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The Effects of Wind and Water on Climates.

In a short article a few weeks since, we described the peculiar influence of the "Gulf Stream" upon the climates of Western Europe, and presented the opinion entertained by some, that the waters of the Amazon river were the cause of this wonderful ocean current. In Lieut. Maury's new volume, "The Physical Geography of the Sea," we find this question discussed with rare ability, and with a profound knowledge of the subject. He compares the Gulf Stream to a water heating apparatus for buildings. "The warm waters," he says, "which are confined in the Gulf of Mexico, is such a heating apparatus for Great Britain, the North Atlantic, and Western Europe." Instead of attributing this stream to the waters of the Amazon, he says, "the furnace is the torrid zone, the Mexican Gulf and Carribean Sea are the cauldrons; the Gulf Stream is the conducting pipe, and its heat is taken up by the genial west winds, and dispersed throughout Britain and the west of Europe." In another place he says, "It is the influence of this stream upon climate that makes Erin the Emerald Isle, and clothes the shores of Albion in ever-green robes; while in the same latitude on this side, the coasts of Labrador are fast bound in fetters of ice." In an article in the *American Journal of Science*, Vol. 45, Mr. Redfield says, "in June 1831, the harbor of St. John's, Newfoundland, was closed with ice; yet, whoever heard of the port of Liverpool, 20° further north, being closed with ice, even in the dead of winter."

It is, indeed, a peculiar arrangement of Him who rules the winds and the waves, that the temperate climates of different countries in Europe are dependent on a hot water sea basin, situated near the American continent, and that this hot water should pass by large tracks of countries on this side of the Atlantic, leaving them bound in icy fetters, and dispense its favors to nations on the other side of the ocean. But so it is, and it requires the winds as well as the waters to distribute those genial favors to western Europe. During the past winter this was displayed in a remarkable manner. For about four weeks easterly winds had prevailed in Great Britain and Ireland, during which period the warmth of the Gulf Stream was prevented from being wafted to those coasts. The result was, that the most intense cold within the memory of man was experienced there; ice formed in large quantities on the sea coast, and, as a world's wonder, the navigation of the rivers Thames and Mersey was greatly obstructed, and the port of Liverpool almost ice bound for some days. In Ireland the effects of this severe cold was such, that thousands upon thousands of small birds—larks thrushes, &c., &c.—which do not migrate, were found dead in the fields and on the highways. In Scotland, the effects of this severe cold were more wonderful still. Hugh Miller—that eminent geologist and keen observer—in the *Edinburgh Witness* says, "the present intense frost—coincident at new moon with a stream tide—has killed many of the littoral shell-fish around our shores, and they now lie by thousands and tens of thousands along the beach. On the beach below Portobello, and for at least a mile on the western side of the town, they are chiefly of two species, *Solen Siliqua*, or the edible spout fish or razor-fish, and *Macra stultorum*, or the fool's cockle, both of them molluscs, which burrow in the sands above the low-water line of stream tides. The spout-fishes, when first thrown ashore, were carried away by pail and baskets full by the poorer people; and yet of their shells enough remain in the space of half a mile to load several carts; but the fishes themselves, devoured by myriads of birds, chiefly gulls, have already disappeared. It is probable that both species will be less common on our coasts than heretofore, for years to come;

and their wholesale destruction by a frost a few degrees more intense than is common in our climate, strikingly shows how simply, by slight changes of climate, induced by physical causes, whole races of animals may become extinct. It exemplifies, too, how destruction may fall upon insulated species, while from some peculiarity of habit, or some hardness of constitution, their congeners escape."

Had the genial west instead of the dry east winds, constantly prevailed in England during the last winter, the atmosphere of that country would have been moist and warm as usual, and no such severe frosts as that described, would have been experienced. From these new facts, we can form some new and more correct ideas of the effects of winds and waters upon climates; and how they affect the destiny and welfare of nations, and living creatures, on the land and in the sea.

Discovery in Painting with Light.

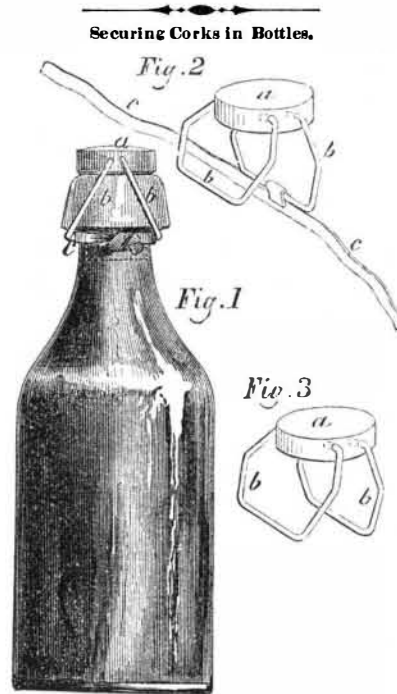
On another page will be found a most interesting article from J. F. Mascher, Esq., of Philadelphia, on new and important discoveries made by him in prosecuting some optical experiments.

Photography has now become one of the most attractive and extensively practiced arts. It is but a few years since the discovery of the Daguerreotype was made in France—we all remember it well, and the wonder that was excited among us when it was first chronicled to the world that a Frenchman had succeeded in taking portraits by the sun. Since that period, the art has flown on the wings of the wind over all nations. There are now hundreds of artists in our principal cities; almost every village has its sunlight limner, and there are quite a number who travel from place to place with movable galleries, to rescue the charms of our village beauties from oblivion, by placing them upon enduring tablets. We look upon the art of photography as one of most delightful and humanizing. It has placed within the reach of the poorest, the means of conveying to one another, or to remote years, the likenesses of those they have loved and esteemed. This was a privilege which but recently belonged only to the more opulent, who possessed the means to employ the portrait painter. Great improvements have been made in the art within a few years; photographic portraits are now taken, surpassing in correctness the skill of the most practiced portrait painters. And it is not to be supposed that we are at the end of improvement yet; indeed the article referred to on another page, shows us that a new and expansive field for improvement has just been broken.

Coal Burning Locomotives.

The subject of employing coal as a substitute for wood fuel in locomotives, is a question of great importance. Many locomotives on various railroads, use no other fuel now, and the time is not very far distant when every railroad in our country must stop using wood. It is believed that many improvements have yet to be made in coal burning locomotives, hence every new one deserves attention. In the list of claims this week, it will be observed that a patent has been granted to Josiah J. Dutcher, of New Haven, Conn., for improvement in coal burning locomotives, embracing three separate claims. One covers an inverted conical water chamber in the fire box, which communicates by pipes at its bottom with the side water spaces, and at its top with the usual water chamber of the boiler, thus keeping up a continual circulation, as this cone is imbedded in the fire, and subject to the most intense heat. It is also believed, that as this cone is inverted, it will prevent the fuel from packing close, and thus allow free draught through the fire at all times. The patent embraces other features, which could not be clearly described without engravings. At a meeting of the "General Railroad Association," held in the Astor House, this city, on the evening of the 10th inst., the subject of using coal in locomotives was partially discussed, and a resolution adopted appointing

a committee, to report at the next meeting respecting the introduction of coal and coke, and the construction of engines capable of using such fuel. This exhibits a proper spirit on the part of the Association, and as D. C. McCallum, Esq., Superintendent of the New York and Erie, is chairman of this Committee, we have confidence that the business will not be suffered to sleep, as is too often the case with members of associations, that provide no means for paying the expenses of those who perform extra duties.



The annexed engravings represent an improvement for securing corks in bottles, for which a patent was granted to T. A. Ashburner, of the city of Philadelphia, Pa., on the 13th of last month.

Figure 1 is a view of a bottle corked on the patent plan; figure 2 is a view of one of the buttons provided with a strip of tin to prevent it from flying with the cork when the bottle is opened; figure 3 is a similar button without the tin strip. Similar letters refer to like parts.

The nature of this invention consists in the peculiar device hereafter to be described, to be applied over the top of a cork in a bottle to prevent it from flying out under inward pressure, the same consisting of a button provided with two stirrup straps which are hinged to said button, so that they catch and hold under the projection on the neck of the bottle to hold in the cork, and may be swung out to release the cork, to let it escape, as may be desired.

*a* is a round button of about the size of the cork in the bottle, and made, for convenience, of wood, though it may be made of metal if found essential; *b b* are two stirrups made of wire bent up somewhat in the form of a buckle frame, and the two ends of wire thus bent up are sprung apart and inserted, one on each side or edge of the button near its center, in suitable holes therein, so that the spring of the stirrup itself holds it to the button, but may swing thereon. It will be perceived that a button thus provided with the stirrups, as in figure 1, has no tendency to leave the bottle, whilst if desired to open the bottle it is readily removed by slipping one of the stirrups out from under the projection. Any inward pressure against the cork forces it against the button, but as the stirrups pass from a central position in the button to the sides of the neck of the bottle, the tendency is to draw the stirrups closer up to the projection, or in other words to hold the harder. *c* is a strip of tin or other metal, hinged by a dead eye to one of the stirrups. This being for the double purpose of making the button a fixture on the bottle, viz., to prevent it from being lost or wasted, and so that the cork may be allowed to fly whilst the button remains attached to the bottle. It is only necessary to slip one of the stirrups from the projection on the bottle to remove it from the cork, and either of the plans as shown in figures 2 and 3 may be adopted. Many devices have been essayed for securing corks in bottles, but al

of them involve expense, intricacy, or difficulties in placing or removing them from the bottle.

More information may be obtained by letter addressed to Mr. Ashburner.

Steam Carriages for Common Roads.

J. K. Fisher proposes, through the *Westchester Journal*, to build a steam carriage to run between certain villages in Westchester County and this city, on the common roads. He offers to pledge a gallery of paintings for the success of the undertaking, and he wishes the residents of those villages to form a joint stock company for the purpose of providing funds to construct as many of those carriages as may be found necessary to try the scheme. We really hope the people of the Westchester County villages will form such a company, and if they can be secured (as they should be) against loss, by the proposer, they should embrace his proposition. We have said—and are positive—that steam carriages cannot pay on our common roads; also that the accounts which have been printed of the performances of steam carriages in England were more highly colored than were those of the hot-air engines among ourselves, but if those who think they know better than we do about such things are willing to guarantee their success and provide some means to secure the stockholders in case of failure, who can find fault with the proposition? It is a fair one, and we, above all other persons, hope it may be put in practice, in order to test the question by the only method of convincing without controversy.

Shawk's Steam Fire Engine.

The *Cincinnati Commercial* of the 31st ult., contains the report of a committee of citizens to witness the performances of a new steam fire engine, named "Young America," and built in the machine shop of Abel Shawk, and according to his patent. In this report it is stated, that in twelve minutes exactly, from applying the match, the engine commenced its work, and the pumping of water began. The first experiment was made by using a nozzle one and one eighth inches in diameter, playing horizontally, the water being thrown 210 feet. The next experiment was with a nozzle one and a quarter inches in diameter, in the same direction. Upon actual measurement, it was found that the water had been fairly thrown a distance of two hundred and twenty-nine feet and four inches. It also forced a stream of water through the 1 1/4 inch nozzle ten feet over the tower of the Mechanics Institute, 150 feet high, and had the wind not been so strong, it would have thrown the stream higher still. The Committee, after a number of experiments, unhesitatingly declared, they were perfectly satisfied, and considered the engine a triumph of which Cincinnati might be proud. We have been informed that this engine is intended for this city.

What is a Tun Weight of Coal?

The *Philadelphia Ledger* of the 10th inst., informs us that the U. S. District Court in that city, decided on the day previous, that the legal weight of a tun of coal is 2,240 lbs., and that coal dealers have no more right to give less weight than grocers to give less than 16 ounces for a pound.

The Supreme Court of Pennsylvania decided, a short time since, that according to the laws of that State, 2000 lbs. were a legal tun weight, and no more could be exacted by a purchaser. We believe that only 2000 lbs. of coal have been given for a tun weight, in this city, for some years past, thus making the customs of coal dealers here conform with the laws and customs of Pennsylvania. These State customs and laws, being at variance with the Federal laws, must be abandoned, as the Constitution of the United States gives to Congress the power to fix the standard of weights and measures. Let each coal purchaser hereafter see to it, that he gets 2240 lbs. for a tun, as his just due according to law.

A breech-loading cannon was recently tried with considerable success at the Charlestown (Mass.) Navy Yard.