BURSTING OF A MOUNTAIN WATER RESERVOIR IN MASSACHUSETTS.---A TERRIBLE CALAMITY.

The beautiful valley of Mill river, a tributary of the Connecticut, near Northampton, Mass., was the scene of an awful calamity on the morning of the 16th inst. At about 8 o'clock A.M. the dam of an immense water reservoir, located high up among the hills, above the village of Williamsburg, suddenly burst, and a tremendous flood poured down the river bed, overrunning the banks and sweeping away like chaff whatever stood in its path. Dwelling houses with families peacefully sitting at the breakfast table were instantly swept to destruction. Great factories, mills, bridges, stores, and property of all kinds disappeared in a moment; and upon the summit of the watery crest were to be seen the broken roofs of buildings, timbers, trees, wheels, pianos, and household goods of every description.

The village of Williamsburg was first struck. One third part of the village was instantly plowed through, leaving a broad bed of shapeless disfigured ruins of stones and débris where cottages, flowers, and scenes of peaceful beauty had previously existed. Many of the principal dwellings, factories, and other buildings were taken off, and a large number of the inhabitants perished.

Haydenville seems to have been unfortunately situated between two river curves, and hence, at one end of the town, are to be seen the effects of the madly rushing torrent; in a sweep of highlands at the other, the effects of the devastating undercurrent of the backwater, as it receded from and finally leaped over the lower bank. The great brass works of Hayden Gere & Co. were first swept, by a wall of débris from fifteen to twenty feet high, and with the added momentum the flood went over the road bed, devastating lawns and porticos of houses, leaving a boiler 2,000 feet from its original position, and placing it on an elevated spot in front of a house, tearing out the stone sides of the river and placing the boulders in the bed of the channel or on the sidewalk, and sweeping men, women, and children into eternity. Wooden houses were seen to come bounding along like corks, and from the interior of more than one were heard the shrieks of wives and daughters, whom their husbands and fathers had left a few moments before in fancied security. It was a sight which paralyzed every beholder.

At Skinnersville, the most frightful havoc of all, as regards extent of damage to property, took place in Skinnersville, although fewer lives were lost there than elsewhere. Only three houses were left standing in the village.

On the main street and village green of Leeds only three buildings remain. The Nonotuck silk factory, a solid structure, together with its costly dam, quickly fell, then the Emery Wheel Co.'s premises, the engine house, church, Wagner's button factory, and all the other buildings in the vicini y.

Over one hundred and fifty lives were lost, and property destroyed to the amount of between one million and two millions of dollars.

This terrible calamity was due to the weakness and bad construction of the reservoir dam, built six years ago. Its condition has at all times been a cause of uneasiness to knowing ones at Williamsburg.

THE RESERVOIR AND DAM.

The reservoir was one of a system of dams and reservoirs owned by a corporation called the Mill River and Williamsburg Reservoir Company, which included all the manufacturing establishments on the line of Mill River from Williamsburg to Northampton. It was situated on the east branch of Mill River, about three miles from the village of Williamsburg, in the northeastern corner of Northampton. The stream which supplied it, after joining the west branch at the village of Williamsburg, forms Mill River proper, which flows through Haydenville and Florence, and empties into the Connecticut river at Northampton.

In building the dam a stone wall was first built, which was stipulated to rise from a width of eight feet at the base pan to two feet at the top, which latter was 42 feet above the bed of the stream. This wall was contracted to be laid in the best known cement, and the projectors claimed it would be as strong as a single shaft of granite. Enveloping this wall on either side was a mass of earth, which sloped down on the water side at an angle of 30°, and on the lower side at an angle of 45°; a lateral section of this earthen support measured about 120 feet at the base, the greater mass of which was on the water side. At the center of the stream, inclosed in a stone wall, running at right angles to the main wall of the reservoir, ran an iron tube of two feet in diameter, for controlling the flow of water, extending, of course, a few feet beyond this eastern wall, at both extremities of its base. This wall of earth, 120 feet wide at bottom, was 16 feet across at the top, covering the crest of the stone wall, two feet in depth, in order to prevent danger from frost, and along its top furnished a good drive way. The water never rose quite to the crest of the dam, being kept about two feet below that line by means of a waste way at the western side. The reservoir covered an area of one hundred and eleven acres, and its average depth was twenty-four feet.

Is the Skunk's Bite Deadly?

While it is apparently difficult to add anything to the odium which is already attached to the common skunk, Rev. Horace C. Hovey finds a way of so doing by bringing forward proof that the animal is as dangerous as it is disagreeable. In the *American Journal of Science and Arts* is a paper by the above writer, in which he considers that a new disease has been discovered, which generally resembles *rabies canina* (of which hydrophobia is a symptom), while differing from it specifically. To this he gives the name of *rabies mephitica*. It is transmitted by the bite of the skunk, and occurs when the glands which discharge its offensive fluid are inactive, so that it is possible that there may be a causative connection between this inactivity and the generation of malignant virus in the glands of the mouth. Mr. Hovey gives a large number of instances of men and animals dying from this cause in fearful convulsions. The mephitic inoculation, he says, is sure death. From the diagnosis given of the resulting disease, it seems that the period of incubation is about the same as that of rabies canina—from ten days to twelve months. The characteristic pustules of hydrophobia, which appear under the tongue and near the orifices of the submaxillary gland, are absent. So also is the abhorrence of water, catching of the breath, difficulty in swallowing, and various other symptoms of the rabies canina. There are, however, oscillations of the pupil, rapid alternate contraction and relaxation of the muscles, wiry radial pulse, and rapid action of the carotid, loss of perception, and delirium. The struggles of Nature to eliminate the poison are less prolonged in the rabies mephitica, and may be abridged by morphine, which has no narcotic effect in hydrophobia. In view of the great number of skunks in various portions of the country, it would appear that a further and more extended investigation into the nature and causation of this disease is of much importance. If the animal is so fearfully dangerous, its extermination should follow as relentlessly as that of the rattlesnake.

A New District Telegraph Instrument.

We have recently seen a new telegraph instrument designed by Mr. Hamilton E. Towle, and Mr. William Unger, of this city, to replace the apparatus now employed on the district telegraph lines. The device, like the ordinary instruments, gives three distinct calls, "police," "messenger," and "burglar alarm," and may be used for transmitting signals by sound. The notched wheels which break and close the circuit at certain times, making a distinctive signal, in the ordinary apparatus, are replaced by vertical bars formed of metal and rubber, so arranged that the switch passing over them receives the current when touching the metal portions, which are placed at certain intervals apart, and transmits the same to the sounding device at the main office. The machine is set in motion by pressing a button, which removes a detent from holding the clock work. A rod then rises from the top of the apparatus until the signal is completed, when it is pushed down, thus winding up the mechanism ready for another signal. The burglar alarm is so arranged that, by breaking a wire or connection, the current, which before preferably traversed that wire, passes to an electro-magnet, setting the device in action and transmitting a proper signal. We shall probably present before long an illustrated description of this invention, until which time further details are unnecessary.

How the Germans grasp American Inventions.

Engineering recently devoted a page of its space to editorially discussing the subject of breech-loading ordnance in general, and in particular the system invented by Mr. L. M. Broadwell, an American engineer. Our cotemporary says that, with a few unimportant exceptions, all the breech-loading guns exhibited at the Vienna Exposition were constructed after this plan. The specialty of the invention consists in the combination of a self-adjusting gas ring with an adjustable circular bearing plate, which together forms a perfectly gas-tight joint, and which can be repaired at an insignificant outlay of time and money. The history of the device, published in *Engineering*, is quite detailed, and it seems that the claims of the inventor have been fully recognized in France, Russia, Austria, Turkey, Italy, and Switzerland, and that these countries have paid him large sums for his patent rights.

In Germany, however, the usual course of injustice has been followed. Krupp has adopted the improvement, is manufacturing it on a large scale, and declines payment therefor; while the government has refused the inventor a patent on a clearly absurd pretence. The story is perhaps too long to find place in our columns, but it adds new corroboration to the facts which we have already published regarding the oppressive workings of the German patent laws as regards foreign inventors.

Unprofitableness of Government Telegraphs.

Our British friends have no doubt become convinced that, as a financial operation, government management of the telegraphs does not pay. With all the possible manipulation of the accounts and charging to the general post office expenses much that is properly chargeable to the telegraph service, there is a deficit, stated by the *Railway News*, of London, at $5,000 per week, and which is constantly increasing. The private companies which were superseded by the government in the business, most of them, made the said business profitable to the stockholders, and the public was as well accommodated as it is now, to say the least.

Government telegraphy, as a remunerative branch of the postal service, is a failure; but having assumed the ownership of the elephant, he must, of course, be retained and supported. If government telegraphy in a country like Great Britain, which is densely populated, and whose telegraph facilities are very generally used by the public, the circuits short and easily maintained, and the compensation of employees comparatively very small, cannot be made to pay, what is the prospect in this country? The experience of Great Britain has probably saved our own government and people from the loss, damage, and dissatisfaction inevitably attendent upon government telegraphic administration; but it is well to keep the facts before the public and Congress.—*The Telegrapher.*

Fish Scale Ornaments.

Among recent patents is that of Eduard and Julius Huebner of Newark, who have invented certain new and useful improvements in preparing fish scales for use in the arts, of which the following is a specification:

The object of the invention is to utilize the scales of several varieties of fish, hitherto thrown away as useless, and prepare them for application in the arts, by producing articles of jewelry, artificial flowers, and similar objects. This invention consists in the process of cleansing and purifying the scales till the clear, horny substance or core of the same is obtained, which produces a new article of manufacture, which may be stamped into various ornamental shapes and dyed in all colors, for use in the arts.

Large scales are the most advantageous, taken from fresh fish. Old scales cannot be used, as they lack elasticity and clearness. The fresh scales are exposed for twenty four hours to the action of pure salt water, for loosening and partially separating the outer layers of organic matter. They are then transferred to distilled water, being placed every two or three hours in clean water and washed therein five or six times, which renders the scales soft and clear. Each scale is then carefully rubbed with clean linen rags, then passed through a press having a linen lining so as to remove the moisture in the scales. The scales are finally placed for one hour in alcohol, and again rubbed and pressed, when they are dry and have a perfectly clear appearance, a mother-of-pearl-like hue, and great elasticity and durability.

The scales are used in this prepared state, or they may be dyed with aniline and other colors, in the usual manner, to be stamped into various kind of ornamental shapes, leaves, and flowers, and applied to the manufacture of jewelry and artificial flowers, for embroidering and inlaying wood, and other uses in the arts.

The New Steam Hammer at Woolwich, England.

To say that it is the largest and most powerful in the world conveys but an inadequate idea of its magnitude and might. The weight of the falling portion is within a few pounds of 40 tuns, and the force of the falling weight is accelerated many times by the use of steam to drive it down from the top. It is at least four times as powerful as Krupp's hammer. It is estimated that the use of top steam is equal to allowing the hammer to fall of its own weight 80 feet. It has been allowed a striking fall of 15 feet 3 inches, and nobody has yet determined what is the actual force of the blow which it will strike. The hammer is 45 feet in hight, and covers, with its supports, a base of about 120 feet square. Above the ground it weighs 500 tuns, and the iron in the foundations below weighs 665 tuns. It has cost altogether about $250,000, the greater part of which has been paid to Messrs. Nasmyth, Wilson & Co., the patentees and manufacturers.

Steam on the Erie Canal.

The Baxter steam canal boat City of New York left this city for Buffalo, with way freight, Saturday 9th inst., at 5:35 P. M. She discharged and received cargo at Utica and Syracuse, and arrived at Buffalo Saturday morning, 16th inst, at 6 o'clock. Time, including all detentions, 6 days, 12 hours, and 25 minutes. She loaded to return on the same day. This seems to demonstrate the perfect practicability of using steam in canal navigation, as the usual time of horse boats is 12 to 14 days. The City of New York is the second boat of the line, and a number more are now being built.

THALLIUM burns in oxygen with a splendid green flame, and its use has been suggested for fireworks in lieu of chlorate of baryta. Thallium is a comparatively new metal. It was discovered in 1861, and has as yet few commercial uses. It resembles lead in appearance and many of its characteristics. Its weight is nearly the same as lead, but it oxydizes much more rapidly than lead.

Recent American and Foreign Patents.

Machine for Matching, Measuring, Singeing, Brushing, and Rolling Carpets.

James Short, New Brunswick, N. J.—This invention consists of an endless belt, with divisions of its length corresponding with the distance from center to center of the figure of the carpet or other woven goods to be matched; also mechanism in connection therewith for drawing the goods alongside of the belt in unison with its movement, and preferably over a table or a cylinder, by which the variation of each piece, in the distance from center to center of the figures, if any, is shown in the aggregate at the end of each piece, where it can be accurately measured with a rule, to be noted on the tag attached to the piece when rolled. The invention also consists in combining, with the mechanism employed for drawing the goods along the matching device and operating the latter, mechanism for measuring, singeing, brushing, and rolling the goods at the same time they are matched, by which one movement of the goods answers for all these several operations. This machine is by the same inventor who devised the very ingenious loom for weaving carpets of any width, illustrated some time ago in our columns. The present invention does away with a large amount of hand labor, and, it is believed, will prove of great utility in the wholesale trade.

Machinery for Burnishing Heels of Boots and Shoes.

Oliver G. Critchet, Belfast, Me.—Steam is introduced into a revolving chamber through a pipe which passes through a stationary head which is tightly packed. On the end of the chamber is a burnishing disk. The chamber is given a rapidly revolving motion, and, being heated by the steam in the chamber, it produces the desired effect.

Improved Pipe Wrench and Cutter.

William W. Micks, Elmira, N. Y.—A clamp-shaped on the inner side, comes in contact with the pipe, and has a round screw-threaded stem that passes through a block, provided with a griping tool and cutter, and enters a handle which is bored and screw-threaded for the purpose. By turning the handle on the clamp stem the distance between the clamp and block may be altered to accommodate different sizes of pipe. The block is arranged to take a new hold on the pipe whenever the handle is vibrated for that purpose. The tenon of the cutting tool has no play. When it is desired to attach one pipe section to another, or to disconnect the same, the jaw is used. When a pipe section is to be cut in two, the block is reversed and the cutter inserted, the handle being adjusted on the stem according to the size of the pipe.