center of gravity is maintained well within the base. Great numbers of them are now in use here, and it is certain that their adoption will be extended.

While noticing the railway carriages we must not pass over the carriage which is exhibited as one of those intended for the temporary Mont Cenis Railway. As several years must elapse before the completion of the great tunnel which is to establish railway communication between France and Italy, a railway is in course of construction to ascend the mountain itself by a route similar to that now followed by the diligence, working at gradients much steeper than those generally allowed in railways. To render this possible a double-headed rail is laid on its side between the two ordinary ones, and supported so that a set of horizontal wheels on the locomotive can be made to grip this rail and thereby obtain an adhesion independent of the gravity of the engine. The carriage is also provided with two pairs of wheels bearing against this middle rail, but apparently not intended to do much work, as they are not provided with axle boxes. A brake is arranged to seize this rail, beside others applied to the carrying wheels in the usual manner. The seats inside are arranged along each side as in an ordinary omnibus, the gage of the road being considerably less than the standard width, but are comfortably cushioned as in ordinary first-class carriages. The whole is of course arranged with chief regard to lightness, and it is probable that for its purpose the railway will be very successful.

There are quite a variety of devices for establishing communication between the guard of the train and the passengers, exhibited, and some of them are in use on the French railways. They always involve a galvanic battery or some other system of machinery which to Americans seem absolutely elaborate and unnecessary. Europeans think that with their system of close compartments passengers could not be trusted with the simple bell cord as we have it, but they might at least give it a trial, and perhaps they would find their fears groundless, while they would certainly save themselves much expense. But it is contrary to French principles to trust the public, and expense is preferred to such a breach of principle. SLADE.

Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

The Chicago Artesian Wells--A Question in Hydraulics.

MESSRS. EDITORS:—On Saturday, August. 17th, the Mayor, Common Council, and Board of Public Works of Chicago visited the artesian wells, for the purpose of testing the head of water, quantity discharged, etc., in order to ascertain whether it would be practicable to apply the water to city uses. There are two wells, one 5 inches in diameter at the surface, contracted to $4\frac{1}{2}$ inches at the bottom; this well is 711 feet in depth. The other is full 5 inches from the surface to the bottom; in this latter well is inserted a cast-iron pipe 64 feet in length, which penetrates the rock 42 feet and projects above the surface 22 feet. This pipe is $5\frac{3}{4}$ inches in diameter and is cemented in and fits the well perfectly tight. From the top of this pipe the water is discharged upon and drives an overshot wheel twenty feet in diameter, used as a power for drilling and enlarging the other well.

In order to test the head of the water, the first well was stopped or plugged forty feet down with an ordinary leather sand bag, so that no water came from this well at the time of the test. Now a cap was fitted on the top of the cast-iron pipe, and a common gas or water pipe $1\frac{1}{4}$ inches in diameter was inserted in this cap, and carried up until a hight of 45 feet above the surface, and 87 feet above the level of the lake was reached. The water overflowed above the top of the pipe 18 inches in the air, when the fact was exhibited and it was readily seen that the water would rise much higher in the opinion of the City Engineer, as much as forty or fifty feet. The plug in the cast-iron pipe at the level of the top of the wheel was removed, and the water discharged at that point. It was estimated to flow here 300 gallons per minute, or 432,-000 gallons per day. Then the plug at the surface was removed, and the water discharged there. This was accurately measured, and found to be 345 gallons per minute, or 496,000 per day. The water at both elevations discharges with great force and power, and we estimate its resisting force in either well at from 600 to 800 pounds, though this fact has never been accurately determined. Now we find that upon closing both of the lower orifices, the one at the surface and the other at the wheel, the water rises to and overflows the top of the pipe only three or four inches, and does not reach its full head of eighteen inches until after the lapse of from twelve to fifteen hours, and during this time it seems, as it were, to creep up by degrees, growing stronger and stronger the longer it is left undisturbed. Now the question is, why does not this water rise at once, and as soon as the lower orifices are closed, to its full head or fountain level? The natural supposition is that it would rise and discharge in less than five seconds, but it does not. At the lower orifices there is not, and has not been for nearly three years, any perceptible diminution or variation in the flow of water, but it comes all the time with the same force and power. Seasons, wet or dry, make no difference. There is no change in the temperature and no change in the quantity.

I can illustrate this by referring to the fountain in the City Hall Park, New York. Suppose the head of this fountain is seventy feet; now screw on a two-inch pipe, say fifty in hight. The water would spout out of this pipe perhaps ten feet in the air. Shut the water off and turn it on again. the discharge would be the same, and the time but momentary. Now, while the discharge from our pipe in the air is fully eighteen inches, yet we cannot obtain that amount except by waiting a given length of time. Can you, Mr. Editor, or any of your readers, solve this question for me?

GEO. A. SHUFELDT, JR.

Chicago, Ill.

Long Range Guns. Vacuum before the Shot.

MESSRS. EDITORS.—The closing paragraph in a communication from E. H. Pardee, in your paper of Aug. 3d, requires a notice from me. It is in regard to firing projectiles *in vacuo*, or from a barrel exhausted of air.

This idea originated with me several years ago, and in 1852 I addressed you a private communication on the subject requesting an opinion. Your reply, in "answers to correspondents," in your paper, will show it, even if the original letter be not preserved. The rapid retardation of shot by the atmosphere has been long well understood, but the powerful effect of this resistance on the shot, before it emerges from the barrel, has not been sufficiently well considered. One would hardly suspect, unless he had made the calculation, that, in the thirty-two pounder, the resistance is more than four hundred and fifty pounds. And this is far more difficult to surmount than that offered by the inertia of a solid body of that weight. Because, the latter is susceptible of accelerated velocity, and of increasing force, while the other, being due to elasticity and not to weight, is incapable of absorbing force. Thus in the case of atmospheric resistance, when the charge shall have traversed half the length of the chamber, it is still wholly inert. It has acquired no inherent velocity, no independent force, and offers quite as much opposition to the driving power, at that point, as at the start. Now, when it is considered that this resistance, to some extent, increases, while the propelling power decreases with tremendous rapidity, it will be seen, that a point is very soon reached, where acceleration ceases, and, beyond which, any additional length of barrel tends to diminish the force of projectiles.

It has been estimated that powder, transformed to gas, expands to two thousand times its bulk, and, that this expansion takes place, *in vacuo*, with a velocity of five thousand feet per second. If this be so, then, a charge of powder occupying one linear foot, in an exhausted chamber two thousand feet long, would fill it, less the amount of explosion due to the quantity of heat absorbed by the barrel; and it would fill it in two fifths of a second. It is evident, also, that a shot placed before this charge, would soon acquire its maximum velocity, and plunge into the external air with terrific force, but at what point acceleration would cease, could be determined only by experiment. In a gun of six inches caliber, perhaps fifty feet might be necessary, and, if so much, it would limit the practical application of this principle, for pieces of so great length, could be used only on fortifications or in sieges, and, possibly also, on large steam ships. Such pieces would have to be made in sections, screwed or bolted together; but the sections could be made extremely light without danger, provided the breech section was of usual strength.

To produce the requisite vacuum at the proper moment, would require the aid of steam, applied as in the Gifford Injector. Let the muzzle of the gun be gently tapered almost to an edge, and surrounded by a second muzzle or rim, extending back ten or twelve inches, with a roomy cavity between, but narrowed down at the point, so that a thin cylindrical sheet of steam would jet forward from it around the bore. A pipe running from this cavity along the barrel to a point central between the trunnions, and these connecting with one from the boiler, would admit the steam, which could be turned on the instant before firing. It would at once almost perfectly exhaust the chamber and relieve the shot, as it advanced, of all opposing pressure.

I am not certain about it, but I think that in my communication, above alluded to, I suggested, in connection with this principle, the idea of accelerating charges, located in recesses along the barrel of the gun. This idea was original with me at the time, but has also been suggested by others. I have seen it, either in the SCIENTIFIC AMERICAN, or elsewhere long before the description of Lyman's Accelerator appeared. Nor, have I any doubt, that it was original with that gentleman also, who deserves all the merit of it for having first practically applied it.

But, I had concluded, that this thing of acceleration, could be accomplished in another way, much more simple and quite as effectual, by a re-enforcing cartridge, used in the ordinary guns. I think it practicable to make a cartridge, with partitions, each partition containing a full charge of powder and so divided, that when fired from the front, they will explode in succession, thus affording all the advantages of accelerating charges placed in recesses along the chamber.

This cartridge, fired *in vacuo* with sufficient length of barrel, would bring us at one step, to the utmost limit of improvement in the range of projectiles by giving an initial velocity equal to that with which the gasses of powder rush through a vacuum.

Such a projectile, moving with such velocity, like some headlong body, falling from the empty regions of space, into our dense atmosphere, with the heat evolved by its violent compression, added to the high temperature acquired, in so long a barrel, by contact with the burning gases, might become incandescent and flash through the air, like some gleaming meteor, thundering on its way.

These speculations unsustained by any practical proof, will have to be taken for what they are worth, as mere fancies, until some one, with ampler means than I, shall test their value by a course of well directed experiments.

H. S. WHITFIELD.

Tuscaloosa, Ala.

The Shipment of Crude Petroleum.

MESSRS. EDITORS:—I have read the article in your valuable journal of Aug. 17 issue, in relation to the sad and fatal accident which happened to the ship *Meteor*, on board of which was stowed upward of two thousand barrels of crude petroleum bound for London. The fearful nature of the accident, which in one minute rendered the noble ship a burning wreck, killing by the explosion of the vapors, one half the crew, and destroying thousands of dollars worth of valuable property, calls for more than a passing remark from the journals of the day. I am gratified and personally thankful that you have so ably criticized the practise of shipping, so inflammable an article as crude petroleum at all, and putting it in the poorest class of barrels, often very leaky and imperfect, always selecting the best glued packages for the finished illuminating oil, which latter article is not dangerous to life or property, owing to the volatile naptha being removed by distilation from it. I have had for the last twelve years much experience in the manufacture of coal and petroleum oils, having had the entire charge of the Downer Kerosene Oil Works from their earliest commencement, and oil, either crude or refined, with the naptha honestly removed from it, is as safe as most articles of commerce in the line of oils. All that is necessary is to distill off the naptha, which is easily and cheaply accomplished, and the last of such frightful accidents as the loss of the *Meteor* would be recorded. Naptha, however, is very largely consumed in Europe for many uses in the arts, such as varnish-making, painting, carbureting gas, etc. If it is all removed from the crude oil, it must be shipped either in tin or metalic vessels, at a large cost for packages, or some suitable vessel must be employed that is, and will remain, perfectly tight, allowing no escape of naptha or gas from it to pervade the vessel. Ordinary barrels do not hold the naptha, the leakage being often from ten to twenty per cent. of the entire cargo; but I do claim that the new tongued and grooved and cemented joint barrel, as illustrated in your paper of July 20, 1867, will carry without leakage, to any European port, the most volatile naphtha, as well as either crude or refined petroleum. The company I represent have shipped largely to Europe, and also to tropical climates, oils and whole cargoes of naphthas without a particle of loss, and when the means of transportation of these valuable products of our country, is within the reach of every shipper of oil, it seems to me the careful merchant and refiner will avail themselves of it and by the use of this improved package render the transportation and storage of these products safe and profitable. You are in error when you state there is no use for naphtha either in New York or Europe, and that it is only of value at the wells where it is produced, as several hundred thousands of barrels of naphtha are consumed per year in this country and Europe; our company, alone, make and sell yearly at least $400,000 worth of naptha.

JOSHUA MERRILL.

Boston, Mass.

Acceleration of Shot.

MESSRS. EDITORS.—Having seen an interesting account of Lyman's Accelerating Cannon in your valuable journal, I thought my experiment to increase the velocity of shot for fowling might be interesting. I first constructed a tube to communicate fire to the center of the charge of powder; this sudden expansion bruised the shot in overcoming their inertia. This objection led to a mode of putting the shot in motion before the powder was all burned. I constructed a long narrow chamber in the breach of the gun and communicated fire to the top, or end next the shot. This had the desired effect; the shot were put in motion before any considerable quantity of the powder was burned and were followed up by the powder burning back, increasing their velocity, and I could use double the quantity of powder with ease and safety and with greatly increased effect. If the length and diameter of the chamber were proportioned to the required capacity of a cannon, I think it would be preferable to having the powder in chambers, along the bore of the gun. SETH BOYDEN.

Newark, N. J.

Screeching of Steam Whistles.

MESSRS. EDITORS.—A steam whistle can be varied in tone by raising or lowering the bell on the standard supporting it, the same being provided with a thread and jam nut for that purpose, but different notes, or discords, are often made by whistles without changing the position of the bells; in other words they screech. This is caused by the vibrations occurring in unequal times so that the waves interfere with one another. The inequality in the vibration is occasioned by suddenly opening the valve so as to start the edges of the bell before the mass has time to respond, by water upon it, and by disproportion in the bell itself. Some whistles are never satisfactory in their operation. These hints may lead to a remedy. E. P. WATSON.

New York city.

The Willow and the Levees.

MESSRS. EDITORS.—Your correspondent, G. W. R. B., in your issue of Aug. 17, labors under an erroneous impression in regard to the willow. No tree is more tenacious of life in any soil, wet or dry. Of its applicability to strengthening the Mississippi levees there is no reasonable ground for doubt. A line of willow posts or stakes thrust not less than three feet into any soil, will take root and grow vigorously. The only object should be to put them to such a depth that the bottom may be constantly moist. They may be set upright, or take the direction of any embankment with one end below the water line and the other at the top of the levee, being careful to cover with earth to the point intended to grow. In a few months they will become as fixed as roots can make them. The white, or osier willow, should be used as it cannot be broken off by passing timber or by any other ordinary means. I have never seen the Mississippi, and know little of the manner of forming the levees, but I suppose them to be simply an embankment, parallel with the river. With this form in mind I will say that were the duty of preserving this embankment to devolve upon myself, I would insert three lines of willows—one on the water side at the base and sloping with the bank to a point near the top—another along the center of the top, and the other about half way down the embankment upon the land side, the last two to be inserted perpendicularly, to the depth of not less than three feet. In a few years these willows would send a net work of roots through every part of the embankment sufficient to resist the wear of any amount of water, and be far more durable than any piling of timber. While on this subject I will say a word in regard to the size of material to be used. The object desired is roots. Now these may as well be obtained from a twig the size of a rake handle, and even smaller, as from a stick of timber a foot in diameter. When once rooted they are safe, and sure to grow from five to fifteen feet in length the second year. They should be set in rows, say two feet apart in the row, and pretty soon the Mississippi will be hedged in with a living fence that may endure for centuries to come T. F. C. H.

Lawrence, Mass.

There can be no doubt of the strengthening influences of the willow when planted on the slopes of river embankments. Whether there may be peculiar influences in the Mississippi to neutralize this benefit we do not know. But the embankments built by Col. Colt at Hartford, Conn., by which he redeemed hundreds of acres from overflow and procured a site for his extensive works and for two villages, are protected by means of osiers thickly planted on both the land and river slopes. These send their roots for a number of feet into the bank and furnish a valuable crop of superior basket twigs, the manufacture of which into articles of use or ornament gives employment to several hundred hands.—EDS.

TECHNICAL WRITING IN THE DAILY PRESS.

It is quite safe to assert that there is but one thing that is likely to cause a writer to commit great errors in writing on a subject he does not understand, and that is, to be inspired by those who supply him with erroneous information either through ignorance or design, or both. The writers on the daily press are for the most part accomplished and scholarly men and treat scientific subjects with judgment when they take the trouble to read up; an important item which we are sorry to say, is but too frequently neglected.

The case in point is the report of the Special Correspondent of the N. Y. *Times* on the voyage of the French iron-clad *Dunderberg* from New York to Cherbourg, and it is to be hoped that a few words spent in pointing out some of his errors may not be thrown away. Hence no apology is necessary for what follows.

The writer on the *Dunderberg* says "our ponderous engines (the largest that have ever been made in the United States) driving us through the water at a speed of 8½ knots,"—as there are no less than eight pairs of screw engines already built in this country, each larger than the *Dunderberg's*, the nonsense of this opinion is apparent. His directions for the treatment of a new engine are too unique to be omitted. "A new engine must be as carefully watched as a new babe . . . . each of its many members must gradually feel the strain. Here a little bracing is necessary, and there the tension (of the diaper pin?) must be relaxed. In this manner the various parts are at last brought into nice adjustment and perform their functions "harmoniously." The simplicity of that description is worthy of Homer or Walt Whitman!

In order to exhibit the tempestous (?) character of the voyage old Neptune is agitated, "thusly"—"In all my experience however I never knew anything to approach the *Dunderberg* in the quiet dignity of her behavior in a high sea." . . . "It was not necessary at any time to put racks on the dining table, our crockery and glass ware keeping in position as securely as if we were on dry land."

The immense force of the huge waves is further shown as follows: "It was only when the sea was running high (?) that it washed over this low part of the vessel." This low part is the deck abaft the casemate and is but a little higher out of water than the monitors' decks; those who made the voyage in the *Miantonomah* will understand the hight of the sea necessary to wash over such a deck!

"I do not," he says," intend to convey the impression that the seas did not break over the main deck at all. On the contrary, they did *at times* curl over in considerable volume, making it necessary to batten down the hatches (over the officers' quarters) and vitiating to some extent the air in the wardroom below, but not to a degree that was *remarkably* uncomfortable." Query? How about ventilation, if they had encountered a gale when it would have been necessary to keep these hatches battened down? A little further on this marine observes: "Her superior ventilation," etc., "are all matters of record!" And, again, the weather was so fine that, as he justly remarks, "It was simply a prolonged excursion at sea, where no drawbacks to comfort existed except the single one—the absence of ladies."

Respecting models our marine architect thus discourses: "It cannot be long before the principles which have governed the construction of the *Dunderberg*, making her so easy and comfortable, are applied to ships generally. Such vessels, being relieved of the jacket of 1,000 tuns of iron, which encases the experimental ships, may indeed place sea sickness, and the minor discomforts at present inseparable from a voyage, in the catalogue of the things that are past." The readers of the SCIENTIFIC AMERICAN are, doubtless, aware that the cross sections of this vessel are almost precisely like those of a scow, the bottom being dead flat and the bilges nearly square—no curved futtocks are used, the side frames being joined to the floors like the gable of the ship-house in the navy-yard. A rudimentary acquaintance with the mechanics and hydro-dynamics of naval architecture is sufficient to point out to any one familiar with them that not only is such a construction about the worst possible for strength, but also for ease of motion in a sea-way. The latter for reasons which will be found demonstrated geometrically, practically, and mathematically, in any standard treatise on naval architecture. And if the object sought is to make such an immersed form positively unfit for ocean navigation, it can readily be attained by lowering the center of gravity of the ship; in the present case, this would be accomplished by "relieving" her, as this writer suggests, "of the jacket of 1,000 tuns of iron," which alone renders her motions tolerably easy; the log states the rolling was "deep and quick," but without "jerk,' Now, to produce as pretty a "jerk" as ever frightened the captain of an improperly stowed ship by seeing his masts cracking like whipstalks, it is only necessary to remove the armor. It would simply be another demonstration of the laws that must be regarded in relation to the form and disposition of weight necessary in order to have a vessel intended to navigate the ocean, properly balanced.

The injury to the national cause during the rebellion by the delay in the completion of "The Union-saving Ram," is thus alluded to by this naval critic:—

"Very few persons have forgotten the high hopes which were entertained during the dark days of 1863–4, when the rebels were receiving aid from England by way of Charleston and Wilmington, of the effective service which this mysterious engine of naval warfare was to render the cause of the Union, by the reduction of the forts which guarded the approaches to the harbors of the enemy. "Happily the war was ended before the formidable powers of the vessel could be tested." The idea of this "mysterious engine" reducing the forts in Charleston harbor and Fort Fisher, is decidedly rich under any circumstances, but it becomes richer still when it is borne in mind that her great draft of water (over twenty feet) would prevent her from approaching within anything like gunshot of the one, or within effective range of the other. The *New Ironsides*, with between fifteen and sixteen feet draft, had to be handled with the utmost skill to keep her from grounding while on service before Charleston. "While she was in progress of construction," so states this correspondent, "Mr. Webb was directed to enlarge the hull and engines to a size considerably larger than was at first proposed," and then, that his application to the Secretary of the Navy "for increased compensation was unsuccessful." Now this may be so, but it does not seem at all likely that the Government first ordered the vessel to be enlarged, and then refused payment for the additional cost, because it "would be compelled to modify the contracts between the Government and the builders of other iron-clads!"

Of course the question of armor and invulnerability receives more than a passing notice; the following extracts will suffice: "It is asserted in some quarters that the *Dunderberg's* good points are more than counterbalanced by the single fact that her armor is not as heavy as recent inventions in gunnery have proved that it ought to be to render her invulnerable. . . . I do not concede the justness or soundness of the objection." This refusal to "concede" to the "soundness of the objection" that projectiles from ordinary naval guns can riddle the armor of this vessel will no doubt cause those "foolish virgins" to pause and reflect, who put on iron to keep them out! But our vulnerable friend complicates his position by stating that "invulnerability is an excellent quality, and in a purely defensive warfare is doubtless the most valuable to possess. But in aggressive warfare there must be other qualities quite as essential." In other words, in "defensive warfare," as he terms it, the cuirass must be strong enough to keep out the enemy's missiles, but in "aggressive warfare" this is not important. No doubt a definition of these terms would be welcome to most of our readers, but what he really means it is impossible to say. In other words victory is important in one sort of warfare but not in the other! It is usually held that the duty of armor is to keep out shot and shells; if like the *Dunderberg's* as is admitted, it will do neither, what useful purpose does it fulfil as armor?

The "aggressive" qualities of the *Dunderberg* are thus set forth: "Speed and the ability to carry a heavy armament are as necessary as impervious armor," as she is utterly deficient in the latter, it is asserted that the former 'essentials obtain in the *Dunderberg* to a degree which is approached by no other iron-clad in existence. I say this in full knowledge that it cannot truthfully be contradicted."

This is what may be termed "doing the thing up Brown" As for speed, it is known that the *Dunderberg* is excelled by all the first-class iron-clads in either the French or English navies, and this opinion, founded originally on the result of the measured mile trial, receives a marked corroboration from the log of her Atlantic voyage. According to the log 82 tuns of coal per day were consumed, and the average speed was only 9 knots per hour; hence, as the consumption of coal increases as the cube of the speed, it will be seen that in order to maintain a speed of 13 knots, some 250 tuns per day must be used, and for a speed of 15 knots, no less than 378 tuns. Of course neither of these enormous amounts can be burned, and the wonderful speed claimed for this absurd shape is seen to be moonshine. This again suggests the subject of models, and a comparison will show that the orthodox forms were not designed by tyros or foolishly adhered to by the most successful constructors. The *Warrior* is a ship of about 3,000 tuns more displacement than the *Dunderberg*, and with a clean bottom can always be driven—as abundant trials prove—14½ knots in smooth water, and she is driven by a set of boilers of one third less area of grate and capacity than those of the *Dunderberg*. This shows how much easier the *Warrior*, with her regularly curved bottom, can be driven than the *Dunderberg* with her scow-formed bottom and straight sides.

The *Dunderberg's* machinery can doubtless develop as much power as that of the *Warrior*, and with the same economy of fuel. The *Dunderberg's* burning 82 tuns per day, or 7,649 pounds per hour, indicates some 2,200 horse-power, and as the speed increases as cube of power, it will be observed that to propel her during the voyage, 13 knots (according to the figures of the log), nearly 7,000 horse-power would be registered. The *Warrior*, deep loaded, runs 14½ knots with 5,500 horse-power.

Those interested in models will now have some idea of the power necessary to achieve high speed with the scow form, after making proper allowance for the conditions.

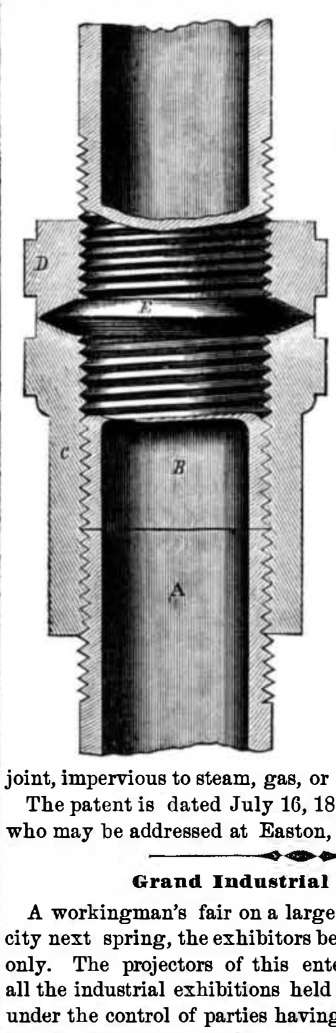
The following comparison it is not likely will be recognized by those who have had a look at the French ram: "The *Dunderberg* was floating like a swan, the outlines of the hull conforming more nearly to the shape of that bird than to any thing else." It is suggested that as she may be more formidable than she looks, a "singed cat" would be more appropriate as a comparison.

With regard to the ability of this vessel to carry a heavier armament than any iron-clad afloat, it is enough to say that there is not a large iron-clad in either the English or French navies but what can carry at least as heavy, and most of them a heavier, battery. The fact is that the gun deck of the *Dunderberg* is much too weak for the manipulation of twenty-tun ordnance. It is unnecessary to say that the same gun carriages on any other ship will work as well, and better with a deck of proper strength.

The following passages from hence to Europe made while the *Dunderberg* was at sea, will give to those familiar with North Atlantic navigation a pretty good idea of the character of the weather she was so fortunate as to enjoy. The *Scotia* left New York at noon, July 24th, arrived at Queenstown at noon, Aug. 2d. *City of Baltimore*, from New York to Liverpool, passage inside of ten days. *St. Laurent*, Brest July 20th, arrived at New York at noon, July 31st. *China*, Queenstown *via* Halifax, July 20th, arrived at Boston July 30th. ***

YOUNG'S PACKED PIPE JOINT.

The connection of metal pipes for steam, gas and water under pressure is always more or less difficult. It is seldom that the threads, either on the pipe or the couplings, fit so accurately as not to leak, and it is somewhat difficult to pack the parts so they shall be entirely tight under all circumstances. Of course, some method of packing these joints is desirable. One is shown in the engraving. A and B, represent two pieces of pipe joined together; C is the fitting or socket covering the joint between the pipes; D, is the lock nut, all shown in section. The approaching ends of the socket and nut are turned concave, and in the cavity thus formed, packing, designated by the letter, E, of some elastic substance or of soft metal, is introduced, and by the inclining sides of the cavity is forced firmly against the threads of the pipe and of the nuts. The result is a perfect joint, impervious to steam, gas, or water.



The patent is dated July 16, 1867, Wm. Young patentee, who may be addressed at Easton, Pa.

Grand Industrial Exhibition.

A workingman's fair on a large scale is to be held in this city next spring, the exhibitors being journeymen mechanics only. The projectors of this enterprise claim that hitherto all the industrial exhibitions held in this country have been under the control of parties having but little interest in the laboring classes, and as the products of labor exhibited by them were the property of capitalists, the honors and profits went to the credit of proprietors rather than the workmen. The fair next spring is to reverse this order of things, in the manner above mentioned. A circular has been issued to the journeymen mechanics of the United States inviting their co-operation in this movement.

BREECH LOADING ARMS.—The board appointed by this State for examining breech-loading fire arms, re assemble on September 17th. Patentees and exhibitors of guns of this class, desirous of presenting the merits of their respective weapons, will have an opportunity on that, or the four succeeding days, of testing their guns in accordance with the regulations adopted.