of only recent realization. It is now practically proved that steel mixed with from three to five per cent. of nickel is double the strength of ordinary steel, and as it does not corrode or take on barnacles, ships constructed of it will possess the very great advantage of never requiring to be scraped. Moreover, as ships of nickel-steel may safely be built much lighter than ordinary steel ships, their engine power and consumption of coal may be safely reduced without diminution of speed. In short, according to this writer, such steel seems bound to supersede the ordinary article, and probably also other materials in present use in ship construction; and this being the case, the nation which is in a position to produce this metal must necessarily control the ship-building industry. For the present, at least, there is no considerable supply of nickel outside of Canada, which, in fact, possesses nickeliferous pyrites without limit, the entire bleak region extending from Lake Superior to Labrador being rich in it. It is remarkable, indeed, but it is declared by experts that the Dominion can supply a million tons of the pure metal annually, if necessary, for an indefinite period.

On the morning of December 4th a disastrous explosion, due to the careless handling of dynamite, took place at Hull, Que., by which four men and a boy were killed and ten or fifteen wounded. The dynamite was used in connection with excavations for the new water mains, and was kept in a small portable hut. Although this hut was only three or four feet square, a small stove was kept in it for thawing out the dynamite, this stove being almost in actual contact with the explosive. A more than usually strong fire set the wood floor ablaze, and the explosion followed while some of the men were working round the hut. The windows and doors of thirty or forty houses were more or less shattered, and had not the buildings in the street been on a foundation of almost solid rock, the loss would have been much greater. Such ignorance and carelessness are almost inconceivable, but the most remarkable sequel to this terrible disaster is the verdict of the jury, which laid the blame for the accident on the poor dead victims, who had been either working under instructions or who were in no way connected with the work, one of them being a boy going to school. The name of the contractor, who of course was responsible for the management of the work, was not even mentioned in the verdict. Such is the mistaken pity of a French-Canadian jury. It is high time that really effective regulations should be put into force on the subject of explosives.

M. Meigs, at a meeting of the American Society of Civil Engineers, recently advocated the use of canvas in order to render cofferdams tight. In repairing the locks of the United States Mississippi Canal at Keokuk, this was the method employed. Here each leaf of the lock gates was 27 ft. high by 46 ft. wide and weighed 40 tons, and the leakage from the lower ten feet was beginning to become serious. The only time of the year available for repairing work was in November, when owing to possible frosts, the use of gravel and timber in building a cofferdam would have been very difficult. It was decided therefore to build the dam of timber and to make it tight by means of canvas. A timber frame was accordingly built and towed into place, where its ends abutted on the flaring ashlar walls of the lock approach, whilst below it was a clean rock bottom. The framing was sunk by loading with old rails, and planks were then spiked on to it. For this purpose a "shot-gun" was used, which consisted of a ¾-inch pipe with an iron rod working in it. This pipe and rod extended above the surface, whilst below it was brought over the spikes to be driven by a diver. The rod was then struck by a hammer at the top. A canvas sheet was then spread over the face of the dam; 12-oz. duck was used, and a ½-inch iron chain was sewn along the lower edge of the canvas to sink it into place. The canvas overlapped the bottom and wing walls by some inches. The work of placing the dam took about five days, after which the lock was pumped dry in about six hours. The leakage was insignificant, the head being 12 feet.

Robert Carey recently read before the British Society of Engineers a paper on Hydraulic Lifts or Elevators, in which he dwelt upon the endless variety in which nowadays they were to be found. He thought that continuous passenger lifts ought to be used more frequently, as they were very convenient, and not so much waiting for the cage ensued. It was doubtful, he thought, whether electric lifts would ever be as safe and smooth running as the almost perfect hydraulic lift. Of all lifts the most important was the passenger lift, and nothing at present equals water under pressure for working them. The author divided hydraulic lifts into two broad classes—direct-acting and suspended. He pointed out the advantages of balancing cylinders for direct-acting lifts, and gave a description of a direct-acting lift with a cylinder bored and fitted with piston, no overhead gear, which afforded great safety. Suspended lifts, on account of greater cheapness, were becoming more common. When the cage is suspended by four wire ropes, the question arose, Should one rope do all the work, or should all do equal work? If only one rope broke out of four, no great harm is done. Entrance doors or gates were considered, and their conditions of safety, as to whether they should open and close automatically. The author advised locking the starting-rope when the entrance door was open. He also recommended the inspection of passenger lifts by Government inspector, to avoid the dangers attending cheaply-made lifts. Special attention was drawn to hydraulic lifts and cranes, which automatically apportioned the quantity of water used to the weight raised. The author described valves for such lifts, or cranes, automatically adjusting the power of the machine, and stated that the actual saving of water by a lift of this kind had been 828.3 gallons per day, or about 58 per cent. The most economical arrangement was to stop the power-setting valve from going into larger power when the lift commences to move. There was great safety in a machine of this kind, and the arrangement could be adapted to balancing cylinders for directing lifts.

The question of the day among shipbuilders and marine engineers is the adaptability of water tube boilers for large vessels. Several British and French authorities are of the opinion that the water-tube boiler is to be the boiler of the future, and they base their prediction on the ground that it possesses the following advantages over those of the ordinary type: (1) It is the means of obtaining higher working pressures than are practicable with ordinary boilers, owing to the excessive thickness of plates which would be necessary both for the shell and also for the heating surfaces. (2) Economy of maintenance, due to the comparative ease with which in some designs every part of the boiler, both external and internal, can be examined and cleaned, and, if necessary, renewed, it being with some types possible to