

# Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY AT  
NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

O. D. MUNN, S. H. WALES, A. E. BEACH.

"The American News Company," Agents, 121 Nassau street, New York  
"The New York News Company," 8 Spruce street.  
Messrs. Sampson, Low, Son & Marston, Booksellers, Crown Building, 185 Fleetstreet, London, are the Agents to receive European subscriptions of advertisements for the SCIENTIFIC AMERICAN. Orders sent to them will be promptly attended to.

VOL. XIX., No. 3... [NEW SERIES]... Twenty-third Year.

NEW YORK, WEDNESDAY, JULY 15, 1868.

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**THE CAUSE OF STEAM BOILER EXPLOSIONS—THE BOWERY ACCIDENT.**

One thing can be said of the verdict of the coronor's jury on the bodies of those killed by the recent explosion of a steam fire engine in this city, which cannot be said of all similar investigations. Much common sense was exercised by the jurors, and some intelligence. As usual in so-called investigations there were froth, foam, ignorance, brought before them, with a modicum of reason and educated intellect. The facts, aided by the statements of engineers, seem, in this case to have had some weight with the jury. We only wish their verdict could have more completely covered the ground.

Just here we wish to notice some of the nonsense which our journals published in relation to these occurrences; evidently written by anybody but a practical engineer. In this case one published statement was that the "steam gage was corroded;" another that the "tubes leaked;" another that only "sixty pounds pressure was on the boiler at the time of the explosion," and still another that the machine was a "perfect powder magazine." All such talk is not only sheer nonsense viewed from a professional standpoint, but it is really wicked, misleading old engineers and puzzling young mechanics. Not less to be deplored is the conflicting statements of men who should know whereof they affirm—not their opinions, but the results of their investigations. While one states that the rupture was caused or aided by a crack in the sheet, another says the sheet was perfectly sound. While one declares that the soot was burned off more than one half the fire-box, another knows there was no over heating of the iron. All this is nonsense, and there is more of the same sort shown in the reports of the testimony given before the jury.

The corrosion of a steam gage will strike our engineers as a new thing; that the leakage of tubes could produce an explosion will also interest them; that a boiler of the build of that which blew up could be even ruptured by a pressure of sixty pounds will amuse them, and that one of the Amoskeag fire engines is a perfect powder magazine under any circumstances would be believed only by those who have no knowledge of the excellence of material and perfection of work used and turned out by that concern.

In reviewing the testimony we cannot forbear a tribute to the straightforward and manly evidence produced by Messrs. Coffee and Powers. The former is well known as a competent engineer of large experience; the latter appears to be a thorough mechanic. No attempt has been made to impeach the testimony of either of these gentlemen. Both agree that the disaster was caused by an over pressure of steam, which a personal examination of the exploded boiler enables us to confirm.

The testimony of Mr. Bean, the superintendent of the Amoskeag works, Manchester, N. H., is somewhat of a curiosity if correctly reported in the daily papers. He says the boiler was braced from five to seven inches apart. Now if seven inches—area of forty-nine square inches—were sufficient, why put braces five inches apart leaving an area of twenty-five inches? But on an examination of the boiler we found a place on each side of the fire box that had nothing but "blind" stays in a space of eleven by eight inches, exposing a large space of three sixteenths iron without a support. In one of these places the rupture occurred. We cannot but think he is mistaken in saying that both the shells were of the same thickness. On our examination we thought the inner skin of the water leg was three-sixteenths, and the shell one-quarter, large. If Mr. Bean is correct then there may be some reason in Mr. Norman Wiard's statement that the shell was the weaker part of the boiler, a statement we take, however, *cum grano salis*.

To return to Mr. Bean; he says: "from the general appearance of the boiler I think the top part of the fire box and flues must have been nearly red hot." What reason has he for this statement? The morning after the explosion there was no reliable evidence of over heating or burning. The clinches or rivetings of the lower ends of the tubes had not started, the tube sheet bore a coat of soot, and the edges of the ruptured sheet were bright, which they could not have been had they been exposed to 400° of temperature.

Our conclusions are that the sheet that gave way was too thin to be stayed with screw stays; that the space between stays—eighty-eight square inches—was too great, and that the cause assigned by the coronor's jury for the explosion—over pressure of steam—is the correct one.

We cannot but suggest to the builders of these upright tubular boilers the insertion of a less number of tubes, giving more water space. It must be difficult to keep a sufficient quantity of water in a boiler built as this one was; probably but for the jarring and shaking of these machines while working, the flue plate and sheets surrounding the fire box would sometimes be bare.

**VISCERA AND VITALITY VS. STEEL, CORD, AND WHALEBONE.**

The devotees of fashion are no less abject in their worship at her shrine, no less willing to throw aside all considerations of reason, and to obey blindly her dictates, than the veriest slaves of heathen superstition are to sacrifice everything to the "gods which their own hands have made." We are struck with horror when we read of people prostrating themselves beneath the wheels of the car of Juggernaut, or of mothers throwing their children into the mouths of crocodiles, but such acts are tender mercies compared to practices in vogue at the present day among those who claim the highest degree of civilization as yet attained in the history of the world. How much better to die suddenly, all sense of pain being instantaneously crushed out of the body by brute force, than to suffer the prolonged misery of slow suffocation in croup, or the agonies of death by consumption.

The votaries of fashion do not scruple to impose these diseases upon themselves and their children, and although they refuse to believe it, and sin through ignorance, it is willful ignorance, and therefore all the more culpable. Parents who permit young children to go with bare necks, and almost bare legs, in the changeable climate of this latitude, are as heartlessly cruel as the heathen mother who immolates her child; and although the result is not so certain in regard to any particular victim, yet we believe that more children are thus annually sacrificed upon the altar of fashion, in proportion to our population, than are destroyed in the superstitious rites of people who are less culpable, because their ignorance is not the result of obstinate refusal to accept truth and obey its precepts. Not content with subjecting their offspring to the risks of exposure in early childhood above alluded to, fashionable mothers have revived the murderous practice of tight lacing. More than this, public journals have opened their columns to its defence, and books are beginning to make their appearance justifying it, and strongly asserting that it is essential to the attainment of both beauty and health.

It is of no use whatever to reassert facts which are patent to every physician, and which, if listened to, would speedily condemn the wearing of corsets to immediate and total extinction. People will not listen, and, to use the words of an English cotemporary, "so long as 'society' is ruled by women of fifty, who want to conceal the obesity which refutes their pretensions to thirty-five," there will be no lack of champions to defend, and examples to encourage the young to adopt the pernicious practice.

Neither is it of use to yield to the temptation which any sensible man must feel, no matter how little given he may be to profanity, to substitute u for the o, and insert an i before the t, in the word corset, whenever he hears the subject mentioned. To reason or to denounce is equally futile. The only way is to let Steel, Cord, and Whalebone "fight it out on this line," until Viscera and Vitality succumb. Let the "poor ghosts" of women now seen so frequently dragging themselves along through the streets, passionless, colorless (unless bedaubed), useless, listless, waistless, less every thing except pain, increase and multiply. Unfit for wives and mothers, they shall at last feel the weight of the disgust their unnatural practices excite; and as the number of old maids and consumptives increase, peradventure common sense may at last resume its sway.

**SMALL PHILOSOPHERS.**

The world is full of small philosophers, ready at a moment's notice to give you reasons "as plenty as blackberries" for anything whatever. They as a general thing believe that the changes of the moon have an important influence upon the weather, that if the new moon lies horizontally it is a "dry moon," and if it stands vertically it is a "wet moon." They will generally tell you that the moisture which gathers upon the outside of a pitcher of ice water in a warm day, is the "sweating" of the pitcher; and they believe that a wagon draws easier because the hindwheels are much larger than the others. They are men who believe implicitly in all the traditions of their fathers, and who carry with them through life the prejudices which they imbibe in their youth. Anything no matter how absurd it may be, provided it does not conflict with their preconceived opinions may be palmed off for truth; utterly innocent of logic, the form of a syllogism is sufficient to convince them, the truth of premises or the justness of an inference never being called in question so long as it leaves their prejudices undisturbed. They are fond of glittering generalities, and of high sounding asser-

tions; and words, so long as they seem to mean something, are enough for them without sense.

Upon them charlatans thrive; and it is sufficient evidence that the mass of society is made up of just such people as we have described that so many imposters, in medicine and law, and in politics and religion, are enabled to fatten themselves upon it.

The tendency of mechanical study is to sweep away prejudice, to enlarge and liberalize views, and to induce men to subject to rigid and logical analysis, everything which demands belief. The vast interest which is now shown in mechanical science, is producing a set of hardheaded and determined thinkers, who are not likely to be deceived by such arts as have in past times, so to speak, led the world by the nose.

We see hope for the future in the developments of the present, and even in some of the vicious tendencies of the times we see agencies at work which will, we are confident, effect their own cure. Meanwhile let us all not only hope but labor for the speedy coming of the new era.

**THE HAVRE EXHIBITION.**

Punctually on the date first announced, the International Marine Exhibition, at Havre, France, was formally opened on the 1st ult., in the presence of the largest assemblage ever gathered in that city. So far as the display of goods was concerned, the exhibition, at last accounts, could not with propriety be called a success, the chaotic state which seems inseparable to the early records of all exhibitions, holding full sway. But if the first impressions were thereby rendered unfavorable, the committee seemed determined to make amends in the opening exercises, by rendering them of a character worthy of so important an event. The ceremonies consisted of the usual laudatory addresses, deemed indispensable on similar occasions, an ode on the history of navigation, and instrumental and vocal music, written expressly for the occasion, and given by an orchestra and chorus numbering about five hundred performers.

The exhibition is of no mean size, the buildings and garden occupying a space of twelve and a half acres. The former consist of closed galleries one story in height, having a more pretentious building at each corner of the square, formed by the galleries, for offices, etc. Inside the galleries, opening upon the gardens, is a covered promenade, monopolized by the representatives—either imported or improvised from native talent—of foreign nationalities, Jews, Turks, Arabs, and Hottentots, where they dispose of trinkets or refreshments, the latter being served in the style with which the representatives are supposed to be the most familiar. The garden boasts of a number of buildings of unique style of architecture. The leading attraction is probably the mammoth aquarium, situated in a grotto beneath what is designed to represent the Island of Fingal with its basaltic columns. The island is surrounded by a miniature sea, in which sport a variety of fishes and a small school of seals.

The number of exhibitors is about three thousand. The two groups of navigation and fishery occupy the front gallery of the building, the place of honor. Here are to be found the models and plans of vessels of every conceivable species and description, rigging for the same, fittings, stores, instruments and charts, systems of signals, boats and apparatus for saving life; also, the chief articles of exportation, the latter comprehending river and sea fishing, with all that appertains to both. These two groups include the goods of seventy-five per cent of all the exhibitors, a much larger proportion than was anticipated, so that nearly the whole of the gallery originally set aside for works of art has been taken for industrial purposes.

The United States is but sparsely represented in the exhibition, and the same may be said of Great Britain; but every thing sent is of first class character. As the exhibition develops we shall present further particulars of novelties displayed.

**CHEMICAL NOMENCLATURE AND SYMBOLS.**

The chemical nomenclature and symbols now in use were founded by the great Swedish chemist, Berzelius. His large work in six volumes is still a standard authority in chemical science, a remarkable fact when we take in consideration that it is nearly forty years old, and that it treats a modern science, not yet one century old, and which in late years has made enormous progress. Immense additions have been made to the total stock of our knowledge, but no change of any importance has been made in the principles laid down by the great Swede in regard to the facts stated by him, as far as inorganic chemistry is concerned. Organic chemistry was in Berzelius' time only in its infancy, and it required, in later times the genius of a Liebig to elevate this branch to the same level.

Berzelius considered it preferable to use for the chemical compounds the Latin names, as they would be the same for all nations. The idea, however, has not been carried out, but the chemical symbols which he founded on those Latin names have universally been adopted, and are now intelligible to all chemists, in all countries, no matter what language they speak, in the same way that numbers written in our Arabic numerals are equally well understood by the English, French, Germans, or others, and named by each in his own language. The reason is simply that the chemical symbols, like the numerals, do not represent the sounds of the names, but the substance, or objects themselves. They are not phonetic, but objective.

The first letter, or two letters of the Latin name which the elementary substances had at first received, have been adopted as the symbol representing not only the substance, but