Scientific American.

NEW YORK, JANUARY 28, 1854.

The Caloric Ship "Ericsson."

To the Editor of the New York Express.

I have much pleasure in assuring you that there is not the slightest cause for the doubt you express in relation to this enterprise. The new engines are completed, and have been at work for several days, their operation proving conclusively that the practical difficulties which attended the first arrangement, have all been overcome. The new engines are much reduced in size, whilst their principle of action is the same as before, with this exception only, that condensed atmospheric air is employed in place of the ordinary atmospheric, for producing the motive power. This modification admits of an increase of power, limited only by the capability of retaining the pressure in the machine. Some difficulty has been experienced in this respect, and it is this which has caused some delay recently. The obstacle is, however, nearly removed, and the public will shortly have an opportunity of judging by practical evidence of the merits of the Caloric ship. I am, sir, very respectfully, your obedient servant,

J. ERICSSON.

New York, Jan. 12, 1854.

[Mr. Ericsson has at last made public confession that his former Hot-Air Engines were entire failures. This the public were told would be the case, through the "Scientific American," before the "Ericsson" ship made her trial trip. We based our opinions on the nature of the motive element—Hot Air. Our views have been verified in every particular. There are certain mechanical laws which are well known to all who are versed in the science of mechanics, such as "there is no power in a lever," it being a mere agent to transmit force; "action and re-action are equal," &c. But the question of hot air, as a motive agent and economical substitute for steam, is more intricate, and embraces a higher range of information. The chemistry of the atmosphere, the law of the expansion of air by heat—its action upon metals when highly heated, and the means employed to make it operative in the "Ericsson" must all be understood in order to pass judgment upon the "Hot-Air Engine." No new project in our day can compare with this in magnitude, for the testing of a dubious motive power, and none has excited so much attention. It has been a touch-stone to test the knowledge of many whose names have stood somewhat prominent as men of science—they were weighed in the balance and found wanting.

In the above letter, Mr. Ericsson informs the public that his *new engines* "are *much reduced* in size, which modification *admits* of an *increase of power*." This is indeed a strange doctrine to propagate now, and is the very antipodes of the one he so eloquently and so strongly enforced on board of the "Ericsson" when she made her trial trip down the New York Bay on the 11th of last January—one year and one day, exactly, from the time he penned the above letter to the "Express." The trip was made expressly for the Editors of the New York Press: and our brethren were in raptures at the success of the Hot Air Ship. Mr. Ericsson, from a diagram explained the construction of his engines, and highly extolled his large cylinders—they were grand features in that Caloric Engine's success. Let us quote his own words, given in answer to a question of Mr. Dana, of the "Tribune," or of Mr. Bigelow, of the "Evening Post," we forget which:—"If it is advisable," he said, "to obtain an augmentation of force, it is only necessary to *enlarge the cylinders*, and thus augment the power. *Were I* to build the engines anew, I would make the cylinders 16 feet diameter instead of 14 feet; and were we able to introduce cylinders of 20 feet, we would be able to surpass anything that floats upon the ocean, and the effect of the movement would be extraordinary."

How does this language accord with the above letter of Mr. Ericsson? A year ago he was to augment the power of his engines, by increasing the size of his cylinders, now he has augmented their power by decreasing them (from 14 feet diameter to 5 feet). The language of Mr. Ericsson we have quoted from the "New York Daily Times" of the 12th Jan., 1853—the above letter is dated 12th January, 1854. Oh, Mr. Ericsson, what a descent you have made in one year! Then you were to gain power by going up, now you have gained it by coming down.

Mr. Raymond, Editor of the "Times," in his editorial remarks, said—"Many persons, whose interests will be seriously affected by the introduction of this new agent, will be reluctant to believe in its feasibility, distrustful of evidence, and obstinate in belief, but they cannot alter the *fact*. And they will most effectually protect their interests and reputation by adjusting them to the new Power and the changes it must effect; caloric ships will very soon take larger cargoes with lower rates of insurance than steamers." Mr. Raymond also lectured, a short time afterwards, on the peculiar superiority of the Hot-Air Engine; the information of his lecture was culled for him—he was merely its endorser, and was no doubt sincere in his opinions, but mistaken.

The "New York Tribune," of the same date as the "Times," made use of the following language:—

"The demonstration is perfect. The age of steam is closed, the age of caloric opens. Fulton and Watt belong to the Past—Ericsson is the great mechanical genius of the Present and the Future."

All the papers in our city were nearly as loud in their praises, and as decided in their views of the success of the Ericsson, as the two whose language we have quoted. These representatives of the Press do very well in expressing opinions upon matters that are not scientific: when they touch such questions they get beyond their depth, as the sequel has shown.

So infatuated were the proprietors of the N. Y. "Evening Post," with the "Ericsson," that in an article on the 29th Jan., 1853, it was stated, "they had contracted with Capt. Ericsson for a Hot-Air Engine." One was made to fill the order, but just as it was ready to be put in, it was discovered, that it had to be sent to France to secure Mr. Ericsson's patent there. A new one was to be ready in the month of last September, 1853, but is not ready yet. Probably it was built with too large a cylinder, and it may be taking its turn to get in a smaller one in order to *augment its power*. Well, wonders will never cease.

But then there is a false impression conveyed to the uninitiated in the above letter. It is stated that the small new engines are to augment their power by using *condensed air*. The old large engines condensed the air from atmospheric pressure to 12 lbs. on the square inch. No gain of power can be obtained from condensing the air; it takes as much power to condense the air, as can be obtained from it afterwards. The use of highly condensed air also is not new. See page 559, Vol. 45, 'London Mech. Mag." in the description of Stirling's Air Engine. The only way to economise hot air would be to use it at a high heat, but as this cannot be done, it is all nonsense to attempt the use of it at all.

We have been informed that the *Regenerator*—that wonderful magic contrivance of Ericsson—is not to be used in the new engines. Everything about their construction, however, is kept so mysteriously secret, that persons are not allowed to visit them for fear, we suppose, they might swallow the condenser and run off with the air pumps. This subject will necessarily demand from us more attention, but we have said enough for the present.

Cheap Ocean Postage.

Meetings have been held in all our principal cities for the purpose of exerting an influence upon our government to adopt a system of Cheap Ocean Postage. Elihu Burritt, the learned blacksmith, is the author and active agent in this Postage Reform. He is devoting his life and labors to it, and *Peace Measures*. The object is a universal system of Ocean Penny Postage, leaving the inland postage the same as it is at present. Thus for a letter to England, this reform would reduce the price to the person who receives it—post-paid here—to one penny (two cents). And to a person who receives a letter from England, the price would be three cents instead of 24, as it is at present. This sytem would save much trouble in our Post Office, and be of great benefit to our people. We hope the time is not far distant when it will be carried out. Of course this can only be done by a treaty between our Government and that of England, and other countries, such as France, with which we maintain ocean communication.

Law of Freezing Water---Beautiful Adjustment.

There are many well-known laws of matter, which have the appearance of being divinely provided for the benefit of man. Thus, by a very peculiar law, contrary, as it were, to a general law, the rivers and fountains in our climate are prevented from freezing to any very great depth. The effect of heat upon bodies is to expand, and cold to contract them. If this law was constant in its operations, in respect to water, ice would commence to form at the bottom of lakes, rivers, and brooks, then they would rapidly freeze upwards and destroy every living thing therein. This is provided against by a peculiar law. The water of our rivers and lakes, above 40 degrees, Fahr. when exposed to a greater degree of cold, cools rapidly at its surface, which surface water is condensed and sinks. This process of surface cooling and sinking goes on rapidly until the whole water has been cooled to 40°, which is 8 degrees above the freezing point. Below this temperature the chilled surface of the water, instead of condensing into less bulk, actually expands (becomes lighter) and remains at the surface, and the cold is thus very imperfectly propagated downwards. The surface in the end freezes, and the ice may thicken, but at the depth of a few feet below the temperature is not under 40°, which is indeed high when compared with that which we frequently experience in our atmosphere during winter. If water, in cooling below 40°, obeyed the same law which it does in cooling to that point, our rivers, streams, and lakes, would become masses of ice, upon which our warm summers would make but little impression, and the cheerful climate which we now enjoy would be less comfortable than the frozen regions of the poles. Upon such delicate and beautiful adjustments do the order and harmony of the Universe depend.

The San Francisco.

The fate of this unfortunate steamship is now well known to all our people, but the accounts which have been published respecting the causes that led to her *foundering* at sea, are not a little contradictory. In our opinion those causes were three-fold—1st. She was too deeply loaded, and would not answer the helm; 2nd. she was built with side guards, and these prevented her from steering well, and at the same time served as levers for the mighty waves, to lift her up and strain every part of the hull; the third was, defective engines. They were oscillating, but said to be of good workmanship, —and yet letters have been published wherein it is asserted they did not operate well on the trial trip. The *condenser* is stated to have been defective and was almost useless from the very first. How true this is we do not know, but the report is general. Her paddle-wheels were Morgan's "feathering kind,"—that is, the floats were operated by the machinery, and made to enter and leave the water vertically. It is a surprising thing to us that such wheels were put into the vessel, as they have been condemned by the West India Mail Co., they having been taken out of three of their steamers, and their places supplied with the common radial kind, by which an increase af speed was obtained; thus showing that the old kind was the best in point of efficiency.

We may be mistaken, but to us it appears evident that there was great mismanagement displayed in sending a vessel in her condition to sea. In the trying hours of danger all on board appear to have done their duty, and no fault, we believe, has been found with a single officer. The cholera broke out in a very aggravated form among the families of the private soldiers, owing to their close confinement, by which the air became perfectly poisonous. It was reported at first that the disease was caused by a too free indulgence in pickled meat, but the physician of the vessel has flatly contradicted this report, and attributes it to the cause mentioned—over-crowding in a confined space.

The merchants of our city have been raising a fund to reward the Captains of the "Three Bells," "Antartic," and "Kilby," who acted in so praiseworthy a manner in rescuing the exhausted sufferers. We hope the government will show some proper feeling on the subject; resolutions have been introduced into Congress for the purpose of presenting some testimonial of esteem to these brave men. May they not end as too many such resolutions do—in mere words.

Purifying Fish Oils without Heat.

Take a gallon of crude fetid fish oil, and add to it one ounce of powdered chalk, and stir them well together. After they have been mixed for some hours, or a whole day; add one ounce of pearlashes dissolved in four ounces of water, and repeat the stirring as before. After the oil has been thus treated for some hours, add two ounces of common salt dissolved in a pint of water, and stir well. When left standing still for some days a deposit will be found at the bottom of the vessel. This contains many impurities that have been separated from the oil, which will be found to be much improved both in smell and color.

Repeating the same process several times, taking care to pour off the clear oil before every renewal of the chalk, &c., any oil, however fetid, and however dark in color, will be rendered free from offensive smell, and of a good color.

Sal soda, dissolved in water, about one ounce to the gallon, and stirred among impure and rancid oil, will render it very free from smell and greatly improve its color. The oil should be put on the fire in a brass or iron kettle (of any size according to the quantity to be purified) and the soda lye added when the oil has attained to about 190° Fah. The whole should be stirred together for at least half an hour, and the scum skimmed off as it rises. After this draw the fire from under the kettle, and let it cool and settle. A thick sediment will then fall to the bottom, and when fully settled, the oil may be drawn off, which will be found very greatly improved indeed. This is an excellent way to purify oil that is to be used for the lubrication of fine machinery.

Rancid oils are rendered sweet and clear by agitating them for some days with new charcoal reduced to a powdered state.

Uniformity of Weights and Measures.

We have already directed the attention of our readers to the benefits that would result from the adoption of a decimal system of weights and measures for our whole country. France is in advance of all nations in this respect, so far as it relates to weights and measures, while *our* currency is superior to that of all other nations. In the calculations of angles, we use the sexagesimal division, while modern French mathematicians use the centesimal. In our currency we show good sense; in mensuration, nonsense. We understand that this subject occupied part of the deliberations of the American Association for the Advancement of Science in 1851, but since then we have heard nothing from that Body on the topic. The Smithsonian Institute should evoke the influence of Congress in advancing the interests of our country by adopting the French system, which cannot be improved. Let us use every sensible system, let it come from what quarter it may—anything to benefit our people.

Application of Chloroform.

A corresponding physician of "Nelson's American Lancet," states that he has applied chloroform successfully in cases of Neuralgia, Tic Douloureux, Tetanus, &c. In a case of Tetanus he applied lint saturated with chloroform along the whole spine, and covered it with india rubber cloth; this was attended with the best results. In cases of toothache, he had found a remedy in filling the cavity with cotton saturated with chloroform, and renewing it until the sensibility of the nerve was touched.