

## MISCELLANEOUS.

## Soluble Glass.

This liquid can be obtained by dissolving precipitated silica in caustic potash. Soluble glass may be obtained in a purer form by completely saturating a solution of caustic potash with precipitated silica, and evaporating the solution, or more economically and sufficiently pure for technical purposes in the following manner: 15 parts of powdered quartz or pure sand are melted with 10 parts of potashes, and 1 part of charcoal in a crucible, until complete vitrification occurs. The mass of glass is difficult of fusion, hard, filled with bubbles, and of a grayish black color; when the potashes are not pure, foreign salts are introduced into the mixture, as chloride of potassium, carbonate and sulphate of potash, and more particularly sulphuret of potassium, which is very objectionable on account of the disagreeable odor which it occasions. These substances, however, are easily separated by pulverizing the mass, and exposing it to the air. Entire pieces attract moisture on their surface under these circumstances, and cracks appear, but they are not essentially altered; the powder, on the other hand, is so hygroscopic, particularly when it is frequently turned over, that the foreign salts are readily dissolved and carried away by the water. In this state the whole is treated with cold water, in which these salts dissolve completely, and the soluble glass which remains is thoroughly washed with water. The purified mass is now boiled with 5 parts of water, in which it slowly but entirely dissolves. The dilute solution is rather quickly decomposed by the carbonic acid of the atmosphere with the separation of silica, and the solution for technical purposes must consequently be evaporated until it attains a specific gravity=1.25. In this state the glass forms a sticky, syrupy, somewhat turbid liquid, which throws up a scum when boiled that can be re-dissolved. It easily gelatinizes on cooling, and dries up when exposed to the air, without perceptibly absorbing carbonic acid, in the form of a clear, transparent, colorless, brittle, but not very hard glass, containing 26 per cent. potash, 62 per cent. silica, 42 per cent. water. This glass has an alkaline taste and re-action, as has also the solution; it is, itself, inalterable in the air, but when exposed, its surface becomes covered with an efflorescence of foreign salts, which can be removed by cold water. The solution of the glass is miscible in all proportions with water, but it is precipitated unchanged by alcohol.

Soluble glass may be more advantageously prepared, on account of the greater purity of the product, and with the same facility, by fusing together 1 part of quartz with 2 parts of crystallized soda. Although the composition of this product is different, it contains 2 equiv. soda to 3 equiv. silicic acid, yet the mode of preparing it is the same, and its properties resemble those of the potash glass. When soda and potash both enter into the composition of the glass (15 quartz, 5 potashes, 4 dry soda) the mass is rendered more easy of fusion, as the simple silicates of soda and potash are more refractory than the mixed silicates.

The chief application of fusible glass is for coating combustible substances, as wood, stuff, paper, &c. It diminishes the inflammability of these bodies by forming, when dried upon them, a layer of glass that impedes the free access of air, and thus removes the most essential condition for combustion. Wood covered with fusible glass and held in a flame, is in the same condition as wood in a charcoal furnace, it is a subject, in the first instance, to the decomposition caused by heat alone, or to dry distillation. Combustible gases are evolved, the combustion of which cannot of course be prevented by the coating of glaze. The layer of glass being very thin, it will naturally soften with the heat, the gases will at last burst the coating, and eventually the wood itself, the interior of which being then freely exposed to the air, must necessarily burn, being no longer protected by the glaze. It must, therefore, not be supposed that soluble glass renders these substances incombustible, its use is confined to rendering them less susceptible of taking fire. Soluble glass ex-

erts no injurious action on the substances to which it is applied, it covers well, and forms a perfectly transparent varnish; it is preferable, for these reasons, to other substances such as clay-water, which is also used to diminish the inflammability of combustible bodies. In order to produce a permanent covering, it should not contain any large amount of foreign salts, which would effloresce on the surface; and the first coat that is applied must be very dilute, in order to penetrate the substance of the material before the subsequent coats are laid on. Every layer should be allowed to dry for 24 hours before a fresh layer is given; if this precaution is not observed, the whole is liable to crack and peel off. The tendency to crack and peel off is not so prominent in soluble soda glass, as in the other varieties.

## Our Steam Navy--The San Jacinto.

This steam frigate, which received a very bad character at home, was sent abroad, not for the purpose of showing what the people could do in the way of building steamers, such as the Collins' Line, but as a sample of the work of that distinctive body—the Government. This steam frigate is a propeller, and appears to be far behind the propellers of every other navy in the world. It arrived at Constantinople on the 15th of last July, and a correspondent of the "New York Times," writing from the City of the Turks about her, says:—

"Aware of the usual reputation and abilities of American ships, a party of us were proudly waiting to see our national ship rapidly sweeping into the harbor, but after she hove in sight around the point of the Seraglio, and was in the presence of the three Cities of Constantinople, and of the whole Ottoman fleet stationed in the Bosphorus, what was our mortification to see the steamer unable to stem the current, and gradually disappearing again behind the point. The officers say the reason was, that, in obedience to orders of the Navy Department, they were so economical of coal. The commander is, therefore, as much entitled to credit with the economists, as our ships will suffer in reputation with the Turks. We should not think that the entrance into the port of one of the largest capitals of Europe, where the *coup d'œil* of the beautiful is more enchanting than in any other capital, was the place of all others to give an hour's exemplification of economy in coal."

This is humiliating, but the fact is, we have a very small number of steamers in our navy, and a miserable lot they are. The Mississippi appears to be a slow and indifferent frigate, and her officers seemed to be wonderfully afraid of a winter passage across the Atlantic in her last year. Where lies the fault? We cannot tell, but that a grievous matter somewhere, is a fact which admits of no dispute; it should be remedied quickly; our national reputation has suffered enough by it already.

## The Steamboat Safety Bill.

We are afraid that the Bill for the protection of life,—to prevent dangers from explosions, &c., now before Congress, will not be passed this Session. It receives a few pushes from one side to the other every day, and seems to get no nearer a final passage in the House of Representatives. Something should be done to prevent explosions and dangers of life on steamboats; here we have had two steam boiler explosions, one burned, and a collision, since the fourth of July, by which 310 lives have been lost.

We learn that Mr. Bowne, from this State, has prepared a substitute for Mr. Davis's Steamboat Bill. Instead of undertaking to enter into the details of machinery, prescribing tests for iron plates, and regulating other matters, which none but practical and scientific men really understand, he proposes to fix penalties for explosions, fires, and the like, which will protect the public against these occurrences. It provides that, in every case where life is destroyed from these causes, the proprietors and owners of steamboats shall be liable to a fine of \$1,000 for each life, and imprisonment, ranging from one to ten years; the United States District Attorney being required to prosecute on the finding of the Coroner's jury. The captains, pilots and engineers are also made liable to fine and imprisonment. There are features in this Bill wor-

thy of commendation, especially the requirement of the U. S. District Attorney to prosecute. Our United States and State District Attorneys, in many cases, are mere government targets.

The Bill, prepared by Senator Davis, of Massachusetts, after it had passed the Senate, received no less than one hundred and fifty amendments in the House of Representatives. The Senate has concurred with all the amendments. Senator Stockton, taking a most singular view of the question, asserted that Congress, by passing such a Bill, violated the liberties of the citizen. In what does he consider the liberties of the citizens to consist?

## The Storm.

A severe storm burst suddenly upon our city on Saturday last. At 5 P. M. the rain commenced to pour in torrents, and the wind to blow with terrific violence. The rain was blown in sheets, and seemed to be lifted up from the tops of mountain waves in the Atlantic, and carried by the gale horizontally along our coast. For six hours the rain swept fearfully and constant over all this district of country. In this city, and the surrounding cities and villages, cellars were flooded, houses drenched from roofs, through ceilings, floors, &c., and many new houses in the course of erection were blown down.—The shipping did not suffer much in our harbor, and this is fortunate. The wind continued violent for at least twelve hours, but did not calm until 5 P. M. on Sunday, thus having lasted for 24 hours. It was the severest storm which has visited this city in three years.

Much as some have suffered by the storm, it has been the means of doing far more good than evil, it has saved the city treasury of New York at least \$100,000 of scavenger expenses. Heavy rain storms are the sanitary friends of New York city; they sweep and wash the streets sometimes, or we never would be able to see the faces of the paving stones. This rain has perhaps saved us from the cholera; it has at least saved us from seas of filth and hills of dirt, all of which were carried down to the friendly sea, there to be pickled from doing evil by the briny deep.

## The Ether Controversy in Congress.

On Saturday last week, on the question of Army Appropriations, Senator Borland moved an amendment to it, appropriating \$100,000 for Dr. Morton's ether patent. This was the means of eliciting a long debate, in which the claims of Drs. Jackson, Morton, and Wells to the discovery were distinctly presented. In our opinion, the claims of Dr. Wells are the strongest, we have seen no evidence to nullify his claims. It would be very wrong for Congress to pass any bill that would be an act of injustice to the real discoverer's heirs, Dr. Wells being now dead. The sum, if granted, should be divided among the claimants. Mr. Hale stated he could prove that not one of the claimants was entitled to any remuneration, that the real discoverer was a deceased physician of New York; it is a very unlikely story. The amendment of Senator Borland however, was rejected, and it is likely that no appropriation will be made for the etherists during the present session of Congress.

## A Monster.

Coming down Pearl street a day or two since, we encountered on the sidewalk a huge specimen of the salamander species—an animal which, in this age of wonders, is no longer a fable, but withstands the fiercest attacks of the fiery element. We speak of the safes bearing the marks of C. J. Gayler, to whose skill and mechanical genius this specimen bears noble testimony. Its outside dimensions are—height, 8 feet 6 in., width, 6 feet, 6 in., depth, 3 feet. Its weight is upwards of 6 tons. On the outside are massive folding doors covered with heavy and wide plate iron, and secured by an ingenious patent combination lock, without key or key-hole. Within these outside doors are two other folding doors, made in the same manner, secured by Mr. Gayler's patent locks; and within these is the case, made of solid mahogany, beautifully polished, and fitted with numerous drawers and closets, for watches, jewelry, etc. As a whole, this safe is a beautiful piece of

workmanship, and a happy combination of elegance with massive strength.

## The Streets of London.

In No. 16 of Mr. Mahew's admirable work the labor and the poor of London, we find some interesting and curious statistics of the streets of that mighty city, which we have condensed as follows:—

The three modes of pavement in the streets of London, are:—1. The stone pavement, commonly composed of Aberdeen granite.—2. The Macadamized pavement, a name adopted from the mode of Sir W. McAdam, the originator of the system; and 3. The wood pavement. The granite for the stone pavement is conveyed to London from Scotland by water. The pavement "is made by the placing of granite stone, hewn and shaped ready for the purpose, side by side, with a foundation of concrete. The concrete now used for the London street pavement is Thames ballast, composed of shingles or small stones, and mixed with lime, &c. Macadamization was not introduced into the streets of London until about twenty-five years ago. Before that it was carried to what was accounted a great degree of perfection, on many of the principal mail and coach roads."

The first thoroughfare which was Macadamized was St. James Square; after that, some of the smaller streets in the aristocratic parishes of St. James and St. George were thus paved, and then, but not without great opposition, Piccadilly. The opposition to the macadamizing of the latter thoroughfare, says Mahew, assumed many forms. It was urged by the opponents that the dust and dirt of the new style of paving would cause the street to be deserted by the aristocracy—that the noiselessness of the traffic would cause the deaths of the dead and infirm—that the aristocracy promoted this new fangled street making that they might the better "sleep o' nights," regardless of all else. One writer especially regretted that the Duke of Queensberry, popularly known as "old Q," who resided at the western end of Piccadilly, had not lived to enjoy, undisturbed by vulgar noises, his bed of down, until it was his hour to rise and take his bath of perfumed milk! In short, there was all the fuss and absurdity which so often characterize local contests.

The Macadamized street is made by a layer of stones, broken small and regular in size, and spread evenly over the road, so that the pressure and friction of the traffic will knead, grind, crush and knit them into one compact surface. The wood pavement is formed of blocks of wood, generally dead, fitted to one another by grooves, by joints, or by shape, for close adjustment. They are placed on the road over a body of concrete, in the same way as granite. There are 50 miles of the streets of London paved exclusively with stone. The stone pavements outside the city are six or seven times the extent of those in the city.

Within the limits of the metropolis proper or inner police district, there are 1,755 miles of paved streets as follows:—Granite pavement, 400 miles; Macadamized, 1,350 miles; wood, 5 miles.

The number of streets in London is said to be 10,000. There are 1,000 miles of gas "mains" (pipes) laid down in the city and suburbs, and 1,760 miles of streets within an area of 90 square miles. These streets are daily traversed by about 1,500 omnibuses, and 5,000 cabs, besides the vast numbers of private carriages and carts; so that the metropolitan vehicles employ altogether upwards of 21,000 horses.

The traffic of these streets of London is enormous, and Mr. Mahew's statistics of it are both interesting and novel.

## New York Reaper.

In our notice last week of the reapers which were tried at Geneva, the New York Reaper of Seymour and Morgan, of Brockport N. Y., was left out unintentionally; it is believed to be equal, if not superior to any other.

## Floating Steam Battery.

The Senate has passed an appropriation for the construction of a shot-proof steamer for the defence of New York. R. L. Stevens is the designer and builder.