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Money Paid by Government for Inventions.

Within a few years Congress has appropriated a considerable sum of money for testing inventions, besides a great amount in purchasing patents. By the report before us, by Hon. W. H. Bissel, of Illinois, on the ether question, we learn that \$110,000 have been appropriated to test inventions within the past ten years, but little of which has resulted in permanent success. We cannot say however, that we cavil at or blame government for making prudent and unextravagant appropriations to test reasonable and plausible inventions, nay, we admire and approve the spirit which dictates the appropriation of a reasonable sum to test any new and apparently useful invention, that would prove beneficial to our country. There is great danger, however, in making such appropriations, lest they may be granted for totally unworthy objects through crafty solicitation and an undercurrent influence. Out of nine appropriations to test inventions, six of them do not appear to have been altogether successful, at least they are not now, so far as we are informed, in use; such as \$15,000 for Colt's submarine battery; \$5,000 for preserving canvas; the testing of fire ships by U. Brown, \$10,000; testing Crutchett's gas lights, \$17,500; and \$20,000 for testing Page's electro magnetic power; and \$5,000 for testing inventions to prevent steam boiler explosions. The money thus expended was ostensibly for the benefit of science; but Morse's Telegraph, for which \$30,000 were granted to test the line between Baltimore and Washington appears to be the only successful invention out of the nine for which an appropriation was made.

Our government has purchased quite a number of patents, and among the grants we perceive \$76,300 to the heirs of Robert Fulton. We also perceive that \$25,000 were granted to Messrs. R. S. McCulloch, and J. C. Booth, for the use of their patent processes for refining gold, which we believe is not used at all now, and respecting which there have been such hot words and controversy between the patentees.

Government has appropriated a great deal more than what appears in this report of the Committee on Ether; for example: \$10,000 was paid for Hunter's propeller wheel, for one of our ships in the navy, and it turned out a complete failure. We suppose that others have received like benefits for producing like results. Uncle Sam is looked upon by many as a fine old gentleman, with exceedingly deep, wide, and altogether too heavy pockets, for the benefit of his health to carry. We sympathize with an inventor of moderate means who has an apparently good and useful invention, but which requires an amount of capital far beyond his ability to test fairly; in such a case we commend the inventor who has faith in his project, in soliciting Congress to test it fairly, and demonstrate its usefulness and benefit to man. But we are opposed to Congress voting money either to purchase an untried patent, or testing the merits of any new invention when the owners of the one or the author of the other has capital at his command, and abundant ability to introduce it into public use.

The Ericsson back to New York.

The Ericsson, or Hot Air ship is now lying at her old berth at Green Point, Williamsburgh. It will no doubt be interesting to our readers to know the present opinion of some of our papers about it, and what she is lying at that place for.

"The ship Ericsson, which arrived here on Monday, left the Capes on Friday afternoon, and stopped four or five hours on the way.—The confidence of the owners, it is said, was greatly increased in the caloric engine by the late trip. She went to Washington before she was complete in order to be there before the adjournment of Congress. She will now go to the shipyard at Williamsburgh, and remain about a month undergoing the finishing operations. The object thus far having been to see how well the machinery will work; it is supposed that the test of speed will be an object

on her next appearance. It is claimed by some of the admirers of the new motive power, that when the maximum of speed is reached in the caloric engine, the steamers will not exceed them in rapidity by more than a knot an hour."—[Tribune of the 16th.

The caloric ship Ericsson, which returned to this port on Monday, is soon to leave for London, from whence it is intended to send her to Australia. Her recent trip to the South has established the partial success of the new principle, at the same time that it has suggested some important improvements, the introduction of which it is expected will materially augment her rate of speed. Her appearance in the Thames will create quite a sensation among the Britishers."—[New York Herald of the 16th.

The Herald of the 24th Feb. said, about the Ericsson, "the caloric experiment has been signally successful," it now says *partially* successful.

The "Tribune makes excuses for the bad performance of the Ericsson, by saying she went to Washington before she was complete. Her speed on her trip home, was about 4½ miles per hour. After her last trip down New York Bay, she was laid up at Green Point for a month getting some repairs made, and now after her trip to Washington she is to be laid up for another month's repairs.—These are not our reports but those of the papers who have hitherto so highly praised the Ericsson. Before the hot air ship will be able to compete with a steamship, she will have to get in new boilers and engines, use more coal, and keep a good supply of water in the boilers. Those ignorant men who have talked about her running faster if she had larger engines, would look blank if told she could not run as fast as the Arctic if she was stowed with hot air engines from top to bottom, but so it is.

What excuses are now made for the slow speed of this ship by the very papers who shouted and bayed a few weeks ago at James Watt, Robert Fulton, and all the inventors that ever lived, and all the steamboats in creation. The "Tribune" at last gives in and admits that after she has attained to her greatest speed, steamships will still run faster, does this look as if "the days of steam were numbered."

Since we last said anything on the question of hot air as a motive power, the subject was discussed two nights in the London Institute of Civil Engineers, and a paper was read on it by B. Cheaverton. Some of the most eminent men in the country, such as Stevenson, Rennie, Meadows, Sir Geo. Cayly, &c, were present. Drawings of the Ericsson's engines were presented and explained. They all condemned the regenerator as a fallacy, and the conclusion arrived at was, that with the amount of coal burned she made slower progress than a steamer would.

We have made but one or two commentary remarks; there is much that we could say, but we do not wish to take up too much room discussing one subject. We have presented a great deal of information respecting the Ericsson, because this ship has created a great sensation throughout the whole country, and our readers desire to have all the impartial information they can get about it. We will still present from time to time such information as may be new, instructive, and interesting about hot air as a motive power. We conclude by stating that the "American Journal of Science and Art" for March, after describing the "Ericsson's" engines says, "we do not at present undertake to discuss the probable success or failure of this important enterprise," and thus the great gun fires neither a blank nor ball cartridge, the gunner evidently exhibiting either a fear or a want of ability to do so.

Railroads and their Accidents in New York.

By the Report of our State Engineer, Wm. McAlpine, C. E., of the railroads in this State, for 1852, we learn that the whole number of passengers carried over 29 railroads, was 7,440,653, and the number of miles travelled was 343,358,545. The number of passengers injured was 82; killed, 26. The number of employees injured was 89; killed, 76; making the total number injured, 265, and killed 162. The ratio of passengers killed to the number who travelled *one mile*, is one for every 13,

206,098 passengers carried. By Dr. Lardner's statistics of railways, we learn that in England the accidents to passengers who travelled one mile has been as one to 65,363,736 passengers carried. The accidents on the roads in New York to passengers therefore are nearly five times more numerous than they have been in England. There is no doubt in our mind but if all our roads had double tracks we would have fewer accidents, but at the same time we are convinced that our tracks are not sufficiently guarded; they should be fenced in, and no person should be permitted to travel on them. There should be a law made to punish trespassers, but this cannot be done until the tracks are enclosed. No less than 76 persons killed by being run over, while standing or walking on the track, and only 26 by collisions. In England they are far behind us in the construction of their cars; if they would adopt our comfortable long cars there, instead of using their old fashioned *dumpy ones*, they would show some appreciation of Brother Jonathan's good sense and ideas of railway comfort. Great improvements have yet to be made in railway management, as connected with safety and comfort, after which the friends of Mr. Ray and the American Institute may modestly claim some testimonial of gratitude to those benefactors of American genius, who so promptly offered and awarded those prizes for railroad improvements.

Events of the Week.

EVAPORATING SUGAR—BESSEMER'S PROCESS.—The claims of two patents for improvements in the manufacture of sugar, were published in the last number of the "Scientific American. The patentee," Henry Bessemer, has long been favorably known in London, in connection with the refining of sugar. Some enquiries having been made of us since last week, respecting the alledged improvements, we will present all the information of which we are in possession at present.

Hitherto all sugar has been boiled to expel the moisture, and leave it fit for crystallization. To boil sugar under a high heat completely discolors it, and previous to 1813, when Mr. Howard invented the vacuum pan to boil the sugar under a low heat, it was almost impossible to produce white sugar at all. The vacuum pan and the charcoal filter, invented in France by Mm. Derome & Cail, in 1824, produced two revolutions in the manufacture of sugar, and it is asserted by Mr. Bessemer's admirers that his new improvements will produce another revolution.

By the new process the boiling of the sugar juice is dispensed with, the water is driven off the juice by bringing it in contact with currents of dry hot air blown in upon it as stated in the claim. The hot air is made to sweep over the surface of the fluid which is taken up on revolving metal plates surrounding a hollow perforated cylinder. By this simple method it is said white syrups are concentrated without producing any discoloration at all. The air is heated for this purpose by being driven by a blower through tubes passing through an oven or furnace.—

The second patent claim is for an improved filter. Crude sugars are of an ugly dark brown color, which is due to an external coating of molasses, which surrounds the crystals of the sugar. This crude sugar in an almost fluid state, is placed in a machine and spread in a thin sheet in a circular table of wire gauze. A partial vacuum is formed underneath by an air pump, and the wire gauze table rotates under a series of fine jets of water, which pass through the sugar with great velocity. This washes off all the molasses, leaving a pure and nearly white sugar. These operations are said to be performed with extraordinary facility and in an incredibly short space of time. Sugar boiling, refining, &c., are practical arts, that is to say, any departure from old practices can only be determined as an improvement by a *fair trial*, nothing else can decide the question.—Opinions, however, based upon experience, may be given, and with respect to the drying of sugar with hot air, we think well of it, we believe that it will operate well, it rightly conducted.

MOUNTAINS IN THE SEA.—Capt. Denham, F. R. S. of the British Navy, while on a pas-

sage from Rio de Janeiro to the Cape of Good Hope took deep sea soundings of the great depth of 8½ miles. In the "London Times" it is stated that soon afterwards he sounded again in only 19 fathoms, on an extended coral bank, thus showing that there are some very high submarine mountains in the ocean, which for the practical benefit of man as a commercial being it is of more importance to know, than the height of the mountains of the moon. It shows the necessity and importance of acquiring a thorough knowledge of the configuration of the bottom of the seas and oceans. There ought to be hydrographic maps of all the seas and oceans, and all maritime nations should join in this great work. Something has already been done by our navy, but a great work is still before us. What has been done will be found by our readers in the excellent Reports of Lieut. Maury, of the National Observatory.

At the present moment the British have two vessels, the Herald and Torch, on a surveying expedition on the Pacific, and particular instructions have been given to them to obtain deep sea soundings. They have discovered two coraline banks, extending 80 miles, suddenly jumping from 200 fathoms, to no bottom at all (beyond the lead) and then to 19 fathoms. The temperature of the sea at 1,500 fathoms was 40°, where at the surface it was 90°. The temperature at the bottom, however deep the soundings, was never below 40°. The sun's rays were traced to have penetrated to 66 fathoms.

A survey was made of the coraline banks spoken of, and the Herald was at anchor in the middle of the ocean for a week to the utter astonishment of some ships whose tracks lay in that direction.

Tin Plate Manufacture.

The manufacture of tin plate is one of which England can truly boast, as she is the heart centre and complete monopolist of it.—She supplies the world with it, and no country uses so much as our own. There is more tin plate used in the United States than there is in England, and the consumption of it is increasing rapidly. The majority of the roofs of our new buildings are of tin, and we do not make an overstatement when we say that for one house erected ten years ago and covered with a tin roof, there are now fifty. The price of the article has greatly advanced, and so far as we know no attempt has ever been made to manufacture it in this country. If it can be done profitably, there is a wide field open for some enterprising company, if not, the article should be admitted duty free, as it interferes with none of our manufacturing interests, and we have now a surplus revenue.

Tin plate is one of the most useful metallic products. No other metallic product is so adaptable in its nature to be made into every form for public and domestic use. At the present time, manufacturers of tin ware and whitesmiths generally, are complaining of the high price of tin-plate; if it were cheaper than it is, we are satisfied that it would be a general benefit to our people.

The Ray Premiums.

The Committee of the American Institute has reported on the Ray Premiums; date of Report March 15, 1853. Names of the Committee; Geo. Stark, M. Sloat, W. Cummings, J. R. Trimble, F. Hungerford. There were four prizes offered, two of which only have been decided upon, viz., "the railroad brake" for which the prize of 400 has been awarded to T. A. Stevens, of Burlington, Vt. The prize for a "night seat for cars," \$300, has been awarded to Samuel Hickox, of Buffalo, N. Y. The prize of \$1,500, for the best invention to prevent railroad collisions, the breaking of railroad axles, and the prize of \$800 for the best invention to exclude dust from cars, they did not decide upon. The reasons given by the committee are: "Doubts of their utility (the inventions exhibited) for actual service."

The excuse offered by the Committee for taking such a long time to make the report, is that the private business of the members made it very difficult to get a sufficient number of them together. And so out of the sum of \$3,000, which was offered as prizes, the Institute has awarded \$700. This brake was illustrated on page 132, Vol. 7, Sci. Am.