

## REINFORCED CONCRETE SHIPS.

"The problem that confronts our country of increasing the merchant marine requires the consideration of every possible method or material of construction; several prominent engineers have suggested reinforced concrete," says a recent bulletin of the Portland Cement Association, Chicago.

"A San Francisco paper mentioned in a recent issue the interesting fact that a local firm of engineers was designing a ship with a length of 330 feet, a beam of 44 feet and a depth of 31 feet, with a capacity of 4,500 tons—to be built of reinforced concrete. This is not something new. A concrete schooner was employed for some years in the north Atlantic coasting trade, having been constructed in about 1898. The London Times mentions a small boat of reinforced concrete built by a Frenchman in 1849 and still in service after a test of 68 years.

The concrete ship is only a further development of the concrete barge and such craft have been in successful use for years. Concrete lighters have been used for the past six years on Chesapeake Bay, supplying coal and water to dredges, carrying loads of sand and gravel, etc.

"With such a craft there is no necessity for caulking or painting, the upkeep is small and there is no danger of decay. Barnacles will not collect on a concrete hull.

"A concrete barge has been in service on the Welland Canal since 1910 and has seen very hard usage. It has a length of 80 feet, a beam of 24 feet and is 7 feet deep. It is interesting that the walls which were constructed between forms are  $2\frac{1}{2}$  inches thick, reinforced with steel rods, yet the barge is used for carrying loads of stone, etc., with conspicuous success.

"Since 1910, reinforced concrete barges have been built for use on the various sections of the Panama Canal and their experience has enabled the engineers to develop a very efficient type of vessel. Recently concrete pontoons were constructed for service as landing stages for boats up to 65 feet in length. These pontoons have a length of 120 feet, a beam of 28 feet and are 8 feet deep. They are very thoroughly reinforced.

"Vessels which are more like ships than barges have been built of reinforced concrete in Norway. A report from the American Consul General at Christiania describes a plant at Moss, Norway, where vessels of 3,000 tons displacement are being constructed. The following quotations from the report indicate the extent of the work under way at that time:—

"The inventor of this new style of vessel is said to be M. Nicolai Fougner, an engineer, who claims to be able to construct a ship of any size demanded. He is now building a lighter for a mining company at Sydvaranger for the oversea export of iron ore and the import of coal. The vessel, having a displacement of 3,000 tons, is to be ready before the end of the current year. It is stated that these concrete ships can be sailed or engined like other vessels, and experts consider that a new epoch in shipbuilding has arrived."

"The ship, which arrived in Christiania last month, resembles a large barge, and is constructed entirely of concrete with the exception of the ribs, which are of steel. This new method of constructing ships has attracted much attention. The Swedish Minister of Marine, M. Brostrom, one of Sweden's largest shipowners, immediately ordered a lighter of some thousand tons displacement, and he was present when the craft was launched at Moss. He was accompanied by four experts, all of whom expressed much satisfaction at the result."

"Two other lighters are now on the stocks, and a large slip for a 4,000-ton craft is nearly completed. More than 200 men are now working in the new yards, and five lighters have been contracted for in addition to the one completed and the two on the slips."

"In view of such examples proving the usefulness of concrete vessels of this character, it would seem wise to consider concrete in the construction of ships which are to increase our merchant marine to the proportions demanded by the present requirements. If sea-going barges were to be constructed, or smaller craft suitable for lake traffic, this would release for other purposes many ships now in use in this capacity. The presence of the necessary materials for a concrete vessel at so many convenient locations would make it possible to provide a large tonnage, and progress in construction would be faster than with ships of steel or even wood."

## KITCHENER ALDERMAN FURNISHES BAIL.

Alderman H. M. Bowman, charged with attempted bribery in connection with the recent appointment of City Engineer Michel to succeed the former engineer, Herbert Johnston, was last week committed for trial at the fall assizes by Magistrate Weir. The case is of interest to engineers owing to the circumstances under which Mr. Johnston was virtually dismissed without stated cause other than the desire to employ a "cheaper engineer."

The magistrate held that sufficient evidence had been presented to commit Bowman for trial, and that with the consent of the crown he would accept bail for \$1,500, Bowman to give personal surety for \$500 and two other sureties for like amounts. Bowman declared that he would not furnish personal bail, and was given two days to furnish it or be committed to jail. He declared that there was no evidence warranting committal, and that the men behind the charge would some day realize its seriousness.

"One of the best ways to make them realize it would be for me to sit in jail until October," said Bowman. "I don't think there is any chance of getting a conviction. So it's up to you as crown attorney to say whether there is any case. Remember, there is the probability that you will have to face the contingency of an acquittal after my being in jail for several months."

Continuing his argument Bowman said: "Surely you wouldn't put an innocent man to jail and keep him there for three months."

"You don't have to go to jail," commented the magistrate, "if you furnish bail. You are just trying to pose as a martyr."

"It is a serious case for me," said Bowman.

"It is if you wish to make it so," the court observed.

The magistrate finally said: "I will adjourn the case for two days, when you must either furnish the bail asked for or I will commit you to jail to await your trial."

When the case was resumed, Ald. Bowman was not present. Upon being found and brought to court by a policeman, he claimed that his attorney had told him that the case had been further postponed, so the magistrate did adjourn it for two days more so that Bowman's attorney could attend.

The case was called for the third time last Friday, and again Ald. Bowman was absent. His attorney said that the alderman had a nervous attack and was confined to his room. The magistrate at once adjourned the court to the alderman's house, and there the bail bond was signed, Bowman deciding not to go to jail for the summer. Two other aldermen also signed the bond.