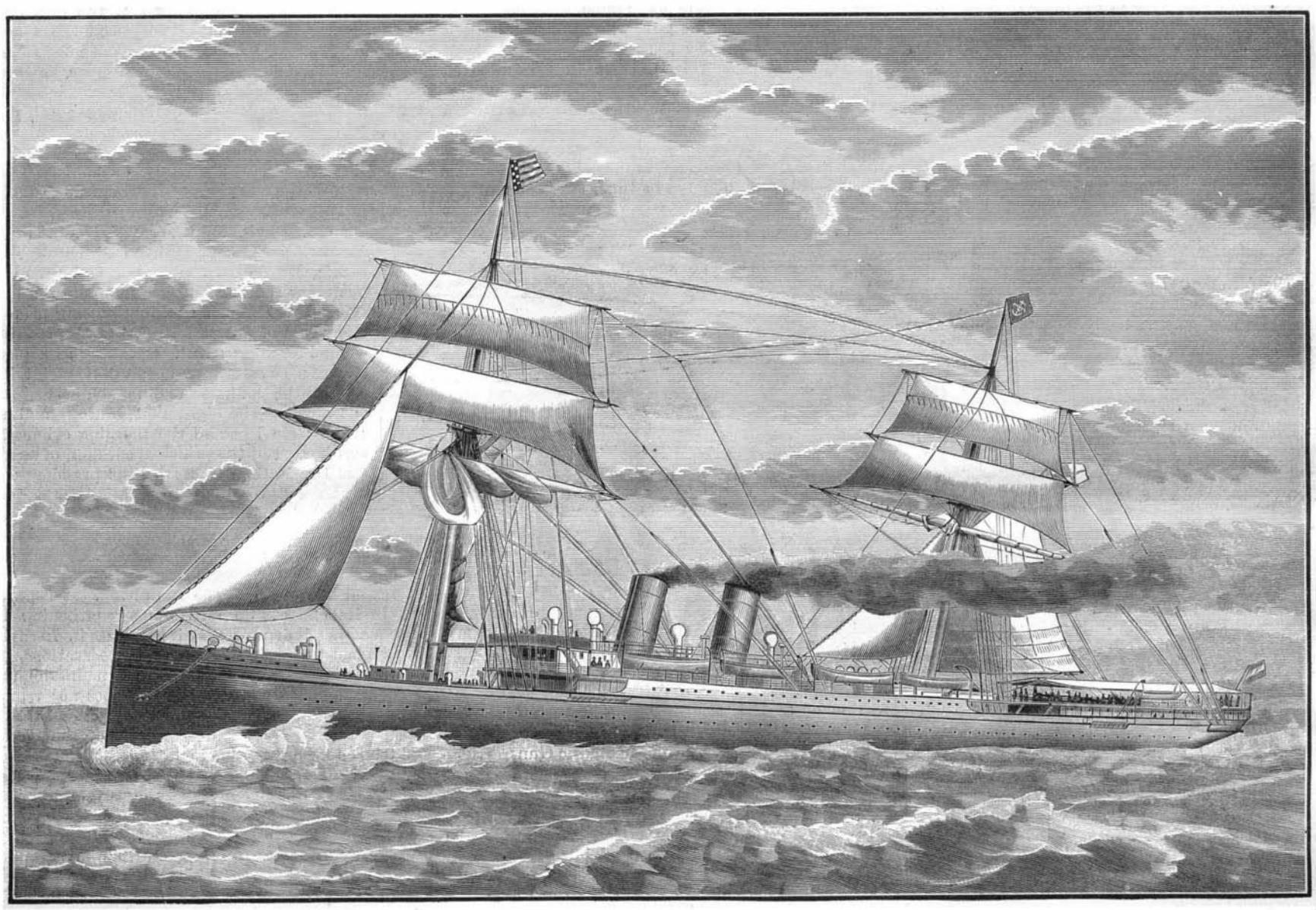
NEW GERMAN-BUILT STEAMERS.

The opening of the new line of mail steamers by the North German Lloyds, of Berlin, has attracted much attention throughout Germany, but special interest has been felt in the six mail steamers which the company, contrary to its established custom of having its vessels built in England, has ordered of the Stettin Machine Building Corporation "Vulcan" at Bredow, near Stettin. It amounts to a competition between England and Germany in a branch of industry where England has always held undisputed sway. The powerful war ships built by the "Vulcan" for the German and other navies have already made for it an honorable reputation, which extends far beyond the limits of the German empire; and many vessels for the German merchant marine have come from these works. The company undertook to built six steamers for this new subsidized line, the three smaller ones of which—the Stettin, the Lubeck, and the Danzig—have been completed.

The first of the three larger vessels (shown in our engraving) was launched with much ceremony on July 10, and was christened Preussen by the wife of the Oberpresident of Pomerania, the Countess Behr-Negendank.



THE IRON SHIPBUILDING INDUSTRY IN GERMANY.—THE NEW STEAMER PREUSSEN.

The other vessels, on which much work has already been done, will be named Sachsen and Baiern. These ships, the cost of which will be about $500,000, will ply between Bremerhafen, Antwerp, Port Said, Aden, Colombo, Singapore, Hong Kong, and Shanghai, and will make the round trip in 110 days.

The principal dimensions of the Preussen are as follows: Length at the water line, about 388 ft.; beam, 44 ft.; and depth from keel to the side of the upper deck, about 33 ft.; cubic contents, 4,000 tons; draught, 20 ft.; and speed, 14 knots, or 16 miles, an hour. The engine is a three-cylinder expansion engine of 3,500 horse power. Steam is generated in four double boilers, for each two of which there is a common funnel, which is provided with double walls, so as to serve also as a ventilator for the fire room. The coal bunkers have a capacity of 900 tons. Besides the large boilers, there are two auxiliary boilers, which provide steam for the auxiliary engines.

The hull of the vessel is made of Martin steel. Three decks extend from stem to stern, and besides there is a fourth, the so-called orlop deck, which extends only over the forward part. In the center of the upper deck the bridge is built, while the forecastle is forward and the poop is aft on this deck. The bridge and the poop are connected by a removable platform. There are eight watertight compartments formed by nine bulkheads, six of which extend to the upper deck. Each compartment is provided with the necessary hand and steam pumps. The cargo will be stored in four separate spaces, and for loading and unloading four large steam cranes—each of which can lift three tons—are provided. Besides these, each mast is provided with a hydraulic hoisting device (Brown's patent). Numerous boats and life-preservers are provided for the safety of the passengers. There are six life-boats, two copper-fastened cutters, and a jolly boat. Four large anchors lie on the forecastle, and there is a steam windlass on the upper deck and a capstan on the forecastle. On both sides there are light towers for the side lights. The vessel is steered by teak-wood wheels on the poop, besides which there is a Muir & Caldwell steam steering apparatus in the pilot house on the bridge. On the upper deck, between the forecastle and the bridge, are the stalls for the cattle. There are numerous ventilated store rooms stocked with all the comforts considered necessary for a first-class passenger steamer, and an ice cellar is also provided.

The vessel is arranged for the accommodation of 116 first-class passengers. In the "between decks" and on part of the main deck there are 200 iron berths for steerage passengers.

The ship is furnished with patent ventilating apparatus and with 340 electric lamps. The first and second class saloons are on the main deck, and under the poop are a ladies' saloon and a smoking room.

The vessel is brig-rigged, and, in case of accident to the engines, can proceed under sail. All the newest and best methods have been applied in the construction of these ships, and it is hoped that they will promote German shipbuilding.—*Illustrirte Zeitung.*

The Breaking of Grindstones.

The last report of the English Chief Inspector of Factories contains the following interesting suggestions with reference to the breaking of grindstones in the cutlery trade. Mr. Redgrave, Chief Inspector, says:

"Mr. Bartlett, Redditch, referring to a paragraph of my report for 1884, in which I had expressed a doubt whether it were possible to prevent the breaking of grindstones used in the cutlery trade, has sent me a recommendation, which I am glad to mention for the information of users of emery wheels, especially grindstones. Mr. Bartlett says: '1. Lay in the stock of grindstones not later than the middle of July, in order that they may have ample time to dry in the sun and air. To do this they must be placed where both sun and air can get to them, and they must be put on their edges on pieces of boards, not on the earth, so as to avoid the absorption of any moisture. 2. As soon as dried thoroughly they should be alone placed in the rooms in which they are intended to be used, or in a dry storeroom, and not be allowed to come into contact with soil or get damp again. 3. Before being used, each stone should be tested in a strong wrought iron testing box, and driven at a greater speed than when in work. 4. The stones above 9 inches in diameter should be hung with side chains or plates instead of being led on to their spindles. By the adoption of this system we have had no accidents in 20 years.'"

The Power of the Sea.

When visiting an outlying island of the Shetland group, I was much struck by the evidences of the enormous force of the sea in throwing up large bowlders. The island, which is composed of a pale red granite, is fully exposed to the Atlantic, and has seventeen fathoms of water at the edge of the rocks. The most violent storms occur from the northwest and southwest. Near the top of a gully facing the southwest, and about 25 feet above the sea level, was a block of granite nearly spherical in form, having had its angles chipped off by the action of the sea. Its measurement gave a weight of 22¼ tons. A little farther up, and about 35 feet from sea level, was a rectangular block 8 feet high, and 5 feet by 5 feet base, weight about 14½ tons. This was the smallest of three which were lying close to one another. They had evidently been recently thrown up, and the three pieces had the appearance of having formed one block, which had been broken where it was lying. I examined the cliff at the water's edge, and could see the mark where a large piece had been recently broken out. I should think it is highly probable that this block, which must have weighed at least 50 tons, had been broken off this rock, cast up 130 yards inland and 35 feet above sea level, and broken in three pieces. There were many slab-shaped blocks lying about; one was wedge-shaped, of 12 tons, another rectangular one 2 feet thick, of 11 tons. The largest block I measured in this gully was 14 feet high and 26 feet in girth.

In a funnel-shaped cleft facing the northwest lies a bowlder quite smooth, a flattened ellipsoid in shape, like a common beach pebble. I estimate its weight to be 17 tons. It is 30 feet above the sea level, and is resting in a V-shaped nick; a cliff behind prevents its being washed inland. This has evidently been polished smooth by being turned round in the cleft during storms from the northwest.

In another island there is a beach facing the southeast. The average size of the pebbles of which it is composed is 8 feet round the minor axis. During the lull in a great storm, the rattling of these bowlders can be heard several miles. EDWARD M. NELSON.

Shetland, August 2.