by the historian in recording the performances of the monitors. He bases his argument against our turrets on the supposition that the monitor system has utterly failed in practice, because, during the short initiatory action at Charleston on April 19, 1863, some slight derangements occurred to some of the turrets; but he ignores the fact that those were so slight that all the vessels were reported ready for action the morning after the conflict. He appears not to know that, several weeks before the Charleston attack, some of the monitors had been engaged with batteries in Southern rivers for days without sustaining any damage which impaired their efficiency. Is it possible that the *Mechanics' Magazine* is so completely misinformed on a subject immediately within its sphere, as to be ignorant that the monitor fleet, *after* the first attack, has been for several months engaged with the Confederate batteries near Charleston? All Europe knows that each monitor has been hit hundreds of times. The records at the Navy Department show that, for instance, the *Patapsco* has been in action twenty-eight times. Not a single shot has penetrated the side armor, pilot-house or turret, and the latter revolves as freely now as when it first left the constructor's yard. Not the slightest injury has been received by any person on board, neither has any damage to her turret engines or other steam machinery been sustained, notwithstanding the severe ordeal to which this monitor has been subjected. In the face of these incontrovertible facts, the *Mechanics' Magazine* perverts history by telling its readers that the Ericsson turret is a failure.

We have carefully examined the engraving of Capt. Coles' turret, and we advise the inventor thereof to pay a visit to some of our monitors off Charleston to ascertain how they are constructed, and learn the effect of glancing shot—such shot as we employ on this side of the Atlantic—on the decks. The apt sailor will see at a glance that the first Yankee projectile (not a sixty-eight pounder) which strikes the deck of the *Royal Sovereign*, near the opening through which the turret protrudes, will close said opening by forcing the plating against it and effectually prevent the turret from turning.

We have been greatly amused on looking at the slight covering which Captain Coles places over the opening between the turret and deck. The captain, it strikes us, lacks practical knowledge, but he has made out a case for himself by depicting the monitors with bolt heads on the outside, which they never had, and his own with countersunk heads, which the monitors *always* had. The editor of the *Mechanics' Magazine*, who enters the arena in Coles' behalf, is evidently unaware of the crushing effect which a large cast-iron shot striking Coles' turret would produce on his delicate means for covering the opening around the turret; nor does he seem to understand that the fragments of broken shot and shell would fall into this opening and wedge the turret so that it never could be turned; the holiday experiments on the *Trusty* to the contrary notwithstanding. The idea of placing half the turret below the deck, as Captain Coles now proposes, is not new; there are numerous plans and models in possession of the Navy Department at Washington, on this principle, and even the little *Keokuk* was so built. There is scarcely a square foot of surface on the turrets of some of the monitors now off the Southern coast that is not marked or indented by shot. It would be waste of time to prove that if built on the Coles' system, these turrets would have been jammed with fragments entering the opening in the deck, and that all monitors built with his turrets would have been condemned after the first action as worthless. It is a distinguishing feature in the Ericsson turret, that the fragments of broken shot cannot interfere with its rotation. The engraving in the *Mechanics' Magazine*, intended to show this detail of the Ericsson turret, is wrong in every particular, and grossly erroneous at the junction of the turret and pilot-house. The heavy wrought-iron ring, five inches thick and fifteen inches wide, attached to the base of the former, and the massive ring bolted to the turret roof for preventing shot from hitting the base of the pilot-house, are not shown at all in the engraving, being omitted, doubtless, to make the comparison strong. The guard plates covering the nuts of the bolts which hold the plates of the turret and pilot-house together, are also omitted in the engraving, and any one who should build such a turret as the *Mechanics' Magazine* presents, might justly be accused of having taken leave of his senses.

An absurd statement is put forth concerning the breaking of the bolts, and projection of the nuts inwards. The facts in this case are simply that the inadvertent omission of the guard plates in the *Nahant's* pilot-house caused a *solitary accident*, which was at once guarded against by attaching the detail alluded to, and not a single accident has since occurred from this source. Our cotemporary should have known this before making the broad assertion that the Ericsson turrets and pilot-houses are unsafe on account of flying nuts. It is discreditable to any journal, at this day, not to know that our monitors and their turrets afford absolute protection, not only to their crews, but also to their own mechanism.

The misstatement of our cotemporary about the want of proper means for giving orders from the pilot-house to the engine-room is ludicrous. We have no "call-boys," as in the theatres, but we transmit orders to engineers by bell-signals. "Ah," he says, "but the bell-wires get shot away!" This is another error, and as sensible an objection as it would be to dispense with the smoke-stack because that is likely to get hit.

The arguments (?) presented against the American system of building turrets and protecting hulls, by a series of thin plates, exposes a want of correct knowledge on the subject unpardonable in a mechanical journal. On page 197 may be found an extract from a paper bearing on this question of laminated protection, which it is hoped will be the means of giving those desirous of information some new ideas on the subject; and as the positions taken in it are fully sustained by practice, it becomes additionally valuable.

We look upon the plan of placing the *stationary* pilot-house on the top of the *revolving* turret as a feature of paramount practical importance in the monitor system, besides being a mechanical inspiration of the first degree; but our London cotemporary intimates that this structure is useless, and gravely calculates the number of square feet of surface which it offers to the enemy's shot! Why should we argue this point? Surely every practical person can appreciate the perfect control which this location of the pilot-house gives the commander. In action his place should be near the helmsman, and above the gunners. What other vessel than a monitor, with the pilot-house placed over the battery, fulfills the conditions stated? Not one. Captain Coles, with his nautical acquirements, surely cannot fail to admit the great advantage of this arrangement, though the editor of the *Mechanics' Magazine* cannot comprehend it.

We look in vain for any means of closing the port-holes of the Coles' turret, for none are shown in the *Mechanics' Magazine*. In the monitors the ports are closed by means of a massive bent block of wrought iron, which revolves on "centers;" one man can operate it with ease. A change of direction of 90° suffices to open or close the port-hole by this simple and efficient contrivance. We advise Captain Coles to copy this port-stopper at once. Now that he builds *turrets* in place of "cupolas," we wish for the credit of our system that he should also close his ports as we do.

The points of superiority claimed by Captain Coles for his turrets are eminently untenable. When the English ships have borne the weight of shot which has been hurled against our monitors with as little injury, it will be time to boast; but all speculation and experiments in dockyards are idle, and ill befit the grave character of the subject. We have confined ourselves to facts, and have more to offer should these prove unsatisfactory.

THE CENTIGRADE THERMOMETER.

If the metrical system of weights and measures is introduced in this country, the adoption of the centigrade thermometer will doubtless constitute a portion of the reform. Indeed, independently of the metrical system, this instrument is gradually coming into use throughout the civilized world. It has already been generally adopted by men of science in all countries; and the time cannot be very far distant when it will be everywhere employed by the mass of the people.

To grade a thermometer we want two natural standards of uniform temperature, and among the numerous standards furnished by nature, in the freezing and boiling points of various liquids and the melting points of different metals, the two best adapted to the purpose are the freezing and the boiling point of water.

The centigrade thermometer makes the freezing point of water zero, and the boiling point 100 degrees above.

Fahrenheit's thermometer is based on a series of errors and blunders. Gabriel D. Fahrenheit was an instrument-maker, of Amsterdam, who made some important improvements in thermometers about the year 1720. These improvements were suggested by Römer; and Fahrenheit has acquired universal fame by adopting them. The use of mercury as the liquid was a good thing; but the fixing of the zero point and the graduation of the scale were both absurd. The space between the freezing and boiling points was divided into 180 degrees, on what grounds nobody knows; and the zero was fixed at 32° below the freezing point, from the false notion that at that point there was entire absence of heat, or absolute cold.

The centigrade thermometer was devised by Celsius, of Sweden, in 1742, and was introduced into France, along with the metrical system of weights and measures, at the time of the Revolution.

SPECIAL NOTICES.

LOUISA RESSEGINE, administratrix of the estate of Wm. F. Ressegine, deceased, late of Brooklyn, N. Y., has petitioned for the extension of a patent granted to him on June 11, 1850, for an improvement in spring mattresses.

It is ordered that the said petition be heard at the Patent Office, Washington, on Monday, May 23, 1864.

ALEXANDER C. TWINING, of New Haven, Conn., has petitioned for the extension of a patent granted to on him Nov. 8, 1853, and ante-dated July 3, 1850, for an improvement in manufacturing ice.

It is ordered that the said petition be heard at the Patent Office, Washington, on Monday, June 20, 1864.

F. P. DIMPFEL, of Philadelphia, Pa., has petitioned for the extension of a patent granted to him on July 16, 1850, for an improvement in steam boilers.

It is ordered that the said petition be heard at the Patent Office, Washington, on Monday, June 27, 1864.

All persons interested are required to appear and show cause why said petitions should not be granted. Persons opposing the extension are required to file their testimony in writing, at least twenty days before the day of hearing.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Hand-pegging Machine,—In this machine a blunt-ended awl is employed also as a driver and is automatically thrown up, alternately to a greater and a less hight. The peg strip rests against the side of the awl when the latter is in its lower position, so that a blow of a hammer will force the awl into the leather, and at the same time a peg is separated from the strip by a knife working on one side of and parallel with the awl. The awl is then thrown up to a sufficient hight to admit the peg beneath its end, so that a second blow of the hammer will drive the peg into the hole already formed. Luther Hall, of Boston, Mass., is the inventor of this machine.

Knapsack Hammock.—This invention relates to an article constructed of india-rubber cloth or analogous water-proof material, adapted to be readily converted into either a hammock or knapsack, said cloth being provided with a pocket or pouch to contain small articles, which pocket may serve the purpose of a pillow when the article is used as a hammock. A. Wm. Sus, of New York city, is the inventor of this improvement.

THE gunboat *De Soto* has thus far proved herself the most successful of all the vessels on the Atlantic blockade. She has captured seventeen blockade runners, whose aggregate value is near $1,200,000.