FRIDAY, JUNE 15, 1883.

DARWIN.

I.

He was a bold discoverer of the wise
And lucid order of the world, who bade
Men love the truth and speak it, and be glad
When each ideal of superstition dies.

The bigot cursed him, and, with flaming eyes,
Flashed hate upon him as on one gone mad
With stark God-enmity, although he had
No blacker sin than honest hearts devise.

He was a hero for the right of men
To seek beyond their bibles, churches, creeds,
Beyond the rigid will of pope or priest,

Thought buried deep in nature; holy when
Revealed to us by any soul that reads
The infinite mind in God and man and beast.

II.

Amid the hard endeavor of old days,
He strove supremely, and, with patient will,
Climbed masterfully onward, upward, till
He rose above men's bitter blame or praise.

He probed our life along its secret ways,
Back through historic centuries, farther still.
He traced the simple, clear designs which fill
Creation as they fill a robin's lays.

Within the vast complexity of forms,
Births of one primal ancestry he saw,
Like stars and planets from one chaos hurled,

And showed, through aeons of fire and flood and storms,
The march of evolution and of law,
The beauty and the wonder of the world.

III.

Ah! we could only listen when he told,
How, through the antique ages to the new,
Life from a barbarous toil and struggle grew,
Like a staunch creeper from an arid mould;

How savage instinct in the strong and bold
Crushed out the weak, and how the mightier few
Roamed in their wild blood-thirstiness, and slew
The fierce-fanged slayers that had been kings of old.

He pictured to our eyes the carnal strife,
The eternal woe and pathos of the earth,
And awful brooding death which makes us mute:

And thus he spoke the story of our life,
The growth of mind from some tenebrious birth,
The soul of man developed from the brute.

IV.

Since he has lived, our human thought has gained
Fresh wings and ampler airs. His courage broke
The serfdom of tradition, and awoke
New visions of a freedom unrestrained.

He was our modern prophet. Truth remained
As fruit of all the burning words he spoke;
And, seeing with his strong eyes, our dreams evoke
A future which shall be at last attained.

He shaped our way, and we shall follow. Time
And hope are with him and with us to-day;
And out of sky and sunlight and the dark

Shall come a knowledge radiant and sublime,
And song, whose music will not pass away,
Triumphant as the singing of the lark.

GEORGE EDGAR MONTGOMERY.

RECENT EXPLORATIONS IN THE REGION OF THE GULF STREAM OFF THE EASTERN COAST OF THE UNITED STATES BY THE U. S. FISH-COMMISSION.[1]

3. Influence of the Gulf Stream.

THE bottom along the upper part of this slope and the outermost portion of the adjacent plateau, in 65 to 150 fathoms, and sometimes to 200 fathoms or more, is bathed by the waters of the Gulf Stream. Consequently the temperature of the bottom water along this belt is decidedly higher than it is along the shallower part of the plateau, nearer the shore, in 30 to 60 fathoms. The Gulf Stream itself is usually limited in depth to about 150 fathoms, and often even less, in this region; below this the temperature steadily decreases to the bottom of the ocean-basin, becoming about 38°–37° in 1,000 to 1,500 fathoms, and falling to 37°–35° in 1,500 to 2,500 fathoms. We may, therefore, properly call the upper part of the slope, in about 65 to 150 fathoms, the warm belt. According to our observations, the bottom temperature of the warmer part of this belt, in 65 to 125 fathoms, is usually between 47° and 53° F. in summer and early autumn. Between 150 and 200 fathoms the temperatures, though variable, are usually high enough to show more or less influence from the Gulf Stream. On the warm belt we took numerous kinds of animals that were previously known only from the Gulf of Mexico or the Straits of Florida. Some belong to tribes that have always been considered as tropical or subtropical, such as Dolium, Marginella, and Avicula, among the shells. In

[1] Continued from No. 16.

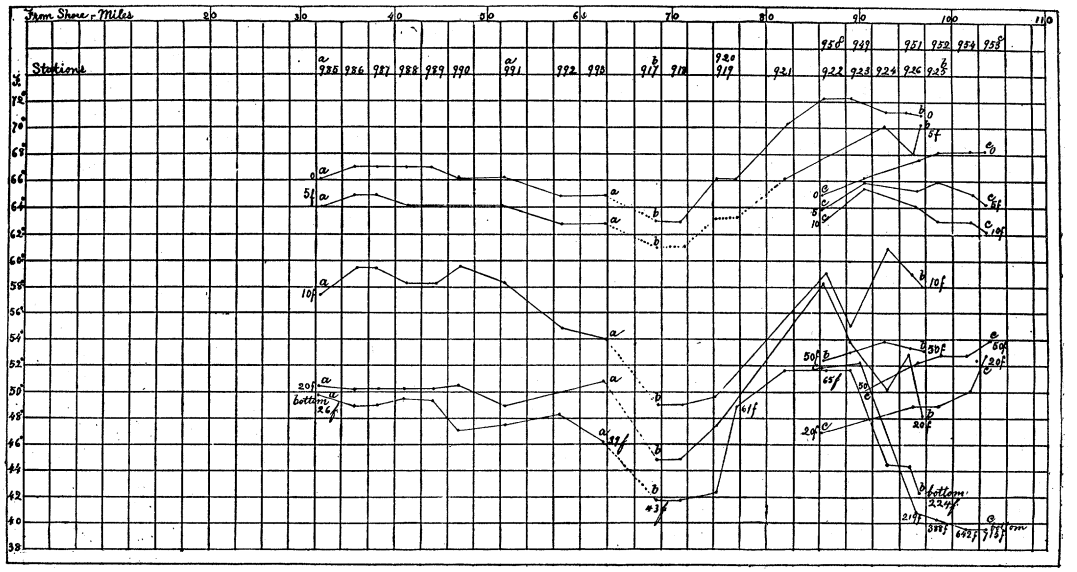

DIAGRAM 2. — Temperature curves at the surface and bottom, and at the intermediate depths of 5, 10, 20, 30, and 50 fathoms, arranged according to the distance, in miles, from the shore. The observations were made on three different days, as indicated by the letters *a–a*, *b–b*, *c–c*. The dotted lines indicate breaks in the actual series of observations.

fact, this belt is occupied by a northern continuation of the southern or West Indian Gulf Stream fauna. Our observations, both on the animal life and the temperature, demonstrate that the western edge of the Gulf Stream is much nearer this coast than it is located on most modern charts. According to our experience, the influence of the Gulf Stream becomes decidedly marked by the rise in temperature at a few fathoms below the surface,

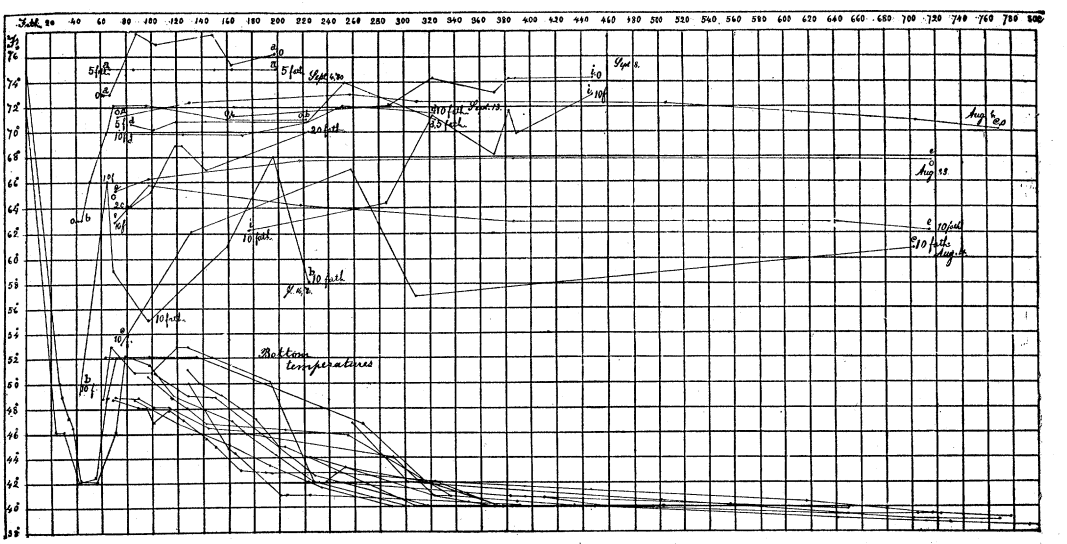

DIAGRAM 3. — Temperature curves at the bottom and surface (*o*), and at 5, 10, and 20 fathoms in the same localities. The curves of bottom temperatures extend from the shore to near the 800-fathom line on the Gulf Stream slope. The position of each station is indicated by the total depth placed at the head of the vertical columns.

and also at the bottom, along a belt corresponding nearly with the 65-fathom line in summer. This is shown both by the abundant occurrence of the various pelagic animals, gulf-weed, etc., characteristic of the Gulf Stream water farther south, and by the temperatures taken by us. The diagrams of temperature curves in 5, 10, 20, 30, and 50 fathoms, all illustrate this, as well as those of the surface and bottom. The recent English admiralty charts, and others, place the inner edge of the Gulf Stream, in summer, entirely outside the slope, or 40 to 50 miles farther from the coast than we have found it in this region. In summer, as is well known, the Gulf Stream is noticed nearer the coast than in winter; but this, doubtless, applies strictly or chiefly only to the surface water. But in summer, owing to the heat of the sun, there is often very little difference between the temperature of the *surface water* at the Gulf Stream and on the in-shore plateau. Our investigations show that the warm belt, in 65 to 125 fathoms, is inhabited by a peculiar southern fauna that could not exist there if the Gulf Stream did not flow along this area at the bottom, both in winter and summer. It is evident that what many of these species require is *not a very high*, but a *nearly uniform temperature* all the year round. Such an equable temperature could not exist in this region, except under the direct and constant influence of the Gulf Stream. On the lower part of the slope, in 300 to 780 fathoms, we found numerous arctic forms of life, corresponding to the lower temperature, which, at 300 to 500 fathoms, is usually 41° to 40° F.; and, at 500 to 1,200 fathoms, 40° to 38° F. On the in-shore plateau, which is occupied by a branch of the cold arctic current, about 30 miles wide, we found that the temperature of the bottom water usually varied from 46° to 42° F. in August, at the depths of 30 to 60 fathoms. In some instances it was higher than this nearer the shore, and especially opposite the mouths of the bays and sounds, where the tidal flow rapidly mingles the warm surface water (70° to 75°) with the bottom water. On the cold part of the shore-plateau we also found an abundance of arctic species of animals, such as are found at similar and less depths north of Cape Cod and in the Bay of Fundy. During the colder season of the year, the temperature of the water over this plateau is decidedly lower; for cod-fish, even, are taken here in large numbers in winter. This plateau, especially over its shallower portions, has, therefore, a *variable cold climate*. But the deep water, below 300 fathoms, has a *uniformly cold climate*. It is evident that the warm belt is here a comparatively narrow zone along the bottom, wedged in between the cold waters of the in-shore plateau and the still colder waters that cover the outer and deeper part of the Gulf Stream slope. The actual breadth of this warm belt varies, however, according to the steepness of the slope, and in consequence of variations in the currents. Just south of Martha's Vineyard, as will be seen by map I, the slope appears to be less rapid than it is either to the eastward or southward, and consequently there is here a broader area occupied by the warm belt,

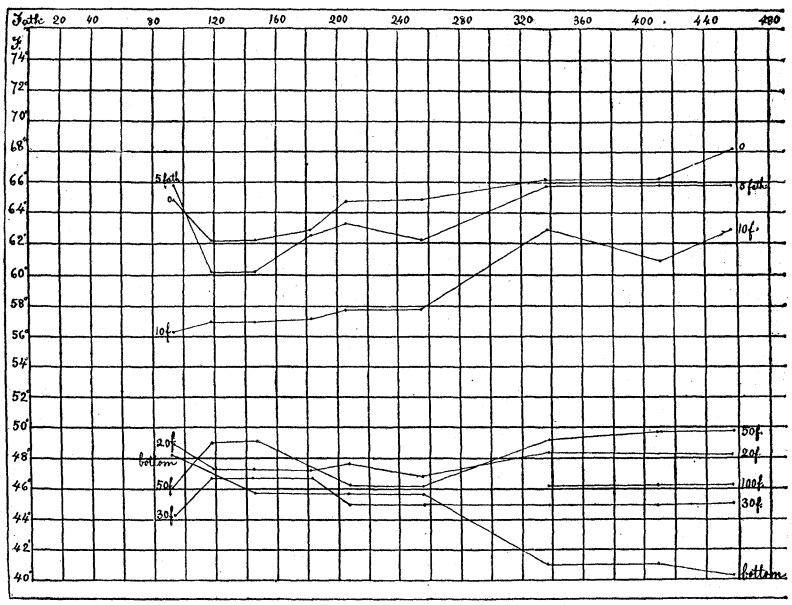

DIAGRAM 4. — Temperature curves at the bottom and surface (*o*), and at the intermediate depths of 5, 10, 20, 30, 50, and 100 fathoms. These observations were all made Sept. 14, 1881. This illustrates the rise in temperature between 30 and 50 fathoms from the surface.

especially between the 65 and 150 fathom lines. Probably this warm belt finally narrows out and disappears from the bottom before reaching the coast of Nova Scotia. We have hitherto obtained no evidence of such a belt off that coast from temperature observations and the character of the fauna; therefore it is probable that the cold water of the greater depths there mingles directly with that of the in-shore plateau. Southward, the warm belt continues to the Straits of Florida, and beyond, the depth of the water characterized by identical temperatures gradually increasing as we go south. At Cape Hatteras this belt becomes very narrow, owing to the abruptness of the slope, and approaches much nearer to the shore; but off the Carolina coasts it spreads out over a wide area, which is inhabited by a rich fauna, similar to that investigated by us off Martha's Vineyard. Many of the species are already known to be identical.

In the following summary table are shown the usual range of variation, and the approximate average temperature at the bottom, in the more characteristic zones of depth, beyond 20 fathoms, in summer: —

Bottom temperatures.

Fathoms.	Usual range.	Approximate average.
20 to 25	45°–51° Fah.	49° Fah.
25 to 58	42°–46° "	44° "
65 to 130	47°–53° "	50° "
65 to 150	46°–53° "	49.5° "
65 to 190	43°–53° "	48.5° "
150 to 200	43°–50° "	47° "
200 to 300	41°–46° "	43° "
300 to 450	40°–42° "	40 5₀ "
450 to 600	40°–41° "	40° "
600 to 800	39°–40.5° "	39.5° "
800 to 1,400	38°–39° "	38.5° "

[From this table, and from the diagrams (2 and 3), a few of the published temperature observations, which were abnormally high, have been excluded, because they were probably erroneous, owing to a displacement of the index, or some other accident.]

A singular feature of the serial temperatures taken at many stations is illustrated by diagrams 3 and 4. In twenty-nine localities out of thirty-six, where sufficiently full series of temperatures were taken, the temperature was lower at 20 to 30 fathoms than at 50 fathoms. Usually the temperature falls pretty regularly from 5 to 30 fathoms; it then rises often three or four degrees, and sometimes eight to ten degrees, at 50 fathoms, falling again at 100 fathoms; but the temperature at 100 fathoms was often higher than at 30 fathoms. In some cases, as shown in diagram 4, the temperature was lower (45° F.) at 30 fathoms than even at the bottom in 200 to 250 fathoms. There is often, therefore, a stratum of colder water, 20 to 40 fathoms beneath the surface, overlying the warmer Gulf Stream water, situated between 50 and 100 fathoms, below the surface in this region. This stratum of cold water may be a lateral extension of the cold water of the in-shore plateau, situated at similar depths. Perhaps the greater density of the Gulf Stream water, due to evaporation, may so nearly balance the increase in density due to lower temperature as to make this a phenomenon of constant occurrence at these depths.

It happened not infrequently that the surface temperature, early in the morning, when we usually began dredging, was one or two degrees lower than that at 5 fathoms, but, during the middle of the day, the surface water was generally slightly warmer than that at 5 fathoms. These changes are illustrated by some of the lines on diagrams 3 and 4.

[*To be continued.*]

TRANSFERRED IMPRESSIONS AND VISUAL EXALTATION.

THERE has recently appeared in the *Fortnightly review* an article by Messrs. Edmund Gurney and F. W. M. Myers, regarding the subject of what is popularly known as *clairvoyance*. By these authors it is termed 'transferred impression.' The gentlemen in question, working under the auspices of the Society for physical research, have, as they claim, collected an enormous amount of evidence, all tending to prove that the mind can, under certain conditions, receive impressions through other agencies than the senses. The mental conditions under which this power is developed are generally abnormal, either as regards the Percipient or the person perceived, who is called the Agent. The cases are classified in accordance with this condition. I append here a specimen of the stories which these gentlemen attest as true.

"A mesmerist, well known to us, was requested by a lady to mesmerize her, in order to enable her to visit in spirit certain places of which he himself had no knowledge. He failed to produce this effect, but found that he could lead her to describe places unknown to her, but familiar to him. Thus, on one