

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° "	40.5° "
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

occasion he enabled her to describe a particular room, which she had never entered, but which she described in perfect conformity with his recollection of it. It then occurred to him to imagine a large open umbrella as lying on a table in this room, whereupon the lady immediately exclaimed, 'I see a large open umbrella on the table.'"

Now, the facts which these gentlemen are trying to establish are entirely antagonistic to modern physiological views, as I have written elsewhere (*New-York medical record*). It is now believed that the senses were developed in order to enable the animal to adjust itself better to its environment. They were evolved primarily *by* the environment rather than *for* it. And in the history of animal evolution there are absolutely no data to enable us to account for the existence of superior extra-sensory perceptive powers. If such powers do exist, we must seriously alter our views of evolution as regards physiological functions. Their existence is therefore antecedently most improbable, and the evidence for the same demands the most rigid scrutiny. So far, it by no means carries conviction. Messrs. Gurney and Myers give us specimen stories which are, for a large part, told by women, or even by children. Some of them are legendary, the incidents dating back a century. The authors, perhaps, allow for unconscious exaggeration, but it does not appear so. They certainly do not, in their estimate, allow for the element of coincidence. Thousands of 'impressions, dreams,' etc., occur daily: we only hear of those which appear to be true.

Finally, and it is this point which I especially wish to bring out, the London quasi-scientists do not appear to be aware that there is most likely such a thing as an enormous exaltation of the sense of vision. This possibility ought certainly to be taken into account in studying the class of phenomena under consideration.

As evidence of this power of visual exaltation, I beg to relate the following experiment:—

In the summer of 1881, the late Dr. George M. Beard, Dr. William J. Morton, editor of the *Journal of nervous and mental diseases*, of this city, and myself, called by appointment upon a Mr. Carpenter, who was a professional mesmerizer, then stopping in this city. Our object was to test the alleged power of Mrs. Carpenter, his wife, to read and see objects when blind-folded. Mr. Carpenter was a man of much intelligence, and, I believe, honest,

though necessarily using a little humbug to give more effect to his dramatic performances. He knew perfectly well that mesmerism was merely a morbid psychological condition, not involving any occult force. His wife was a lady of about thirty years of age, of very pleasing appearance, intelligent, refined in manner, and evidently of a highly sensitive organization. She was easily susceptible to her husband's influence, and could be hypnotized by him. In the hypnotic condition, at certain times, her visual sense appeared to be enormously exalted. Dr. Beard had, on several occasions, under suitable tests, seen her read cards with eyes closed and bandaged. Sometimes, however, she had failed.

On the present occasion we were ushered into the large back-room of a New-York boarding-house, Mrs. Carpenter and her husband being the only persons present besides ourselves. It was broad daylight, and there was no attempt to darken the room. Mr. Carpenter hypnotized his wife so that, while perfectly conscious of every thing, she could not open her eyes. Her eyes were then bandaged with four handkerchiefs. Two were folded, and laid as pads over each eye; the others were tied around the head. In addition, a strap was tied around just below the nose. (I have bandaged my own eyes in this fashion, and found that I could not distinguish light from darkness.) Mrs. Carpenter was placed in a chair at one end of the room. Mr. Carpenter's eyes were then bandaged, and he was placed at the other end of the room, so as to prevent any possible collusion. A pack of cards which had been brought by Dr. Beard was shuffled, and placed, with faces down, upon a table beside Mrs. C. One of us then took a card, and handed it to her. She held it in one or both hands before her eyes, sometimes pressing it upon her forehead. No questions were asked by any one. Her husband remained silent. She would first tell the color (red or black), then the kind (diamonds, spades, etc.), then the number of spots. Sometimes she did it quickly, sometimes slowly: occasionally she failed. Sometimes she could only tell the denomination, and could not count the spots. Dr. Morton had brought in his pocket a private dinner-card with 'B. No. 9' printed upon it. No one but himself had ever seen it in his possession before. Mrs. C. took this in her hand, and read it. The picture-cards were sometimes distinguished also. The letters and figures looked, she said, much magnified. It generally required several seconds

for the impression to be created. In some cases, after she had held the card for some time and failed to read it, she laid it down, took up another, and called it by the name of the card laid down, showing that the impression from it had just been received. Any entirely opaque object placed between her eyes and the card prevented her reading it. She could not see objects to one side of the range of her eyes; e.g., behind her head.

All the phenomena seemed to point to the theory that she had an extraordinary exaltation of vision rather than any extra-sensual power, and I am at present inclined to adopt this explanation.

I have not been able to repeat this experiment. Mr. Carpenter refused to allow his wife to repeat it, as it injured her health. My friend, Dr. E. S. Bates of this city, has a lady acquaintance who has, he says, the same power. Dr. Beard told me a year ago that similar experiments had been tried by some friends of his in Boston.

I believe that the above experiment was the first successful one in which this power of *clairvoyance* was so carefully tested in broad daylight, with every possible source of error excluded. We were none of us able to see how any trick could have been played; nor was there any object for trickery, as no money was paid, and the experiment was only allowed as a special favor.

I venture, therefore, to submit the account which is here written out in full for the first time. It is quite possible that this power of exaltation of vision may explain many cases of so-called 'transferred impression;' at any rate, experimenters like Messrs. Gurney and Myers should be aware of its probable existence.

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#### THE WEATHER IN APRIL, 1883.

THE most marked storm of the month appeared on the North Pacific coast on the 18th. Crossing the Rocky Mountains, it was central in Colorado on the 21st, and passed off the Atlantic coast on the 23d. On the 21st, pressures below twenty-nine inches (lower than before noted in this region in twelve years) were recorded in and near Colorado. Attending this depression were exceedingly severe local storms and tornadoes, which form the main feature of the weather this month. These were specially severe in Iowa, Alabama, Mississippi, and Georgia. In the latter two states, from two hundred to three hundred people lost their lives. In Colorado a passenger-train was

thrown from the track near Como on the 21st; at Pueblo the storm began at 2 P.M. of the same date, and was the worst ever known there: several houses were unroofed. Kansas reports a tornado at Kingman on the night of the 20th: it struck Lun City at 2 A.M. of the 21st, destroying five houses, and killing two people; hailstones nine inches in circumference fell in Harper county; at New Bedford three houses were blown down, and one person was killed. Iowa was visited by tornadoes during the nights of the 21st and 22d: these destroyed farmhouses, and some lives were lost. Mississippi reports a tornado at 1.10 P.M. of the 22d, near Starkville: its width was three hundred yards, and within it every thing was levelled to the ground; one life was lost. The most terrible disaster from this cause occurred in Wesson and Beauregard, about a hundred and forty miles south-south-west of Starkville. Wesson, a town of seventeen hundred inhabitants, was struck at 3.15 P.M. of the 22d. Twenty-seven houses were destroyed, sixty people injured, and thirteen were killed. At Beauregard, with six hundred inhabitants, the tornado, lasting fifteen minutes, destroyed every dwelling and store, seriously injured forty, and killed twenty-nine people. Clay county was visited by two tornadoes,—one at noon, and the other at 1 P.M. of the 22d; both were violent, causing loss of life and property. In Monroe and neighboring counties to the north, a number of persons were killed. In Jefferson county the tornado is reported at 11 A.M. of the 22d: it was two hundred yards wide, and swept every thing before it. There was some loss of life. Ten people were killed at Harrisville, seven near Morton, and two at Calcedonia. The storm passed east of Natchez at about 10.30 A.M., and east of Monticello (nearly destroyed by the tornado of April 21, 1882) at 11 A.M., 22d. The track was about two hundred yards wide. There was some loss of life. In Alabama, at Talledega, a train was blown from the track. In Georgia the storm, accompanied by hail, began at Americus between 3 and 4 P.M., 22d. As far as known, the track was narrow. Buildings were blown down, and some persons killed. The next morning, between 6 and 7, a tornado passed through Emanuel county, about a hundred and twenty miles east-north-east from Americus: all houses in its track were swept away, two persons killed, and several injured. A like storm-wind was felt in Dodge county about the same time. In Dougherty county the track was about a quarter of a mile wide. Eight persons were killed, and twenty injured. Loss of life and great damage