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Telegraph Improvements.

On the evening of the 4th instant, a severe thunder storm prevailed for some hours in the region of New York City, and extended far eastward, along the Atlantic seaboard. Its influence paralyzed all the telegraphs, and suspended intercourse on those highways of thought—the wire conductors. In the midst of the storm, the steamer *Niagara*, from Liverpool, arrived at Halifax, but the wires failed to convey the intelligence which she brought. It had been stated in a number of the daily papers that Hughes' new telegraph would be able to operate in such storms when all other telegraphs failed. This was stated to be one of its new and superior qualities, and certainly, if it possessed such, its value could not be over-estimated. We were informed that this telegraph had been put on a line between New York and Boston two weeks ago, and surely there never was a finer opportunity of showing its superiority over others than on the evening named. Why it did not, or could not operate, we have not been informed, but we are confident that without perfect insulation and protection of the conductors, neither the Hughes nor any other telegraph apparatus can operate during thunder storms. It is not the machines, but the wires which now cause the greatest trouble to our telegraph companies and the public, and it is to this feature in telegraphic operations that we wish to direct attention.

There is much that is mysterious in the nature of electricity. The common way of explaining its action on a telegraph line, is by comparing it to water flowing through a tube —hence the current is generally called an electric *fluid*, and the wire a conduit or conductor. But electricity is not a fluid according to the usual meaning of that term; and its action is totally different from water flowing through a tube. A copper wire covered with silk, and wrapped in numerous convolutions around a piece of soft iron, exerts such a peculiar influence upon the iron, as makes the latter capable of drawing or attracting heavy metallic bodies towards it. It naturally would be supposed that, as the wire was covered with silk (which is a non-conducting substance,) that the electricity would pass onward and exert no influence upon the iron—but such is not the case. It is therefore totally different in its nature from any known fluid; it exerts an influence of a peculiar character through and outside of the covering of its wire or conductor, and it is also affected by like influences, outside of its conductor, such as atmospheric electricity, during thunder storms. The wires of our electric telegraphs, therefore, when exposed, as they now are, will always be subject to the counter action of atmospheric electricity, and thus oftentimes rendered incapable of operation, no matter whether the Hughes or any other telegraphic machine be employed in transmitting messages. Atmospheric electricity (lightning) is oftentimes so intense, also, that it takes possession of the wires of a line, vaults along them, and enters the offices, where it melts and injures all interposing connections and apparatus. This is a difficulty connected with telegraphic operations, for which perfect insulation—not the machine—appears to be the only *sure* remedy. Telegraphic interruptions, so common at certain seasons of the year, are great drawbacks to the usefulness of this great modern invention. How tantalizing to the feelings of the public, and to men in business, when waiting with anxiety for a deeply important message passing on the wires, to be informed of the suspension of the communication by some sudden thunder storm passing over a section of the line. Such interruptions are not unfrequent, and are of no minor importance. No efforts should be spared to prevent them; no efforts should be spared to render the telegraph perfectly reliable in its operations under all circumstances, but this never can be effected without perfect insulation and protection of the conductors. To such improvements for perfecting telegraphing—this great modern improvement in communicating rapidly between distant places—intense application should now be directed.

Notes on Ancient and Curious Inventions.—No. 9.

Preserving Timber.—Wood is unfit for building purposes, especially ships, in the state in which it is felled, for if placed in a confined situation, the humid nitrogenized matter in the sap soon decomposes, and induces rapid decay. Timber, therefore, should have its sap dried, removed, or changed, before it is finally applied for building purposes.

The ordinary method of seasoning wood consists in exposing it to a free current of air, the wood being in the form of planks, boards, logs, or scantling. If the pieces are thin, like boards, six months' exposure in a dry situation will complete the desication for houses, but thick pieces, like beams, sills, &c., require a much longer period, and the closer the grain of the wood the longer is the time required. Oak logs, two or three feet in diameter, require five or six years to season thoroughly. The exposure ought to be continued until the wood ceases to lose weight by evaporation. In all shipbuilding establishments logs may be seen lying about for years, waiting until they are fully seasoned.

The seasoning of thick logs is better effected, and sooner, by exposing them for some weeks in a running stream of water, to wash out the sap; or by boiling them in water in long tanks.

In 1825, a patent was taken out in England for drying wood in vacuo, and under heat. The timber was placed in a long air-tight iron cylinder connected with an exhausting pump, and when all the air was exhausted the cylinder was heated by steam, and all the moisture of the wood driven off.

The amount of moisture contained in green wood varies according to the closeness of its grain, from five up to forty-five per cent. of its weight; and it is never fully expelled in any timber that is dried in the open air. The seasoning of timber by dry steam, appears to us to be the best method of desication; and for timber only requiring to be thoroughly dried (as all timber should be) for house building, we recommend it as the best and most simple method. Every saw mill in our country should have its steam-drying house, in which boards, planks, and scantlings should be thoroughly dried before sent to market.

The nitrogenized matter in the sap of wood is the cause of its rapid decay,—it is called vegetable albumen. In its nature it is similar to animal albumen, which is very putrescent in its nature, when exposed to low heat and moisture. To preserve wood thoroughly, this albumen must be removed, thoroughly dried, coagulated, or changed in its nature by combining it in the wood with some solution that will alter its chemical nature. Common seasoning dries the sap of the wood; and if the wood be kept from moisture in a dry situation, and exposed to a free circulation of air, as in a dry building, it will endure for thousands of years. We have seen timber eight hundred years old, and it was as fresh and strong as the day it was put into an old cathedral. But the choice of a dry situation for wood, and a free circulation of air cannot always be obtained; therefore, if wood can be so treated to endure for a long time in any situation, the method of so treating it should be more generally known. It can be so treated.

If the albumen is removed from wood before it is applied for building purposes, it will not be found so liable to decay. It can be washed and boiled out, but when removed, the fiber of the wood is greatly weakened. When all the strength of the timber is desired to be retained the albumen, therefore, must not be removed. It can be retained and coagulated by a heat of 230°, and steam heat is the best for this purpose. But, if some of the strength of the timber can be dispensed with, the albumen may be washed out by placing logs in a running stream of water, for three weeks, with their butt ends up stream. After this they may be sawed up into boards, and seasoned by exposure in the open atmosphere.

The application of varnish to the outside of timber, to protect it from the influence of the moist atmosphere, has long been known and practised for the preservation of timber, but unless wood is perfectly sap dried before varnish or paint is applied, its decay will be hastened, not prevented.

The greatest efforts of men of science and inventors have been directed to the preservation of wood by chemical processes, to change the nature of its albumen. Various antiseptic substances have been employed for this purpose. The process called "kyanizing," consists in treating timber with the chloride of mercury (corrosive sublimate.) In solution it combines with the sap of the wood and forms an insoluble compound, not susceptible of fermentation and spontaneous combustion. This substance effects the same result when applied to animal albumen. It is employed, therefore, by aviarians for preserving birds, insects, &c. The wood sawed in blocks or planks, is soaked for seven or eight hours in tanks containing a solution made up of one pound of corrosive sublimate to every five gallons of water. The impregnation can be effected in open tanks by sinking the wood, or in close tanks, where the air can be extracted by an air pump, and the solution allowed to flow in. This is a very good process, but it is expensive, and besides it is a dangerous solution for those engaged in the operations.—Another good substance for preserving wood by combining with its albumen and forming an insoluble compound, is the sulphate of copper (blue vitriol.) It is applied in solution about the same strength and in the same manner. The sulphate of zinc (white copperas) is also a good solution for the same purpose. About two quarts of crude pyroligneous acid added to every gallon of the sulphate of copper solution, improves its preservative qualities. Lime has been patented for preserving wood, but it injures the fiber of the timber. Alum in solution has also been tried, but while it counteracts the decomposition of the albuminous matter, it acts injuriously upon the fiber of the wood, and impairs its strength. Common salt is a preservative of timber, for it is an antiseptic, and it has been extensively used in the preservation of the timber of New York ships. The ships built on the shores of the Baltic Sea, always endeavor to make their first voyage with a cargo of salt. For preserving house timber, owing to the deliquescent nature of common salt, it is unfit to use, but this is owing to that impurity—chloride of calcium—in the salt, for pure salt (chloride of sodium) is not very deliquescent in its nature. If, then, it could be obtained easily and cheap, we would recommend that much of the timber for building purposes, such as for bridges, &c., be impregnated in a solution of it. We have been given to understand that *pure* salt is now manufactured in considerable quantities at Syracuse, N. Y. Live-oak, used for ship-building, is impregnated with salt to render it preservative; the best Turk's Island, we understand, being used for this purpose.

Oils are also preservatives of wood; and the whaling ships are evidences of its virtues. They seem to be proof against decay. Hot oil has been experimented with in impregnating wood, but while it rendered it more durable, it injured the tenacity of the fibers. From the well-known preservative nature of arsenic, it would be effectual for preserving timber, but its use is so dangerous that we can not recommend it. Timber impregnated with a solution of tannin, is rendered preservative, by the tannin combining with the albumen, and forming an insoluble compound, in the same manner that leather is produced by the combination of the tannin with the gelatin of skins. Oak trees have been preserved fresh in peat bogs for thousands of years. Creosote is an excellent preservative of wood, and the efficacy of common tar, for this purpose, is attributed to the creosote it contains. The boiling of timber in wood tar, renders it highly preservative, but it impairs its strength. About two gallons of creosote to every 100 gallons of water, makes a sufficiently strong solution for use.

Burnet's process for preserving wood, consists in the use of a chloride of zinc solution —one pound to every five gallons of water. It is applied in the same manner as the corrosive sublimate described. For ship timber it is much superior to corrosive sublimate, because the compound it forms with the albumen of the wood is insoluble in salt water; which is not the case with the mercury compound. A solution of this substance is also excellent for preserving the canvas of sails and awnings, and is now much used for this purpose. The canvas is first steeped for two hours in a liquid of this chloride zinc of a strength of 3° by a hydrometer, then taken out, dripped, well washed, and dried. It is made by dissolving clean strips of zinc in muriatic acid; this is reduced for use by the addition of soft water. The chloride of zinc and the sulphate of copper, are the most simple and best preservatives, considering the cost.—The former is the best, the latter the most convenient for common use. We therefore recommend these substances in preference to all others. Shingles for the roofs of houses, boiled in a solution of the sulphate of copper or pure salt, will last many years longer than they otherwise would.

Recent American Patents.

Machine for Husking Corn.—By Oren Stoddart, of Busti, N. Y.—The ears of corn are pushed down by an attendant between a pair of rollers having raised stumps of rubber upon them. The rollers rotate in a direction contrary to that in which the ears are pushed and serve to strip off the husk. The butt, or stalk part of the ear, is cut off by means of a knife, which comes in play as soon as the ear passes the rollers. The husks are discharged at one place, and the clean ears at another.

Preventing Damage from Water.—By Thos. Estlack, Philadelphia, Pa.—Great damage to goods often ensues from the flooding of stores and warehouses with water in cases of fire.—This improvement consists in placing the floors of buildings on a slight incline, and providing the lower side of each floor with a trough connecting with a common leading pipe, which extends down to the pavement. If the floors are at any time flooded, the water at once runs off into the trough and escapes to the street without doing injury.

Improvement in Harvesters.—By A. B. Wilson, of Waterbury, Conn.—In this improvement the cutters are all pivoted and cut, like the knives of a straw cutter, against hide, or other suitable material. There is also a peculiar arrangement for driving the cutters, varying their hight from the ground, etc.

Oil Gas Apparatus.—By S. H. and M. C Walker, Lancaster, Pa.—Brilliant illuminating gas for lighting dwellings, stores, factories, and churches, may be made without difficulty from common oil. The apparatus and the process are quite simple. A heated retort is provided, the oil is introduced at the top or roof, and falls, drop by drop, upon the bottom. Contact with the heated metal converts it almost instantly into gas. But the oil leaves a slight residium, which is liable to collect on the spot where it falls, and, after a time, impedes the operation. The retort must then be opened and the residum scraped off.

The object of the present improvement is to provide a means of scraping away and removing the substance named without opening the retort. This is done by having a receptacle or pocket at one end of the retort and a scraper within. The handle of the scraper passes out through a small aperture in front of the retort. The operator moves the scraper as often as necessary, and pushes the stuff into the pocket. When not in use the handle may be unscrewed, the scraper left within, and the aperture tightly closed. Oil gas is very extensively manufactured in various parts of our country. The above improvement greatly facilitates its production.

Improvement in Steam Slide Valves.—By William Burdon, of Brooklyn, opposite New York.—This invention consists in a hollow cylinder placed within the steam chest and supported upon wheels, to run on the valve seat or on suitable ways when the steam chest is parallel therewith; said cylinder is arranged with its axis perpendicular to the valve seat, and is open at the end next the valve seat to receive a piston attached to the valve. It is closed at the opposite end. This piston is of such size as only to leave a portion of the valve exposed to the pressure of the steam, said portion being of an area sufficent to re-