the mine being at vertical depth of 36 feet below the vessel's keel, and diagonally 110 feet.

The explosion proved entirely harmless, as did also a second and a third attack at 80 and 60 feet distance.

At the last experiment the mine was sunk only 50 feet outside the outer line of the ship, when all present expected that the vessel would be blown to pieces.

Great pains had been taken to insure her against sinking after the explosion, but the precautions were all unnecessary.

"The mine was fired from Fort Mokton by electricity; then followed the usual upheaval of water, to the height of more than a hundred feet." "As the disturbance struck under the vessel's starboard side, she rose to the motion of the thrown up waves to the height of several feet, and fell again into the outer swell, surging up on the crater's edge."

The Oberon remained apparently unharmed, and it was only after she had been placed in dock that the damage could be seen. It was considerable, but not sufficient to make her leak; and had she been one of a fleet passing a fort, she would have only had her engines disabled, and could still have been towed onward to her destination.

Had the Oberon been thirty feet nearer the mine she would probably have gone down, but this experiment shows that ships must either be in contact with torpedoes or nearly over them to receive any material damage; and in shallow water the direction of least resistance being over the torpedo instead toward the vessel's bottom, the chances are that a ship with little draught would pass unscathed a torpedo only twenty feet distant.

I have myself seen a side wheel steamer's paddle box blown off, the buckets broken, and a number of bulkheads thrown down by a torpedo exploding under the wheel, while the hull remained uninjured, and I fired a hunderd pound torpedo on the Mississippi in ten feet of water, only fifteen feet from the bow of a coalbarge, without the latter receiving the least damage, while twenty pounds in contact with the hull would have blown the barge to atoms. These experiments show that ships have a chance to escape destruction from sunken mines. When there are a number of vessels, some of them must get by, as one explosion will probably cause the chain of mines to be broken up.

By experiments lately made in Sweden, it was shown that a mine of dynamite one hundred and six feet from two other disconnected mines exploded them by concussion; from a similar shock the electric wires would be broken.

There are chances, then, which should not exist, for a fleet to pass a fort, and they can only be neutralized by torpedo vessels, monitors, rams, sunken mines, obstructions, and forts combined.

To build a great number of fighting ships on any but the monitor plan seems inadvisable, as we require mostly iron vessels for the defence of our coasts.

It is beyond our power to wage war on the coast of any European nation that is provided with proper appliances for defence. Our policy should be protection to our coasts and aggressive war on an enemy's commerce.

If we should fit out powerful iron clad fleets, and they should engage an equal force of the enemy, the destruction of either or both forces would have no effect to bring about a peace; neither country would suffer materially.

It is only by destroying the commerce of a great nation that we could bring her to terms; hence, one vessel like the Alabama roaming the ocean, sinking and destroying, would do more to bring about peace than a dozen unwieldy iron clads cruising in search of an enemy of like character.

For this reason I would recommend that we should no longer repair the old wooden ships, but entirely rebuild them with new hulls and improved machinery and guns, and we should build up a fleet of swift wooden cruisers, of at least twelve hundred tons, with the heaviest batteries and a speed of not less than fourteen knots.

If we were to lay up our present vessels, and build a new set, with improved machinery, it would be economy in the end; the vessels would be run on half the present amount of coal, would require fewer men, and would do their work twice as well.

Great Britain, following the example we set her during the rebellion, is building a number of such vessels, but is improving on our models, machinery, and guns of that period.

I lately read an account of the trial trip of two of these vessels just built—the Raleigh, 22 guns, iron screw frigate, 3,215 tons, with sheated bottom, and 800 horse power, and the Sapphire, 11 guns, screw sloop, 1,890 tons, and 350 horse power. The former on her trial trip made 15.3 knots, and the latter, it is supposed, will do still better.

There are now building in England the following fast clipper steamers, that could entirely destroy the commerce of an enemy, with no chance of being overtaken, viz.: The Bacchante, 14; Diadem, 16; Diamond, 14; Egeria, 4; Swan, 26; Sappho, 4. Besides these, there are one hundred and nineteen other sloops and frigates, wooden and of the composite kind, which, if not of equal speed, are very fast vessels, and of the most destructive character.

This is the policy of a great commecial nation, our only superior in commerce, and every year she adds twenty thousand tons to her navy, never by any accident getting behindhand. Who can interfere with British commerce, or maltreat a British subject in any part of the world, without paying damages?

Great Britain has a coast line twenty times less in extent than our own, and the combined navies of Europe could not approach it with safety, while with us, as matters now stand, a single iron clad frigate could blockade our shores from Maine to Texas.

Different opinions prevail with regard to the best plan of constructing iron clad cruisers that can safely go around the world without racking themselves to pieces.

It is necessary that we should have a few of these, say six, to convoy and protect bodies of troops in case we desire to land on an enemy's coast.

Experience teaches us that wood and iron combined do not agree, and ships built on that principle soon decay.

Heavy iron clads, with high free board, are exceedingly uncomfortable, and rack themselves to pieces in a sea way, and, in the race between heavy ordnance and ironsides, the guns have gained so great ascendancy, that it is doubtful whether wisdom would dictate building a ship with heavy plating more than three feet above the water. There is a limit to the quantity of iron which a ship can carry, while there seems to be, comparatively, no limit to the size of guns, and the 38 ton cannon now contracted for at Krupp's foundery will perforate any iron clad ever built.

History repeats itself in the course of centuries. Men fought in armor until musket balls made it useless, and the same principles is beginning to apply to the matter of iron clad ships of war, especially as regards turrets and topsides.

I believe that iron sea going ships of war will ultimately be built without any armor on the topsides; that the hull, for three feet above and below water, and the decks will be made as far as possible impervious to shot, but that all the upper works will be ordinary iron through which the shot will be allowed to pass.

This, it is true, will not afford perfect protection to the ship's company in action, as shot passing through the thin iron will knock down everything in its course; but this is better than having a turret of fifteen inches thickness crushed in upon a crew, and I believe men will fight longer and better on an open deck where they can see their enemy and know what is going on.

It is very demoralizing to be shut up in a turret and have men killed by concussion, with the likelihood of a stray shell coming into the port and killing all hands. A few years ago officers and men would scorn such shelter, and I believe at this day that almost any one would rather take his chances on the open deck.

Uncovered guns run little risk of damage by shot at sea. When a vessel is rolling, not more than one shot in twenty takes effect; and there are no serious objections to guns on the open deck, provided they are covered from grape or canister. Bulwarks could be thickened to extend a little over the height of the gun, but only in front of it.

I propose that the hulls of sea going ships should be built as strong as the monitor hull, and light bulwarks and upper works made of iron, with light iron spar deck covered with wood planking.

A vessel the length of the Monadnock could carry eight heavy guns amidships, that could, in action, be run out in broadside. Such a ship might have all her upper works cut away and still be fit for battle. A vessel of this kind should be built without head booms, and her forward after gun should be so arranged as to run out to give her a fore and aft. Add to this a double screw, and you will have a good sea going fighting ship.

A vessel of six hundred or more tons displacement than the Monadnock would carry twice as many guns as she does now, and having light upper works, would be a good sea boat and lively in any kind of weather. The guns could be fitted to lower below the deck when loading, like the English gunboats.

A vessel of this kind should be built on the bracket system, with double bottom and top frames strongly connected with the hull.

Such a ship with the same steam power would have greater speed than one of the heavy European iron clads, for she would have much less weight to carry. All her upper works being of light iron, with wooden sheathing to her bottom, she would cost much less and would last for years.

To enable such vessels to carry a heavy gun right on their bows, they should be constructed with projections forward under water, like the English ships Northumberland, Hercules, Bellerophon, Invincible, etc., and the torpedo vessel Alarm, just built at New-York.

The latter has now mounted right on her bow a fifteen inch gun, and could sustain one of twenty inches, gaining sufficient dis