Scientific American.

NEW-YORK, MARCH 1, 1856.

The Bees and the Honey.

A few months since we announced the formation, in Boston, of an Inventor's Association, the object of which, according to the published circular of the projectors, was "to enable the inventors and actual producers of new and useful articles, or objects of art, to bring them to the notice of the public with the least expense and greatest benefit to themselves."

The first step in this enterprise was the holding of a grand exhibition at Gore Block, Boston, in October and November, 1855. An account of the exhibition was duly published in our columns at the time.

The President of the Association was Mr. Ithiel S Richardson, inventor of the Atmospheric Tubular Telegraph, and the Secretary was Mr. Elizur Wright, an inventor and literary man.

In their circular calling upon exhibitors to contribute to the exhibition, these gentlemen voluntarily made the following pledges and statements:—

"The management of the affair is entirely in the hands of practical mechanics, and the arrangements of the Exhibition Rooms will be superintended by Col. Wm. Beals. * *

The entire proceeds of the Exhibition after paying the unavoidable expenses, and reserving ten per cent. to form a fund for the ulterior purposes of the Association, *will be divided among the exhibitors* according to the merit and attractiveness of their contributions, by a committee chosen by themselves. These terms, it is believed, are more favorable to exhibitors than any hitherto enjoyed by them, and they cannot fail to meet the cordial approbation of all original inventors and actual producers, when it is stated that the association designs to devote all the funds it may acquire to promote the interests of inventors and mechanics—first by making adequate provisions for future exhibitions, and secondly by establishing a weekly or monthly journal, which shall serve as a fit organ for the inventive talent of New England. *It starts upon, and means to stick to the principle that the bees themselves* have the *first claims* on the *sweets* as well as *the honors* of their own *honey*. If the history of past exhibitions is any test of the interest which the intelligent people of New England take in the inventive genius and artistic skill of their fellow citizens, it will be entirely the fault of those among us distinguished for such talents, if they do not retire from this with something more substantial *in their pockets* than lithographic diplomas, and something more satisfactory than settled or unsettled bills of expense." . . . . . .

The exhibition, it appears, was a decided success. More than eleven hundred contributors were brought out, and one of the finest exhibitions ever known in New England took place. Between six thousand and ten thousand dollars were received, which amount, less unavoidable expenses, was, according to the prospectus, to be divided among the exhibitors. But in getting at a division of the *honey*, some trouble ensued, and resulted in the appointment, by the exhibitors, of an investigating committee to examine into the transactions of the officers. The following are the names of this body, all of them, we believe, gentlemen of respectability:—John Hartshorn, Anson Hardy, S. T. Bacon, Gilbert Nurse, N. Low Murphy, all of Boston. Copies of their report can be had on application to any of them.

This committee discovered a most veritable *mare's nest*. It was ascertained that the much vaunted "New England Inventors' and Mechanics' Association" consisted solely of three individuals, viz.:—Richardson, Wright, and Beals, the latter the manager. Well, what of that? They are certainly entitled to great credit for having gotten up so splendid an exhibition, and for having carried it out with so much success.

The committee next received an assurance from the the officers before mentioned that all of the receipts were eaten up in expenses, among which were items like the following:—

Cash paid to Mr. Richardson for services as President, &c.	$1000·00
To Elizur Wright, for services as Secretary.	224·36
To Wm. Beals, as Manager, &c. . . .	280·93
For services of Richardson's son, brother and nephew, and services of Mr. Beal's wife, and lady friend, also for carriage hire for family, odds and ends, incidentals, &c. -	397·38
For pulleys and shafting on hand - - -	350·00
	$2252·67

The commitee intimate that perhaps there are other sums spent for purposes analagous to the above. They claim that, allowing all the other expenditures to be bona fide, as represented, the items above named are not quite fair, that the amount was justly due to the exhibitors, and should have been divided among them, as promised, &c.

Now, we beg to dissent from the opinion formed by the committee. We fear they have been too much prejudiced in their own favor. It appears to us that the above payments are correct. The gentlemen named were the life and soul of the whole thing. Did they not plan, organize, and carry the affair through? They worked hard, very hard. Is it more than fair that they should be paid for their services? We notice that there were some *queen* bees engaged in the enterprise. Are not they entitled to any of the sweets?

But who shall say the published contract has not been carried out? They started with the publicly announced principle, which, they emphatically stated, they meant *to stick to*, that "the *bees themselves* have the *first claim* on the sweets as well as the honors of *their own honey*." Nothing can be plainer, even from the evidence of its accusers, than that the Association religiously adhered to this policy. The whole subject seems to hang upon the question "Who were the bees in this case?" Whoever they were, to them belonged *the honey*.

In conclusion we would state that we have known of the formation of quite a number of Inventor's Associations, during the past few years, but believe that in every instance they have failed to give satisfaction. Instead of benefitting, they have generally assisted to impoverish those who fell into their clutches. Inventors who cannot help themselves will look in vain for aid from such sources. The *honey* will, in all cases, be taken care of by the *bees*.

Black Oak Bark in Tanning.

The black oak (*quercus nigra* of botanists) grows spontaneously in the northern American States, and is used in the art of dyeing for producing colors on cotton called "bark greens, bark yellows, bark browns, and olives." The name by which it is commonly known is "quercitron bark," and constitutes the inner bark of the tree. The color which it produces in a simple aqueous solution is yellow. Its coloring properties were discovered by Dr. Bancroft, of London, in 1784. He discovered it while on a visit to America in search of new dyewoods, and the British Parliament granted him a patent for its exclusive use for twenty years. It was the principle substance employed in Britain for coloring yellow on cotton from the date of the Doctor's patent until about the year 1820, when the bichromate of potash was introduced,—which has now almost superseded it.

The bark of this tree, when used for tanning, makes leather of as good quality as white oak bark, but because its color is a light yellow, it will not bring the same price in the market as hemlock and white oak tanned leather.—The prejudice against it on account of the color is wrong, and is founded on ignorance, but tanners cannot afford to wait until this public prejudice is cured. Many of them, therefore, knowing the quality of the yellow bark, have consulted us in reference to some method that would enable them to use it in their vats and change its color, and make the leather tanned by it resemble the reddish hemlock, or the buff of white oak.

We will give them some information relating to substances which act as re-agents on the color of the bark, and then they can make experiments for themselves, and no doubt they will discover a method of giving the leather the desired color, although, with us the yellow leather would meet with the most favor.

Decoctions of this bark should always be made very strong, as it then deposits a portion of its coloring matter on cooling. It contains a great quantity of tannin and *quercitrine*—the coloring matter. Much of this coloring matter disappears if the decoction is allowed to stand until it becomes *stale*, a hint which may be of use to tanners. Lime water gives a yellowish red precipitate with a decoction of this bark; the muriate of tin a yellow precipitate; alum a yellow precipitate; the sulphate of copper, a greenish yellow precipitate; the sulphate of iron (copperas) a dark olive green. In dyeing cotton a brown color with this bark, the goods are first dyed yellow with it, then redwood and logwood liquors are given on the top of the yellow. It has been observed by dyers that the yellow forming the base of the brown color will disappear, as it were, by long handling of the goods afterwards in a redwood or logwood liquor. Tanners may take advantage of this property of *quercitrine* and use its decoctions, in the earlier stages of tanning, and then finish off with hemlock bark liquors. They may also get the proper shades of leather desired, by using the bark with hemlock in the same vat, or with catechu.

We have no doubt but this bark will yet come into more extensive use, and that the leather tanned by it will come up to a useful value, which does not lie in the color of it.

Pearsall's Method of Preserving Flour and Meal.

It is well known that one of the great difficulties in the transportation and pesservation of flour and meal is their liability to ferment and become sour, after a short time. Many a cargo has been rendered wholly worthless from this cause. When large quantities of flour or meal are packed together, as in flour barrels, the material heats and ferments, beginning at the center of the mass, where no air can gain access.

In 1854, Mr. Thomas Pearsall, of Geneva, N. Y., patented a remedy for the evils above mentioned, his improvement consisting in the use of an open tube, running lengthwise through the center of the barrel. The air circulates through the tube, and keeps the latter always cool; consequently, the center of the mass of meal cannot heat. This plan, according to theory, ought to prevent fermentation. We are happy to say that the most thorough practical experiments have completely established the correctness of this theory, and demonstrated the great value of his discovery. Samples of flour that have several times crossed the Atlantic, and been sent on very long sea voyages, have invariably preserved their sweetness. Indeed, a singular fact has been ascertained, viz.: that flour and meal put up in the ventilated barrels of Mr. Pearsall become improved in quality by age. The testimony on this point is conclusive.—The invention is already becoming well known in Liverpool, and we notice by a recent British price current, that Indian meal, put up in "Tubular Barrels," is quoted as selling at an advance of 50 cents. per barrel more than the meal packed in the ordinary manner. It is believed that when the advantages of this discovery become somewhat more extended, the quotation prices will rise still higher, for the purchaser will always feel sure, not only of getting fresh and sweet meal or flour, but the quality will also be better. There is no musty smell or taste, no matter how long the article is kept. Mr. Pearsall's invention is patented in Europe. It will be found illustrated on page 240, last volume of our paper.

Our Prizes.

The following letter from one of the successful competitors for our late prizes, exhibits, in a few but eloquent words, the benefits of the prize system adopted by us. The writer, it will be noticed, has taken another prize before the present. Such acknowledgments encourage us to continue the plan of paying liberal rewards in cash to those who labor for the extension of the Scientific American:

Messrs. Editors—I see that I have again been successful in gaining a prize for my list of subscribers to the Scientific American. It would give me much pleasure to be able to extend the circulation of so valuable a publication as yours without any compensation, but a prize of thirty dollars to a man in my circumstances makes it doubly so. Please send the amount I am entitled to by mail, or otherwise, as in your judgment is most safe and convenient, and receive my thanks for your liberality. John Garst.

Dayton, Ohio, Jan. 29th, 1855.

Corrugated Iron.

Experiments have been made at Washington to ascertain the strength added to iron by corrugation. A plate three inches long and four broad, so thin that, supported at the ends, it would bend of its own weight, when corrugated sustained a weight of 600 pounds. Corrugated iron has been adopted for many camp utensils. A camp bedstead of this iron weighs 50 pounds, and is equally strong with the English camp bedstead, weighing 150 pounds. A corrugated iron water-tight wagon body, that floats from 2000 to 2500 pounds of freight, besides the running gear, and weighs less than a wooden carriage body to carry the same freight, has also been adopted into the service of the United States, besides other articles of the same material. The additional strength of the iron in this form is obviously upon the principle of the arch. A circular tube is, in proportion to its amount of material, the strongest of all forms.

Corrugated iron is stronger than plain iron because the metal is contracted in bulk as well as arched in form. The first application of corrugated plate iron for the purposes of springs and to withstand great sudden strains, so far as our knowledge extends, was made by H. T. Hyde, and was illustrated on page 60, Vol. 4, Sci. Am.

A Word to the Wise.

The next number of our paper completes the half year, and affords a most excellent opportunity for new subscribers to enter their names. Singular as it may seem, men require to be reminded, and even urged, to the performance of duties which involve their own good. The Scientific American is, by universal consent, declared to be a source of special benefit to every individual who chooses to read it. Yet we are obliged to lay down "line upon line and precept upon precept," in order to increase the number of our patrons. We wish they would save us this labor by volunteering, *en masse*, to fill up our subscription books.

One of the rules of our business is to discontinue the sending of the paper as soon as a subscription expires. Those who have only paid for a half year are therefore requested to remit, immediately, the money requisite to pay for the balance of the volume. If this is not done we shall be under the disagreeable necessity of crossing off their names, and they will be deprived of many cheerful interviews with the Scientific American.

Recent American Patents.

Marble Sawing Machine.—By W. and G. Bull, of Towanda, Pa.—This machine is designed for the sawing of blocks of marble on a taper, both sides being cut simultaneously. Such blocks are used for monumental purposes. The improvement consists in a novel arrangement of adjustable guides, so that the angles at which the saws cut can be conveniently changed.

Improved Seed Sower.—By Stephen Gorsuch, of Altona, Pa.—In most of the seed sowers now used, the grain falls from the seed-box down through close tubes into the earth. The tubes are shod in front with small plow points, that open the furrows, in which the grain drops; close behind the tubes are suitable shares, that cover the furrows. The grain is not exposed to the eye during the operation, and therefore, if any of the tubes become clogged up so that the seed cannot fall, the fact is not readily ascertained by the attendant, and uneven sowing is the result.

The object of the present improvement is to remedy the evil just mentioned, and for this purpose the inventor makes slits or openings in the seed tubes, both in front and behind; said openings extend nearly the whole length of the tube, and are covered with wire cloth. The openings permit the entrance of light, and enable the attendant to see the seed as it falls, and to detect at a glance any choking up of the tubes.

Improvement in Machinery for Rolling Iron.—By Corliss and Harris, of Providence, R. I.—The common method of rolling iron is to pass it, in a hot state, between heavy metallic rollers, the latter revolving in fixed bearings.

The object of the present invention is to roll iron into sheets that are of a tapering thickness; that is, thicker at one edge than at the other. The long wrought-iron hinges used upon heavy doors are cut from iron of this description.

The improvement consists in placing the iron to be rolled, properly heated, upon a flat bed, and causing a roller to traverse over the iron until it is suitably rolled out. The frame in which the roller is carried is subject to certain adjustable guides, by means of which the roller is readily made to press harder and harder as it advances, and thus taper down the iron beneath. The above is an excellent improvement.

Blind Slat Tenoning Machine.—By John H. Palmer, of Elmira, N. Y.—Two small cutter heads are arranged upon the extreme ends of a pair of mandrels which have a horizontal lateral movement. The slats being introduced between the cutters, the latter are moved up and operate on the slats. Two round tenons are simultaneously produced, one at each end of the slat. This is a very rapid machine. The special novelty consists in cutting both tenons at once, the common machines being only capable of operating upon one end of the slat at a time.

Hemming Apparatus.—By S. P. Chapin, of New York City.—This contrivance is an attachment to sewing machines, and its object is to fold over the edges of the cloth into the proper condition for hemming, while the cloth is being fed into the machine. There are a great many species of garments and articles made by the aid of sewing machines, on portions of which some hemming is required. The invention here noticed is capable of a variety of applications, and is a highly useful improvement.

Improvement in Temples for Looms.—By R. Reynolds, of Stockport, N. Y.—That portion of the weaving loom called the "temple" is a contrivance for stretching and keeping the sides of the cloth stretched, as fast as it is woven. But for the temple the cloth would shrink up and impede the movements of the loom.

The subject of this patent belongs to the class commonly known as jaw temples, and is intended to be attached to the breast beam of the loom in such a way as to be capable of moving forward thereon. The first improvement consists in extending the upper jaw so as to form a lever, and giving the forward extremity such form, that, by its contact with a roller upon the breast beam, the temple may be retained in a proper position to gripe the cloth as near to the last filling thread as is desirable; the temple is also allowed to slide forwards under the said roller, when struck by the lay near the termination of every beat, and is thus caused to release the cloth. When the shuttle is arrested or retarded so as to be caught between the temple and reed, the temple is arranged to move forward with its jaws open, and thus prevent injury either to the reed or web.

The second improvement consists in the introduction of an elastic or yielding medium between the jaws of the temple, for the purpose of holding the cloth more securely, and at the same time protecting the selvedge and all that part of the cloth which is griped by the temple, from injury.

Machine for Making Ship Thimbles—By Corliss and Harris, of Providence, R. I.—The thimbles here mentioned are the iron rings or eyes which mariners use in the rigging of vessels to prevent the chafing of ropes when attached to hooks, staples, bolts, and the like. The surface of the thimble is concave, and the rope is bound around it.

The iron from which these thimbles are made is commonly rolled out into flat bars, cut to the proper length, and bent up into circular form. The flat ring thus made is then placed upon a peculiar shaped mandrel and the pressure of rollers applied, in order to produce the required convexity of the thimble. The operations of bending, rolling, and removing the thimble from the mandrel are comparatively slow and expensive.

The present improvement consists in the use of an anvil, having a convex surface, upon which a pair of hammers, operated by steam power, are made to fall in such a manner that if flat bars of iron are fed in upon the anvil they are quickly hammered up into complete thimbles ready for use. The operation is much more rapid than the old plan, and the quality of the work is superior.

Note.—The foregoing inventions were patented on the 19th inst. The claims of the patentees are published in the official list in another part of this paper.

Improvement in the Manufacture of Iron—Mr. J. Harrison, of St. Louis, President of the Co. owning the great Iron Mountain of Mo., has made a valuable improvement in charging boxes, for iron furnaces. The box is of the same size as the furnace, cylindrical in form, with a movable bottom. In use, the charge of coal, ore, and limestone, is placed in the box, rolled on a railroad, immediately over the top of the furnace, and then discharged through the movable bottom. In this manner the charge is thoroughly spread out and intermingled; the result, Mr. Harrison tells us, is an increase of between five and ten per cent. in the production of iron. This is an important gain. The old method is to dump in the charge from barrows; but when thus thrown it falls in a heap in the center of the furnace, where the ingredients cannot so readily melt and combine.

Improvement in Garments—By Amasa S. Thompson, of Springfield, Erie Co., Pa.—This is a method of making a seamless sack coat out of a single piece of cloth. By a few changes in the loops and buttons the garment may be converted into a cloak, and then into another formed garment called a talma. These changes are all made with rapidity. One piece of cloth is thus caused to serve several different purposes. The expense is no greater than for a common sack coat.

Incrustations in Steam Boilers.

Notwithstanding we have published a great deal of information on the subject of boiler incrustations, we very often receive letters asking for more light on the subject. We have now before us a letter from J. T. Milton & Co. of Coeymans, N. Y., which contains the following :—

"We are using a new locomotive boiler of about 65-horse power, which is fast becoming covered with scale, and we have tried various substances to prevent it, but without success. The water used is hard limestone water. We will pay one hundred dollars to any person who will inform us of any substance we can use that will effectually prevent the formation of scale, without injury to the boiler."

In a letter from Mr. Van Dalsem, of Lexington, Ky., he says:—

"What is the best remedy to remove limestone formations in high-pressure steam boilers. Some persons here use molasses, blocks of hickory, charcoal, bones, &c. Is there anything better than these substances? if so, information of the same will be very useful to us here. Our water comes off limestone rock."

We may not be able to give our first correspondents the precise information that would merit the requirements of their proposition, but we will give such information on the subject as will not only be useful to them, but to all our readers who employ "hard water" in steam boilers.

What is the scale or incrustation which forms on the inside of steam boilers? It is a crust of stone, deposited on the metal of the boiler from the water which has been evaporated. This crust is a non-conductor of heat; it therefore presents a constant resistance to the heat penetrating from the fire in the furnace to the water; hence it is a "fuel waster." But how is this scale or crust formed from evaporated water? Water is a great solvent of earthy matters. Rains enter the earth and dissolve some of the saline matter of the soil and rocks with which they come in contact, and carry them in solution into wells, streams, rivers, and lakes. The waters of some springs and streams contain less earthy matter than others; and owing to the geological character of a country so is the water impregnated with different saline matters. The crust which forms on the inside of the steam boiler of Messrs. Milton, from water in Coeymans, N. Y., is different in its nature from that formed from the water in the boiler of Mr. Van Dalsem, at Lexington, Ky. The crust in the former boiler, we judge, should be composed of silica, (sand material,) alumina, (the basis of clay,) oxyd of iron, some chloride of sodium, (common salt,) and carbonate of lime. The crust—judging from the geological character of the country—will be of a light brown or buff color. On the other hand, the crust which forms in the boiler at Lexington will be composed principally of the carbonate of lime, the carbonate of magnesia, some silica, and perhaps traces of iron. If the latter is present, the color of the crust will be buff, if not present it will be whitish. It is very evident that the same substance which might prevent crust forming in one boiler, or which may remove it, may exercise little or no effect in preventing or removing the crust in other. This is the reason why blocks of oak and various kinds of saw dust have prevented scale forming in some boilers, while they have utterly failed to do so in others which were fed with a different kind of water.

A gallon of pretty hard water contains about 40 grains of saline matter in solution. Some waters do not contain more than a fourth of this amount. But allowing the water used at Coeymans to contain this amount, it being 65-horse power, it must evaporate 3900 gallons per day, (ten hour's work) thus leaving 156,000 grains of solid matter behind, which, if not removed, and has any electrical affinity for the iron will soon adhere to it, and form a scale of 27 lbs. per day, 162 lbs. per week, and 2106 lbs.—nearly a tun, in three months. We can thus easily conceive how soon a crust of greater weight than the boiler itself may be formed within it. And allowing the water to contain only ten grains to the gallon it will form a crust of nearly 7 lbs. weight everyday. Let Messrs. M. weigh on fine accurate scales, a clean copper or iron vessel; then measure a gallon of water and weigh it; then evaporate the whole very slowly, and then weigh the vessel, which will contain the earthy matter of the water adhering to its sides and bottom; the increase in the vessel's weight after evaporation will indicate the quantity of saline matter held in solution by the water, and will give them a correct idea of its stony nature.

There is a well-known and effectual remedy for preventing scale in all steam boilers. What is that? Don't use hard water. Or if you use such water, remove all the earthy or saline matter from it before you admit it into the boiler. If Messrs. Milton would make large reservoirs and use rain water for their boiler, and exhaust the steam into a tank, and thus use the same water over and over again they would never be troubled with scale. This would be a sure preventive, and every person who uses a steam boiler, if he has room to construct and use large rain reservoirs, should do so.

But those who cannot build such reservoirs for want of room or any other cause, and who are compelled to feed their boilers with hard water, have a remedy for scale by precipitating the saline matter in the water before it enters the boiler. The patent apparatus illustrated on page 113, this Vol. Scientific American, will accomplish this. Another plan to effect the object for limewater (and which will also be effectual, in a measure, for the water at Coeymans) is that furnished to us by J. H. Balsley, of Dayton, Ohio. He says:—"We have been running an engine four years, using boilers 40 inch. diameter and 22 feet long, 15 inch flues, running ten hours per day. We exhaust into a box that is 8 feet high, and of an area of 20 square inches—a narrow rectilinear box. The feed water enters at the top of this box, and finds its way down through a pack of wood shavings to the bottom, and then goes to the feed pump. The uncondensed steam passes out at the top of the box. About half a peck of lime is taken from this box every week. We put a pint of molasses into the water of the feed pump twice a week, and have been doing this for two years. We clean out the boiler every three months, and find about half a bushel of brown mud in it, but no scale. Some scale had formed in the boiler before we commenced using the molasses, but it has now nearly all fallen off. Before we commenced thus to use the filter and the molasses, we had to clean out our boiler every six weeks; the pipes then used to be choked with lime, but now we have no trouble of the kind. There are four or five persons here who have used molasses for five years with the same results."

Here, then, we have positive testimony respecting a method of preventing limestone scale in steam boilers. The action of exhaust steam on the incoming feed water is to disengage the lime matter, because it is held in solution by carbonic acid, which is easily driven off by heat. The effect of the molasses is to envelope the moleules of other saline matters not removed by filtration, hold them in solution, and prevent them adhering to the boiler.

If scale is already formed on the inside of a boiler, of gypsum (sulphate of lime) and carbonate of lime, (chalk,) the introduction of some salammoniac into the boiler will dissolve it, and also prevent scale arising from the water. The salammoniac decomposes the sulphate and carbonate of lime, forming sulphate and carbonate of ammonia and the chloride of lime—all very soluble salts. About one pound of salammoniac is sufficient for about 50 cubic feet of water. The great objection to the use of salammoniac is that the carbonate of ammonia formed, is liable to pass off with the steam and rapidly corrode any copper or brass fittings on the engine. The useful effects of molasses, glucose, and gallic acid in preventing scale forming in boilers have long been known. Potatoes, wheat bran indian meal, &c., have been used with effect in furnishing glucose; molasses for furnishing saccharine matter, and blocks and saw-dust of oak, mahogany, logwood, &c., for furnishing gallic acid. The objection to the use of oak and mahogany saw-dust is stated to be an injurious action on the metal of the boiler; that to the use of bran, indian meal, and potatoes is, "they cause *priming* in the boiler;" and molasses, when freshly introduced, is said to do the same. By coating the interior of a boiler with a composition of tar, linseed oil, and plumbago, scale will be prevented forming for a long time; but this is a troublesome method.

Having said this much on the cause of boiler incrustations and the remedies, the climax of the whole matter is, that scale can be prevented forming in steam boilers by four methods. One is to use soft or rain water only; the other is, to purify hard water before it is used; the third is, to use the mixed process of filtration and molasses; and the fourth method is, the use of extraneous substances in the boiler to keep the saline matters in solution, and to *blow out* these frequently. The subject of incrustations in boilers is a most important one when we take in consideration the fact that the water of all wells, streams, and lakes, contain some salts in solution, and that incrustations are liable to be formed in nine-tenths of all the boilers used in this country. We have no doubt but incrustations cause the loss of some millions of dollars every year, just in the waste of fuel alone, not counting injury to the metal and loss of time in cleaning out, &c.; besides scale is a most formidable objection to the use of the best boilers—the tubular kind.

Those who can, should use pure water, like rain, in preference to every other kind. But when this is impossible, the hard water should be purified before it is admitted into the boiler, and a little molasses insures safety in case perfect deposition is not effected in the filter. We do not counsel the use in the boiler of any of the extraneous substances named; but in many cases, if discreetly used, they may be employed advantageously both in removing and preventing incrustations.

Cooper's Torpedo.

Peter Cooper, Esq., of this city, describes in the *Express* a nautical torpedo for destroying enemies vessels' laying off the coast. All that is new about it is simply the guiding of it from the shore by strong wires attached to two rudders, these wires to be reeled off a windlass when the torpedo is going out, and reeled on it when it is coming back. Regarding the method of raising the steam to drive its engine, he says :—

"This torpedo (a peace-maker as I will call it) was a small vessel with a rotary steam engine driving a screw propeller. The steam was generated by a mass of red hot iron placed in a cavity answering to a fire-place in the boiler, which caused steam to generate with great rapidity."

All persons unacquainted with the science of steam entertain such ideas regarding the raising of it with wonderful rapidity by means of red hot iron. But when the Cooper Institute is finished and in full operation, Mr. Cooper will, no doubt, learn from some of the scientific professors employed there that his plan to generate steam is a scientific method to do so in the slowest manner possible, owing to the spheroidal condition which the water assumes when exposed to red hot surfaces.