September 3, 1898.] end of a magnetic needle which is toward the south, when at rest, is of the same kind as that of the north pole of the earth. But when we speak of the north pole

of a magnetic needle, we do not refer at all to the kind of magnetism which it contains. We call that pole the north pole which points to the north and which consequently directs a traveler on his way. If any one chooses, he may use the south pole of the needle just as easily as the north to steer by. There is no law to prevent. The Chinese do it.

(7482) W. A. G. writes: In your number of May 28 you gave a description of the "Vizcaya" of the Spanish fleet, and on page 345 I note the following: "They stand high out of the water, they have abundance of berthing space between decks, and they are credited with a coal supply of 1,200 tons, or enough to carry them for 10,000 miles at a 10 knot speed." Am I imposing too much on you to ask whether this statement is correct, as during the course of a conversation here a statement was made that the "Vizcaya" could not cross the Atlantic from Spain to Havana and have two days' coaling left in her bunkers. Based on your statement, it was that she had coal capacity enough to cross from Spain to Cuba and back. As I am in the position to prove that the boat could not have two days' steaming of coal left in her bunkers, I would be pleased to know whether you can give me the correct information. I understand that a United States naval officer is the authority for the statement that there would be no coal left to talk of on her arrival here from Europe. I believe Mr. Charles Cramp, of Charles Cramp & Son, Philadelphia, in a newspaper interview also substantiated this statement, This, however, I cannot get confirmed. A. There is no point regarding war ships about which there is so much uncertainty as their coal capacity and steaming radius. The "Vizcaya" is officially rated as carrying 1.200 tons of coal. At an economical cruising speed, this should carry her from Spain to Cuba and back without recoaling, supposing that her bottom is clean, engines and boilers in good condition, that the coal is of good quality and the firemen understand economical coaling, and that the auxiliary engines do not eat too heavily into the supply. In almost every one of these particulars the Spanish ships were faulty. As a rule the official steaming radius of warships may be reduced one-third. They rarely accomplish in practice what they do on trial.

(7483) H. W. S. writes: I would be much obliged if you would answer these questions: 1. Is it possible to put the Fletcher breech mechanism and mount on the 13-inch rifles now in use, without very much expense and trouble? A. Replying to your questions of August 1: The Fletcher mechanism is already in use on the 13-inch naval guns. 2. How long would it take to make 13-inch Brown wire wound guns for the navy? Would the recoil of four of these be too great for our battleships designed to carry the 13-inch gun now in use? A. The 10-inch Brown wire gun is more powerful than the present 13-inch navy gun. With proper plant one could be made within twelve months. The recoil would not hurt the ship. 3. What is the cost of a book or annual giving a list of the best modern ships and fairly good descriptions of the chief types in the leading navies of the world, and where can this list be obtained? Does the "Naval Annual," which was mentioned by The Engineer in its reply to the Scientific American's article on our use of S. F. guns? A. We supply Brassey's "Naval Annual." Cost \$5.

(7484) W. P. asks: Please let me know the name of the acid and how it is prepared that is used in detecting positive or negative poles in any source of electricity from battery up to 5 Φ volts, also what number platinum wire should be used as leads. I want something that can be sealed and carried in the pocket. A. A solution of potassium iodide in glycerine will serve as a polarity indicator. The size of wire leading into the solution is not of any importance. A simple polarity indicator may be made by dissolving some potassium iodide in water, add a little starch, and boil. Into this dip blotting paper or any other paper which will absorb the liquid. When dry, cut the paper into small strips 1/2 inch by 1 inch. For use moisten a piece, and apply the ends of the wires to it a short distance apart. The pole which is positive will discolor the paper. Ferrocyanide of potash may be used in the same way. So also may phenol phthalein. With these no starch need be

NEW BOOKS, ETC.

DAS WASSERWESEN DER NIEDERLAND-SCHEN PROVINZ ZEELAND. By Friedrich Müller Berlin: Wilhelm Ernst u. Sohn. 1898. Royal octavo. Pp. xxvi, 612. 121 engravings and 10 maps. Paper \$9.50.

The province of Zeeland, in Holland, perhaps more than any other stretch of coast along the North Sea, owes its preservation largely to the dikes and bulwarks built by the sturdy citizens of Holland. The incessant vigilance and labor which were naturally the outcome of this constant struggle have led to a close study of Holland's waters. In order to prove how important this study is, Herr Müller has written a most comprehensive worl based upon researches made in the archives of the country and upon extensive geological, hydrographic, historical, and economical investigations. Of the three divisions of the work, the first treats of the formation of the land and the geological development of the waterways. In this connection it is of particular interest to follow by means of the accompanying atlas the constant changes in the land and the struggles of the stanch Dutchmen against the encroaching waters. In the second division of the work we find an excellent account of dike building and a description of particular portions of the sea coast with their bulwarks and protective structures The third and most extensive division is devoted to legal and economic considerations, and deals primarily with the laws which have been passed to defend Holland from her implacable enemy, the sea. As a conclusion to bis work the author has given a most complete bibliography of the works that he bas consulted. The book will no doubt be welcomed not only by engineers, but by many a student of history, for in the historical portions of his work the author has incorporated matter which cannot be found in any other book.

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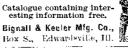


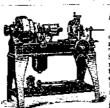
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AND EACH BEARING THAT DATE

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Anical .
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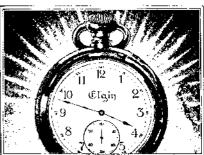
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