

Scientific American

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Our New Volume.

The next year will be unusually attractive and interesting to the readers of the Scientific American. The great Exhibition to be held in New York, in 1853, will enable us to illustrate an extraordinary number of new machines, and as a standard work for binding at the year's end, the present, being the commencement of a new volume, forms a good opportunity for engineers, mechanics, millwrights, farmers, manufacturers, and all lovers of science and art, to become subscribers.

The New Safety Steamboat Law.

The new law passed by the late Congress for the better protection of life and property in vessels propelled in whole or part by steam, is very comprehensive, and if its provisions be faithfully carried out, travelling by steamboat will be exceedingly safe. But here is where the difficulty lies; we may make as many laws and penal statutes as would build a pile high as Mount Blanc, and yet they may all be no better for the protection of life and limb than "the baseless fabric of a vision." The safeguards for the protection of life on board of vessels propelled by steam are not good laws merely, but good laws faithfully executed. Here we have a good law, but will it be faithfully executed? that is the important question. The responsibility of its execution will rest with the inspectors of the various districts; they have supreme authority—almost boundless—to carry out its requirements and enforce its demands.

No register, license, nor enrollment, shall be granted to any steamboat, unless it first shall give satisfactory evidence that all the provisions of this law have been complied with, and those who are to see to it, that the provisions of this law must be complied with, are the inspectors. In every district there is to be a supervising inspector, and along with him, there are to be a sociated the collector, or other chief officer of customs, and the judge of the district court of the United States, who, for the district in each of the following collection of districts, namely, New Orleans and St. Louis, on the Mississippi river; Louisville, Cincinnati, Wheeling, and Pittsburgh, on the Ohio river; Buffalo and Cleveland, on Lake Erie; Detroit, upon Detroit river; Nashville, upon the Cumberland river; Chicago, on Lake Michigan; Oswego, on Lake Ontario; Burlington, in Vermont; Galveston, in Texas; and Mobile, in Alabama; Savannah, in Georgia; Charleston, in South Carolina; Norfolk, in Virginia; Baltimore, in Maryland; Philadelphia in Pennsylvania; New York, in New York; New London in Connecticut; Providence, in Rhode Island; Boston, in Massachusetts; Portland, in Maine; and San Francisco, in California, shall designate two inspectors of good character and suitable qualifications to perform the services required of them by this act, within the respective districts for which they shall be appointed—one of whom, from his practical knowledge of ship-building, and the uses of steam in navigation, shall be fully competent to make a reliable estimate of the strength, sea-worthiness, and other qualities of the hulls of steamers and their equipment, deemed essential to safety of life, when such vessels are employed in the carriage of passengers, to be called the Inspector of Hulls; the other of whom, from his knowledge and experience of the duties of an engineer employed in navigating vessels by steam, and also in the use of boilers, and the machinery and appurtenances therewith connected, shall be able to form a reliable opinion of the quality of the material, the strength, form, workmanship, and suitability of such boilers and machinery to be employed in the carriage of passengers, without hazard to life from imperfections in the material, workmanship, or arrangement of any part of such apparatus for steaming, to be called the Inspector of Boilers; and these two persons, thus designated, if approved by the Secretary of the Treasury, shall be from the time of designation, inspec-

tors, empowered and required to perform all the duties required by the law. Every steamboat is required to have the spaces surrounding the boilers safe from ignition; the boilers are to be tested by hydraulic pressure, at least once per annum; each boat must have some kind of life-preserver for each passenger; metallic life-boats must also be provided.—Vessels, according to their tonnage, must have from one to three force pumps on deck for the extinguishment of fires, and there must be a good supply of buckets. Every engineer must be examined by the inspectors and get a certificate of qualification before he can be employed to take charge of an engine,—and the safeguards for carrying only a certain amount of steam, and to have good gauges, are full and complete, but, at the same time, as we have said in substance before, this law will be a mere incubus upon the statute book if good inspectors are not appointed. Those inspectors should be men of good qualifications respecting skill and knowledge, and high above all, stern integrity—the energy and iron will to do their duty.

We do not publish the whole law, as it is very long and contains no less than 44 sections. The inspectors are to be provided by the Secretary of the Treasury with a suitable number of uniform instruments to test the strength of boilers, there will therefore be no excuse for any inspector who may suffer a steamboat to run in his district with a defective boiler. We have heretofore had United States Inspectors of boilers, but they were of very little use. Steamboat companies were well acquainted with the way of removing a conscientious man who stood in their way; we hope, for the sake of humanity and the honor of our country, that the inspectors appointed under this new law will be as sacred men, performing their duties in a sacred manner.

Scientific and Mechanical Institutes.

We have received a communication from a highly respected subscriber and correspondent, in New Orleans, about such an Institution as the "Ecole Centrale," at Paris, where young men are educated in the theory and practice of engineering, manufacturing, and general machinery; he says, if he cannot get his sons instructed at home, in their own land, as he desires them to be, he must send them to France. He requests us to call the attention of our people to this subject. He has no desire to send them to a workshop or foundry, to learn an apprenticeship, as they would not be under the same general admonition and instruction as if under tutors.

It would be a good thing for our country if some complete school of this kind were instituted; at present there is not one, so far as our information extends. The School or Institute should have all kinds of tools and various machines, and students should be instructed how to use the tools—how to make various machines, and thoroughly instructed in the whole theory, while they are learning the practical part. The Lawrence Scientific School, we believe, was intended to embrace such kinds of instruction, but we are not aware of such views having ever been carried out. A new Chair of Civil Engineering, under Prof. Norton, has been established at Yale College; this is a judicious and wise movement in the Yaleites, it shows they are awake to the improvements of the age.

"The Peoples' College,"—that institution which our mechanics are endeavoring to get established under the patronage of the State, is intended to embrace the very system of instruction about which our correspondent has written. We hope the subject will be taken up with a hearty good will by our next Legislature.

A Claimant for the American Reaper.

The Edinburgh Review states that the Rev. Patrick Bell, a Scottish Presbyterian minister of Carmyllie, in Fife, constructed a reaping machine with wheels and scissor blades, in 1825, and that his brother, a farmer, improved it, and cut down his crops with it for a number of years. He got a prize of £50 from the National Society, a number of years ago, and in 1834, several of them were in operation in Scotland. A number of such machines it asserts, were taken to or made in America by emigrants, who saw Mr. Bell's and the one of McCormick and Hussey

were but re-productions; and while they were astonishing the people of England, at the Great Exhibition, the old machine of Mr. Bell was quietly cutting down its yearly harvest in the case of Gourie, in Scotland. We cannot contradict these statements, except so far as it relates to the borrowing of the ideas of Mr. Bell, by Americans. Let us have names and dates for these statements; it is said that some of Mr. Bell's machines were sent to America twenty years ago; if this is true, the names of those who brought them here, or to whom they were sent, can surely be given. Let them be produced, and this will settle the question. It seems culpably strange that there should be a good reaping machine working away in Scotland, and yet the people of England know nothing about it,—nay, that the first knowledge of such machines being in existence, was derived from the sweepingly successful experiments of machines brought from America to the Great Exhibition. The American exhibitors of these machines certainly knew nothing about Mr. Bell's.

Spontaneous Combustion.

Prof. Graham, of London, the able chemist, made a Report to the Lords of the Board of Trade, on the subject of the Burning of the Amazon, which has recently been published in a number of our foreign exchanges. He speaks of the dangerous practice of mixing the various engineers' stores in one room, near the boilers of steamships. Tow or cotton waste, saturated with oil, by exposing much surface to the air, often oxidates rapidly, and heats spontaneously. He has known of olive oil, spilled among saw-dust, doing this; also greasy rags; cloth covered with varnish, &c. Fires in coach-works, oil stores, engine-rooms, &c., have been caused by such means. Ground charcoal and lamp-black, if any oil obtains access to them, should never be admitted as ships' stores. Oil cans, and those containing turpentine, should never be stowed in a warm place, as the liquid expands one volume in thirty, by a rise of 60° in temperature. A moderate heat increases the tendency of coals to spontaneous combustion; coals have taken fire in more than one instance, by being heaped against a heated wall. The covering of wood with iron to protect it from fire, is a dangerous practice, for the iron is a good conductor of heat, and the wood below is heated nearly as much as if it were not covered. Wood, by repeated re-heating, is brought to an extraordinary degree of combustibility, and is liable to spontaneous ignition. Wood has frequently ignited by long contact with iron pipes, which conveyed hot water for heating purposes. Coals should always be taken aboard of a steamboat in a dry state, and as an obnoxious vapor always rises before coals ignite spontaneously, they should at once be turned over when this vapor is noticed. The oil of turpentine gives off a vapor sufficiently dense, when heated to 110°, which, if mixed with air, will explode by contact with the flame of a candle. Newly painted or tarred wood is liable to be ignited very quickly, when exposed to a degree of heat of 212° for some time, and then approached with a lighted lamp. Great care should be exercised by those loading ships, in respect to stores which are liable to ignite spontaneously.

Observatories.

It is proposed to erect an observatory at the Highlands, near this city. We hope the project will be carried out, and that in respect to this plan it will not be said of our city, owing to its gasconading about the Washington Monument a few years ago, "New York is mighty upon everything that makes money, but contemptible in everything else." An association was formed in Brooklyn, two or three years ago, to erect an observatory there, but alas, where is the observatory and where the society now? The subject of an observatory for New York has been talked of so often, that we feel excessively cautious in saying anything at all about the proposed new one. We should have an observatory here, the city is rich enough to maintain the best in the world, but will it do it? that is the question. We hope it will.

The largest achromatic telescope in the world has recently been erected in a new ob-

servatory near Leamington, England. It was constructed by a Mr. Craig, an Episcopalian clergyman. The tube is of a cigar shape, is 76 feet long, and is 13 feet in diameter. Mr. Craig will soon turn it on the planet Venus to settle the question whether she has a satellite or not. The Moon seen through it presents a most magnificent appearance, clear and colorless, with her rocks and mountain craters looming up in terrific grandeur.

Safety of Railroads versus Steamboats.

The conclusion cannot be shut out from the mind of any man, that steamboat travelling, in comparison with railroads, is triply dangerous, and wherever the railroad can be chosen in place of the steamboat, it is recklessly criminal not to choose such a means of conveyance. We defy any person to refute the statement, "that more lives have been lost on steamboats, in these United States, during the past three months, than have been lost on all the railroads in our country since the first rail was laid, and that is more than twenty years ago. Many people here profoundly calculated on the certain safety of our North River boats; "they were all low pressure," they said (a mistake, however, many supposing that all condensing engines have low pressure boilers), "consequently there was nothing to fear," but by the burning of one steamboat, and the explosion of the boiler of another, no less than one hundred and ten of our fellow creatures have lost their lives between the cities of New York and Albany in three weeks. The late accident was that of the steamboat Reindeer, which burst a plate of her boiler, by which thirty persons came to an untimely end. There was no carelessness nor defective construction in any part of the boat, so far as human eye could judge; of this we are fully convinced by the testimony of witnesses. The cause of the accident was a bad plate of boiler iron—it had a flaw in its heart. The boiler was made of what is called the best Pennsylvania iron; who was the maker of the iron, we cannot tell, but this we do know, that it is the second explosion from the same cause—a bad boiler plate—which has taken place on New York steamboats this summer. Let us have the names of the makers by all means, so that the public may be made aware of those who make bad work for the endangering of precious lives. In view of the great destruction of life, by steamboat travelling, and even taking into consideration the new Law recently passed by Congress, for the better protection of life, we cannot but advise all who can, to choose the railroad as the safest means of travel, in preference to the steamboat. Of course there have been and will be railroad accidents, but surely, if the pastis of any use at all—if we can place any reliance on past events for future guidance—the railroad is assuredly by far the safest medium of modern travel.

Patent Law of the United States Applied to Englishmen.

A correspondent of the London Mechanics' Magazine, signing himself "Justice," calls attention to our present Patent Laws, and the large fees which the subjects of Queen Victoria have to pay for an American patent. All foreigners—Frenchmen, Germans, &c.—are charged \$300, Englishmen and all other British subjects are charged \$500. This fee was charged to correspond with the patent fees of specific foreign countries. "Justice" hopes that our charge for Britishers will now be reduced, as the English patent fee has been lowered. We advocate its reduction to \$300, so as to make all foreigners stand on the same level, but, at the same time, we do not advocate this measure because England has reduced her fees,—they are yet too high.

We do England the justice, however, to say that she makes no distinction between her own and American citizens—all men stand on the very same level before her patent laws. We hope our next Congress will reduce our patent fees, for the subjects of Britain, to \$300.

Information Wanted.

Any person knowing the residence of Lauren M. Peck, formerly of Philadelphia, will confer a favor by addressing a note to this office.