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THE EVENTFUL YEAR OF OUR LORD 1868.

From whatever point of view we consider the year just passed into history, we are struck with the number of important events that have been crowded into its annals. With its political or religious aspects, although they present much food for profitable thought and study, it is not our province to deal. The progress of science, and the remarkable physical phenomena so numerous, and in some instances so appaling, during the twelve short months that have rushed past us, give ample scope for a brief and profitable retrospect.

The year 1868 will henceforth be known as the earthquake year. History has not on its records a period of such universal terrestrial convulsion as the one just left behind us, and scarcely one of greater disaster from this cause. The eruption of Vesuvius, and the excited state of many other volcanos throughout the world, indicate that the mighty forces to which these phenomena are due, are still at work. Whether their energies are in such measure exhausted that no further immediate danger is to be apprehended, is yet undetermined. These terrible visitations are gradually changing the physical aspect of our globe; and from them we can gather some idea of the power of the immense volcanic disturbances, which, ages ago, threw up our vast mountain ranges and engulfed whole continents.

No less grand and impressive have been the celestial phenomena of the year. The great solar eclipse, possessing in some respects features of greater interest than any that has occurred for a long time past, or that will occur for a long time to come, has been not the least of these remarkable occurrences, both on account of its special peculiarities, and the results which have been obtained from organized observation. Add to this the splendid meteoric shower of November, and we may well say that the heaven above and the earth beneath have been prolific of wonders.

The progress in the most mighty undertakings which the world has ever witnessed is no less remarkable. The most gigantic railroad enterprise ever attempted has been pushed this year almost to completion. The Suez canal now almost joins the Mediterranean to the Red Sea, while during the year a movement has been initiated for the construction of a similar work across the Isthmus of Da ien, which will unite the two great oceans. A new sub-Atlantic telegraph of greater length than any heretofore attempted, has been made and will soon connect the two continents, to be followed, no doubt, by others of greater magnitude. It has also been the subject of serious contemplation to lay a cable between the Pacific coast and China, and we would probably hazard little in predicting that some even now old men will live to see that work accomplished. Never has the earth seen a period of greater enterprises; never before has civilization made such triumphant advances.

The discoveries and improvements in the sciences and the arts have been numerous and important. To review them and specify them as they demand would fill a volume. A glance at the index of the volume we have just closed will show the great variety of subjects upon which scientific minds are now at work—not in mere speculation, but in actual and accurate experiment. Almost daily, nature responds to some bold inquiry of this kind, and a new truth is born to science.

As this article meets the eye of our numerous friends and readers, the congratulations and kind wishes of friends will be mutually interchanged upon the advent of the new year. That the year 1869 will be as fruitful of progress and as promotive of the welfare of the entire human race, as the eventful year that has passed, is our prayer, while we beg to unite with other friends in wishing each and all a "Happy New Year."

INSURANCE---DUTIES OF COMPANIES AND INSURERS.

The occasional if not frequent litigations between insurance companies and policy holders are calculated to do great injury to both. That company which soonest and quietest adjusts its affairs with a holder of a policy after his loss is always the most popular. The fact of an early payment of the amount is heralded by the recipient, and given currency in the newspapers, making one of the best, although gratuitous, advertisements the company could have. But litigation before a jury or a suit before a referee does more damage to the company than can be offset by their success in that particular case, and injures the business of insurance generally.

Insurance is a perfectly legitimate business, and its institution has done much more to nurse and protect enterprise in building, manufactures, and commerce than is generally supposed. The Chicago *Insurance Chronicle* gives an idea of the history of insurance that may be of interest to our readers. It says that the earliest recorded application of the principle was in marine insurance, which was the invention of merchants and ship owners engaged in the commerce of the Mediterranean, somewhere about the twelfth century. Its object can scarcely be more clearly and fully set forth than it is in the language of the English statute of 1691, which declares that, by means of insurance, "it cometh to pass, upon the loss or perishing of any ship, there followeth not the undoing of any man, but the loss lighteth rather easily upon many than heavily upon few, and rather upon those that adventure not than upon those that adventure; whereby all merchants, especially of the younger sort, are allowed to venture more willingly and freely." It was not long before the same principle was applied to the insurance of buildings, and so to the protection and encouragement of trade.

Further on the writer says; "It is vain to argue that insurance was designed for the use of business, and not business for the use of insurance. Insurance is governed by certain laws, which cannot be violated with impunity. The premium must be equal to the average risk, and exceed it by a sufficient margin to cover the necessary expenses of conducting the business, or bankruptcy is inevitable. This ideal may not be always attained with mathematical precision, but the departures from it will oscillate within ever narrowing limits. If the premiums are calculated too high, the business will decline; if too low, impending ruin will soon teach the insurers their error. It is folly to consider the interests of the insurers and of the insured as distinct. It is madness to regard them as inimical. Insurance is the friend of industry and thrift everywhere. Despite the crudities of its present classification of hazards, that classification is the result of long experience and careful observation, and is established as much in the interest of the insured as of the insurer. It cannot be materially changed without defeating the very objects of insurance. The practical question, therefore, in the case before us is this: If the present rates are prohibitive to the manufacturer, and yet unremunerative to the insurer, what is the remedy? What, in the name of common sense, but this—the co-operation of both in the search for some sufficient safeguard, some measure of protection, that shall reduce the hazard and so reduce the rate? In this search they have each an equal interest. The minimum rate, consistent with safety, is the result which the underwriter seeks, and it is better for the manufacturer to recognize this fact and do all in his power to diminish the hazard, than to seek to reduce the cost of indemnity by means which, if successful, must surely result in the destruction of the indemnity itself."

We would suggest, in addition to the search for a safeguard, honesty in the insured and the insurer. So long as seekers for insurance prefer to overrate the value of their property and pay the additional premium, and the companies, for the sake of that additional premium, or increased amount, will issue a policy on property the real or market value of which they do not understand, or care to ascertain, so long will insurance be simply a contest of sharp practice between insured and insurers, and suits at law will follow losses and a demand for payment. Although both parties are to blame for this state of affairs, a little consideration will show that the *onus* of the blame rests upon the insurer. It is his business to ascertain the value of the property insured. Men generally believe, and honestly too, that what is theirs possesses some peculiar value, and they will estimate their possessions at a higher figure than similar property held by their neighbors. This is natural, and therefore in some measure, excusable. But the insurance agent should use his own judgment, aided by a personal inspection of the property to be insured and the opinions of disinterested but competent parties. And the agent should have a theoretical, if not practical, knowledge of the nature of the business carried on in the buildings for which an insurance is asked. An exhibition of this knowledge would serve as a restraint on the party who desired the insurance, and aid in correcting his mis-statements whether honestly or fradulently made. Instead of employing as an agent or solicitor a person who has merely the gift of fluency of speech and personal presentability, our insurance companies would do well to have agents for each class of their risks who are experts by reason of their familiarity with the nature of the property on which they recommend risks to be taken. Improper representations on either side and consequent controversies in case of loss would thus be avoided.

WILL STEAM IGNITE COMBUSTIBLE SUBSTANCES?

The idea that heating buildings by means of steam pipes completely prevents all danger from fire, we do not believe is correct. When we know that the heat generated by a hydrocarbon in combination with a combustible fiber will produce combustion, as has been so often proved, and that a fibrous material saturated with oil will, if exposed to the sun's rays burst into a flame, it follows that a greater degree of heat, whether produced by steam or any other agency, may produce like results. Experience has proved that a long exposure of wood to a temperature not exceeding that of boiling water, or 212 deg., brings the wood into a condition very favorable to ignition; how much more should it be accepted as a truth that long exposure to pipes conveying steam at a temperature of from 350 deg. to 400 deg., should render the combustible substance liable to ignition. We have on our table specimens of boiler lagging, of pine wood, inclosing the steam space and defended by a sheet iron jacket, thus protecting them from the oxygen of the atmosphere, that are reduced to the condition of porous charcoal, lighting as readily as our old-fashioned tinder merely by the contact of a spark. Every engineer must have noticed in his experience the inflammable condition of the wood through which a steam pipe passed, or on which it rested, if they had remained in contact or contiguity for a period of a few weeks. Every engineer of lengthy experience and close observation also knows that it is possible to ignite combustible or inflammable substances by the direct impact of steam. Cases have been recorded where dry wood was ignited by escaping steam at a distance of not less than thirty yards from the boiler; and we know, personally, where, as an experiment, we lighted oil-saturated cotton waste and dry pine wood by the steam from a boiler at a distance of twelve feet, the boiler pressure being at the time only 95 bls., temperature, by Regnault 335 deg. The materials burst into flame in a few minutes.

The ordinary way of conducting steam through buildings, factories, shops, etc., from the boiler, is to lead it through a series of parallel pipes, connected by bends or cross pipes at the ends and suspended on iron hooks or brackets attached to upright wooden cleats. These brackets hug the pipes closely to the wood, but they leave spaces between the pipes and wood for the lodgment of the dust from sweepings and the particles held in suspension by the atmosphere of the room. These particles are simply a form of tinder, calculated from their lightness and combustibility to readily ignite. When it is considered that the mere heating of a stick of pine wood, however much seasoned, will compel it to give out an inflammable vapor, it will readily be understood that dry wood and the "fluff" that settle from the atmosphere of a cotton factory or sawing and planing mill are in the best condition for ignition even at low temperatures.

ABOLISHING OF THE FRANKING PRIVILEGE.

We are happy to learn that Senator Ramsay has reported a bill from the Committee on Postoffices, and Post Roads, recommending the abolishing of the franking privilege, and we are glad to see that the senator personally recommends its adoption.

The abuse of the franking privilege has become so general that the revenue of this department is greatly impaired in consequence, and that, too, by our very lawmakers, who should be the most scrupulous in observing the spirit as well as the letter of the statute.

If congressmen would limit their franking operations to their own business there would be less cause of complaint, but some of them allow their friends the use of their signature to frank advertising circulars and pamphlets to a great extent. We have had frequent occasion to call attention to this flagrant abuse before.

If the abolishment of the franking privilege should be extended to the departments it would cost us thousands of dollars on what matter now passes free between us and the Patent Office. But we had rather pay the postage both ways, than have the Government deprived of the large revenue it now is, under the present franking system.

Let the various departments and all congressmen pay their own postage and each bureau charge the same to disbursement account, the same as if paid for stationary, clerk hire, fuel, etc. We hardly expect that our congressmen will pass any bill curtailing their own privileges, but that a reform is needed, no one knowing the abuse of the franking privilege can deny.

SUBMARINE DRILLING AND BLASTING--THE SHELBOURNE SUBMARINE DRILL.

The difficulties of navigating the East River entrance of New York harbor, especially by vessels of considerable draft, occasioned by natural obstructions, have been recognized ever since the settlement of Manhattan Island. About sixteen years ago the hight of the sunken rocks was considerably reduced by the Maillefert process, which consisted of lowering cans of gunpowder on the rock and exploding them by the galvanic battery and connecting wires, the theory being that the superincumbent mass of water formed a resistant or fulcrum against which the explosion might react. But where the rock presented a smooth surface without salient points this method has not proved satisfactory. In consequence the attention of engineers has been directed to the provision of some more adequate means.

The United States Government, having appropriated $85,000 toward the improvement of New York harbor, and General Newton, United States Engineer, having advertised for proposals, the contract for the removal of the Hell Gate obstructions has been awarded to Sidney F. Shelbourne, of New York