

THE MONITOR TURRETS.

We have no desire to enter into a controversy with our trans-Atlantic contemporary, the *Mechanics' Magazine*, upon the respective merits of Captain Coles's turrets and Captain Ericsson's turrets; time has proved, and will still further prove, that what we have said about our vessels is fully sustained by their merits, and our article published on page 201 of the current volume of the *SCIENTIFIC AMERICAN*, commenting upon the two kinds of vessels, was called forth by the production in the *Mechanics' Magazine* of elaborate and extensive engravings of the two turrets—Coles's and Ericsson's—in such a manifestly unfair manner that we could not pass them without comment. The *Artizan*, another English journal, has since published a series of engravings, purporting to be representations of the monitor turrets, or United States floating batteries, and we also commented upon them, as we felt it our duty. Since the drawings in the *Artizan* are so widely different from those in the *Mechanics' Magazine*, surely the editor of the latter will see that our criticisms and strictures were not unjust. If these drawings represent the knowledge the English possess of our turrets so much the better for us, and the worse for them. It is unreasonable to publish such abortions, to father them upon Americans as the inventors of them, and then expect us to hold our peace.

In regard to the endurance of the monitors, let us examine the facts and leave speculation for awhile. The monitor *Montauk* has been struck 214 times with 9 and 10-inch shot at close range, and the *Weehawken*, before she sank, 187 times, almost entirely by 10-inch shot. Now the former vessel is as good to-day as she ever was, notwithstanding this tremendous pounding, and can go anywhere under fire. The turrets of these ships are made wholly of the despised thin plates, built up in sections, which, when damaged, are easily removed and replaced, and the tests they have withstood prove them worthy of confidence. "But," says the *Mechanics' Magazine*, in another paragraph, "if our engravings are wrong why does not the *SCIENTIFIC AMERICAN* present correct ones?" There are good reasons for our declining this proposition, which will be apparent on reflection.

The *Mechanics' Magazine* exposes the source from whence it derives its knowledge of the monitors by referring to the official report after the engagement of April 19th, 1863; it is not the only journal, at home or abroad, that has been deceived by it. If the editor had reflected a moment he would have discovered that the defects he criticizes and publishes engravings of, were those discovered in new ships immediately after the engagement, and did not refer to the condition of the turrets and the ships the next morning, or ten hours thereafter. This fact was stated in our first article, and it strikes us as singular that the editor overlooked it. The difficulty experienced by the pilots in the turret—in obtaining a clear view ahead—was solely the result of the suggestions made to Captain Ericsson by naval officers. These persons thought that a simple round hole in the pilot-house wall, deeply flaring or counter-sunk inwards, would afford sufficient range of vision. This idea was proved to be an erroneous one, and the plan adopted on the first monitor is in use in all, and a range of 120° of the horizon is now obtained through one sight-hole; there are five in all, we believe, in the pilot house, and the view of the vicinity is almost unlimited. The broken bolts we referred to in our previous article, and accounted for the solitary disaster which occurred from them; not the slightest trouble has since been felt from them. Why does our contemporary quote the report to prove us wrong? The heavy wrought-iron ring which shields the base of the turret and the pilot-house and prevents broken shot from entering between it and the deck, was not mentioned in the reports previously referred to, for very good reasons—doubtless somewhat similar in character to these which prompted the officers to find all the fault they could, but to refrain from expressing any favorable opinion of the monitors, or of any iron-clad built on their plans. Shot might be heaped to the muzzle of the guns without interfering with the rotation of the Ericsson turret.

Our contemporary seems to have rather confused ideas in respect to laminated armor and its application to the defense of ships. He ascribes more

knowledge on the subject to us than combined Europe possesses, and asks somewhat superfluously, "What on earth have our armor-plate committees been about all this time?" As this question may be asked in future, we leave it for time alone to answer, but we beg permission to call the attention of our foreign contemporary to the reports of the experiments at Shoeburyness, which have been published from time to time in his own journal. Does he not read therein that the thick armor plates have been repeatedly smashed, cracked, and penetrated? Have they ever stood against heavy shot in cases enough to warrant their adoption?

We have read edifying reports in the English journals, wherein it was stated that some public functionary (a Lord of the Admiralty it might be, who knows as much about iron plates and the effect of shot upon them as he does about Lord Rosse's telescope) peered curiously at the indentation caused by the shot, or at the remains of the plates, and surveying the cracks and the shattered condition of the armor, sits down and writes reports that the plates are impervious, and that 5½-inch armor is heavy enough for any ship, and proof against the best modern artillery. Does the editor of the *Mechanics' Magazine* not know that the best 6-inch solid plates made in France, have been smashed in fragments by our 15-inch gun at reasonable range? If not then we can tell him something new, and point to the system of laminated armor covering a heavy slab as novel, useful, and a defence which is invulnerable to the heaviest projectiles and charges we fire here, and they are not 68-pounders, but 380-pounders. This is no place to discuss the merits of different systems of armor plating, but speculation and theory applied to controvert the results of practice in actual and deadly combat, is so clearly absurd that we pursue the subject no further. The turrets of the monitors have never been penetrated, and we have examined the one on the *Passaic*, the vessel which came home as "seriously injured," and the deepest indentation in it was not over one inch and a half. The Whitworth shot, or facsimiles of them, struck the turret crossways, so to speak, and there was one large hole, in shape like an ellipse, in the top of the chimney, which showed plainly that these "destructive" missiles went end over end like boomerangs to their mark.

It is not our affair if the English choose to build frigates instead of monitors, and clothe them with slabs instead of armor of a proper kind. If shot smash and crack them so that they drop off, or the resistance to the live strength of the shot shatters the ship's frame so that she is useless after a severe engagement, these are results that must be learned by experience. We have put our trust in thin armor plates, skillfully applied, and have never been confounded. We are requested to consider the *Rolf Krake*, an English ship on the Coles's plan of turrets, and her doughty deeds. What has she done, pray? She went within long range of some tremendous Prussian 32-pound rifled guns, and not being actually sunk is pointed out as an example of an invulnerable iron-clad.

Our contemporary may deride our ships as much as he chooses, but when he brings to his aid the engraver, and designs something which he calls plans of our iron-clads, and gives them to the world as the fruit of American inventive skill, he must not blame us if we challenge their accuracy, and repudiate the forgery in the name of American engineers and American ingenuity.

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:—

Black-washing Pipe Molds.—This invention consists in the employment of a casing fitting nicely over the sprinkler and arranged in such a manner that when the casing covers the sprinkler the latter can be filled with black-wash and nothing is allowed to escape, and after the sprinkler has been adjusted in the proper position over the center of the mold, said casing can be readily removed; the application of the black-wash to the inside of the mold can thus be effected in a short time with little trouble and without danger of injuring the interior of the mold. The in-

vention also consists in the combination with the sprinkler of a conical guide piece or head, in such a manner that the sprinkler is retained in the center of the mold and prevented from damaging its sides. The invention consists, finally, in a fender placed under the mold into a suitable tank and used in combination with the sprinkler, in such a manner that the sprinkler, after having passed through the mold is still kept in the center and prevented from floating off to any other part of the tank whence it would be difficult to recover. George Ross, of Newport, Ky., is the inventor of this improvement.

Gas-burner Socket.—This invention relates to the sockets by which portable pendants or the flexible tubing, portable table-stand lights are attached to the burner of gasoliers or gas brackets. These sockets are made of two pieces, between which the india-rubber or other elastic packing ring or rings are commonly secured by burring the edge of one piece over a shoulder provided on the other; but this mode of securing the packing does not provide for the adjustment or contraction of the packing which, by the frequent removal of the socket from the burner and its replacement thereon, soon wears so as to fit the burner too loosely to prevent the escape of gas around it. The object of the invention is to provide for the adjustment and contraction of the packing to make it fit the burner tightly; and to this end it consists in uniting the two parts of the socket by means of a male screw-thread on one and a corresponding female screw on the other, by which means the packing is enabled to be compressed in the direction of the length of the burner, thereby causing the contraction of its opening and making it fit tightly to the burner. Joseph Todd, Madison, Ind., is the inventor of this improvement.

Combined Abdominal Supporter and Corset.—This invention consists in constructing stays or corsets in such a manner that they will, when applied to the wearer, be made to answer, besides their legitimate purpose, that of an abdominal supporter and a truss, and be capable of being applied so that they may be worn with great ease and comfort, and by females even when in a state of pregnancy, and also be capable of being adjusted and applied so that a requisite pressure may, in all cases, be exerted upon or against the abdomen of the wearer. Mrs. S. A. Moody, of New York city, is the inventor of this improvement.

Sheep Shears.—This invention consists in the employment or use of a guard attached to the shears in such a manner as to effectually prevent the latter from cutting the skin of the sheep during the process of shearing the latter, and also to prevent the wool from distending or forcing apart the blades of the shears during the cutting operation, a contingency which frequently occurs, especially when the shears loose their keen edge in consequence of the wool slipping in parallelly between the two blades. J. A. Hadley, of West Waterford, N. Y., is the inventor of this improvement.

Lock for Fire-arms.—This invention consists in giving additional support to an outside hammer applied to a fire-arm by making a hub boss on the inner face, and counter-sinking the outside of the frame of the arm concentric with the bearing of the main spindle or arbor of the lock, to form a bearing for the boss within the frame. It also consists in a certain novel mode of applying a safety stop in combination with the hammer for the purpose of stopping it a little way from the nipple or from the place where it strikes to fire the charge. Both features are applicable to either muzzle-loading or breech-loading fire-arms. Eben T. Starr, of New York city, is the inventor of this improvement.

Fire-arm.—The object of the first part of this invention is to enable the charges in several fixed barrels to be fired, one at a time, in succession, by means of a single hammer without giving the hammer any other movements than those necessary for cocking and striking, and to this end it consists in the employment of a revolving and sliding plunger interposed between the hammer and the barrels to transmit the impact of the blow of the hammer to the percussion priming employed for firing the charges. It also consists in so combining the revolving plunger with the hammer of the fire-arm that the necessary revolution of the plunger may be effected by the act of cocking the hammer. Eben T. Starr, of New York city, is the inventor of this improvement.

Hoop Skirt.—The object of this invention is to admit of the hoop-skirt readily contracting laterally, when subjected to any lateral pressure, and without being thrown up in front, as is now the case with the ordinary hoop-skirts. To this end the invention consists in having the lower hoops of the skirt divided into two parts and having them connected by rings or joints to form a flexible connection which will admit of sides of the skirt readily yielding and bending inward without being thrown upward in front when subjected to lateral pressure, as for instance in being seated in a public conveyance in close contact with passengers on each side. Mrs. S. A. Moody, of No. 12 East 16th street, New York, is the inventor of this skirt.

Comparative Cost of Petroleum and Gas.

On the 24th of February, William Marcet, Esq., M.D., F.R.S., read a paper before the Society of Arts, in London, giving the history of some elaborate experiments undertaken by him to ascertain the comparative quantity and cost of light produced by burning petroleum, illuminating gas and other substances. The results are thus given:—

“Let us now proceed to compare the light given by a petroleum-lamp, with a wick six-eighths of an inch broad, and that given by tallow candles, composites, sperm candles, and oil. The results have been arranged in the form of the following table, on which I shall make a few remarks:—

	Petroleum.	Gas.	Tallow Cands.	Com. posites.	Sperm Cands.	Colza Oil.	Sperm Oil.
Light emitted by petroleum lamp equal to	1	1 to 1.3	10	6.3	6.5	0.61	0.55
Weight burned in 3 hours 18 minutes	1386	12.7	408	550	490	2901	3250
Price of material burned in 3 hours 18 minutes	1d.	½d.	½d.	1d.	1½d.	2½d.	5d.

“From six experiments, where the amount of petroleum burned varied from 393 grains to 466 grains per hour, the average quantity of the oil consumed was 420 grains, the price of which, at 3s. 8d. a gallon, would be three-tenths of a penny, and consequently an amount of petroleum worth only 1d. will burn for 3 hours and 18 minutes. Now, 2 tallow candles burning for 3 hours and 18 minutes, will cost about 1d.; and as, according to my experiments, petroleum gives about 10 times as much light as a tallow candle, it will follow that the expense of burning petroleum will be the same as that of burning 2 tallow candles, and there will be no less than 5 times as much light obtained from the oil as from the 2 candles.

“In comparing the expense of burning petroleum with that of consuming coal gas, by measuring the amount of gas consumed with a very accurate gas-meter, it will be found that the quantity of gas burned by a good fish-tail burner in 3 hours and 18 minutes is 12.7 cubic feet, which at 4s. 6d. per 1,000 feet, will cost six-tenths of 1d., or, in round numbers, a trifle over one half-penny. With respect to the light given out, that of gas supplied as above is generally a little less powerful than that of petroleum, but for all practical purposes both lights may be considered equal; consequently, gas in London, at 4s. 6d. per 1,000 cubic feet, is half the price of petroleum, but the oil presents many advantages over gas which will make up, in a great measure, for the extra expense—as, for instance, the portability of a lamp; the pleasant, subdued light of petroleum, instead of the dazzling brightness of gas; and also the fact shown by Dr. Frankland, that there is less heat given out by petroleum than by gas, and less products of combustion injurious to health. Then in many small towns gas is very dear, and houses are but indifferently supplied with it; in other places, such as village country houses, there may be no gas at all, and in these cases rock oil becomes an invaluable boon.”

It will be observed that the price of London gas is just one-third of the price charged by the New York companies, and their's may also be superior in quality to ours. On the other hand petroleum costs nearly twice as much in London as in New York. Consequently in New York gas is about three times more costly than petroleum.

In consequence of the decline of the hoop skirt business many men were left with braiding machines on their hands. Baulked in this direction they have launched out into the business of braiding shoe strings, and some are prosecuting a profitable trade in this new line.

MISCELLANEOUS SUMMARY.

NASMYTH'S SOLAR DISCOVERIES.—Mr. Nasmyth claims to have been the first “to discover, delineate, and accurately describe” the structure and structural details of the sun's luminous surface, and those curious forms which he has termed the “willow leaves,” with which this luminary is completely covered. He states that they are scattered in every direction over its surface—no symmetrical arrangement being perceived. He estimates their length at 1,000 miles, and their width about 100. The thickness of the layer of those luminous spots does not appear to be considerable, as the semi-luminous atmosphere on which they float can be perceived through the interstices, and which give the sun its peculiar and well-known mottled appearance. The actual form of those singular bodies is best seen when they drift across a spot and form those “bridges” which occur when the spot is collapsing.

OUR FINANCES.—*Thompson's Bank Note Reporter* in an article upon the policy of Secretary Chase says:—“He appeals afresh to the people in this the most trying military and financial period of the rebellion, to come forward with heart and money. He is reducing the volume of currency gradually, and will continue to do so. If the stock and gold gamblers shall again attempt the game they played lately, he will bring the whole power of the Government, and its whole means, both here and abroad, to checkmate them. The Secretary of the Treasury relies upon the people for the ways and means; upon the army for victories; and upon Congress for adequate taxation.”

ARMED STEAMERS IN THE PACIFIC.—The Pacific mail steamship, *Constitution*, Commodore Watkins, has completed her armament, in mounting a hundred-pound Parrott rifled gun, in addition to her two Dahlgren rifles. This monster piece of ordnance is placed forward on the main deck, and its working gear is so arranged that it will have full play when called into action. It carries a solid shot of sixty pounds, and has a range of four miles. Her Dahlgrens are twelve-pound rifled guns, carrying a solid shot of sixteen pounds. With this armament Commodore Watkins entertains no fear of piratical cruisers, and taking into consideration the vast size and speed of the *Constitution*, even if he should encounter the *Alabama*, he could easily capture or sink her.

A MAN in Worcester, Mass., has invented a machine for turning clock and watch pivots, or cutting round tenons on square or round rods or wire. Pivots of different sizes and length are cut in this machine on any size wire or rod with the greatest accuracy, and without centering, the pivot or tenon being perfectly true with the outside of the rod upon which it is made. It also makes tenons upon any kind of tubing, such as gas pipe or gun barrels, without centering or using a mandrel, said tenon being true with the inside of the bore.

MORRIS ISLAND would be a great place for a junk dealer. A recent letter says that over one hundred tons of iron, consisting of broken guns, fragments of shells and unexploded shells, have been gathered in a heap at the ordnance depot, and that the quantity would be greatly augmented, if the projectiles buried in the sand were dug up and added to the heap.

CATALOGUE OF NEBULÆ.—A valuable work, containing all of Sir W. Herschel's nebulae (2,500 in number), with other catalogues, and comparisons between them, has been published by M. Auwers. The want of such a work has long been felt by such observers as were engaged in searching for comets, as no complete catalogue existed previously.

THE hot-air bath is recommended as a possible cure of phthisis. Some of the most eminent British physicians are recommending the Turkish bath as a great restorative of health.

It costs \$50 per day to board at the hotels in Wilmington, N. C., and the fare is represented as very poor at that.

THE workmen are laying the ways for launching the *Puritan*, and she will probably be launched in the course of a few weeks.

AMY SOLOMON, of Attleboro, Massachusetts, died May 1st, at the age of one hundred and seven years.

WE are indebted to Hon. James Brooks, M. C., for valuable public documents.

FOREIGN INTELLIGENCE.

FRENCH ARMOR PLATES.—Further trials of French armor plates, made by Messrs. Petin, Gaudet & Co., of the Rive de Gier, have taken place, since our last, at Portsmouth, and in each case their 4½-inch plates have earned the distinction A 1, to which only the best 6-inch plates of home manufacture have yet attained. The plates were tried in the usual manner, with a 68 lb. shot, fired with 16 lbs. of powder, at a range of 200 yards. The results have caused much comment in naval circles as well as among our iron masters.—*London Engineer*.

[A 15-inch shot was fired at a 6-inch best French plate with a charge of 30 pounds of powder, quite recently, in Washington, and after the shot struck there was a very large quantity of scrap iron in the place of the French plate.—Eds.]

THE PENALTIES OF FAME.—The great English poet Tennyson is exposed to great annoyance from the curiosity of intruders. Strangers are found from time to time seated in his garden, peering in at his windows, wandering freely through his grounds. From the lawn in front, when conversing with his family in assumed privacy, he has, on casually looking up, discovered an enterprising British tourist taking mental notes of his conversation from the branches of a tree above. Mr. Tennyson has been compelled to make fences, raise embankments, train foliage, and in fact half fortify his house, and in spite of all is not permitted to enjoy what any of our readers so circumstanced would expect to enjoy as a thing of course—the quiet freedom of a country home.

THE ATLANTIC TELEGRAPH CABLE.—Messrs. Glass, Elliott & Co., of London, have purchased the entire works of the Gutta Percha Company, and formed a new company under the name of the “Telegraph Construction and Maintenance Company,” with a capital of £1,000,000, for the purpose of making and maintaining telegraph lines of communication, both submarine and on land, in every part of the world. The new company are to carry out Messrs. Glass, Elliott & Co.'s contract with the directors of the Atlantic Telegraph Company to manufacture and lay down, in the summer of 1865, the cable between Ireland and Newfoundland.

THERE have been launched at St. Petersburg two gunboats, constructed in the building yard of Messrs. Carr & McPherson of that city. Those two vessels, named the *Ladnik* and *Bronenosetz* (which signify “Clad in a Cuirass” and “Coat of Mail”), are constructed on the American system improved by Ericsson, and armed with two cannons. They are 200 feet long, 46 feet wide, and 11 feet deep. The engines are of 160 horse power. The launch, which took place in the presence of the Minister of the Navy and a great number of officers of the fleet, was followed by a breakfast.

A PAPER has been addressed to the Agricultural Society of Chalons, in which it is stated that potatoes may be safely grown free from disease by merely planting them in June instead of April. The writer, who has proved his theory by several years of successful experiment, is of opinion that by planting the roots in April they become corrupted by the alternate frost and heat.

MEASURES for restocking the lakes and rivers of Switzerland with fish have for some time past been in operation. Up to the present time a million and a half of young trout have been introduced into the Lake of Zurich.

AN enormous cylinder, weighing above 30 tons, intended for Her Majesty's iron ship *Minotaur*, was received at Woolwich recently, from Messrs. John Penn & Son, having been conveyed thither by a team of 30 horses.

FOUR steel paddle-steamers, very fast vessels, are reported to be building at Liverpool for the Confederate merchant service. They are intended to run the blockade. They will be acceptable additions to our navy.

THE French now make bonnets out of india-rubber, painted to imitate Leghorn braid. India-rubber bonnets ought to fit any head.

THE American copper-toe shoe is introduced into use in England, and is much approved.