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Accidents---their Cause and Cure.

We have said so much about accidents, that, were it not a duty which we owe to the community, we should not occupy our columns with a single word on the subject at present. Since the lamentable accident of the burning of the "Henry Clay," whereby seventy of our fellow creatures lost their lives within two hundred feet of the shore, in broad daylight, as noticed in the last number of the Scientific American, we have received a great number of communications, presenting different plans for the prevention of such catastrophies. One proposes an improvement in force pumps, to be worked by a capstan near the bow of the boat, for the extinguishment of fires; another proposes to line the boiler room and all around the steam and smoke pipes, with sheet or plate iron, filled in behind with plaster of Paris, or some other non-conductor, to prevent a boat taking fire; and another proposes that every person who travels by steamboat, or sailing vessel, should have some article of wearing apparel made into a buoyant life-preserver, to keep him or her from sinking in the water. It is laudable to present good plans for the prevention of such calamities, but that will afford no remedy, unless they are acted upon. If the Henry Clay had not been racing that day, does any person suppose she would have taken fire? Not one. And after she was on fire, if a stake had been hastily driven into the ground on shore, and a chain run out from it and secured to the stern of the burning boat, almost every one on board could have been passed along it to the beach and saved. But the unfortunate event has transpired, and no less than seventy families in our land, are clothed in sadness and grief. It is easy to account for such accidents; it requires only the exercise of a common judgment, but to prevent future accidents of a like nature, requires a thorough reform in national conduct and feeling. If prompt punishment were awarded to those who, by reckless conduct, conduce to such disasters, fear would act as a restraint upon all those placed in positions where human lives were under their charge for safety. But we well know, that, although hundreds have lost their lives by boiler explosions in our country, both on steamboats and in workshops, and although numbers have lost their lives by railroad accidents, where the most culpable recklessness and carelessness have been proven, yet in what case—a solitary case—has just punishment been meted out to the guilty? We know of no case in which this has been done. If severe and prompt punishment were dealt out to the really guilty, we should soon see an end of such accidents; it is for want of the good administration of justice, that so many accidents do take place. Are our courts corrupt—are magistrates debased, or what is the matter? How is it that men of wealth or political influence can get so many delays, checks, decisions, and counter decisions in our courts, so as to obstruct and nullify the aims of justice? These are serious questions—let our people take them to heart, and endeavor to find a remedy. We may make as many laws as we choose for the prevention of accidents by steamboat and railroad, and as many remedies may be suggested as would build a pile of plans high as the Andes; but unless our courts and magistrates do their duty, good laws will be worse than no laws, and good plans but a delusion and a mockery. The evil lies with our prosecuting magistrates and courts; if they did their duty we should have less cause for mourning.

Artificial Stone Fronts on Houses.

A great number of houses are now built with coarse brick fronts, which afterwards receive two or three coats of boiled oil, and are then covered with a coat of peculiar mastic cement, which is composed, we are told, mostly of dried sand, some boiled oil, some red lead, and a little plaster of Paris. This cement resembles moist sand when put on, but it sticks well, and in a short time becomes as hard as freestone, which it greatly resembles. This plaster is streaked off in blocks, and a building so covered looks like one built of dark brown polished freestone. We have heard objections made to such buildings, but not one by a person who had taste and experience in architecture. This cement does not scale off; it endures and forms a thorough coating of artificial stone. The only objection worthy of note, urged against them, that we have heard, is this—"after all, they are not so good as brick buildings, which are no shams;" these words we have marked, for they have appeared in print in a daily paper in our city, but the objection, urged against the artificial stone fronts, can be as strongly urged against the painting of any building. Paint is put on to preserve and beautify a building, and so is the artificial stone cement.

A New Fish Business.

During the past winter, the controversy respecting the resuscitation of frozen fish was effectually settled through our columns; a new fact to many was also brought to light, namely, the supplying of ponds with new kinds of fish brought from distant waters in a frozen state. We have also noticed in the Scientific American the mode of cultivating carp in the marshy ponds of France; but perhaps the most extraordinary discovery of the present day, in the fish line, is that by which they can be produced to an incalculable extent, in streamlets, rivers, ponds, and lakes, by artificial means. This process within the past three years has been employed on a grand scale, with considerable success, in various parts of France. Two fishermen in the Department of Vosges, having noticed that the fine trout in the streams were fast declining in numbers, made it their business to investigate the cause. They discovered that not one egg in an hundred deposited in the beds of the rivers came to maturity, the rest being washed away or devoured by other fish. It struck them that if they were to collect the eggs and protect them from large fish, they would in a few years obtain a plentiful supply. They accordingly in imitation of fish, placed the eggs on a bed of gravel, put them into a box filled with holes, and sank it into the bed of a river. In due time they had an abundance of small trout, which they kept in clean water, out of danger, and supplied with fitting food. Applying this process for a few years, they have stocked a great number of the streams and rivers of France with millions of fine trout. This is a subject which should arrest the attention of people in our country.

A Railroad in Broadway.

It has been proposed, in our Common Council, on the application by petition, to build a railroad in Broadway, in order to relieve it of the enormous quantity of stages and other movable obstructions. The property holders in Broadway held a meeting last week, and passed a number of strong resolutions against the project. Here is one of them :—

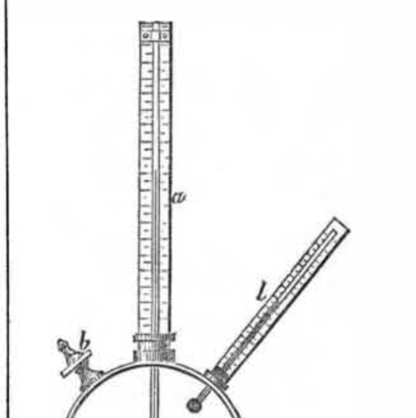
"Resolved, That the Railway will render Broadway, as is the Bowery now, because of its Railroad, a street through which none would pass unless compelled by necessity, preventing entirely the desire for its use for pleasure—depriving the citizens of the use of that fine promenade, now so much sought after, and enjoyed with so much zest."

We believe that the owners of property would be the gainers, as well as the public at large, by a railroad. Still it would be wrong and unjust to erect a railroad through that street, against the wishes of the owners of property in it. It is our opinion that beautiful railroad carriages would be less objectionable than clumsy stages, to those who promenade along that noble street—for beautiful it is not yet, but may be at some future period. The railroad cars would be more regular in their trips, and promenaders would not have to wait and run so much to avoid furious stages, as they now do, when crossing from one side to the other. A railroad would not entail any loss upon the owners of property nor those doing business in Broadway; still, if they think it would, their voice should be potent in the matter. One thing we do know—the obstructions to persons desirous of crossing the street below the City Hall Park, by crowds of carts and stages, demand some remedy. What shall it be? The owners of property should suggest some thing.

Steam.

The effect of heat is to convert many solids and liquids into vapor. Of all the vapors, we are most familiar with steam. Water, when converted into steam by heat, expands from a cubic inch to 1700 cubic inches. But a much larger quantity of heat enters into vapors than into liquids. If over a steady fire, a certain quantity of ice-cold water requires one hour to bring it to the boiling point, it will require a continuance of the same heat for five hours longer to boil it off entirely. Liquids do not become hotter after they begin to boil—a thermometer will not rise any higher if kept in a boiling vessel (after the water commences to boil) for a year. This fact is of importance to cooks in saving fuel; to boil meat in a gentle way, is just as efficacious as to boil it with great fury at the expense of a larger amount of charcoal.

The steam from boiling water is found to be no hotter than the water itself. What then becomes of the heat communicated to the water, since it is not indicated by the water or steam? As much heat disappears as is capable of raising the temperature of the water, which is converted into steam, 1000 degrees; this is now assumed to be about the latent heat of steam. A cubic inch of water, raised into steam, will, if confined in a tight vessel, and 5½ cubic inches of water, at 32°, injected into it, raise the whole of that quantity to 6½ cubic inches of water at 212°—that is, the steam will be condensed into water, and the cold water elevated 180° in temperature; this experiment proves the theory of latent heat.



Gay Lussac discovered that liquids were more easily converted into vapor when in contact with corrugated, than smooth surfaces; also that it boiled at two degrees higher in glass than metal vessels; this is a fact for boiler makers.

It is the pressure of the atmosphere, 15 lbs. on the square inch, which makes the temperature to be increased to 212° before it boils, for water will boil on the top of mountains at a much lower temperature, and in a vacuum at 150°. A high heat browns sugar, and advantage was taken of the low heat at which sugar boils in a vacuum, by a Mr. Howard, in England, who adopted the system of boiling his syrup in a tight-covered pan and pumping off the air and steam. The inventor of this improvement made a fortune.

Various liquids boil at different temperatures; hydrochloric ether boils at 52°, alcohol at 173°, water at 212°, whale oil at 630°, mercury at 662°; water, saturated with common salt, will not boil till it attains to 224°. Although steam, at the common atmospheric pressure, is never above nor below 212°, yet it can be, and is, increased in temperature by confinement under pressure. There is a great difference in the effects of low and high pressure steam upon the person. The steam of boiling water occasions a severe scald, it allowed to condense upon the body, but every engineer knows that his hand can be held, without scalding, in the exhaust steam of a high pressure engine, when it issues into the air; a thermometer placed in this steam shows it to be below 212°. This singular property of high pressure steam is connected with its great capacity of rapid expansion—in other words, the law of absorption in the gases of the atmosphere, whereby the heat is rapidly extracted from the steam in proportion to its expansive force.

The elastic force of steam at temperatures above 212° is determined by heating water in a stout globular vessel containing mercury, *m*, (as shown in the annexed figure), and water, *w*, and having a long glass tube, *t t*, screwed into it, open at both ends, and dipping into the mercury, with a scale, *a*, divided into inches, applied to it. The globular vessel has two other openings, into one of which a stopcock, *b*, is screwed, and into the other thermometer, *l*, having its bulb within the globe. The water is boiled in this vessel for some time, with the stopcock open so as to expel all the air. On shutting the stopcock, and continuing the heat, the temperature of the interior, as indicated by the thermometer, now rises above 212°, at which it was stationary while the steam generated was allowed to escape. The steam in the upper part of the globe becomes denser, more and more steam being produced, and forces the mercury to ascend in the gauge tube, *t*, to a height proportional to the elastic force of the steam. The height of the mercurial column is taken to express the elastic force or pressure of the steam produced at any particular temperature above 212°. The weight of the atmosphere itself is equivalent to a column of mercury of 30 inches, and this pressure has been overcome by the steam at 212°, before it began to act upon the mercurial gauge. For every thirty inches that the mercury is forced up in the gauge tube by the steam, it is said to have the pressure or elastic force of another atmosphere. Thus, when the mercury in the tube stands at thirty inches, the steam is said to be of two atmospheres; at 45 inches, of two and a half atmospheres; at 60 inches, of three atmospheres, and so on.

Woodworth Patent Pamphlets.

Any of our readers wanting a copy of the Report against the extension of the Woodworth Patent Planing Machine, in pamphlet form, can have one sent (post-paid) by enclosing two three-cent stamps. Its publication will occupy the remaining numbers of this volume, at the rate of two columns each week.

In connection with this notice, we can hardly omit to furnish our readers with the names of the Committee on Patents in the House, to whom the whole country is deeply indebted for the satisfactory manner in which this affair is placed before them. Seldom have we read a more able and convincing report. D. K. Cartter, of Ohio, Chairman; M. M. Dimmick, of Pa., W. T. Ward, of Ky., Benj. H Thurston, of R. I., and Alexander White, of Ala. Gentlemen, we sincerely thank you for having nobly done your country service.

To Save from Drowning.

We have seen it stated in books and papers, that if a person falls by accident into deep water, he will float and not sink if he lies still and does not lift up his hands. The reason given is, that the head, having so much cavity or air space in it, will keep above the water, and thus prevent the body from sinking. This is certainly not correct; no person can float in deep water unless he has learned to do so by a great deal of practice. It is true that the body is more buoyant in salt than fresh water, but no person who cannot swim will float two minutes in sea or river,—he will soon sink, as we have seen in more than one case. All our young men should learn the art of swimming; it was part of the education of the early Romans, and should also be of the young men of our Republic.

Something Wanted for Engravers.

A substitute for boxwood, for wood engraving, is much wanted. This wood is very scarce; it costs $500 per ton, and is all imported from Turkey and Italy; various kinds of wood have been tried to supersede it, but not one among all the varieties tried, has the same qualities. Hardness is not the only quality, it must be close in the grain and free from breaking before the graver. Type metal, with some change in the form of tools, may supersede it; the price of boxwood is getting higher every year.

The readers of the Scientific American will have the able Report of Mr. Cartter to bind up in this volume.