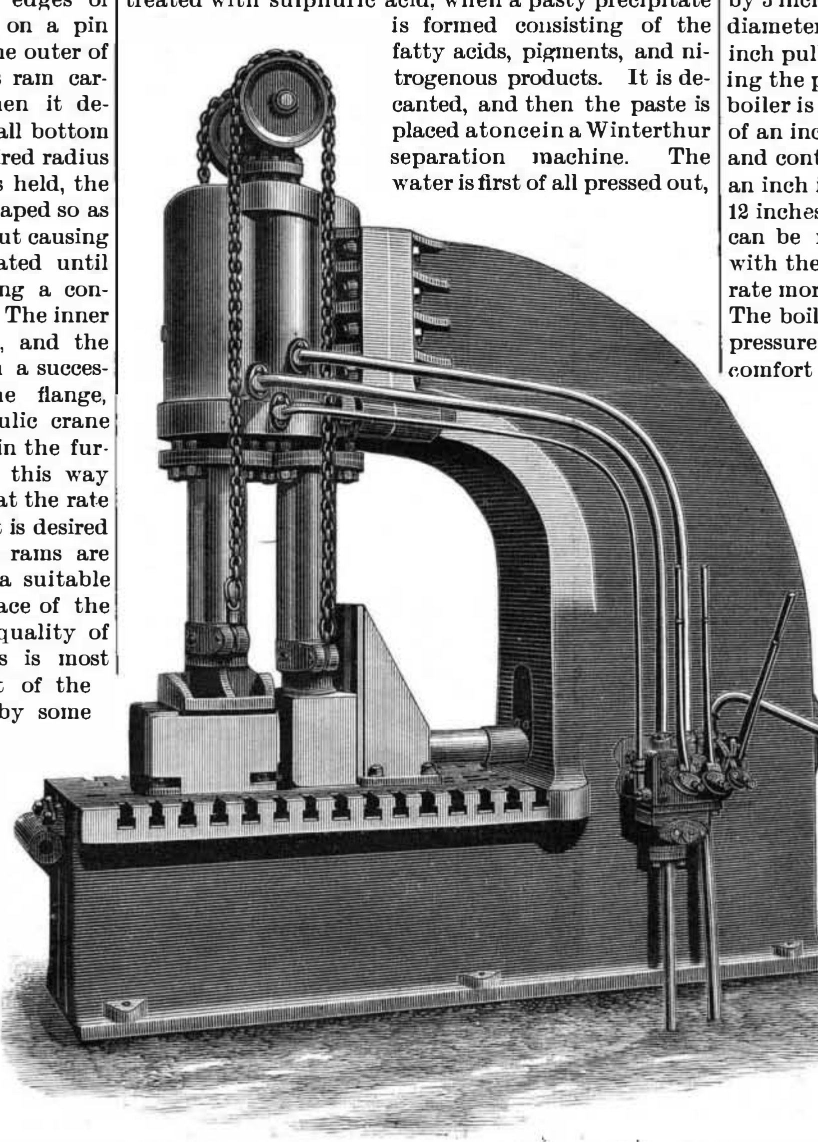
HYDRAULIC FLANGING MACHINE.

In this machine, instead of the whole plate being flanged in one operation, a progressive action is adopted; in fact, by the combined action of three hydraulic cylinders, the action of hand flanging is very closely imitated. The mode of working is extremely simple. When flanging the outer edges of circular boiler fronts, the plate is centered on a pin so as to bring the edge under the ram of the outer of the two vertical hydraulic cylinders. This ram carries a closing or nipping block, which when it descends holds the plate firmly against the small bottom block or die, which is formed to suit the desired radius or curve of flange. While the plate is thus held, the inner ram descends, the tool on it being shaped so as to turn over the edge of the plate without causing undue stress, these operations being repeated until about 8 feet or 9 feet of flanging—this being a convenient length to heat at one time—is done. The inner ram is then withdrawn into its cylinder, and the horizontal ram brought forward. This, with a succession of short rapid strokes, squares up the flange, and the plate is then lifted by a hydraulic crane placed above the machine, and deposited in the furnace for another length to be heated. In this way flanges 8 inches to 9 inches deep are finished at the rate of 90 feet to 100 feet in nine hours. When it is desired to flange furnace mouths, the two vertical rams are coupled together by a block or die, and a suitable mould substituted in the bed plate in place of the blocks used in flanging the edges. The quality of the work turned out by these machines is most excellent, and they are now used by most of the leading marine boiler makers, as well as by some of the large steel companies. In general terms, it has been stated by a large user that such work as steel boiler fronts with flanges 7 inches to 8 inches deep is flanged at four times the speed and at one-sixth the cost of hand work. When it comes to 9 inch or 10 inch flanges, hand work is, of course, out of the question. In flanging dome ends and similar work, the machine will do five times as much work in the same time at one-seventh the cost. All the flanges for from sixty to seventy large boilers per annum can be made with one machine, assisted with three ordinary fires for odd flanging. It should be added, however, that this is not the only saving, since the putting together of the boiler is much facilitated by the accuracy of the various parts when flanged in dies by hydraulic pressure. This machine is made by Fielding and Platt, Gloucester, Eng., and is, says the *Engineer*, one of the exhibits at the London Inventions Exhibition.



IMPROVED HYDRAULIC FLANGING MACHINE.

A Life Saving Canal Horse.

A correspondent of the New York *Sun*, writing from Creek Lock, N. Y., October 16, says: Barney Dugan's canal horse Old Joe has saved two persons from drowning within the past three weeks. The first rescue was that of a girl named Annie Ginley. She was playing on her father's boat at Big Basin. As Dugan's boat and Old Joe came along, the girl fell into the canal. Before any other aid could be given to her the horse plunged into the water, seized the girl's dress in his teeth, swam with her clear across the basin, where the bank was low, and clambered out with her. He refused to swim back, and had to be taken from the tow line and driven a mile back to a bridge.

The second rescue was that of the boy who drives him on the canal. The boy was wrestling yesterday with another boat boy on the tow path, and was thrown into the canal. He couldn't swim, and there was no one near him who could. While a boatman was looking for a pike pole, Old Joe jumped into the canal and brought the boy safely back to the tow path.

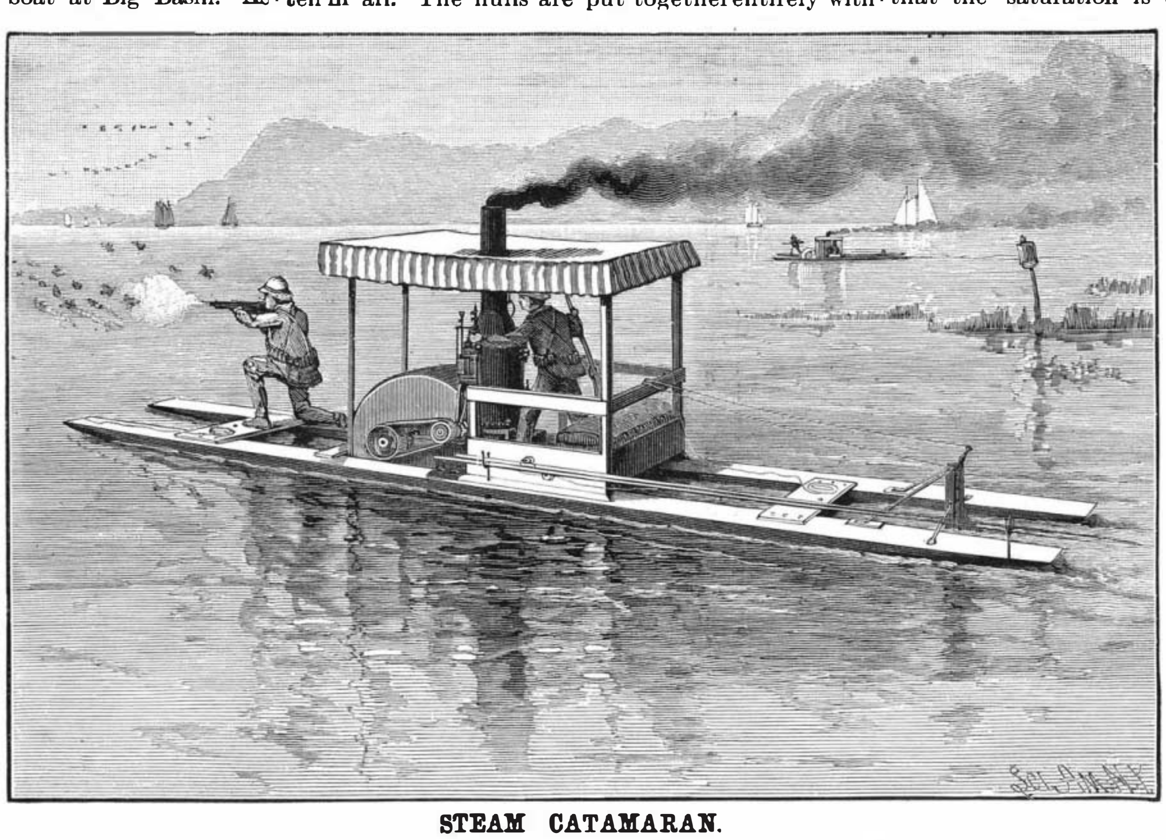
FANCY baskets are made of the pulp of wood which are superior in every respect to those made of any of the ordinary materials now used. They are light, strong, and handsome. And they are bound to become the ladies' favorite work baskets. What next? Trunks, we suppose, will next take the field. And why not?

Extraction of Soap.

According to Professor Lunge, about 55 to 60 per cent of the fatty acid originally contained in the soap are now recovered in the Swiss works out of the waste soap liquors, which, in former time, were allowed to run away without utilization. The waste soap baths are treated with sulphuric acid, when a pasty precipitate is formed consisting of the fatty acids, pigments, and nitrogenous products. It is decanted, and then the paste is placed at once in a Winterthur separation machine. The water is first of all pressed out, then the pressure is increased while heat is applied at the same time, finally the remaining mass is extracted with bisulphide of carbon or petroleum spirit. The fatty acids obtained are of good appearance, and, of course, can be used again in the manufacture of soap.

STEAM CATAMARAN.

The steam catamaran shown in the accompanying engraving is designed to be used in shoal water where propeller boats could not run; it is 26 feet long by 4 feet wide over all. Each hull is 10 inches wide by 8 inches deep, and has five watertight compartments, or ten in all. The hulls are put together entirely with screws and bolts, thus making a strong and safe life-preserver that will hold weight according to capacity, whether right side or bottom side up. Another important advantage gained by this method of construction is the stiffness—a person stepping from one side to the other hardly changes the position of the hulls. The paddle wheel, placed near the center, is 24 inches in diameter, and has four buckets, each 3 by 24 inches. The wheel shaft is hung in bearings, which can be raised or lowered so as to take more or less water against the buckets, or can be raised clear of the water when it is desired to use a sail. The steam cylinder is 2 by 3 inches. The pulley on the engine shaft is 5 inches in diameter, and carries a 3 inch belt, passing over a 14 inch pulley on the paddle wheel shaft. A box inclosing the paddle wheel keeps all the machinery dry. The boiler is made of the best steel, and is three-sixteenths of an inch thick, 14 inches in diameter, 24 inches high, and contains 80 seamless brass tubes, three-fourths of an inch in diameter by 12 inches long. The firebox is 12 inches high, with one-half inch water space. Steam can be raised from cold water in nine minutes, and with the exhaust entering the stack the boiler will generate more steam than can get through the cylinder. The boiler is tested to 200 pounds, and the working pressure is 100 pounds. This craft is shaped more for comfort than high speed, but the manufacturer, Mr. Geo. F. Shedd, of Waltham, Mass., proposes to construct the next one so as to combine both.



STEAM CATAMARAN.

Naphthalene as a Wood Preservative.

One of the exhibits in the Mining Exhibition at Glasgow is the naphthalene process for preserving timber, as patented by Mr. Henry Aitken, of Falkirk. The *Journal of Gas Lighting* says: The process is not only ingenious and apparently effective, but is noteworthy as offering a useful application for one of the most embarrassing residuals of gas manufacture. Even as purchasable from tar distillers, naphthalene is cheap for this purpose. The inventor claims many advantages for his process as compared with any other device for the protection of timber from decay. Among others, it is stated that wood to be preserved in this way may be treated while green and unseasoned, and may afterward be painted and varnished, neither of which observations applies to the creosote process. Of course, the test of a wood preserving process is time; and in this case only four years have elapsed since the process has been placed upon trial. During this period, however, not the slightest sign of decay has shown itself, either in the poorest description of white wood fencing treated by this system or in timbers placed below ground, where dry rot attacks the best seasoned timber, and renders it worthless in from three to four years. As an experiment, three years ago, timber from the wet log has been naphthalened, and made up into three railway wagons for the North British Railway, and these wagons have been running ever since without the slightest change. The plant required is said to be inexpensive, and the process is easily worked. The naphthalene is melted in a vessel capable of being tightly sealed, and the wood is laid in it, remaining until experience shows that the saturation is complete. The temperature at which timber is treated is kept as low as possible, so as not to injure the fiber. For firs and pines the naphthalene may be heated to 190° or 200° Fah.; but for oak and hard woods in general a temperature of 180° to 190° Fah. is sufficient. Vacuum and pressure may be employed in naphthalening as in creosoting; but so far as experience goes, neither is necessary. Seasoned wood may be naphthalened without losing its hardness or color by placing it in a solution of naphthalene in spirit under pressure. When withdrawn, the spirit evaporates, leaving the naphthalene in the wood. Wood may, if desired, be partially treated by exposure to naphthalene vapor. The action of the naphthalene is to destroy all albuminoid compounds in the wood, leaving it dry and clean to handle, and with only a faint aromatic smell.

TO REMOVE DANDRUFF.—Take of borax one drachm, rose water one-half pint, tincture of cantharides one-half drachm, cologne water one-half pint. Mix, and apply night and morning.

Practical Hints on House Building.

In one of our exchanges we find the following useful suggestions on the alteration of old houses or construction of new ones. We do not know if the hints here given are those of an architect or of some practical housewife, but the advice is none the less useful whether they emanate from the practical woman or the professional architect.

In most cases a house should be so planned, built, and placed as to afford facilities for enlargement, and without making a thoroughfare of any old room to get to the new part of the house.

For a country house, a porch is desirable, almost essential, and big enough for children to play on, and to swing a hammock in.

If you can't have a dry cellar, don't have any, but build your house on the ground level, on a concrete bed. Cellars can be made dry by concreting floor and walls, and by giving the floor an inclination toward a drain in one corner. A trough-shaped gutter may be run in the concrete when fresh, so as to make an admirable water course for any water that may get in by bursting water pipes or from floods. The cellar should be as light as you can make it. Dark cellars get damp and dirty. Light ones are apt to be dry, clean, and sweet.

If you are going to have water pipes throughout the house, see that you have plenty of water clear up to the top, for cleanliness and for use in case of fire. An upstairs sink, where scrub water can be drawn and discharged, saves many a step and tends to keep things clean.

All the rooms on the floor should be of the same level. This up-a-step and down-a-step business is a nuisance.

Many a small house is spoiled through not having enough hall room—no place to put a hat rack or the baby carriage or lots of other things which take up room, and which do get put in a hall or an entry where there is one.

It would be a very handy thing if at least one dimension of each room was an even number of carpet widths. Carpet comes either twenty-seven or thirty-six inches wide, and rooms can generally be multiples of at least one of these dimensions.

The parlor may be more nearly square than the dining room. It should, if possible, be so planned as to leave room for a square piano against an inside wall. A piano placed against an outside wall gets out of tune, and changes with the outside temperature.

The dining room should be considerably longer than it is wide. If you have to "skimp" on the size of your dining room, you had better shave off the width of it and arrange for room lengthwise. The room must be wide enough for a four foot table and guests on each side, and passage way behind the guests; that is, a fixed width, no matter how many are sitting down to the table; but the table has to be lengthened to accommodate the guests, and there should be lengthwise room.

A square kitchen seems the handiest to the housewife, and her ideas should be consulted—and carried out—as to this room, if as to no other. Don't "skimp" the kitchen as to size. A summer kitchen, even if it is only a shed, will help keep the house warm in winter and cool in summer. A kitchen store room, where the women folks can keep many of their supplies, and save themselves the time and trouble of going down cellar or up attic, will be a daily blessing in most families. A butler's pantry or china closet between kitchen and dining room is a good investment if you can afford it. Plenty of expensive houses are built without it, and would be better with it.

The bath room should be accessible without having to pass through any other room. It is well to have it communicate with one of the bedrooms, or better yet with one on each side, but there should be one door opening into an entry.

Set it down that winding stairs are an expensive, inconvenient, dangerous, and inartistic arrangement. Straight flights are equally dangerous and more inartistic. Flights with right-angled turns at landing ways give a fine effect and do not trip one up, and children cannot fall far when they start from the top. Where there are little children or very old people, "halved steps" are good things, that is, the staircase is composed of two separate stairways, each half the width, each having full height of riser, but the treads arranged so as to alternate or break joint. A child or very old person, instead of having to take seven inch steps, can walk up the center of the flight with the right foot on the right hand set and the left foot on the left hand set, and take only three and one-half inch steps; or two persons can pass each other, each taking the regulation steps. This is not theoretical, but is a good thing which is in actual use in some old English houses.

Communicating rooms are a great convenience in most families. It is very easy to shut off the communication where it is not needed; but those houses where all the rooms are isolated, and open only into the halls, are about as inconvenient as those in which some of the rooms are of necessity thoroughfares.

A NEW INDIVIDUAL TELEPHONE CALL.

Our engraving illustrates the salient features of a new individual telephone call now in regular use in England, and recently introduced in this country. In this invention well known principles have been applied in a simple and effective manner.

A coil of wire, A, of not more than ten ohms resistance, is supported on a pivot, B, journaled in a frame, C, which also supports a horseshoe magnet, D, whose poles are surrounded by the coil, A. A pendulum, E, secured to a pivot, B, is weighted so as to have a period of oscillation different from any other in the same circuit. The pivot, B, supports a detent, upon which rests the free end of an arm, F. The coil, A, is in the line circuit, which is connected with the outside binding posts, and the lever, F, and the post, G, under it,

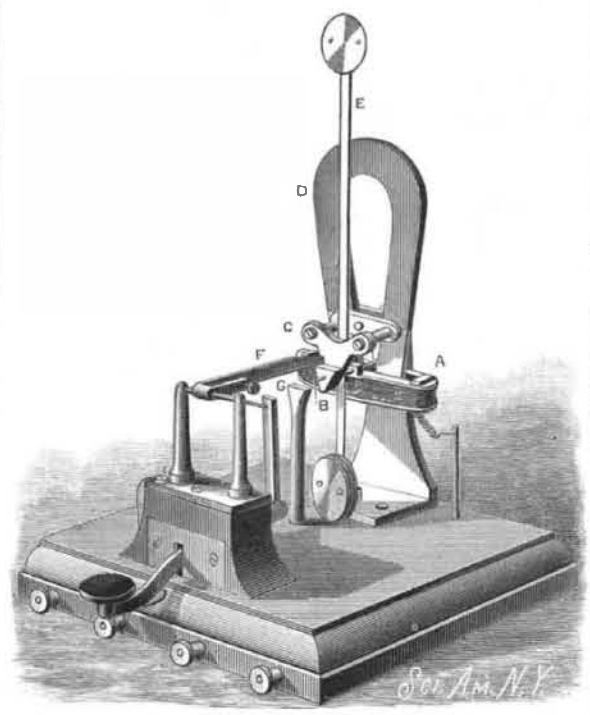


Fig. 1.—STEPHEN'S INDIVIDUAL TELEPHONE CALL.

form the terminals of a circuit connected with the inner binding posts.

It will be seen that, if an alternating current is sent over the telephone wire, the alternating positive and negative impulse traversing the coil, A, in times consonant with the period of the pendulum, E, the pendulum will begin to oscillate, and the swing will increase until its amplitude is so great as to turn the detent on the end of the pivot, B, sufficiently to liberate the lever, F, and allow it to drop on the post, G, and complete the local circuit, ringing the bell, or giving other audible or visible signal. After the signal has been given, the lever, F, may be replaced in its position on the detent by means of the key projecting from the front of the instrument.

The current may be sent by hand, taking the time by the swing of the pendulum adjusted to the instrument which it is desired to actuate; or an electrical impulse may be transmitted automatically by pendulum or metronome, the bob of which can be readily adjusted so as to influence any particular instrument on the line. It will be seen by reference to Fig. 2 that normally the electro-dynamic coils alone are in the circuit.

An addition to the instrument, which is not shown,

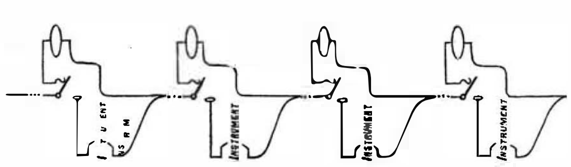


Fig. 2.—CIRCUIT OF STEPHEN'S INDIVIDUAL TELEPHONE CALL.

renders it impossible for one subscriber to listen to the message being transmitted to another.

By means of this simple instrument a small town at a considerable distance from a large telephone center could secure connection with the system by means of one wire, without any expense whatever for a central office.

These instruments have been set up at the establishment of L. G. Tillotson & Co., No. 8 Dey Street, New York city, where they may be seen by appointment with Mr. Alfred J. Faulding, at the same address.

CAPTAIN HANSON, of the bark Pauline, from Cardiff, at Quebec, recounts a strange phenomenon. In latitude 55 degrees north, longitude 46 degrees west, on September 20, during a rainstorm, a brilliant ball of fire lodged on the deck, and for a few minutes played about from the cabin to the forecastle, prostrating the captain and two seamen. With a loud report the fiery visitor disappeared as suddenly as it appeared, without damaging the vessel

CAN THE TEMPERATURE OF THE ATLANTIC STATES BE CHANGED?

The changes in our climate are often discussed, but it is probable that the possibility of our being able to cause a radical change in the temperature of any part of the earth is scarcely ever considered.

The first time the reader examined a globe or map, and followed the isothermal line on either side of the Atlantic Ocean, he was, no doubt, surprised to find that New York city, Madrid, and the Isles of Greece are about the same latitude, while frozen Labrador, England, and the "Evergreen Isle" are about equidistant from the equator.

Now, we understand the reason of this difference in temperature on the same parallel is to be found in the Gulf Stream, which, passing through the Straits of Florida, and bathing the shores of the British Islands, clothes their shores with perennial verdure.

The Gulf Stream in its course passes by Cape Hatteras at a distance of about thirty miles, by New York at a distance of about two hundred and forty miles, crosses the Grand Banks below Newfoundland at a varying distance from Newfoundland, depending upon the season—the stream in the spring and winter being forced about five degrees to the southward and eastward by the cold current from the north.

The question arises, Why has our coast no warmth from the tepid waters of the Gulf Stream? The reason is that we have the cold waters from the Polar Sea between us and the Gulf Stream. This fact is as fully conceded as that the Gulf Stream exists. We quote from the "American Coast Pilot" an article by C. W. Redfield as follows:

"I have long since become satisfied that the current in question is neither more nor less than a direct continuation of the Polar or Labrador current, which bears southward the great stream of drift ice from Davis' Strait, and which in its progress to the lower latitudes is kept in constant proximity to the American coast. In collating the observations of the various navigators, we find reason to conclude that, in ordinary states of weather, this current may be traced from the coast of Newfoundland to Cape Hatteras, and perhaps to Florida."

From the sailing directions for the coast of North America, published in London, edition of 1876, in an article on "The Currents on the American Coast" we find the following: An Arctic current originates in the frozen regions near the North Pole and flows along the east coast of Greenland toward Cape Farewell; then a portion continues its progress southward toward Newfoundland. The Davis' Strait current runs southward, and being augmented on its course by the Hudson's Bay current, these cold polar waters coast the shore of Labrador, pass into the Strait of Belle Isle, and thence into the Gulf of St. Lawrence. This current, following the shores of Cape Breton Island, Nova Scotia, and toward Nantucket Island, and along the east coast of the United States, forming what is called the cold wall of the Gulf Stream, etc.

The current runs at the rate of about two knots per hour through the Strait, and for thirty to forty miles to the westward. The temperature of the water is often at the freezing point, and brings many icebergs into the Strait and conveys them miles up the St. Lawrence Gulf. Two hundred bergs have been counted at a single time amid the floating fields of ice in the Strait during the month of August. (*Vide* Blunt's "Coast Pilot," 1857, p. 70.)

Assuming this to be true, it appears that closing the Straits of Belle Isle would cut off this current, and make a great difference in the temperature of our coast from Cape Hatteras to Newfoundland. Nova Scotia would have a climate as mild as Cape May, and Block Island and Cape Cod become winter watering places.

The polar current would be kept out of the Gulf of St. Lawrence. Navigation would be open the season through. There would be no icebergs in August, and the harbor of St. John, Newfoundland, would not be closed by ice in June, as it was in the year 1813. (*Vide* Maury, "Physical Geography of the Sea," page 49.)

What effect closing the Strait of Belle Isle would have on the Gulf Stream after it passes the banks of Newfoundland is largely a matter of conjecture. We have the statement, on the authority of Lieut. Maury, that the Gulf Stream is five degrees south of its position in the fall and in the spring, and that it is then deflected by the Polar current. If all the water passing through the Strait met it at the same point as the other current, it might bear it still further to the south, and the great body of the Polar current run under the Gulf Stream, as it now does.

There is another hypothesis. We are told by Lieut. Maury that the Gulf Stream is moved at a point near Newfoundland by varying winds and currents a distance of over three hundred miles, "like a pennant in the breeze," as he describes it.

If the water now passing through the Straits of Belle Isle (a larger volume than all the water passing from rivers into the Atlantic Ocean, from Newfoundland to the Gulf of Mexico, including the St. Lawrence and the Mississippi river, impinges on the Gulf Stream at a point where it now has its greatest variation, it can-