

The Gulf Stream.

TO LIEUTENANT MAURY, U. S. N.

DEAR SIR:—A few evenings since I was engaged in conversation upon a subject in which I had previously devoted some considerable thought, and on which I had proposed to lecture, but other things having occupied my time I have not done so; but as you, as an authority, were appealed to during the conversation, pardon me for addressing you upon this subject. You have taken a deep interest in making soundings of the ocean and a general chart of its waters; you may, therefore, be better able than any other man to say whether the theory entertained by me for the cause of the Gulf Stream is correct. If you think it worth your while to examine into that theory and understand what it is, you would oblige us. In order for you to do so, it is proposed you should take a map of the world, and examine the position of the rivers of this continent lying between the Alleghanies and Rocky Mountains, those of Mexico, and in our southern States that border on the Gulf of Mexico, those of Central America and the northern part of South America, and observe into what they flow, and then the narrow gorge or outlet between the coast of Florida and the island of Cuba. These innumerable and hundreds of thousands of miles of rivers, some of the largest capacity and greatest length of any on our globe, throw their accumulated waters into the Gulf of Mexico, and have to make their exit to the ocean, dammed up as they are from escaping in any other direction by the long reach of the Antilles, which by their own heads, or by their sunken rocks, affords a complete barrier to their passage in any other way than through this narrow gorge, and then ask yourself the question whether this great accumulation of waters in the Gulf of Mexico, subjected as they must be to the tropical heat of the sun through the Gulf, having to flow so great a distance, and presenting it to so large a surface, subjected to the heat of 90° to 100° or more, might not explain the fact that when they arrive off the eastern coast of Florida they should have attained to a degree of heat of 76° (that being the heat of the waters in the Gulf), and that they should rush through that gorge with the velocity they do, every particle of which is ever and continuously pushed on by the constant rush of these rivers. Then take into consideration that there is a tide setting into the Caribbean Sea, commencing at Cape St. Roque, on the north-east point of South America, which continues through that sea and through the Gulf of Mexico to add to its waters, after being subjected to the same tropical sun, through the vast extent of this sea and Gulf and along the coast of South America, to be added to those of the innumerable rivers that flow into the Gulf, and all to have their outlet through the narrow space between Florida and the island of Cuba. It has seemed to me that this is a proper solution of this great phenomenon, and the meeting of these heated waters with the salter and colder waters of the ocean is the occasion of the phenomena that takes place at this outlet of them, walled up, as they are, between the coast on either side. In looking at the map and considering attentively these facts, and your superior knowledge of the position of things there (for I have never been there to examine them), you may be able to confirm or disprove that such causes could produce such results.

Again, look at the map of the waters that run into the Mediterranean Sea, and what is the course they must take? We understand it has been ascertained that while the water is, apparently, constantly flowing into that sea from the ocean, there is an under current that flows into the ocean, shooting, as it were, under it, producing, till that current was ascertained, the unaccountable phenomenon of inward flow of the ocean through the Straits of Gibraltar, which led the scientific to suppose there must have been sufficient evaporation going on by the Sun to carry off these waters, accumulating, as they apparently did,

from so many sources. We understand there is a tide commencing at the Bay of Biscay, (supposed to be occasioned by the trade winds) running south on the coast of Africa till it meets with a current running from the Cape of Good Hope, occasioned, as is supposed, by the monsoons; and perhaps, I may add, a current round Cape Horn, both of which are, perhaps, occasioned by the waters that flow into the Pacific on the western coast of South and North America, and the southern and eastern coast of Asia, which, joining with the current as it shoots off the north-western coast of Africa, strikes the north-eastern coast of South America at Cape St. Roque; then, you will perceive by the formation of that coast, it would lead this current into the Caribbean Sea, and meet the waters that flow into the Gulf of Mexico. Now, keeping your eye on the course of the Gulf Stream, the question has arisen in my mind whether, after striking the coast of Europe, it does not continue down that coast till meeting with the waters that flow into the Bay of Biscay and the waters of the Mediterranean, as they arise from their submersion, and continue on in their course, making thereby the great circle of the waters, and accounting for the immense currents that are constantly circulating through the ocean.

I have heard that the influence of the Piscataqua river is felt in the ocean twelve miles from its mouth. You may know, perhaps, in the Exeter, Newmarket, and Durham rivers there are what are called the great and little bays, containing a number of thousands of acres, which have to be filled and emptied at every rise and fall of the tides, which, together with the waters which come from the other branches of that river, probably producing its rapid flow—so rapid that it never freezes over. The question has arisen if so small a river and bays, comparatively speaking, can produce such effects that their influence can be felt so far out at sea, and other rivers on the coast are felt in a similar manner, what may or what must be the effect of so large a number of rivers of such extreme length, many of these three or four thousand miles long, and bearing on their bosoms, as has been expressed, whole forests of trees, and acres of land sunk beneath their waves? and these continue ever flowing, and are, without cessation and without ceasing, pushing before them, for an eternity of ages, the waters that immediately precede them.

Taking this view of the subject, the question arises, will these facts, in your mind, explain the currents of the ocean? and will the observations you have made in your valuable surveys confirm this theory, and enable our navigators better to understand the currents, counter currents, and eddies which it is presumed they meet with in all parts of its waters? G. W. F. MULLEN.

Boston, Mass., August, 1858.

[The above letter was sent to us for publication in the form in which it now appears. We have not made any alterations, even in the heading, as it contains so much that is new, that we thought the author should state his theory exactly in his own way. Should Lieut. Maury think it worthy a reply or comment, we shall be happy to publish that also.—Eds.]

The Color of Wall Paper.

MESSENGERS, EDITORS.—On page 320 of Volume XIII. of the SCIENTIFIC AMERICAN, I find an article on the poisonous qualities of certain green wall paper, where arsenic was made use of in its manufacture, causing, as was supposed, the air of the room to be impregnated thereby. I think I can say a few words upon this subject, which, if they do not satisfy you as to the real cause, may assist, by further research, to clear up the case.

But few persons have any idea of the baneful influences which different colors have upon the mind and body. Some two years ago, I noticed in one of the New York papers the account of a physician, who had for months failed to make any change in the health of a

whole family he was attending, all of whom were affected alike with a stupor of mind and languid state of the nervous system. At length, upon entering the room one day, he observed the dingy, yellow color of its walls. This struck him very forcibly, and he immediately caused them to be whitewashed, when to his surprise and satisfaction, he found, upon his next visit, the patients who had been confined for months, almost entirely recovered. No more physic was necessary.

I well know the depressing effect which the color of my office has upon my mind and body. I cannot sit down with any satisfaction, and I often fall asleep in five minutes when I attempt to read; thus causing stupor and a languid state of body. The office next door, being whitewashed, has no such unpleasant effect, everything being much more cheerful, and tending to promote lively spirits. The color of my office is a light green, made so on account of my eyes for ease in operating upon the mouths of patients. Who has not experienced an elevation of spirits when the sun shines out after a dark and gloomy storm? You well know the effect it has upon organic matter—the animal and the vegetable worlds. After the dark night, all hearts leap for joy on the dawn of the bright morning. Pure white light is necessary to health, and more attention should be paid to the coloring of the walls of rooms for the sake of promoting it. W. G. A. B.

Dover, Del., August, 1858.

Submarine Cables.—Who is the Man?

A correspondent of the New York Tribune asserts that J. J. Craven, a Newark mechanic, was the first to apply, in 1846, gutta percha to the covering and insulating of submarine electric wires, and claims for him a share of the praise now so freely bestowed upon a certain few whose names have been brought prominently before the public in connection with the Atlantic Cable. This is a mistake. Mr. Craven made application for a patent for the application of gutta percha to the covering of wires in the summer of 1848; and the patent was refused, on the same ground that one was refused J. Reynolds, of this city, for the same purpose, some months previous. We do not know who was the first to apply this important non-conducting material to telegraph wires, but we do know that as early as 1846, before gutta percha had been known to any useful extent in this country, Mr. Reynolds constructed a machine for insulating wires, one or more in number, with india rubber softened by camphene, and macerated by forcing the gum so softened through a sieve-like die connected with the same machine in which the insulating was effected. Samples of iron and copper wire thus coated were shown to Professor House, the inventor of the printing telegraph, Mr. J. Richards, the constructor of the House instruments, and others. In the autumn of 1846-'47, two lines of wire were thus insulated with a compound of india rubber and sulphur for Mr. Hugh Downing, the President of the House Telegraph Co., for connecting this city and Philadelphia by telegraph; and in the months of April, May and June, 1848, a large amount of small iron and copper wire was insulated and covered with gutta percha by Mr. Reynolds, for persons connected with the Morse lines; and in July of that year four miles of No. 9 iron wire were insulated with a double coating of gutta percha by the same gentleman, a part of which cable was placed at the bottom of the river between New York and Jersey City. The persons for whom this cable was made were supposed to be in the employ of Professor Morse. In the years '55, '56, '57, ten miles of No. 9 wire on reels of one mile in length were covered with a double coating of gutta percha by Mr. Reynolds, and a great quantity of No. 16 with a single coating.

The machinery for performing these results is of the most ingenious character, and a patent for it was applied for in 1848, but on account of Mr. Reynolds declining to make a disclaimer, the patent was not obtained until

1856, when, through our Agency, this patent and four others were secured for working gutta percha into useful articles. We also secured a patent for the same inventor in 1850 for covering wire.

In reference to the claims of Samuel T. Armstrong, who has also received a prominent notice in the Tribune for his supposed agency in insulating wire with gutta percha, we would state that all the useful machinery ever employed by him for this purpose was invented and made by Mr. Reynolds, and operated by Lorenzo Higgins, of this city.

Those who are so willing to rush into print, claiming the honor of great discoveries, should be careful not to spread too much canvas at the start, as they are liable to have their honors ruffled, and the wind finally taken out of their sails.

The Potato Rot.

In regard to the Henderson insect theory and cure of the potato rot, the Country Gentleman remarks:—

“Now if the theory that the potato rot is caused by this insect is correct, there are these difficulties, which must occur to any one acquainted with entomology:—

1. The insect referred to has always been known in this country, and was probably quite as numerous fifty years ago as it ever has been since. From the earliest times the farmers have found it infesting their potato fields, and have consequently given it the common name of the “potato bug.” Why did it never cause the rot until so recently?

2. The insect referred to has never infested Great Britain; the only examples of it seen there, so far as we can ascertain, having been carried thither as curiosities in collections gathered in this country. Why did the potato rot appear there? Could the devastations of the insect in the crops of America have caused the rot that carried off all the potatoes in Ireland one or two years before?

Lest there might be some mistake on our part, we submitted this subject to Dr. Asa Fitch, who will surely be received as an authority, and whose endorsement we have for the statements in the last two paragraphs.”

In answer to these inquiries, we would only say that the *Phytocoris* has not been known in this country as causing the potato rot, and the insect that farmers have known from the earliest times as the “potato bug,” is the *Aphis*, and not the *Phytocoris*. Mr. Smee has observed this insect in Great Britain, and we are not aware of any entomologist in England who would look upon a *Phytocoris* as a curiosity. We think that were Dr. Fitch, with his great entomological knowledge, to investigate the matter carefully, he would do much good, both to practical farmers and pure science. The *savant* can never be better engaged than when verifying, by attentive observation, the discoveries of only practical men, and at the same time separating truth from the weeds that often surround it. Perhaps the Dr. may be induced to reconsider what is apparently an unfavorable verdict, and if he does, we shall look anxiously for a report of his investigations.

In confirmation of Mr. Henderson's statements we publish the following communication:—

MESSENGERS, EDITORS.—Now is the time for each one to verify for themselves, by experiment, the value of Mr. Henderson's statements in reference to the cause of potato rot, as set forth in a late number of the SCIENTIFIC AMERICAN.

I confess I was led to experiment because the SCIENTIFIC AMERICAN indorsed Mr. Henderson's statements, which I did simply as follows:—I took a perfectly healthy piece of vine and placed it in a bottle of water, and put thereon a few of the bugs, and set it out of the way of other insects. In twenty-four hours half of the leaves of the vine had all the usual symptoms of the disease. Seeing is believing; and as at the present moment each one can try an experiment, they should do so, and make the result as widely known as possible. The information is too important to be neglected. Yours, truly,

WILLIAM CLEMSON.
East Woburn, Mass., September, 1858.