

THE MAGNET.

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NO. 5.

MAGNETISM.

CLAIRVOYANCE.

We give place to the following communication from our friend Carter, because we know it will gratify our readers to see his details in our columns.

But we should state, perhaps, that though we have had scores of descriptions from persons in the somnipathic state, like the following, yet we have never considered them as satisfactory demonstrations of what we understand by *Clairvoyance*; for it will be seen at once, that there is not sufficient evidence here, to prove that this boy actually saw the things which is supposed he meant to describe. There are so many chances for mistakes in these descriptions, that we never like to report them as demonstrative evidences of *Clairvoyance*, to those who know nothing of this phenomenon. Descriptions of what is in the *mind* of the operator might be evidences of *Clairvoyance* to him, while it would not be evidence to any other person. But these accounts, in order to satisfy others, should be made of things under the following circumstances:

The patient should repeatedly describe accurately, what no other person present knows, or what all the persons present know; that neither the patient nor operator had any previous knowledge of, and the things described, should be examined *immediately* afterwards, by all who heard the description, that they may see and judge of its accuracy.

We suppose we have had as good *Clairvoyants* as any ever known; and yet we would not assume, that one out of the whole would describe, without any mistake, what neither of us knew any thing about, till the time the description was given. True, we have had such descriptions, but they have been given under circumstances which have taught us to be careful how we presume upon this power, or report accounts of its exercise, which will not bear the most rigid investigation.

To the Editor of the Magnet.

MY DEAR SIR:—Although I am aware that you have not, or, perhaps, I should say, after reading your last letter to me, *had* not overmuch faith in the marvels that have been related of the *Clairvoyant* faculty, yet I think you will not be altogether unwilling to peruse patiently, the following narrative of some very remarkable magnetic experiments, in which I was concerned, either as a spectator or an

operator. I would remark, in commencing, that I do not pretend, at present, to draw any conclusions from what I have witnessed, but merely relate the facts as they occurred or appeared to me to occur, without comment or explanation.

The first remarkable specimens of the magnetic phenomena that I saw, were on the evening of March 22, 1842, at the house of one of the editors of a daily paper in this city. The mesmeriser was a French gentleman, then connected with Harvard College as a teacher of his native language. The boy, who was to be magnetised at seven o'clock, appeared to be about fourteen years of age, timid, quiet, and rather unintelligent. I had previously ascertained, satisfactorily, that the operator's acquaintance with him was only of two or three days' duration.

In a few minutes the operation commenced. He seated himself opposite the boy, and fixing his gaze steadfastly upon him, made a few passes chiefly upon his head and arms. In about twenty minutes his eye-lids closed firmly and suddenly, as if they had been struck down. The operator, after a few more passes, left the boy and conversed for a few minutes with some ladies present.

A large thick handkerchief was then tied over the eyes of the boy, so that, as I satisfied myself, by inspection, it would have been impossible for him to see anything, had he been awake. He described several articles pretty accurately, yet not with sufficient precision to convince me that he saw them.—He said he saw not with his eyes, but with that part of the forehead which is first above the eye-brows. He said that he could not see so well this evening as he would when in the magnetic sleep hereafter. On being at different intervals asked the time, he invariably told it correctly even to a minute.

It was then proposed to test his *Clairvoyance* by taking him to distant places. I whispered to the operator when at some distance from the boy, to take the latter to the City of Washington. He accordingly told him that he wished him to go with him to a distant city, and inquired if he were willing?

"Yes."

"Come, then, we will go—now we are on the road. Ah! here we are; is not this a fine city?"

"Yes, very fine."

"What is the name of it?"

"New York."

The operator seemed embarrassed, and whispered to me, that he had imagined himself immediately in Washington, and that he had not thought of New York. He, however, said,—“We must not stop here, let us go farther. Here is another city—how do you like it?”

"Very much. It is a large and handsome place."

"What is the name of it?"

"Philadelphia."

"We must proceed still farther. Where are we now?"

"In a very broad street."

"What is the name of this place?"

"Washington."

"Well, what do you see here?"

"A very large building built of marble."

"Let us enter. Where are we?"

"In a large round hall with pictures. It is very beautiful, I should like to live here forever."

"What do you see besides pictures?"

"A man."

"What is he doing?"

"He is not a live man; he is made of marble, and is upon one side of the hall with a railing round him."

"What is his position?"

"He is sitting, but he is as tall as a man standing up."

"How is he dressed?"

"He has a sheet wrapped about him, and he holds a sword in one hand and a paper in the other."

"Do you know who it is?"

"I do not know his name, but I know his face; I have seen it in picture books."

This was, undoubtedly, Greenough's colossal statue of Washington which had been placed in the rotunda of the capitol, but a short time before these experiments were made. The description is, I believe, correct, with the exception that the right hand of the statue which points upwards, does not hold a paper or any thing else. The boy had never been to Washington, and though it is probable he may have read something about the statue in the Boston newspapers, had he been describing from memory and not from what he saw, he would scarcely have said that the statue had a sheet wrapped around it. The papers which mentioned the statue spoke of its Roman dress, and I do not think that the boy could have had any definite idea of what that was. If he described it from remembrance of what he had read, he would naturally have said that it was dressed in the Roman fashion. The operator, it should be remarked, had never seen the statue, nor were there at that time, any engravings of it in this part of the country.

The boy was brought back to Boston, and at my request, the operator went with him to Quebec.—He said that there he saw stone walls on which squirrels were running, and children playing; that he saw a city and a fort, the fort was on a high rock above the city,

"What is there on the walls beside children and squirrels?"

"Nothing."

"Are there not cannons?"

"The cannons are below the walls."

"Do you see any soldiers?"

"Yes."

"What is the color of their coats?"

"Red."

"What kind of people are there in the city?"

"English, with plenty of French, Scotch and Irish"

"Where is the city?—In what country?"

"I do not know."

"Is there any water near the city?"

"Yes, a very large pond."

"You are mistaken, it is not a pond."

"It is, because the water is fresh."

"No, it is not a pond, it is a river."

"I tell you it is not a river; river water is salt and this is fresh."

This answer was remarkable, inasmuch as a boy

brought up in Boston, knowing no river but the mouth of the channels, would naturally think river water salt unless reading had corrected his ideas.

"What is there in the river?"

"Many ships, one of them a man of war; a seventy-four, as large as that in Boston Harbor."

"What do you see on the opposite side of the water from the city?"

"Pine trees, and men at work digging."

"What time is it at this city?"

"Early in the evening."

"What time is it at Boston?"

"Ten minutes to nine."

This was correct to a minute.

The boy was then brought back to Boston; and after a few minutes interval, the operator asked him to accompany him to his mother's house in France.

"Come, get into this ship."

The boy was made to step into a rocking chair, where he stood some minutes, balancing himself perfectly without raising his hand. He was then told to seat himself in the chair and go to sleep for a fortnight. He accordingly sat down and leaned his head against the back of the chair. He then left him and conversed with us about ten minutes, at the end of which time he called to the boy.

"Come, wake up. Here we are in Havre. How long have you been asleep?"

"A fortnight and one day."

"Did you ever sleep so long before?"

"Yes—but I was awake in the day time."

"How do you like France?"

"Very well."

"Will you take a glass of wine with me?"

"No."

"Why not?"

"I do not want to, I never drank any wine in my life."

"You must—this wine is very good. Here drink it."

With much hesitation the boy raised his hand to his mouth and pretended to drink.

"Do you like the wine?"

"Yes, it is very pleasant."

The boy, when he came out of the magnetic state, refused a glass of wine that was offered him, and said that he had never drank any in his life.

He took the boy ashore to a hotel, where the sleeper said he saw the landlady and some drunken sailors.

"Let us leave Havre," said the operator, "and go to Brest, where my mother lives. Ah! here is Brest, how do you like it?"

"It is handsomer than Havre."

"True, here we are in the streets—what do you see?"

"Very fine trees and the theatre."

"What words are there in front of the theatre?"

"Nothing but the word *theatre*."

"True, let us go to my mother's house. Do you see it?"

"Yes, it is on a hill with a fence about it."

The operator told us there was a fence about it, but it was not upon a hill.

"Let us go in. What do you see?"

"A lady sitting alone in a room—she is sewing; she has had sore eyes; her eyes are better than they have been, but they are yet weak."

The last time the operator heard from his mother, she was much troubled with weak eyes.

"What else is in the room?"

"Books—I do not know what kinds; they are not English."

"Has this lady any children?"

"Yes, two sons and three daughters."

"True, where are her daughters?"

"They are gone out to fetch in wood."

"How does this lady support herself? What does she do for a living?"

"Nothing; her daughters support her by sewing."

"True—where are her sons?"

"One of them is in a ship, on the coast of England. He is well, quite well. He is in the middle of the ship reading. The ship is called the Empire; she will return to France in about a year. He is a midshipman."

The operator told us that his younger brother was what the French style lieutenant of a frigate, answering to the American passed midshipman. When he heard from him last, he was on board the Cassard, which has latterly been laid up in harbor, and he could not tell whether he had been transferred to a vessel called the Empire or not.

"Where is the other son of this lady?"

"He is at No 5 S—— Place, Boston."

"What is he doing?"

"I do not know."

"Let us go to Caen, in Normandy, where I was born. What do you see?"

"A small brook."

"True—let us jump over it. What more do you see?"

"Another brook."

"True again—let us jump over that also. What more do you see?"

"A large meeting house. I know it is a meeting house, because it has a steeple."

"Let us go on."

"I see another meeting house larger than the other."

"What do you see in it?"

"Two or three hundred people; more than one hundred are women, and the rest are men. One is apart from the rest talking to them."

"What does he say?"

"I cannot understand him."

"Do you know what language he speaks?"

"No."

"Tell me what he says; repeat some of the words."

"I cannot; I do not understand him."

"You must tell me, I insist upon it."

The boy listened for a moment or two, and then slowly and reluctantly said "*Mon Dieu*."

"Do you know what *Mon Dieu* means?"

"No."

"Are you sure he said that?—Did he not say *Mort Dieu*?"

"No, he said *Mon Dieu*."

I then requested the operator to take the boy to Nismes, and let him describe the famous *Maison Quarree* or Square House, with the appearance of which I was somewhat familiar. He did so.

"We are in Nismes. What do you see?"

"A large hotel."

"Let us walk on. What do you see?"

"A large building made of marble. It is twice as long as it is broad. It has four columns at the end."

"How large is it?"

"I do not know."

"Look at it carefully, and estimate its size."

"It is about one hundred feet long, and fifty wide."

"What is inside?"

"Glass cases containing curiosities. I do not know what they are—they are mostly of stone."

N. H. Carter, in his letter from Europe, says—"We went to the *Maison Quarree*, or Square House, a parallelogram about 80 feet in length, 49 in width, and upwards of 60 in height. The only entrance is at one end, where there is a splendid porch, supported by ten columns, thirty feet high, and three feet in

diameter." Ten columns each, three feet in diameter, in front of an edifice only forty feet wide, must, of course, be in two rows, which would give five to each row, so that the boy was not far out of the way in his statement. Mr. Carter continues: "In May, 1823, it was converted into a museum. It is now filled and surrounded with a great number of Roman antiquities found in the neighbourhood of Nismes.—The articles consist of altars, sepulchral monuments, specimens of Mosaic coins, and various kinds of sculpture."

As it was now growing late, the boy was brought back to Boston, and told to examine the bodies of those present. A gentleman whom I have known for a long time to be of infirm health, was first presented to him. The boy took my friend's hand, and feeling his wrist carefully for a minute, bent down his head slightly, as if looking intently at something, and then said:

"He is ill—he is consumptive. He does not take exercise enough. His lungs are weak, his stomach very weak. He must not drink tea or coffee—he must go south; this climate is bad for him. He must not go to the West Indies, it is too hot there, he must travel about, and he will be quite well in six months. His brother died of consumption; his mother died of lung fever, but the doctor thought it was consumption."

This, my friend said, was all true, as far as he could judge.

This, dear sir, is an exact transcript of the clairvoyant remarks of the boy, and of the questions put to him. Deception and collusion were out of the question, and there was, indeed, no motive for them. All present were believers in human magnetism, and mostly relations of the gentleman who was chiefly concerned in the experiments, so that no advantage could have accrued to him from deceiving them.—The boy could not, in most cases, have derived his knowledge from the mind of the mesmeriser, or of any one present, for he told things which none of us previously knew.

Should you care to hear further from me on this subject, I will send you an account of some still more remarkable examples of the same kind.

Truly yours,

R. C.

Boston, Mass. Aug. 27, 1842.

For the Magnet.

CASES OF SOMNIPATHY.

Mr. Editor:—Your remarks in No. 2, under "Abuses of Magnetism," and "Caution," have induced me to state certain facts which have come under my observation, while pursuing Magnetism; but before referring to them, I would state, that I have several patients whom I am treating by Magnetism. The first is a lady, who has been very unwell for about eight years, afflicted with prolapsus uteri, dysmenorrhea, severe pains in the lower part of the spine, very foul stomach, with costiveness and dyspeptic symptoms, at times hysterics, neuralgic affection of the face, general debility of the nervous system, &c., has had various physicians to no purpose; has been magnetized for about five months, daily, and is very nearly cured—states, that in one month she will be perfectly cured. This lady is an excellent somnopathist.

The second is a gentleman, who has suffered for many years with dyspepsia, and dropsical symptoms—growing stronger daily—no somnopathy. The third is a lady with epileptic fits of several years' standing, has been magnetised about a month, and improves rapidly—fair somnopathist. The fourth is

a case of chorea from childhood, a young lady 18 years of age, gaining very fast, is magnetised daily, and is a good somnopathist. The fifth is a lady with disease of the heart from acute rheumatism, who is, probably, the best somnopathist in the country. I have others, but will not refer to more at present.

I will now attend to the above noticed facts.

1st. Having heard a great deal about moon, star, and sun visits, I carried several patients at different times, to the sun, to the moon, to heaven itself.—They all gave singular and beautiful descriptions of these places, but *their statements did not agree in a single instance*. Much pain in the head, both during the magnetic, and subsequently, in the natural state, invariably followed these imaginary journeys, and other unpleasant feelings which caused me to suspend these “*marvellous and astonishing*” experiments.

2nd. The fourth case given above, of chorea, was, and I presume is, a good somnopathist; at first she was not magnetized by me. The individual who magnetized her, having, as she said, in a state of somnopathy, injured her by trying experiments in clairvoyance, power of the will, &c., so prejudiced her against him, that she would no longer be magnetized by him, and to this moment, nothing can overcome this antipathy. I now magnetize her, and she goes very readily into the magnetic state, but I can do nothing with her; she will not examine diseases, be in the least subject to the will, nor in fact, do any thing but sit still and converse sociably. She says this is necessary to her recovery, and she does not intend to be again injured. Here the will, positively, has no other effect than producing the magnetic repose.

3d. The fifth case, I have said, is the best in the country. Her detection of disease, even to the most minute symptoms, have astonished all who have witnessed it, and her prescriptions have, as yet, never failed in producing the desired result in any one instance. Her clairvoyance is likewise remarkable.—I will relate an instance or two.

While in this condition, she was requested by a lady, to visit her son at sea, in the Pacific ocean.—The questions were made by myself, who was ignorant of the truth or falsehood of the answers. To the proper questions I received the following replies: She saw the lady's son—he was sitting in the cabin—was a lad about 12 to 14 years of age—was well, and thinking of home—had written no letter, but his mother had heard from him through another person. Lest some may suppose that leading questions were given, I think best to mention them. “Do you see him? How old does he appear to be? Is he well? Has he written home? Was his mother at home when she heard from him?”—She was at a temperance meeting at the time she heard from him.*

Another lady present, then requested to have her visit her husband, Capt. W., a perfect stranger to me. I then said to my patient, “Come, as we are now at sea, let us visit this lady's husband and see how he is?” After a brief pause, she replied “that she saw him, but,” says she, “he is not captain, he is mate, there's the captain,” (pointing out her finger.) This rather staggered me, as I feared she would spoil all by this mistake, but felt perfectly pleased when informed by the lady, that it was true. “How is he?—well. What is he doing?—talking. Has he written home?—yes, he has written a great many letters, but she has only received three.” This was correct.

* How is it proved that the boy was sitting in the cabin and thinking of home at that time? The above, and what follows, may or may not be true, either in whole or in part.—[Ed.]

When Dr. Brevoort, the Phrenologist, was here, he visited this patient one evening, and among other things, she accurately, and without a multiplicity of questions, described his house at Williamsburg, and informed him that a lady, which from her description, he judged to be his wife, was holding a boy of his in her lap—he had been eating something which had made him sick—he was at the time she saw him, vomiting—would soon get over his sickness. A few days after, Dr. B. received a letter from his wife, in which it was stated, that his son had been eating whortleberries, which had made him sick.

Upon the whole, this is one of the clearest cases on record; it is immaterial whether she knows individuals, places, or any thing else, her descriptions are correct; there are times, however, such as when she has over-exercised through the day, previous to being magnetized, &c., in which, as a clairvoyant, she is good for nothing.

4th. But what is the result of this? For a long time, she has, in her natural state, complained of a pain in her head, a confusion, as it were, of her intellect, at times, a total forgetfulness of every thing, and she has just recovered from an inflammation of the brain, whether owing to magnetism or to exposure, I do not pretend to say, though I am inclined to believe the latter.

5th. I have, however, noticed in all patients that they never feel so well after being experimented upon in any way, as they do when confined merely to their own diseases, and those of individuals presented to them for examination. Whether experiments in reality injure them, I do not know, though I have had one or two on whom it appeared to produce no unpleasant effect at all; however, I send you the accompanying letters, translated from the French of M. de Puysegur, in which you will observe the evil effects of experimenting.

6th. I will state here, that a somnopathist has informed me, that if immediately previous to restoring them to the natural state, I make many passes on the head, face, and other painful parts, so as to remove the pains, and then allow them to sit a few minutes to calm and collect themselves, no unpleasant effects will take place. I have tried this, and with success.

7th. As to the will, I will remark, that I have never found a patient completely subject to it; they only obey to suit or please themselves, and if they say “no,” determinedly, all the will in the earth could not change them.

Yours respectfully,

J. KING, M.D.

New Bedford, Mass., July, 1842.

LETTER.

FROM JEAN GASPARD LAVATER, MINISTER OF THE HOLY CHURCH, TO THE MARQUIS DE PUYSEGUR.

Zurich, Aug. 31, 1785.

I take the liberty, dear and respectable benefactor of humanity, of interrupting you in your occupations, which are as astonishing as useful; and I do not ask pardon, for I know that you love confidence. Have the goodness to read the accompanying memoir, written by my brother Diethelin, a physician, I dare to say, equally skilful and faithful, and above all, possessed of a good understanding. It is my dear and amiable wife, for whom I implore your assistance.—Last evening, she was, as she believed, on the point of expiring. She felt more unwell, more debilitated than ever; she cried, laughed, wept, and afterwards was very weak. I throw myself upon your human-

ity; will you have the kindness to answer me by one of your secretaries, as soon as possible.

J. G. LAVATER.*

OBSERVATION BY PUYSEGUR.

The testimonies of esteem given to me by a man as celebrated as M. Lavater, left me no doubt of the confidence which he placed in me; I, therefore, indicated to him without reserve, the process which he ought to employ to magnetize his wife, and I added, that if he operated with the firm conviction of the existence of the agent, of which I assured him he would recognize in himself the power, he would obtain the most satisfactory results. The next letter will show the docility with which the minister was willing, faithfully to follow my indications.

Sunday, Sept. 11, 1785.

Thanks be to God, respectable P., a few days after those horrible effects of animal magnetism, my wife has gone into a somnambulism, the most tranquil, and has indicated to us all the means for saving her. Every thing goes on well. I have magnetised her, and by my unworthy hand has the Lord saved her. She has indicated many simple means for other patients of her acquaintance. I dare add nothing further, except the most sincere assurance of my gratefulness for your favor, although unaccompanied with any good counsel; I simply believe that it was impossible for you to give me any.

J. G. LAVATER.

M. PUYSEGUR'S ANSWER.

Strasburg, Sept. 19th., 1785.

I cannot express to you, sir, the pleasure which your letter has given me, by which you inform me, that you have had the happiness of recalling to life, madam, your wife. Since your good and honest intentions alone, have led you to procure an effect as astonishing as it is salutary, therefore, for the future, take counsel on the magnetic process only from yourself; you may have recognized by this time, how far I was from approving those exterior processes, which others have heretofore employed; in a word, you behold, convinced of this glorious truth, that those who firmly believe that the Supreme Being has given to them a means of doing good, and who are willing to do it zealously, to their kind, will have the power; but I cannot, sir, with a man as commendable as yourself, enter more lengthy into the details necessary to be known, in order to proceed with security and safety in the delicious way into which you have entered. Behold, in a few words the principle, and your mind and understanding will teach you the rest.

Our soul emanating directly from Deity, enjoys itself only in order and good.

Our soul, then, inspires us with the thought of good.

From the thought of good springs the will of doing it.

Even to the present time all its actions are moral. The magnetic fluid which surrounds us, or, more properly, our animal electricity is at the disposition of our will, the same as our arms and our words.—This electricity, carries itself wherever our will directs it; the more the will is good, the more it partakes of a well directed mind, in perfect harmony with its principle, the greater degree of strength will our electricity possess. Let us believe, that it always takes the impression and the character of our will. A

* Accompanying this letter was a recital of the habitual sufferings &c., of the patient; also of the incoherent effects of evil guidance of magnetism upon her.

man, then, who constantly and ardently wills to do good, CAN NEVER DO EVIL; this truth is incontestible, and you will recognize it more and more. If, in magnetising, I perceive the least evil of the nerves, the slightest twitchings or convulsions, all my attention and will is directed to this effect, which is unpleasant to me; I *will* that it does not continue, and it ceases, except it be a crisis favorable to the cure of the disease.

I would be willing, sir, to enter into further details on the physical effects of magnetism; the best idea which you can have of it, is to compare its influence, to the effects of electricity, not electricity considered as a fluid, which is an error, but as motion. I strike a billiard ball which communicates with five others, immediately the last escapes or is thrown off; the electrical chain is absolutely the same thing, and animal magnetism steps in to enlighten us on this cause so much sought after in electricity, and which will cease to be a problem any longer.

We men are perfect electrical machines; our minds are the handles; we electrify positively and negatively any body to whom we wish to do good, because nature, wisely and passively, submits to our directing. It is only necessary to will that sleep takes place, and the eyes close; it is only necessary to will for them to open; the actions or gestures are of the greatest indifference; in order to fix the mind more attentively and vigorously, it is necessary to act or manipulate at a little distance, or even to touch; but once in relation with your patient, if you do not fear the secondary causes, you will be able to act as well at a distance as near by.

PUYSEGUR.

LETTER IV. FROM J. G. LAVATER.

Zurich, Oct. 4, 1785.

I persecute you, friend of mankind, and friend of Lavater. A friend to whom I owe much, has placed in my hand the accompanying paper. Do you think he may be cured,—that he can be placed in a state of divination? He does not believe it, but a word from you, of whom he has an exalted opinion, will give new life to him; he is very honest, but very unbelieving.

LAVATER.

OBSERVATIONS BY PUYSEGUR.

I have not found the paper which accompanied this letter, neither the copy of my reply; but I remember I strongly disapproved of the word *divination*, of which M. Lavater made use to designate the lucidity of somnambulism. This lucidity, I wrote him, may be only the development of a human faculty, but never a state of *divination*. In carrying, and in exalting the thoughts of somnambulists on objects out of their reach, we run a risk of *fatiguing the springs or sources of their intelligence*. The thoughts of a magnetised being, I added, are like a mirror, from which is reflected all those of his magnetiser;* far then from receiving the manifestation of a truth from his replies, we oftener draw only the reflection of our own peculiar errors. In conclusion, I advised him no longer to prolong, for the satisfaction of his curiosity, the somnambulism of his wife, and to occupy himself, for the future, only in curing her as promptly as possible.

M. Lavater, in this instance, placed, probably, but little value to the advice which my experience dictated to him, for he wrote me no more. Several years afterwards, I learned that his wife had become insane, and that, instead of attributing it to his own

* Recent experiments have proved this not to be the case with all somnambulists.—Translator.

imprudence, he had imputed all the evil to animal magnetism. I have since learned that he had imagined that the magnetic action was dangerous, and was able to proceed only from the influence of a bad principle.

For the Magnet.

REMARKABLE PHENOMENA.

Dear Sir,

The following incidents occurred in the midst of a course of lectures, given at Hempstead, N. Y. in the last week of August, 1842. On the Thursday evening lecture, the Rev. Silvester Woodbridge, Pastor of the Presbyterian church, and Dr. Judson, Dentist, were selected as a committee of investigation for that evening. Dr. Judson was requested to examine the pulse of the patient previous to any operation, that he might be able to determine the degree of its acceleration after she was magnetised. This he did, by taking her left wrist in his right hand. I then proceeded to magnetize her in the usual manner; but, before I had completed the operation, she began to pinch, pull, twist, and throw her left hand, raising it towards the shoulder, and throwing it off from the body. In answer to my questions, as to what ailed her hand, and how it felt, she replied, that she did not know what was the matter with it, but that it felt very bad and strange—she felt as tho' she would like to tear it off and throw it away. I endeavored to operate on it, but with little success. She became very much agitated for some time, throwing her arm about, and complaining that the agitation fatigued her and made her weak. I was unable, either to give my audience any explanation of the matter, or proceed in my experiments. At length, however, by persisting in my operations, she became in a measure quiet, and I endeavored to make my usual experiments. At the close I awoke her, when her left arm assumed a rigid condition, the elbow and wrist joint being turned in opposite directions. The patient said she had no recollection of what she had suffered during her sleep, and immediately asked, what I had been doing with her arm. It now repelled the touch of myself and every other person, except Dr. Judson's right hand. It even repelled her own right hand; and whenever Dr. J. presented his left hand, it was repelled, except he presented it at her left shoulder first, and then passed it over to and directly down her left arm to the ends of her fingers; his right hand, however, ever attracted it, and by a few passes it put her almost asleep. She was finally much relieved by the passes from his left hand, so that she could take hold of it with her own hand, and also allow others to touch it. But this was by no means a termination of the singular phenomenon.

The next day I called, with her, at the Rev. Mr. Woodbridge's house, for the purpose of some private experiments, but as soon as magnetised, her arm resumed the same rigid and repulsive state as it had the evening before. As she was evidently in greater distress in the sleep-waking, than in the natural state, I immediately awoke her, but her left hand and arm, up to just half the joint of the elbow, remained in its state of rigidity. She was unable to have me touch it, without receiving a shock, even when unobserved by her in approaching it. For an experiment, I presented a razor within 18 or 24 inches of her hand: in an instant her hand was attracted by it, and she extended her arm towards it. I then made three or four passes down the arm with the razor in my hand, when, to our surprise, she was fully magnetised; and now, we could not approach her on either side without being repelled. We en-

deavored to wake her, but in vain. As her desire to have the razor became great, Mr. W. conveyed it out of the room, and concealed it in his carriage-house; but before his return, she appeared to be literally drawn out of her chair, and went in pursuit of him. He met her on his return at the threshold of the back door—where, from an obvious repulsion by him, she was obliged to stop. Here she stood for some time, in apparently a good deal of distress, manifesting a great desire to pass out, yet unable to do so. Her respiration increased, limbs and joints trembled, and she almost sunk to the floor. Seeing a pair of smoothing irons in the room, I caught up one, and presented it in front of her, when she retreated, as if repelled, but recovered her position after it was taken away. In the mean time her eyes were fully closed, and her hearing gone. As her agitation increased, I requested Mr. W. to remove the razor, if necessary, out of the village. This he turned to do, when she followed him, both running at full speed. Though her eyes were yet closed, she pursued him directly to the carriage-house, and back through the garden and the hall of the dwelling to the front door, which he had violently shut after him. She reached out her hand to open the door, but as it approached the large iron lock upon it, she jerked back her hand without touching it, and appeared to receive a shock. Here she stood, trembling and much agitated, as though unable to move in either direction. Mr. W. carried the razor out of the village, when her agitation gradually subsided. She, however, kept her place till he had reached within a few steps of his house, on his return, when she suddenly awoke, returned to her chair, and sat down.

Upon inquiry, she declared she had not the least recollection of what had passed during her sleep, but there was no change in her left arm. It remained, as before, rigid, and in a state of repulsion, the *radius* of the arm raised towards the shoulder, and the hand drawn down towards the feet. Being somewhat exhausted myself, and supposing that, to repel this positive fluid from the arm, would require a person of strong magnetic power, Mr. Anderson, the hotel keeper, was sent for, and directed to make the passes from her shoulder down to the ends of the fingers, and throw it off with a sudden flirt of the hand. I felt, also, afraid of the influence of Dr. Judson, and wished to try the power of some other person. Mr. Anderson had operated but a few moments, when we had indications of relief. He was soon able to touch her arm, and pass his hand down its whole length. After a short time, it became quite relaxed, and fell down by her side. It was, however, numb, and she was unable to move it; it also still repelled even herself, so that she could not bear it to rest on her lap, or even look at it, without receiving a shock. In this condition, it was left to remain all that day. At night, it had become much swollen and inflamed. The affection seemed to spread itself further into the body, and threatened to paralyse all that side, including the internal organs. The patient thought, that if Dr. Judson should magnetise her right side fully with his left hand, keeping his right hand from her as much as possible, she would be entirely relieved.

As the hour had now arrived for my lecture to commence, and not feeling at liberty to postpone it, I concluded to have the experiment made in the presence of the audience. I therefore made statements of the facts in the case, and offered my proposition to those present, and invited them to select two scientific gentlemen to act as a committee. They selected Dr. Webb and Lawyer Haddon. When the patient was placed in the chair, her arm appeared to be in a worse state than it ever had been in before. The

swelling and inflammation was great, and the repulsion extreme; she was obliged to keep the head almost constantly turned from it, to avoid the shocks she experienced from even glancing at it. It was unfortunate for the science, that her suffering was so great that I did not feel justifiable in allowing the committee to touch it. They could, however, see its state, and the evident distress it occasioned the patient; it could also be observed by the whole audience. Dr. Judson was now directed to approach the right side of the young lady with his left side towards her, then to magnetise her with his left hand, and when fully magnetised to pass the influence over into the left shoulder and arm of the patient, by making transverse passes, and then passing them down the arm to the extremities of the fingers. This he did, without touching the patient. In the course of half an hour, the rigidity began to yield. The blood receded from the arm, and although the swollen condition was not entirely reduced, yet the hand became white, and of the appearance of a dropsical state, instead of an inflamed one. By degrees, the patient was able to approach it with her opposite hand, until finally she could bear to clasp her left wrist in her right hand, when she commenced assisting the operator by her own passes. In about an hour she was entirely relieved except the swelling, and that was only partially reduced.

The patient was then waked up by Dr. Judson, after which I magnetised her myself without any unpleasant effects. The next evening the hand appeared as well as ever. In the course of that day, however, the patient went into the Doctor's room and stood by the table, on which was spread out his case of dentistical instruments. She had stood by the table but a few minutes, when she found herself almost asleep, and was obliged to leave the room. When I came to be informed of this fact, I felt assured, that the next time she was magnetised she would be again affected as before: and such was the fact—I magnetised her again that evening, and again her arm became rigid. The repulsion also was as great, whenever the arm was touched. I now invited several gentlemen to my room, to witness the attempt to relieve her; among them were Lawyer Haddon and Mr. Anderson, the latter of whom I desired to operate, after I had put him in communication. But very soon after those persons entered, she commenced extending her arms towards various persons, and suddenly jerking them back, saying, "something attracts, and something repels them." At this I requested every person to divest himself of every thing containing iron or steel. Mr. Haddon drew from his pocket a very large bunch of keys, a knife, and several other articles. And towards him the patient had extended her arms a great many times. But still her agitation increased, and she appeared to be particularly attracted and repelled by Mr. Haddon. Her right side attracted the iron and repelled the steel, while her left side attracted the steel and repelled the iron. Accordingly she received first a shock from the steel on her right side, and then another from the iron on her left. In this way she was constantly harassed, all endeavors to relieve her proving ineffectual, till her distress seemed too intolerable to be endured. She complained that it seemed as though it would tear her assunder in the centre of the body, and that she would prefer death to such suffering. The distress of the patient thus augmenting, I insisted that either the articles were not removed to a sufficient distance, or that iron or steel was in the room. Lawyer Haddon sat on her right side, at some distance from her, and by him she appeared to be mostly affected; so that her right side seemed repelled by him, while her left hand and arm were drawn across her body towards

him. I therefore insisted that he had steel about him in some shape or other. But he declared that he had emptied his pockets, as did also the rest. In the mean time Mr. Anderson was continually operating, but without any benefit to the subject. In the midst of the excitement, Mr. Haddon changed his seat to the left of the patient, unobserved particularly by any one in the room. The patient being asleep, her eyes closed and blindfolded to prevent the lights from injuring them, she could not have been conscious of his change of position, except from the magnetic influence. Yet Mr. Haddon had not more than seated himself, resting his chin on the head of his cane, when the left arm of the patient was extended towards him. Before this her arm was extended across her body; now it was extended from the body. As she reached out her arm, her countenance assumed a very pleasant expression, her hand opened and shut, and she remarked, "something feels good at all events." On being asked what felt good? she replied, "I don't know, something attracts it, it feels good; ha! ha! it is pleasant, I think it is steel." At this, I could not refrain from quite excited feelings towards lawyer Haddon, believing that he had practiced some deception. Finally, he pulled the head of his cane, and drew out a large sized sword. "There," said he, "take that away, I retained it *designedly*, and am satisfied she was affected by it." This was then taken out, and put with the other articles in the ball-room. But they seemed yet to get a deeper hold of her. I requested that they might be removed out of the house, but as no one took a sufficient interest to do it, I led her into the middle of the street, and then out to the outer part of the village, where Mr. Anderson, by operating on her right side, fully charging it with his own fluid, and then passing it over to the left shoulder, and down the arms to the ends of the fingers, also down her left side to the ends of her toes, relieved her almost entirely. This was done from the patient's own direction. We then woke her up, as she stood in the street. She was much surprised on restoration to consciousness, and even went into quite a rage, supposing she had been imposed upon. She, however, became appeased on an explanation, and walked with me to the house.—As we entered the hall, Mr. Haddon with his cane in his hand, and several others, stood by the table conversing. When we passed them to go up stairs, she took a sudden sheer off from them, towards the wall, at the same time her body shuddered. She could not have been aware of the particular cause.

The next day she appeared very well, except that she, once in a while, experienced slight shocks. Towards night, however, we had a few flashes of lightning at a great distance, from each of which she experienced a slight shock. On Monday afternoon a cloud passed over quite heavily charged. The first flash shocked her heavily. I then ordered her to bed, and had her room darkened, so that she could not see the flashes; nevertheless, she received a shock from every flash. After the cloud had passed over, she was at once conscious of it, and said she felt better, and did not think her arm would trouble her any more. And thus far it has not. It has been magnetised repeatedly since, but no such symptoms have ever attended. I have stated these facts just as they occurred, and shall submit them to you without comment. They are simply an amplification of what has been observed by almost every magnetiser, except in one respect. And that is, the remarkable phenomena of one side of the same person repelling the other, so that the body was at war with itself. If such an instance was ever before known, I never heard of it. Yours respectfully,

O. K. LAMESS.

Brooklyn, N. Y. Sept. 14, 1842.

ELECTROTYPING.

The process of Electrotyping, introduced by Professor Jacobi, of Berlin, is exciting a good degree of curiosity amongst our citizens, and we are often asked what that process is. It is said to be very simple. By it the impress of coins, medals, and engravings, are transferred to copper, representing with the most perfect accuracy even the delicate lines of the original, and copies of rare and curious works of art may be multiplied to any extent.

A few years since, Professor Jacobi, of Berlin, succeeded in producing lines of metallic copper upon plates of the same metal, from a solution of Blue Vitriol (sulphate of Copper) by means of Galvanism. Numerous experiments were subsequently made to produce casts of medals, if possible, copperplate engravings, and other works of art, which were highly successful. Rare and curious coins, medals, engravings in copper, steel, &c. can now be copied, with the most perfect accuracy. The minute exactness and great delicacy of the process are such, that not only every leaf, line, or letter of the medal or engraving is correctly transferred, but also any slight soil or of dimness occasioned by the breath or touch of the fingers is also copied with equal precision. For minuteness of execution it equals the Daguerreotype. *Daguerreotype plates have been copied by means of Electrotypes.* This, perhaps, is the most striking instance of the exquisite delicacy of the process.

The chemical phenomena attending it are interesting. Indeed it may well excite surprise that from a beautiful transparent liquid, solid plates of copper can be obtained, and may be made to assume any form corresponding with the article to be copied.

Two liquids—one the solution of Sulphate of Copper, and the other water highly acidulated, are brought in contact with each other, yet in such a manner as to avoid mixture. This is effected by interposing between them some animal membrane. A circular current of Electro-Galvanism is then made to revolve through the two liquids both of which undergo chemical decompositions. The copper held in solution in the blue liquid is REVIVED and precipitated, not in the form of powder, but according to its own principles of crystallization. It is as if the copper when revived, was reduced to its ultimate atoms, and then by virtue of its crystalline properties, these atoms which must be infinitesimally small, unite to a solid copperplate. If a medal, or matrix containing the impression of a medal, be placed in the solution in such a manner as to form one of the poles of the Electrotypes, it will receive the deposit of copper, on one side of which will be a perfect *fac simile* of the medal.

Engravings have in this manner been made; and used extensively in Printing. No difference could be seen between the picture struck off from the original engraving, and those printed from the Electrotypes copy.

VOLCANIC ACTION.—A fact of great interest has been proved, by the borings for Artesian wells in the suburbs of Paris, viz. that as we go toward the centre of the earth, the temperature increases at the rate of about one degree for every 50 feet. That the whole interior portion of the earth, or at least a great part of it, is an ingenious ocean of melted rock, agitated by violent winds, though I dare not affirm it, is still rendered highly probable, by the phenomenon of volcanoes. The facts connected with their eruptions have been ascertained, and placed beyond dispute.—How then, are they to be accounted for? The theory, prevalent some years since, that they are caused by the combustion of immense coal beds, is per-

fectly puerile, and is entirely abandoned. All the world would never afford fuel enough for a single exhibition of Vesuvius. We must look higher than this, and I have no doubt that the whole rests on the action of electric and galvanic principles, which are constantly in operation in the earth. We know that when certain metals are brought together, powerful electric action is evolved, and a light is produced, superior even in effulgence, to the splendor of the sun. Now, if a small arrangement produces such results, what may we not expect from combinations of those immense beds of metals, to be found in the earth? Here we have a key to all the grand phenomena of volcanic action. Illustration on a small scale, may be seen in an instrument called the thermo electrical battery, made of zinc, bismuth, and antimony, packed in a box and varnished. In this, heat is evolved below, while the top is cold; and here we have the very case of the volcano, when in the interior, a fiery ocean is heaving its surges, while its peak is capped with everlasting snows.—[Professor Silliman.]

IMPORTANCE OF TRUTH.—Who can tell how soon science may throw her light on that truth that is now discarded, and show its application to some useful purpose? The falling of an apple is an insignificant thing, considered in itself, yet it was the clue that led Newton to some of the grandest discoveries in Philosophy. How many ages passed away, before a Fulton conceived the utility and application of steam? Yet every old woman that had ever boiled a tea-kettle had generated steam; there was the truth, and the man that first applied it to propelling a boat with paddles on the Delaware, was thought to be crazy, by the wiseacres. The fact is, we have conceived certain things to be impossibilities, and in our vocabularies this word means, something we have never known. The circulation of the blood was an important discovery in Medical Jurisprudence; and would not the simple fact of the circulation of the blood have been a truth worth preserving, supposing it had been accidentally discovered by some one who knew not what application to make of it? And is any man prepared to say, that all that may be known of value, in relation to it, is already known? Let me say, truths are previous things; they are the pioneers to grand and useful discoveries; they are diamonds that are sparsely strewn along the shore of time; if we find one, let us preserve it, husband it as a miser does his gold; the day may come when we can use it. Pure science is always modest. It vaunteth not itself, is not puffed up, acteth not rashly, but rejoiceth in truth.—Pitts. Ch. Advocate.

AN AERIAL EXCURSION.—Mr. Wise, the aeronaut, made an ascension in his balloon on Saturday from Bellfonte, and safely descended. He describes the trip in glowing language, and says:

"I have at present in use a black balloon, which creates a congenial atmosphere around it in the cold upper regions of the atmosphere, from the radiating superiority of that colour over a lighter one. It is now beyond a doubt in my mind established, that a current from west to east, in the atmosphere, is continually prevailing within the height of twelve thousand feet from the level of the ocean. Both my trips this season were strong proofs of this. At Lewistown, I arose with the breeze from the south-west, and finally landed east of that place."

CURIOUS DISCOVERY.—Plants will grow more luxuriantly beneath glass of a blue, violet, or indigo color; but this growth is wholly checked beneath yellow and red glasses.

THE MAGNET.

NEW YORK, OCTOBER, 1842.

THE MAGNETIC NATURE.

It will appear, we think, in the course of these articles, that we have some good and sufficient reasons for applying the term magnetism to that peculiarity in our nature, now under notice. At the same time, we have no partiality for this term, if a better one can be found. What we now wish, is to give the reader some idea of that singular *susceptibility* of the nervous system, which seems to have resulted in so many strange phenomena, which have heretofore remained unexplained.

In our last, we showed the power which one's mind has over his own nervous system. We will now give a few facts, to show how the nervous system often sympathises with the influence exerted over it, from others, and in proceeding to the following facts, the reader is particularly requested to bear in mind the statements already made with regard to the electrical forces, which the Deity has subjugated to the power of the human *mind*. It will yet be found true, we have no doubt, that in no one sense did God create man in his own "likeness," more than in that of his mind; by which God gave to the human WILL the self-determining power, and to a limited extent, control over matter. Indeed, it is worthy of notice, that almost in the act of making man from the dust, and breathing into his nostrils the "breath of lives," God, by an express declaration, gave him "*Dominion* over the fish of the sea, and over the fowls of the air, and over every living thing that moveth upon the earth." And this ordination of the Deity, it will be seen, is in most beautiful harmony with the positions we have assumed with regard to the power of the human mind over the *attracting* and *propelling*, or contracting and expanding forces, before described.

This doctrine may have startled some of our readers, perhaps; but we hope they will suspend their decision against it till they shall have given the subject that calm and prayerful consideration which its importance demands, and without which, we cannot reasonably expect to arrive at the truth on any subject. There may be many truths in connexion with the philosophy of mind, which are yet to be learned; and it is, certainly, not the better way, for any one of us to come at once to the conclusion that, because a position is new to us, that therefore it is not true, and should be rejected as unworthy of notice.

We could not, of course, find room for any considerable portion of the facts we have at command elucidating this subject, but the following, it is believed, will be sufficient to bring it sufficiently before the mind of the reader:

"In a poor house at Harlem, under the inspection of the learned Dr. Boerhaave, a girl, under an impression of terror, fell into a convulsive disease, which returned in regular paroxysms. An interested by-stander witnessing her, was seized with a similar fit, which also recurred at intervals. On the day following, another was attacked; then a third, and a fourth; and finally, nearly the whole of the children, both girls and boys, came to be affected in the same manner. No sooner was one seized than the paroxysms pervaded nearly all the company. Every

remedy was prescribed by attending physicians which their skill could suggest, but all in vain. They then applied to Dr. Boerhaave to come and examine the nature of this complaint, and to prescribe a remedy if possible. The learned doctor immediately observed that the disease was communicated from one to another by *sight*; and he inferred that it was the effect of imagination solely, and that he must apply his means to the minds of these children, rather than to their bodies. He resolved, therefore, on the experiment of diverting their minds from those paroxysms by rendering a fit extremely hazardous. Having apprized the magistrate of his design, he ordered, in presence of all the children, that several portable furnaces should be placed in different parts of the chamber, containing burning coals, and that irons, bent to a certain form, should be placed in the furnaces. He then gave these further commands:—that all medicine would be entirely useless, and the only remedy with which he was acquainted was, that the first which should be seized with a fit, whether boy or girl, must be burnt in the arm, to the very bone, by a red-hot iron. He spoke this with uncommon dignity and gravity, and it was completely successful. The idea of burning in case of a fit, was enough to enable them to counteract the tendency of their minds to fits, or these spasmodic affections, and the complaint occurred not again."—*Rees' Cyc. vol. 19, part 2, Art. Imitation.*

Some years since, a Mr. Perkins gained great celebrity, both in this country as well as Europe, for the cures he effected by the use of two small pieces of pointed metal, which he called "Tractors." However, we believe the popularity of his "Tractors" did not last long, after it was found out that wooden pins produced the same salutary effects, when applied to the bodies of diseased persons.

In 1808, and for some time after, a Mr. Austin, of Colchester, Vt., gave out that he had "the gift of healing;" and that he could cure diseases without even seeing the patient; and many were the accounts published at those times, of the cure of deafness, blindness, and consumption, cured by the "Prophet of Colchester," as he was called.

History gives us an account of one Valentine Greatracks, who lived in the time of Cromwell, and who proclaimed himself empowered of God to cure the scrofula, and other diseases. Many professed to be healed by the touch of his hand, and he tells us that even the touch of his *glove* had removed many kinds of pain, and fits from women.

About the same time a Capuchin Friar, by the name of Bagnone, pretended to "the gift of healing," by the touch of his hand alone. Multitudes attended him wherever he went, and many professed to experience the healing power, with which they believed him endowed.

The following interesting account is given in the words of the Rev. Charles Wesley, and may be found in *Southey's Life of Wesley, Vol. 1, p. 141.*

"To day one came who was pleased to fall into a fit for my entertainment. He beat himself heartily. I thought it a pity to hinder him; so instead of singing over him as had often been done, we left him to recover at his leisure. A girl, as she began her cry, I ordered to be carried out. Her convulsions were so violent as to take away the use of her limbs, till they laid her without at the door and left her; then she immediately found her legs and walked off. Some very unstill sisters, who always took care to stand near me and tried who could cry the loudest, since I have had them removed out of my sight, have been as quiet as lambs. The first night I preached here, half my words were lost through the noise

of their outcries; last night, before I began, I gave public notice, that whosoever cried so as to drown my voice, should, without any man's hurting them, or judging them, be gently carried to the further corner of the room; *but my porter had no employ the whole night.*"

Some years ago, we saw a work written by Pres. Edwards, giving an account of the great revival of religion which took place in New England, about the year 1745, in which were detailed a number of facts of this kind.

Most of our readers have probably heard, or read, of the strange occurrences which took place in Kentucky and Tennessee, some forty years ago, during what was denominated the Great Revival there. A particular account of them is given in Lorenzo Dow's Journal, and in the *Ed. Med. and Surg. Jour. vol. 3, p. 446*; and also by various others, which may be seen quoted in Powers' "Essay on the Influence of the Imagination over the Nervous System." The following account is from Dr. F. Robinson, of Tenn.:

"The churches in these states, at that period, (1800) were small and uncomfortable, and the people from necessity assembled in the open field at extraordinary meetings. These meetings lasted from three to five days.—They remained upon the spot day and night, and worshipped their Maker incessantly. The outward expression of their worship consisted chiefly in alternate crying, laughing, singing and shouting; and at the same time, performing that great variety of gesticulation, which the muscular system is capable of producing. It was under these circumstances that some found themselves unable, by voluntary efforts, to suppress the contraction of their muscles; and to their own astonishment, and the diversion of many of the spectators, they continued to act from necessity, the curious character which they had commenced from choice. The disease no sooner appeared, than it spread with rapidity through the medium of imitation. Thus it was not uncommon, for an affected person to communicate it to a greater part of a crowd who from curiosity or other motives had collected around him. It attacks both sexes, and every constitution; but evidently, more readily those who are enthusiasts in religion.—The contractions are sudden and violent, such as are denominated convulsive; being sometimes so powerful, when in the muscles of the back, that the patient is thrown on the ground, where for some time, his motions more resemble those of a live fish, when thrown on land, than any thing else to which I can compare them. During the intermission, a paroxysm is often excited at the sight of a person affected, but more frequently by the common salute of shaking hands. The sensations of the patient in a paroxysm are generally agreeable, which the enthusiastic class often endeavor to express by laughing, shouting, dancing, &c. Fatigue is almost always complained of after violent paroxysms; and sometimes a general soreness is experienced. It has not proved mortal in a single instance within my knowledge, but becomes lighter by degrees, and finally disappears." The author adds by a subjoined note,—"*Some who took the disease in 1803, have not yet (1805) entirely got rid of it; but these instances of its long continuance, are very few.*"

These convulsions were commonly called "the jerks." Another writer, (McNeman) quoted by Mr. Powers, gives the following account of them:

"At first appearance, these meetings exhibited nothing to the spectator, but a scene of confusion, that could scarcely be put into human language. They were generally opened with a sermon; near the close of which, there would be an unusual outcry; some bursting forth into loud ejaculations of prayer or thanksgiving for the truth; others breaking out in emphatical sentences of exhortation; others flying to their careless friends, with tears of compassion, beseeching them to turn to the Lord. Some struck with terror, and hastening through the crowd to make their escape, or pulling away their relations;—

others trembling, weeping and crying out for the Lord Jesus to have mercy upon them, fainting and swooning away, till every appearance of life was gone, and the extremities of the body assumed the coldness of a dead corpse. Others surrounding them with melodious songs, or fervent prayers for their happy resurrection in the love of Christ."

"The rolling exercise consisted in being cast down in a violent manner, doubled with the head and feet together, and rolled over and over like a wheel, or stretched in a prostrate manner turned swiftly over like a dog. They were sometimes driven in this manner through the mud, and were sullied from head to foot. Nothing in nature could better represent the jerks, than for one to goad another alternately on every side with a piece of red-hot iron. The exercise commonly began in the head, which would fly backward and forward, and from side to side, with a quick jolt, which the person would naturally labor to suppress, but in vain. He must necessarily go as he was stimulated, whether with a violent dash on the ground, and bounce from place to place like a foot-ball, or hop round, with head, limbs and trunk twitching and jolting in every direction, as if they must inevitably fly asunder. Sometimes the head would be twitched right and left, to a half round, with such velocity, that not a feature could be discovered, but the face appear as much behind as before. Head-dresses were of little account among the female jerkers. Even handkerchiefs, bound tight round the head, would be flirled off almost with the first twitch, and the hair put into the utmost confusion; this was a great inconvenience, to redress which, the generality were shorn, though directly contrary to their confession of faith. The barks consisted in being compelled to imitate the canine animal; and persons thus affected moved about on all fours, growling and snapping the teeth, and barking in so personating a manner, as to set the eyes and the ears of the spectator at variance. These persons, however, were the most gifted in prophecies, in trances, dreams, visions, fragrant smells, and delightful singing in the breast. Some were favored with an interview with their departed friends, and learned their different allotments in the invisible world; some saw the holy city, and heard the songs of the angelic hosts, others in their visions were employed in crossing rivers, climbing mountains, finding treasures, fighting serpents, or more delightfully employed in eating the fruits of the tree of life, bathing in clear water, casting off old garments, and putting on new."

The following account of these singular occurrences is from Dow's Journal, before referred to. In the year 1805, he preached in Knoxville, Tenn. before the governor, when about one hundred and fifty persons, (among whom were a number of Quakers) had the jerks. He adds:—

"I have seen all denominations of religion exercised by the jerks, gentleman and lady, black and white, young and old, without exception. I passed a meeting house, where I observed the undergrowth had been cut away for a camp meeting, and from fifty to a hundred saplings were left, breast-high, on purpose for the people, who were jerked, to hold by. I observed where they had held on, they had kicked up the earth as a horse stamping flies. A Presbyterian minister told me, while he was preaching the day before, some had the jerks. I believe it does not affect those naturalists, who wish to try to get it to philosophize upon it;—and rarely those who are the most pious; but the luke-warm, lazy professor, is subject to it. The wicked fear it and are subject to it, but the persecutors are more subject to it than any; and they sometimes have cursed and swore, and damned it, while jerking."

It is a fact, not generally thought of perhaps, that the Quakers, at first received this name from the circumstance of their being convulsed with these or similar affections of the nervous system. And they have prevailed more or less, among the Methodists, Baptists, Cumberland

Presbyterians, and other sects; and the authenticated facts upon record, of this kind, would fill a large volume.

It is true, many pious people attribute these occurrences to the powerful influence of the Holy Spirit.—That many persons affected in these ways, are pious, sincere christians, there can be no doubt. But a knowledge of the nervous system, and the nature of the human mind, would leave us little doubt, that these things may be rationally accounted for in some other way.

We have often seen persons "lose their strength," as it is called, at camp-meetings, and other places of great religious excitement; and not pious people alone, but those also, who were not professors of religion. In the spring of 1824, while performing pastoral labor, in Dennis, Mass., we saw more than twenty men, affected in this way. Two young men of the name of Crowel came one day to a prayer meeting. They were quite indifferent.—We conversed with them freely, but they showed no signs of penitence. From the meeting they went to their (shoemaker's) shop to finish some work, before going to the meeting in the evening. On seating themselves, they were both struck perfectly stiff, as if paralyzed by a stroke of palsy. We were immediately sent for, and found them sitting, paralyzed, on their benches, with their work in their hands, unable to get up, or to move at all! We have seen scores of persons affected in the same way.—From ten to twelve years ago, the papers gave an account of a young lady in Philadelphia, who remained in a similar state some eight or nine days, and it is said her face shone with a peculiar brightness. We have seen persons lie in this state, for forty-eight hours. At such times they were unable to converse, and sometimes unconscious of what was passing around them. At the same time, they say they are in a happy state of mind.

We have thrown numbers of persons into what is called the magnetic sleep, and as far as we have been able to determine, there is a most striking similarity, between this state and that into which the nervous system seems to be thrown, when persons are said to "lose their strength," under great religious excitement. As for instance, we have seen scores of persons so affected by religious excitement, that the entire body became as rigid as if it were frozen. The principal difference in these two states seem to be, in the personal agencies by which they are induced. In the former, it comes to pass, by the influence of the imagination over the person's own nervous system; in the latter, it is produced by the WILL of another.

In our next, we shall give some facts, tending to demonstrate the polarity of this magnetic nature; or that in some respects, it is governed by laws similar to those which regulate the natural magnetic forces.

HUMAN MAGNETISM.—Directions for its Application to the Cure of Disease, by La Roy Sunderland, New York, Phreno Magnetic office, 138 Fulton street, 1842.

This is a small pamphlet of 36 18mo. pages, containing full directions for the application of magnetism to the cure of disease. We have had frequent applications for a work of this kind, and are certain that this will be found sufficient for all ordinary purposes. 50 cents per dozen, \$3 per hundred.

PHRENOLOGY.

MENTAL ORGANS.

From the first, we have had it in contemplation to give a list of the mental organs, the existence of which have been demonstrated, or rendered highly probable by our magnetic experiments, and we have been urged to this, also, by the request of numerous patrons, often repeated.

In giving the following, we must state:—

1. That all the light which our experiments and examinations have shed upon the subject of phrenology, has not led us to think of altering one of the land-marks laid down by the immortal Gall; indeed, all the results, at which we have arrived, have most wonderfully confirmed the discoveries and positions assumed by that distinguished man with regard to those organs, the locations of which, were definitively fixed by him. It is true, we think we have found a much larger number of specific organs, than Dr. Gall ever seems to have imagined the existence of, but he was before all others in marking the portion of the brain where the family, (if we may so speak,) was to be found. As, for instance, where he located one organ, we have found a cluster of the same class, or family. In that portion of the brain which he appropriated to Love of Approbation, for instance, we find one for the WILL, one giving a sense of dignity of character, one giving a sense of *modesty*, another giving a sense of ridicule, another for vanity, giving a desire for *display*, &c. And in the region which he called Ideality, we have found a larger number still; indeed, we are inclined to believe there are as many as twenty distinct organs in the portions hitherto appropriated to Ideality and Sublimity; but they seem to be only so many members of the family which was discovered long ago, by Dr. Gall.

2. We are not able to speak so confidently of some of the new organs in this list as we could desire. The new organs we have put in italic, and though we have demonstrated the existence of most of them beyond all reasonable doubt, in our own mind, yet, there are a few which we are only prepared to mention as highly probable, as we have not had opportunity for making a sufficient number of examinations to authorize our putting them down as certain. We have found them in a few subjects, in which we have been able to excite them, and we shall wait for further light before we come to a final conclusion as to the location and the precise nature of their functions.

3. We have not yet classified the organs to suit our views of their real functions. The following division of them into families is not satisfactory, but it is the best we have been able to do amidst our numerous professional duties, hitherto.

4. We have, from the beginning, felt considerable embarrassment, for the want of suitable names for the different organs. We never did like some of the old names, and we have by no means found it an easy matter to select or originate a suitable name, for many of the new organs which we think we have more recently discovered. And in giving the following list, we would not by any means, wish to identify any portion of the brain with the names or terms here used, so as to prevent the use of more appropriate ones, should they hereafter, be suggested.

5. We would respectfully suggest, to others who have made this subject their study, whether it would not subserve the cause of science, if they, also, were to publish the results of their own observations. Let us compare notes, and when we shall have received sufficient light upon the location and functions of the new organs, we shall furnish our readers with a plate which will enable them to designate those portions of the brain where they are to be found.

I. LIFE—ITS COMFORTS AND PRESERVATION.

Vitateness.—Giving a desire to live; and also, the power of living against disease.

Dread of Death.—Fear of dying; unwillingness to go through the struggle of death,

Desire for food.

Thirst.

Smell.

Taste.—The power of distinguishing flavors.

Acquateness.—Desire for the use of water, as in washing and swimming.

Desire for Money.

Destructiveness.

Acquisitiveness.

Grief.

Anger.

Ravenousness.

Desire to Hoard up Treasures.

Desire for Protection.

Fear of Bodily Pain.

Caution.

Discontent.

Inquisitiveness.

Desire for Precious things.

Love of Stimulants.

II. OUR CONDUCT TOWARDS OTHERS.

Suavity.

Praise.

Censure.

Deception.

Disguise.

Secretiveness.

Cunning.

Courage.

Boasting.

Aversion.

Retribution.

Covetousness.

Contradiction.

Veneration.

Watchfulness.

Jealousy.

Combativeness.

Suspicion.

Sarcasm.

Hatred.

III. AFFECTION AND ATTACHMENT.

Amativeness.

Connubial Love.

Filial Love.

Parental Love.

Love of Pets.

Love of Gifts—Keepsakes.

Adhesiveness.

Love of Enemies.

Forgiveness.

Inhabitiveness.

Love of Country.

IV. SELF GOVERNMENT.

The Will.

Self Esteem.

Self Confidence.

Dignity.

Ambition.

Desire of Display.

Dread of Ridicule.

Vanity.

Modesty.

Love of Praise.

Concentration—Recent—Power of confining the attention to recent events.

Concentration—Ancient—Power of confining the mind on the contemplation of events long since passed.

Firmness.

Perseverance.

Sense of Responsibility.

Industry.

V. INTELLIGENCE, SCIENCE, KNOWLEDGE OF MEN AND THINGS.

Language.

Comprehension.

Number.

Mathematics—Calculation.

Order.

System—Method.

Conservativeness.

Melody—Tune.

Harmony. The power of combining and judging of the harmony of simple sounds.

Individuality.

Things—their identity.

Names.

Form.

Size.

Weight.

Color.

Light and Shade.

Eventuality—Recent.

Ancient Eventuality.

Simple Comparison.

Comparison of Ideas.

Perception of Motive.

Prevision.

Generalization.

Analysis.

Recent Causality.

Remote Causality.

Locality.—Sense of the direction of one place from another.

Desire for seeing Ancient places.

New Places.

Time.

Invention.

Constructiveness.

Sublimity and Ideality. In the portions of the brain where these organs have been marked, there seems to be

a large number, such, for instance, as give a taste for seeing—

Architecture, Waterfalls, Statuary, Volcanoes, Caverns, the Heavens, the Earth, Animals, Birds, Insects, Storms, Battles, the Ocean, Fruits, Flowers, Meteors, Landscapes, Pyramids, &c.

Imitation.

Antiquities.

Perfection.

VI. INTELLECTUAL HAPPINESS.

Beautiful.

Contentment.

Cheerfulness.

Joy.

Mirthfulness.

Playfulness.

Fiction.

Curiosity.

Hope.

Confidence.

Wit.

VII. RELIGION.

Conscientiousness. Justice.

Worship—Adoration.

Obedience.

Gratitude.

Pity—Compassion.

Benevolence.

Faith.

Spirituality.

Compassion.

Marvellousness—Wonder.

Belief.

Fear of God.

In addition to the above, we have found, that by exciting other portions of the brain, we produce the feeling of *infancy* and *childhood*; and also *insanity* and *madness*.

It is difficult, however, to tell with precision, the shades of difference between the manifestations of different portions of the brain, but we have seen enough to convince us, beyond all doubt, that there is much yet to be known as to the number and real functions of many other portions of that important organ.

THE NERVOUS INFLUENCE.

We must beg the reader to bear in mind, as we have before stated, that we do not agree, in all respects, with the views set forth in the work from which these extracts are taken. Nevertheless, there appears to be in it so much that is evidently true, that we feel fully justified in continuing our quotations.

INFLUENCE OF MATTER IN THE MENTAL OPERATIONS.

The material part of our nature is, in my belief, more deeply concerned in the operations of the mind than is generally supposed. As far as I can discern, its influence is extensive and important, and even indispensable to the performance of the mental functions, at least during our present mode of existence. Its nature and degree are therefore subjects worth the closest investigation, as some further insight into the philosophy of the human mind might possibly be obtained, by tracing its phenomena *through* those

of the material part, instead of considering its powers, independently of any material action.

APPARENT NECESSITY OF TWO PRINCIPLES.

An attentive examination of the phenomena of my own mind, has led me to conclude, that the action of two principles is required in all its operations.—One, dignified in its nature, unknown in its essence, characterized by the three general powers of *feeling*, *willing*, and *understanding*: the other subservient to the former, constituting the materials upon which it acts, and the tools by which it operates, and possessing at the same time the capability of acting upon and influencing it to a certain degree.

MUTUAL DEPENDENCE OF THE TWO PRINCIPLES— DEPENDENCE OF SPIRIT UPON MATTER.

The two principles are therefore dependent upon each other, in certain respects.

The present dependence of the immaterial principle of man upon matter, is made evident by the phenomena which the human constitution exhibits, and chiefly by the total cessation of the mental operations when the functions of its material organs are interrupted, as in syncope, and in every case of suspended animation. If a single act of the intelligent power could be performed during this state, we might infer that it was, so far at least, independent of matter, but even its consciousness of existence is lost, and though the soul still continues to exist, it is incapable of operating, as a workman necessarily remains inactive when he is destitute both of tools and materials. Thus we cease to see when we are left in darkness, not because the faculty of seeing is destroyed, but because the means by which we use it are wanting. This fact does not therefore afford any reason for supposing that the immaterial principle remains *extinct* when the functions of the brain are permanently arrested in death; for the possibility of an *unconscious* existence in certain circumstances is proved by its taking place during life.

DEPENDENCE OF MATTER UPON SPIRIT.

The entire and necessary dependence of matter upon spirit, is made evident by the inertness (among other reasons) which is one of its characteristic properties, for as it can neither commence nor direct its own motion, it must owe the capability of executing *any* operation to a will that can impel it, and an intelligence that can direct it.

LIMITS OF OUR SPIRITUAL POWERS OVER MATTER.

The power which has been granted to our immaterial principle over matter, is, however, partial and limited, for we are incapable of giving existence, powers or properties to a single atom. Our influence is confined to the production of *change* and *motion* in surrounding matter (in this I include, not only the excitation and direction of mechanical and muscular motion, but the excitation of the mind's material agent—that is, the brain—to the performance of the mental operations): but however narrow may be its sphere of action, our immaterial principle displays the attributes of a *spiritual nature*, viz. a will to *impel* and *call forth*, and an intelligence to *direct* both mental and material operations.

MATERIAL ORGAN OF THE MIND.

It appears that the material agent upon which the mind *directly* operates, is the brain, or rather (in my opinion) a subtle and mobile fluid, of an electric nature, of which the brain and nerves are the conductors. But this hypothesis, as I have before mentioned, is independent of any other which I may por-

pose in the course of the Essay. It is only my intention to trace the *effects* of the nervous influence upon the mind, taking it for granted that it exists, without referring to its nature, further than that I believe it to be material. All of which we can be certain is, that it consists of some action which takes place in the brain and nerves, and that when their functions are interrupted, our spiritual part loses the capability of communicating with the external world, being unable either to produce motion or receive an impression.

MYSTERIOUS NATURE OF THE NERVOUS INFLUENCE.

I am inclined to think, that the means by which these operations are performed, may perhaps be within the reach of our knowledge, and be developed when the sciences of anatomy, physiology and chemistry, shall have arrived at a greater degree of perfection—but with respect to the *direct* action of the immaterial principle upon matter, i. e. upon the nervous fluid or whatever it may be, I have no doubt that it will remain unknown as long as our faculties are restricted within their present limits. Perhaps indeed there may be no secret to discover in this ultimate operation, and the fact may be simply, that when the will decides, it is so *ordained*, that the matter allotted to its purposes should move in consequence: by which matter, I must not be understood to mean the *muscles*, but a more direct and immediate agent of the mind which acts *upon* the muscles, viz. the nervous fluid.

LIMITS OF THE CEREBRAL AND INTELLECTUAL ACTIONS.

I shall now endeavor to trace the respective limits of the cerebral and intellectual actions, first observing, that no phrase which I use is to be construed into an assertion, and that this chapter contains merely a statement of what *appears* to me to take place in the mind.

The share which the material principle takes in the mental operations, is to produce *impressions* upon the immaterial principle, and to *obey its impulse and direction*.

The part of the immaterial principle is to *feel* the impressions made by the means of the *sentient power*, to *perceive* and to *judge* of their nature and relations by means of the powers of the *understanding*, and to produce *impressions* upon matter by the power of the *will*. The immaterial principle therefore is both active and passive, for it both receives and produces impressions.

The action of the two principles will be next considered under two distinct heads, though it is not possible to separate them *entirely*, as neither can operate without the assistance of the other. The first section will treat of the *material or nervous power*; the second, of the powers of the immaterial principle. Under the first head I shall place the physical sensations, the ideas, the moral sensations or feelings of the mind, and volition, by which I mean the executive power of the will: under the second, the perceptive faculty, the judgment, the imagination, and the will.

OF THE NERVOUS ACTION.

The part of the nervous system under present consideration consists exclusively of the nervous system of the animal life, that is, of the brain, and the cerebral and spinal nerves.

FOUR NERVOUS ACTIONS.

There are, it appears to me, four different nervous actions concerned in the operations of the mind; two which take place from the nerves to the brain; one

is confined to the brain alone, and one takes place from the brain to the nerves. The two which take place from the nerves to the brain act *upon* the mind, and produce the physical and the moral sensations. The one which is confined to the brain co-operates with the mind, and contributes to the formation of the ideas; the one which takes place from the brain to the nerves conveys the mandates of the will *from* the mind to the muscles of voluntary motion, and produces an act of volition. These nervous actions are excited, some by external matter; some by the immaterial principle; and some by either; and they all form concatenations with each other, which enable them to follow one another spontaneously, if not disturbed by a new impulse from the will, or from external matter. In viewing them separately, I shall first notice the physical sensations, which must, I should suppose, from the nature of the understanding, precede every other mental operation, at least during the first development of the mind.

THE PHYSICAL SENSATIONS.

The material principle has, as I have before observed, the power of operating upon our immaterial part. The capability of the latter to *feel*, or to be sensible of the action of the former, is called the sentient power. The effect produced by matter on the immaterial principle is called a sensation.

SENSATION.

It seems that an action of an unknown nature is excited in the nerves of the organs of sense, by the various undulations of the air, by the rays of light in all their different colours, and reflected by material objects at different angles, by the subtile particles emanating from odorous substances, and by the more intimate properties of bodies that have the power of affecting the organs of taste and feeling; and that this action of the nerves is communicated to the brain, and from thence to the mind, in which it produces a *sensation*—which may be painful, pleasing, or indifferent. This constitutes the first and lowest order of functions belonging to the nervous system of the animal life. When an act of the perceptive faculties is combined with a sensation, it constitutes, as I should suppose, a perception, which being the first operation of the understanding, will be presently considered. The next mental operation consists in the formation of ideas.

FORMATION OF IDEAS.

An idea appears to me to be formed by the combination of an intellectual and cerebral action. The ideas are excited by the physical sensations, by the will, and by *other* ideas. They succeed each other in the mind incessantly (at least during our waking hours), and spontaneously; but their course can be altered by new sensations, directed by the will, and is at all times more or less regulated by the tendency of ideas to form *associations*.

ASSOCIATION.

Two or more ideas may become concatenated, so that when one is excited, the other shall naturally follow; and these concatenated ideas may be associated with moral or physical sensations, or muscular actions; so that the sensations will be always followed by the particular ideas, and the ideas will, in like manner, be followed by moral sensations, or by actions of the muscles.

I would refer the phenomena of association entirely to the *nervous action* concerned in the ideas, sensations, and acts of volition; for I am inclined to think that the *mechanical* part of all the mental operations

is carried on by the *material*, not the *spiritual* agency—the first being known to act mechanically; while such a mode of operation seems repugnant to the nature of the latter, as far as we can form any notion of it. The analogy which exists between the regular succession of muscular actions, when they occur mechanically in the order in which they have been excited, and the regular succession of ideas, gives me reason to suppose that both are regulated by the same laws which connect nervous actions. We find that “if a train or succession of nervous actions takes place, they become concatenated, and are liable to recur in succession, if one of these actions is accidentally or voluntarily induced.” Now, as the cerebral action is concerned both in the mental and the muscular phenomena, it may not be irrational to suppose that a concatenation of nervous actions takes place in one case as well as in the other. Upon this subject I will hazard a conjecture, which I have formed, under the supposition that the nervous action consists in the operation of a nervous fluid: it is, that when this fluid has been impelled by the will, or by any other exciting cause, in a particular direction, it retraces the same course with more readiness and facility.

HABIT.

To this we might attribute the power of *habit* in the muscles of the animal life, and perhaps the regularity of action in the muscles of the organic life. In both cases we find that a *disordered* nervous action becomes a regular habit in the course of time.

The concatenation of our ideas is formed independently of the will; but this faculty may be exerted, in order to produce voluntary associations; it can form them by directing the attention to two or more objects alternately and repeatedly; but I doubt whether it can ever break the link when once it is formed. The gradual operation of time alone can effect this, by causing forgetfulness; the nervous actions grow weaker in time, if not occasionally re-excited, and the union is then frequently dissolved;—or it may be suddenly broken by the interposition of more powerful nervous actions, particularly those produced by a morbid state of the brain; and we find that in insanity, many old associations are destroyed, and new ones are formed. Inflammation of the brain, fever, fits, and comatose diseases, also destroy former associations of ideas, by disordering the nervous action. If they *weaken* the cerebral action, the power by which they unite with so much tenacity is diminished or lost; the ideas themselves lose the force and vividness with which they were presented, and the *memory* is then said to be injured. To this faculty I will now direct my attention.

THE MEMORY—DEFINITION.

It is to the power which the brain possesses of repeating and concatenating its actions, that we owe the faculty of the memory, which in my opinion, is not a faculty of the immaterial principle, but results entirely from this capability in the material organ. If we consider the nature of this operation, we shall find that it consists in the repetition of former cerebral actions, in the same order in which they have been excited—a repetition which *can* take place spontaneously, and without the assistance of the will, or of any other mental power, except the perceptive faculty. What appears to be an exertion of the faculty of the memory, is an act of the *will*, which excites and directs the cerebral action, and calls forth particular trains of ideas. The will, directed by the judgement, and combined with the cerebral action, is therefore sufficient for the purpose, without supposing the existence of any distinct

mental faculty. Indeed, the memory seems to me to be more mechanical than voluntary; for we are often unable to remember what we wish, while we are compelled to remember what we do *not* wish. When we would recal an idea, or train of ideas, we are obliged to employ indirect means, such as seeking some sensible object, or calling forth some other idea, with which the one required is associated. But the will may be exerted very successfully in securing future recollections, by giving force and vividness to an impression which we wish to recal at a future period. This can be done by directing the attention to it exclusively; and by associating it with ideas which are more likely to present themselves spontaneously.

NERVOUS ACTION CONCERNED IN THE IMAGINATION.

Before I quit this part of the subject I must notice the capability of the brain to form *new* combinations, and repeat former impressions in a different order from that in which they have been received, which appears to me to be the material means by which the imagination operates.

The new arrangement of the ideas may be produced by the will, and by the moral and physical sensations, as all these have the power of exciting the cerebral action concerned in the formation of the ideas. The operations of the imagination are more or less regular, according to the causes which excite and direct them. In invention, they are directed by the will and the judgement, and the memory has a considerable share in the operation. Their greatest wildness and irregularity is exhibited in the phenomena of dreaming, and in delirium, when new associations are formed entirely independent of the judgement and of the will; and in this case, they seem to be excited exclusively by the moral sensations and to be considerably influenced by the state of the nervous system. If the connexion between the moral sensations and the nervous actions were traced, some light might possibly be thrown upon the subject.

This connection will be the next subject of consideration, and I shall now offer an hypothesis which I have formed respecting the share taken by the nervous action in the feelings of the mind.

THE MORAL SENSATIONS.

The third nervous action takes place, in my opinion, from certain internal nerves to the brain, and forms the material action concerned in the production of the moral sensations or feelings of the mind. My reasons for this opinion will be presently detailed.

The sensations which I call *moral*, to distinguish them from the physical sensations, include all the feelings, emotions, and passions of which the human mind is susceptible.

DEFINITION OF MORAL SENSATIONS.

I should define a feeling of the mind to be a *sensation* of a peculiar kind, associated with an idea, or a train of ideas. Upon considering their nature, I cannot doubt that they are sensations, i. e. nervous actions, felt by means of the sentient power, but of a different kind from those produced through the medium of the external organs of sense, and excited by a different cause, that is, by the ideas, instead of by external matter. The moral sensations are in some cases naturally associated with the ideas which excite them, and in others the association is formed by circumstances: these sensations excite in their turn other ideas, belonging both to the memory, and the imagination. The imagination appears to me to be most powerfully excited through this medium.

SEAT OF THE MORAL SENSATIONS.

The distinctness with which I can trace the action of the moral sensations to the region of the chest, convinces me that it is not confined to the brain, but that it is intimately connected with certain internal organs. In this opinion I have been confirmed by every observation which I have made upon the phenomena which the mental feelings exhibit. I will now explain my notions respecting the *part* of the nervous system to which I think this action may be referred. We cannot of course refer it to the nerves of the external senses; still less to those of voluntary motion; neither is it probable that the nerves derived from the ganglia & the spine, by which the vital functions are carried on, should convey the moral sensations to the brain. I would therefore place them in the *cerebral nerves* which descend to the vital organs, and which thus appear to connect the animal and the organic life. Might they not result from the excitation of the *eighth pair of nerves*, or *par vagum*, which, in its long and irregular course, traverses the lungs, and gives off branches to the heart? The action of some nerves in the chest is so evident, in this class of operations, that the feelings have been referred to the heart by common opinion from time immemorial. The branches of cerebral nerves which the heart receives do not appear to be intended for the purpose of producing muscular motion, as the contractions of this organ are carried on independently of the brain: we may therefore suppose that they are intended to answer some other purpose. The *par vagum* sends branches to the larynx, and it also adheres firmly to the lingual nerves for some way after leaving the brain, which may possibly account for the rapid and direct influence of the mental feelings upon the voice. This great nerve continues its course through the stomach and liver; but so far from presenting an objection to the hypothesis, it accounts, in my opinion, for the effect which complaints of these organs have upon the mind, and also for the manner in which they are affected *by* the mind.

FEBRILE ANXIETY.

There is a peculiar sensation attending that derangement of the animal frame, which produces fever, that seems to favor my hypothesis, and which is thus described:—"The sense of weight, fulness, and great uneasiness at the breast, which is denominated *febrile anxiety*, is totally different from, and independent of, the general uneasiness all over the body, and often occurs in a very disproportionate degree: it resembles that anxiety which takes place from grief, fear, and other depressing passions of the mind, and which is also accompanied by paleness, and diminution of size of the veins, which are seen on the surface. The patient likewise respires irregularly, as one under the influence of the passions just noticed, and frequently sighs deeply, as if to free himself from the load that oppresses the region of the heart." Hence it appears that certain disturbances in the physical and mental parts of our nature produce the same *sensation* in the same region, which is the breast, and the sense of anxiety, so remarkable in fever, may probably be attributed to this cause, viz. that the action of the nerves to which I refer the mental feelings, is deranged, owing to the feverish state of the whole system. As these particular nerves partake of the general derangement, the peculiar sensation, *without* the associated idea, is excited; the *physical* part of the operation only takes place, and we experience the pain without the corresponding mental cause. But even when this painful nervous action has been roused by an idea, and constitutes a feeling of the mind, we must have frequently observed that it remains a mere *sensation*,

when the thoughts are turned to objects that have no connexion with our grief.

SEAT OF THE MORAL SENSATIONS.

It must not be supposed that I consider the heart, or any other organ, as the seat of the moral sensations. I believe that sensation is produced in the *mind* by the action of the brain, and that, consequently, the mind is the seat of sensation, and the action of the brain its immediate cause. Neither do I attribute the excitement of the brain in the production of the mental sensations to the action of the heart, lungs, stomach, or liver, but to the excitation of certain nerves, connected with all these organs. I have drawn this conclusion: first from their situation; secondly, from the observations I have made upon my own internal sensations; thirdly, from the peculiar effect produced by affections of these organs upon the mind.

SITUATION OF THE EIGHTH PAIR OF NERVES.

First, with respect to their situation—as one part of the nervous system is allotted to the mental, and another to the vital functions, it seems not improbable that the eighth pair of nerves, which originates in the brain like the former, and passes into the internal organs like the latter, should connect the mental and bodily as well as the animal and organic functions; secondly, the observation of my own sensations naturally leads me to refer the mental feeling to the region of the heart and lungs; we cannot, it is true, trace the nervous action farther; but perhaps it becomes less evident to ourselves as it recedes from the brain, in the same manner that the sense of taste, which is distinct at the œsophagus, grows fainter in proportion to its distance from the brain, until the action of its nerves becomes imperceptible to the mind; thirdly, the effect of the mental feelings upon the internal organs, and of these upon the mind, is a subject which requires longer discussion. It is very evident that the influence of the mental affections upon the bodily health is very considerable, and it also is a fact, that the organs traversed or connected with the eighth pair of nerves are those which suffer from this influence. Diseases of the heart, consumption of the lungs, dyspepsia, and bilious complaints, are caused by too strong, or long-continued excitement of the mental feelings. The heart is less liable to disease than the lungs, stomach, or liver, in this case, and the stomach is the most susceptible of all, and is in general the first affected. Now it is to be remarked, that the heart only receives a *branch* of the *par vagum*; while the trunk of the nerve traverses the stomach, forms its means of communication with the brain, and has a share in the operation of digestion. This may account for the effect of strong emotions, which is sometimes so powerful as to arrest the digestion suddenly, and also for the general diminution of the digestive powers, in consequence of affliction or anxiety—a diminution which I would attribute to the exhaustion following the over-excitement of the nerves passing from the stomach. The liver lies more remote, and is affected in a more indirect manner: the depressing passions produce *chronic affections* of the liver, and, we may observe, that they are *preceded* by a disordered state of the stomach.

RECIPROCAL INFLUENCE OF THE MIND AND THE DIGESTIVE ORGANS.

If the digestive functions are affected by the state of the mind, they exercise in return an influence as powerful over our immaterial part, and whether their derangement proceeds from mental or physical causes, it equally impedes the due performance of the

mental operations: perhaps the above mentioned nerves, which communicate directly with the brain, affect the cerebral action concerned in the formation of the ideas. Common experience shews that a disturbed state of the stomach confuses the ideas and thus incapacitates the mind from using its powers; it also influences the feelings and disturbs the imagination, producing anxiety, timidity, melancholy, and irascibility.—Now this can be easily accounted for, by supposing that the nerves concerned in the production of the mental feelings, and in the excitation of the ideas associated with them, were in a morbid state of irritation.

REMARKABLE CHRONIC DISEASE.

Before I leave this subject, I will notice a chronic disease which strongly displays the influence of the internal organs upon the feelings.

This disease, which attacks the viscera successively, has no distinct place in the nosology, and is treated as a derangement of whatever particular organ is principally affected. But from the observations which I have had the opportunity of making upon its origin and progress for years, I have been led to conclude, that it is a distinct disease, which has its seat not in the organs themselves, nor yet in the general nervous system; but in that particular division of it which immediately connects the mental and corporeal functions.—In short, that it consists of a disordered action of the eighth pair of nerves, which consequently affects all the organs connected with it. The characteristics of this malady are, first, its course and progress, which distinguish it from a mere stomach or liver complaint, and give it the appearance of a *succession* of complaints. It first shews itself in the lungs, affects the heart in various ways, afterwards descends to the stomach, and from thence to the liver and the upper part of the intestines, following the same course, it will be observed, as the eighth pair of nerves. Secondly, it is made remarkable by its potent effect upon the feelings, producing irascibility, agitation, occasional melancholy, anxiety, arousing passions which do not always belong to the character, while the excitation which they give to the cerebral action, fills the imagination with horrible and painful ideas, causes frightful dreams and nightmare, and produces an apprehension of insanity.

Slighter cases are only marked by depression of spirits and irritability of temper: the malady exhibits its most decided character in individuals of an ardent temperament and *deep* as well as strong feelings, and appears to have its origin in the disturbance of these feelings, and in a too violent excitation of the cerebral action. The third distinguishing characteristic of the complaint is, that it does not yield to medical treatment like any other affection of the digestive organs, but clings to the constitution till it has spent its fury.—The reason of this is obvious, if it is caused by a disordered nervous action, for in the first place the cause is not *removeable*: when stomach and liver complaints are produced by a bad climate, intemperance, etc., much may be done by the exertions of medical skill, but here it seems capable only of relieving symptoms. In the second place, the treatment of nervous diseases is not so well understood as common obstruction or inflammation, and even if it were, this malady would have little chance of amendment if it is nervous, because it is never treated as such. It may indeed appear strange to ascribe a vitiated state of the secretions to a nervous cause, but since the action of the nerves is necessary to the operation of secretion, bilious and nervous causes cannot be so totally distinct as they appear at first sight. I might mention a fourth symptom,

which indeed seems to be an attendant of *every* nervous disease, but never in a manner so distressing.—This is an extreme susceptibility to atmospheric changes, especially with respect to its dryness or humidity, and also to the wind. The influence of weather in this case is so powerful as to produce attacks of the complaint without any other apparent cause. The nerves do not appear to be so much affected by the actual humidity of the atmosphere, as by the electrical state which precedes the *change*, and we find that a nervous barometer of this kind can frequently foretell an alteration in the weather, before the clouds make their appearance. It is my opinion that the hypochondriasis is a disease of the eighth pair of nerves, originating like the former in over-excitement, mental or bodily. But it differs from it in this respect—hypochondriasis exhibits loss of energy, *habitual* melancholy, and sluggishness of the vital functions, the other disease shews an *increase* of excitability in the organs of digestion, a morbid state of the secretions rather than a deficiency, and an inflammatory tendency in the liver or lungs. In my apprehension the same cause that produces hypochondriasis in persons of a phlegmatic temperament, when they have lost the vigor of youth, induces the complaint above described in individuals of an ardent mind, an inflammatory habit, and in the prime of life. The notion that hypochondriasis is merely a disease of the imagination must now be quite obsolete; for whoever has been troubled with nervous affections (and to whom are they not unknown?) must acknowledge that the sufferings arising from a disordered state of the nerves that belong to the digestive organs are but too real, and not the less so because the mind is affected also. In this case the body and the mind react upon each other; the despondency, fear of death, suspiciousness of disposition, and pertinacity in magnifying unpleasant sensations, affect the functions of life; while the derangement of the latter, in return, depresses the spirits and enfeebles the mind.

The last observation that I shall make on the malady above mentioned is, that I have sometimes seen it alter its direction, after having run some part of its course, but it always preserves its characteristic effect upon the spirits, though in a less distressing manner, and it remains involved in the same obscurity, baffling every endeavor to eradicate it from the constitution. In one case, after having traced its progress through the lungs, stomach and liver, I have seen it expend its irritating influence externally on the muscles and skin, in inflammatory affections for which the sympathy between the stomach and the skin may possibly account. Upon the whole, when I consider the singular phenomena exhibited by this disease, the mysteriousness of its origin, the tenacity of its adherence, the peculiarity of its course, the degree of its dependence upon atmospheric changes, and the tyranny of its influence over the mind, I am strongly inclined to believe that it is of a nervous character.

OFFICE OF THE MORAL SENSATIONS.

The moral sensations constitute the *motives* of our actions, that is, they move or incline the mind to the performance of particular action, but of this more will be said in the section on the will.

VOLITION.—DEFINITION.

The fourth nervous action takes place from the brain to the nerves, and it is excited by volition, which I define to be the power which the immaterial principle *exercises* over matter, and over mind through the medium of matter, i. e. the brain.

I distinguish it from the *will*, which I consider as

a *state* of the mind, to which it is led by the ideas, and moral sensations, while volition is an active faculty which calls into action the material organs allotted to the purposes of the mind. Volition excites the brain to the production of ideas, and through this organ the nerves to the production of muscular motion, (including the important movements of the tongue) by which means we are enabled to cause changes in surrounding matter as far as our power extends. Volition is the active power of the will; but as the capability of the will to *use* this power, depends upon the capability of the material organs to obey it, and other circumstances, the state of mind we call *willing* is not always followed by the corresponding act of volition.

MODE OF THE OPERATION OF VOLITION IN THE PRODUCTION OF MOTION.

Upon attentively examining the mode of the latter operation, it appears to me that the nerves of the voluntary muscles are not excited *directly* to the immaterial principle, but through the medium of the brain, and in the following manner. The imagination represents in idea the action we are about to perform, and if the power of volition is exerted, the cerebral action concerned in these ideas is followed by a corresponding *nervous* action, which takes place in the voluntary muscles.

CONCATENATION OF NERVOUS AND MUSCULAR ACTION.

By repeating certain nervous and muscular actions in succession, they become associated and follow each other mechanically, when they have received the first impulse from the power of volition.

OPERATION OF VOLITION IN THE EXCITATION OF IDEAS.

The power of volition also excites the cerebral action in the performance of the *mental operations*, and enables us to call forth particular ideas, or trains of ideas at pleasure. The concatenation of the *nervous* with the *cerebral* action, is made evident by the convulsive motions of the limbs, when the brain is excited by other causes than the will, as in fits of various kinds.

INFLUENCE OF PHYSICAL SENSATIONS OVER VOLITION.

The movements of the muscles which in man constitute the *fourth* nervous action, because the ideas and moral sensations are interposed between the physical sensations and the acts of volition, must, I suppose, form the *second* nervous action in those of the brute creation that have no brains, and it is probable that in this lowest class of animated beings, *motion* follows as a direct consequence of *physical sensation*. In brutes of a higher class, motion necessarily follows the *moral sensations*, i. e. *feelings*, but in man, the nervous action can be suspended to allow the exercise of the judgment, and other intellectual powers. Sensation has undoubtedly a certain share of influence over our actions, but this is neither irresistible nor even *direct*, for the operations of the understanding are, or ought to be, exercised between the impressions made upon us by matter and those which we in return make upon material objects.—It was not intended that we should move like machines, under the influence of sensation, but that the faculties which are granted, to enable us to direct our motions to rational purposes, should first be exerted. We even have the power of acting *against* the influence of sensation, and nothing proves to me more clearly the existence of a principle differing from and superior to matter, than the capability which I feel internally, of exciting and directing one material operation in direct opposition to the influence of another.

FOUR NERVOUS ACTIONS—RECAPITULATION.

From the above it will appear, that I believe the

nervous actions to be of four kinds. The first is the action of the *nerves of the senses*; it receives its excitation from external matter, and conveys it to the brain, which it excites to the production of *physical sensations*. The second is an action of the *brain*; it receives its excitation either from the nervous action concerned in the physical or moral sensations, or from another cerebral action with which it is associated, or from the will; and it co-operates with the immaterial principle in the formation of *ideas*. The third consists, (in my opinion) in the action of certain *internal nerves*, which seem to connect the mental and corporeal parts of our nature; it receives its excitation from the cerebral action concerned in the formation of the ideas, and it excites other ideas in return; this constitutes the *moral sensations*. The fourth consists of the action of the nerves of *voluntary motion*; it is excited by the will; in this case the action commences in the brain and ends in the muscles of voluntary motion, and constitutes an act of volition. These four nervous actions form concatenations, in the order in which they have been enumerated.—The first proceeds from the exterior of the body to the brain. The second is confined to the brain alone. The third takes place from the brain to the internal nerves. The fourth proceeds from the brain to the exterior.

INTELLECTUAL OPERATIONS.

The office of the material organs which are allotted to the purposes of our spiritual part, formed the subject of enquiry in the last section; the powers of the principle which *employs* these agents, will be the next object of consideration.

ATTRIBUTES AND NATURAL POWERS OF THE IMMATERIAL PRINCIPLE.

The most deep and fixed attention that can be bestowed upon the phenomena of the mind, will not enable us to discover its essence, or constituent substance; we can only perceive that it possesses and exercises certain faculties which distinguish it from every other principle with which we are acquainted. We can be clearly conscious that we *feel* the impressions made upon us by matter, that we can *perceive* or be sensible, of the existence, properties, and relations of the things which makes these impressions upon us; and that we can, to a certain degree, *voluntarily direct* our material and mental operations. These which we call the sentient power, the understanding and the will, appear to me to be the inherent powers of the soul, and its distinguishing attributes; not acquired, but forming as it were, a part of its nature, and distinguishing it distinctly from matter, which in every situation within our knowledge, shews that it does *not* possess them.

ACQUIRED POWERS OF THE IMMATERIAL PRINCIPLE.

We feel, perceive, and act, as soon as our powers are called forth, but the capability of perceiving with *correctness*, and directing our *movements* with *certainly* and *precision*, is acquired. For this purpose we are enabled to perform certain mental operations; the cerebral action on the one hand, can be excited to the repetition of former impressions, and to the formation of new combinations, in the operations of memory and imagination; the immaterial principle on the other hand, can excite and direct the operations of the brain, combine and arrange these various materials, form others from them, and by means of its acquired knowledge and numerous ideas, become an enlightened rational agent; in this manner the memory and imagination supply the materials, and the judgment makes use of them.

The faculties which are most immediately connec-

ted with the material action, viz. the sensations, ideas and volition, have necessarily been included in the preceding section; those which remain are the intellectual powers, and the will, which will be treated under two separate heads.

POWERS OF THE INTELLECT.

The powers of the intellect are the highest attributes of the immaterial principle. They consist, I apprehend, of the perceptive faculty, the judgment, and the imagination; the reasoning power I do not consider as a separate faculty, as reasoning is only an extended operation of the judgment—it is a chain of judgments.

THE PERCEPTIVE FACULTY.

The perceptive faculty is the power by which we are made sensible that things possessing certain properties exist. It is the first intellectual power that is developed, and the one which derives most assistance from matter in its means of operation. Its objects are either material, in which case they are presented by the senses; or mental, when they are presented by the memory and the imagination.

PERCEPTION—SIMPLE, COMPLEX, AND ABSTRACT IDEAS.

The first *active* operation of the mind, is perception, which appears to me to take place in the following manner. The various properties of an object make their several impressions on the mind, through the medium of the organs of sense and the brain; this is *sensation*, and so far the mind only *feels* the impression made by the color, taste, etc., of an object, and is passive under the operation; but these various impressions are repeated by the brain, and become concatenated, and then present to the mind the idea or image of the object with all its properties combined, as far as they have been made known to us by means of the sensations; if one property alone is presented, as for example, light or darkness, it forms a *simple* idea; if several, as man or ship, it is a *complex* idea. By observing that different things possess the same properties, we form the idea of a property or a quality, *independently* of any one particular object, and this is an *abstract* idea.

LANGUAGE.

For this purpose we require the aid of language, which represents by signs, what cannot be represented by images, and thus enables us to perform the higher intellectual operations. I should suppose that the sensations, and the repetition of them by the cerebral action, form the foundation upon which the superstructure of all our other ideas is gradually raised by the operation of the mental faculties. If we were only susceptible of sensation, we should feel an impression without attaching any idea to it, no corresponding action of the brain being excited; this is probably the case with animals that have no brains, and consequently can only *feel*, and do not *perceive*.

ABSTRACTION.

The difference between sensation and perception is made evident when the mind is in a state of *abstraction*, that is, when it is occupied in perceiving the ideas presented by the memory and imagination, instead of those produced by surrounding objects.—In this case, the mind still receives the impression of light, color, etc., which external objects make upon it, because when we are awake, the channels of communication with external objects are not closed; but it is passive under these impressions, and attaches no ideas to them, because it is at that time employed in the perception of other objects.

THE JUDGMENT.

The judgment is more intellectual in its operation than the perceptive faculty, and is the power next developed in the mind.

DEFINITION OF THE JUDGMENT.

The faculty of perception makes us aware that things exist; but they not only *exist*, but *act* upon each other, by means of certain powers and properties, and *judgment* is the faculty by which we are made sensible, that the change which takes place in one object, has its cause in some property that resides in another. The means by which we are enabled to use this power with correctness, are experience and observation; these form the judgment, and gradually give us the capability of discerning causes and foreseeing effects with accuracy. We first perceive that certain objects always produce particular effects upon ourselves, and we attribute these effects, (i. e. sensations) to certain properties possessed by these objects. By observing that the same objects under similar circumstances, produce the same effects, we learn to foresee what effect will follow a particular *cause*, and to form conclusions respecting what cause must have produced a particular *effect*. The judgment decides respecting what *must* be, by what *has* been, and this recollection of what we have felt and observed, we call experience. The same causes must produce the same effects, under the same circumstances, and it is this certainty which enables the judgment to draw right conclusions; a correct knowledge of the *attendant circumstances*, is therefore as indispensable as a *precedent*, to guide the judgment, and our ignorance or error on this point is one of the numerous causes that mislead this faculty. As the judgment is formed by experience, its accuracy must be partly dependent upon the particular circumstances in which we have been placed; hence, while physical perception is nearly the same in all men, this faculty exhibits different degrees of power, even in minds possessing an equal degree of *natural* capability, because it not only varies according to the strength of the intellect to which it belongs, but also according to the means by which it has been developed.

THE REASONING FACULTY.

The capability of judging respecting *immediate* causes and effects is not sufficient for the execution of the mental operations. We are enabled, therefore, by the help of the memory, which presents facts and former judgments to the mind, to *trace a series* of causes and effects, and to form a chain, of which every link is a judgment. The power by which we find the connexion between *remote* causes and effects, is the reasoning faculty. We judge and reason at first from our own sensation; and, as the mind unfolds, we acquire abstract ideas, we judge and reason by analogy and induction. The more assistance we can derive from the physical sensations, the more certain is the operation of the judgment, whose liability to err increases in proportion to its dependence on the intellectual operations.*

DEFINITION OF THE IMAGINATION.

The imagination is, in my apprehension, the most intellectual and the last developed of the faculties.—I should define it to be the power which the imma-

* As far as the physical perceptions and the memory can guide, I should suppose that sagacious animals are capable of judging; but when abstract ideas, and the power of reasoning is required, I believe they cannot proceed, owing to the want both of mental power and language.

terial principle possesses of forming *new* combinations of ideas. The material means by which it operates consists in the capability of the brain to repeat the actions that have been excited in it in a different order, and to form associations under the influence of a *mental faculty*, instead of a real object.—As we are incapable of *creating* a new idea, and can only form new combinations of those which have been already produced by received impressions, the imaginative faculty can only operate with the assistance of the memory. The faculty of the memory must therefore be developed before the imagination; the ideas belonging to each department will always be intermingled, and the will belong to the one or the other, according to the reality of their object.—When we *invent*, the will and the judgment direct the imagination; when we give the reins to this faculty, the ideas succeed each other without any exertion of the will, and fanciful images, as well as recollections, flow spontaneously from the mind.

Like the ideas of the memory, those of the imagination may be excited either by present objects, by other ideas associated with them, or by the moral sensations. In dreaming, they appear to be excited exclusively by the latter. The action of the senses and the will being suspended, dreams are very much influenced by the state of the stomach, which confirms my opinion, that the nerves belonging to the digestive organs are connected with nerves concerned in the production of the moral sensations.

ENUMERATION OF THE MENTAL FACULTIES.

To conclude, the mental faculties may, I think, be enumerated in the following order:—Sensation, volition, perception, memory, judgment, imagination. We shall find that the lowest in the scale are the most material in their operation (with the exception of perception,) the first developed in infancy, and the most universally possessed by the animal creation, the lowest class of brutes possessing only the two first, and the number of faculties increasing according to the degree of perfection of the animal.—We may also observe that the inferior faculties can operate without the superior, while the latter cannot act without the former.

THE WILL—DEFINITION.

What we call the will appears to me to be a *state* of the mind; it is its *determination* to a particular course of action; while *volition* is the power of acting in *consequence* of such a determination. Every act of volition must therefore necessarily be preceded by this particular state of the mind.

The mind is brought into different states of belief and doubt, determination and inclination, by different kinds of ideas. As belief and doubt are produced by the ideas which constitute *reasons*, so determination and inclination are produced by the ideas which constitute *motives*.

The operations concerned in an act of the will are three:—the first is the representation of the ideas called motives—these throw the mind in a state of determination; the second consists of the ideas called *resolutions*, which *shew* this particular state of the mind, (and, in fact, the ideas are the only means by which its different states can be made known;) thirdly, the operations of the brain and nerves, which produce *mental action* or *muscular motion*;—these are the *consequences* of this state of the mind.

MOTIVES.

First, the ideas which give a determination of the mind towards one course of action rather than another, are not merely *ideas*, like the reasons which are brought before the understanding to produce the state of belief; they are ideas *associated with the mor-*

al sensations, and, in order to constitute a motive, the idea *must* be combined with a *feeling* whether of liking or aversion, even if it be so slight as to be imperceptible to ourselves.*

INTELLECTUAL OPERATIONS.—RESOLUTIONS.

Secondly, the class of ideas, which denote the state of the mind produced by the motives, are called *resolutions*. These may be followed immediately or not, by the mental operation of muscular action to which they relate.

In examining this class of ideas attentively, I find that it consists in the execution of the intended act of the *imagination*. The act of volition which succeeds may, by repetition, become associated with these ideas, and follow them mechanically. In this case, the nervous actions concerned in the ideas and muscular motions become concatenated, and follow each other without a new act of volition. This must, I think, take place in somnambulism; for the will has certainly no influence whatever during sleep.†

Nevertheless, we have the power of arresting or changing these nervous actions at every point, and calling forth other motives. If, like many animals, we had but *one* motive, viz.—sensation, the action must irresistibly follow; but in the plurality of motives, and in the power of opposing immaterial to material impulses, the superior nature of man shews itself, and chiefly in the power of the imagination, which is sufficient to overbalance the present and immediate influence of sensation, by the representation of future advantage. It is by this means that the mere expectation of eternal happiness, or eternal misery, can overpower the wish of present gratification, and the fear of immediate suffering; that it can enable us to lose the perception of the present in the contemplation of the future; can check the full tide of passion, overcome the strongest resolutions, and arrest the execution of an evil action on the very point of its perpetration.

OBSERVATIONS.

I shall conclude this chapter by a few detached observations, which could not find admittance in a simple definition of the mental faculties, and I shall place them in the order that I have adopted in the enumeration of those faculties.

OBSERVATIONS RESPECTING THE FORMATION OF THE IDEAS.

The ideas according to my supposition, are *formed* by the joint action of the brain, and the mind; *excited* both by the will and the sensations; *associated* with the physical sensations, with each other, and with the moral sensations.

* The ideas which produce conviction are not always perfectly free from these accompanying feelings, and will sometimes mingle with *reasons*, when we are drawing a conclusion, but their intrusion should be repressed; for as far as they have any influence, so far is the judgment liable to be biassed. Hence it is that a cool judgment will often decide more correctly than a stronger judgment that is under the influence of personal feelings, and that we sometimes judge better for others than for ourselves, because we can reason more dispassionately. When the powers of two individuals are equal, the cool temper will naturally have the advantage; and minds even of unequal power are brought more nearly to a level when passion shackles the one, while the faculties of the other are exercised without impediment.

† If the nervous actions concerned in the motives, resolutions, and actions become concatenated, they naturally excite each other; this may be one reason that an appeal to the feelings has a more direct and immediate influence upon the actions of men than an address to their understandings.

NECESSITY OF CEREBRAL ACTION.

The following are my chief reasons for believing that the brain has a share in the formation of the ideas :—

First, the formation of ideas is an operation that instantly ceases when the functions of the brain are suspended.

Second, the state of the brain influences considerably the regularity and perfection of its execution.

Third, the morbid state of certain internal organs that have a physical influence on the brain, have a corresponding influence upon the mental operations.

Fourth, the constitution of the body has an influence upon the constitution of the mind.

Fifth, the mind cannot, by the exertion of its power, *create* a single idea—they must all have their first origin in the impressions that are made upon it through the medium of the brain.

Sixth, the concatenation of ideas is perfectly analogous to the concatenation of nervous actions; if one is accidentally excited, the others follow spontaneously in succession.

Seventh, the succession of ideas can take place without any exertion of the immaterial principle, as in the involuntary and mechanical acts of the memory in dreaming, etc.; and it can even oppose to a certain degree the voluntary effects of the mind.

Eighth, when the functions of the brain are disordered, as in delirium and in insanity, the immaterial principle loses the power of directing them; the perceptions are incorrect; the associations of ideas are broken and altered; and the judgment is actually deceived by the false ideas and associations which rise before it.

To be more particular:—it is very certain that when the cerebral functions are arrested, whether by chemical or mechanical causes, as by a blow on the head, or by the contact of unoxygenated blood in cases of suffocation, not a single idea can be formed;—that inflammation of the brain causes false perceptions and breaks the association of the ideas; that bodily fatigue renders them vague and indistinct; that affections of the stomach and liver often produce an inordinate action of the mind, and disorder, confusion, and insubordination among the ideas; that constitutional torpidity and languor in the physical functions are usually attended by a corresponding slowness in the formation of the ideas, while the rapidity with which they pass before the mind and form their associations is greatly influenced by the warmth and irritability of the temperament; that our ideas result from impressions made *upon* us, and that they are not created by the immaterial principle; for the wildest notions of the most extravagant imagination are not formed of *new* ideas, but are new combinations of *former* ideas; that, although the immaterial principle has the chief direction of the operations that take place in the mind, the ideas sometimes succeed each other in opposition to its efforts—shewing that it is acted upon by a different principle, which is not in complete subjection;—lastly, that in insanity, the regularity of the mental functions may be restored by physical means, while *reasoning* is ineffectual.

From these facts, which shew the great influence of physical causes upon the mental operations, it should seem that the organ whose functions connect the mental and corporeal parts of our nature is not only concerned in the regular performance of the mental actions, but that we are so constituted at present, that its assistance is necessary to enable the immaterial principle to operate *at all*.

My notions respecting the nature of the immaterial principle are not consistent with the belief that it is, like the material principle, subject to disease, or to any mechanical action. The supposition that it

is liable to fatigue, to exhaustion, to derangement, etc., is, in my opinion, incorrect: it applies those terms to the *mind*, which properly belong to the mind's *agent*. It must be the *brain* which repeats mechanically the same actions that have been formerly excited by the will, or by external matter; it must be the brain which acts without the participation of the will when it is excited by external causes, and which produces false impressions on the mind when its action is violent and irregular, as in insanity; and it is the brain which must be weakened in its action when it is exhausted by long-continued excitation. In this case the sensation of the fatigue and the indistinctness of the ideas is probably produced by the exhaustion of the nervous fluid. I believe that the occasional irregularities of the operations of the mind are entirely attributable to the nature of the causes that act *upon* it, and that the spiritual part, of itself, may be compared to a fixed and steady light, before which dark clouds may pass in succession, and for a while intercept its rays, while its nature and inherent powers remain unchangeable, except in their gradual increase of strength and brilliancy. This increase, however, must depend upon external causes, i. e. upon the circumstances which can add to the number of the ideas, and give them correctness; for without knowledge, its powers must remain undeveloped, and the luminary which might diffuse a dazzling radiance around, can only show a light as feeble and powerless as the remotest star.

ELECTRO-MAGNETISM.

ATTRACTION AND REPULSION.

BY P. CUNNINGHAM, ESQ.

The effects previously described of the hemispheric attractions and repulsions upon the mass-electricity and magnetism in the steel bar, show that these two bodies form an immense ocean, encircling the superficies of the respective hemispheres of the earth.

The attraction of these bodies for each other, the rotation of the earth, as well the westerly motion necessarily given them by the attractions and repulsions of the sun and moon, will naturally produce a greater accumulation of their matter toward the equator, and a progressive diminution thereof from the latter to the poles.

This equatorial accumulation seems fully verified by the swinging of the pendulum. A bar of steel, for instance, as before illustrated, whether placed on its side or its end in the northern or electric hemisphere, will always have its mass-magnetism occupying the lower part, and its mass-electricity the upper, whichever way it be shifted. Now, taking this bar and swinging it as a pendulum in the electric hemisphere, it will be evident that as the end of it rises from the earth its electric current will flow toward its *upper* side, and its magnetic current toward its *under* side, and the farther the pendulum swings, the farther will the magnetic current run along this under side, thereby increasing its power as a lever, and enabling the attraction of the electric hemisphere to pull it back again with more ease to the earth, to whichever side it may swing. Now, it is also evident, that as the attractive power of the hemisphere increased, the vibrations of the pendulum will be shortened, as well as retarded by the increasing attractive power not only pulling it quicker and quicker down, but binding it also down with stronger and stronger grasp toward the earth. To retain, therefore, the pendulum's vibration uniformly equal in an equal arc over every part of the earth, it follows from the above that as the attractive power of the

earth *increases* we must *decrease* the power of the lever, and hence arises the necessity of progressively shortening the pendulums of clocks, as we advance from the pole toward the equator, where the greatest attractive power exists. But attractions being weight, bodies, therefore, must be *weightiest* near the equator, and were it possible to construct a needle with one pole only, it must also follow that, provided there be no electro-magnetic current, it would point to the equator in both hemispheres, if it pointed horizontally anywhere, and hence also the heaviest metals, such as lead, gold, and platina, would seem fitted for magnetic needles.

It may be objected to this view, that as the poles of the needle dip more and more in their respective hemispheres as we progress either north or south from the equator, this increase of dip would consequently seem to argue an increase of attraction, instead of a diminution thereof. It must be evident, however, that as we advance from the equator toward the north, the attraction of the earth's southern magnetic zone for the south point of the needle will be progressively diminished, thereby admitting the repulsion of the northern electric zone to tilt more readily the south point of the needle upwards, and consequently cause a progressive dip of the north point; the latter point being the one necessarily tilted upwards in the southern hemisphere, and the south point the one which dips.

The opposite attractions and repulsions of the respective northern and southern hemispheres, must also cause the weights used and articles weighed in them, to vary in weight, according as electricity or magnetism predominated in the said weights or articles. Thus, if a weight, or an article weighed, contains more mass-electricity than mass-magnetism, it will weigh heavier in the southern hemisphere than in the northern, and *vice versa*, if containing more mass-magnetism than mass electricity, a circumstance which must frequently cause a difference of weight in the respective hemispheres in articles exported from the one to the other.

The difference of custom-house weight often observed between the article when shipped and when landed, has been hitherto ascribed to the absorption or exhalation of moisture during the voyage, according as an increase or deficiency of weight was found to exist; but it may be as likely owing to the absorption or exhalation of electricity or magnetism, if I may use such expressions, or to the different amounts of these bodies in the article when shipped,—when transported in the latter case from one hemisphere to the other. In corroboration of this point there is evidently a reverse of weight in particular coloured sands in the two hemispheres; thus, in the northern African desert the moving sand-hills and flying sand are of a dusky red, and the more immoveable sands of a white or leaden colour; while in the southern deserts of America the reverse is the case, showing thus a reverse weight in each species of sand in these opposite hemispheres. What can this singular circumstance be attributed to, except that of the red sand containing electricity in excess like the sun's red rays, and the pale sand magnetism in excess like his pale rays. The above is one of the many links tending to prove the sun's rays to be compounded of various proportioned electro-magnetic atoms; his most electric rays being the reddest, and his most magnetic rays the palest, while the rays between the two partake of a progressive or retrogressive scale of refrangibility or heat, according as we advance from either extreme of the rainbow-fan into which the sun's rays are expanded by the glass prism. Nearly all the chemical experiments having been hitherto made in the northern hemisphere, sufficiently ac-

counts for any difference of weight that may exist between similar articles weighed in both the hemispheres having been hitherto unnoticed.

TIDES, AND VARIATION AND DIP OF NEEDLE.

The tides in the northern hemisphere being on an average higher than those in the southern, lend a probability to the supposition of the moon vibrating principally with the former,—and to the moon's influence upon the tides in the northern hemisphere I confine my observations. When the moon is in repulsion with the earth, her pressure upon the ocean will naturally cause a hollow therein, and by reason of the earth's diurnal motion the westernmost of the two ridges of waters constituting the hollow will be forced backward toward the west in shape of a tide; when, however, the moon is in attraction with the earth, this attraction will lift up the waters directly under her, and through means of the earth's rotation cause a westerly moving tide also. The moon's pressure upon the earth again during repulsion operating indirectly upon every particle throughout the latter, will necessarily cause a similar westerly moving tide on the opposite side of the earth, while by her lifting upward during attraction of the matter of the electro-magnetic zone directly under her, she will cause a similar westerly moving tide on the opposite side of the earth, in consequence of the electro-magnetic matter being diminished in amount at this point proportionate to the accumulation of it at the other, admitting thereby the waters there to be more readily propelled outward through the centrifugal influence of the earth's rotation. Were the tides produced by the influence of the moon alone, they would necessarily be highest when she was at the points of greatest attraction and greatest repulsion, that is, when farthest from and nearest to the earth; but the sun, by reason of his greater size, exerting a greater attraction and repulsion upon the latter than the moon, consequently counteracts the moon's action in the elevation of the waters, when their respective influences are opposed to each other in the effecting of this object; and hence the highest tides are produced when their influences correspond, that is, when they both operate upon the same part of the ocean when in conjunction, or on opposite parts thereof when in opposition. That the solar tide should be but little perceptible, while the lunar tide on the contrary, is so prominently marked, is doubtless referable to the much greater size of the sun than the moon; so that his attractions and repulsions embracing an infinitely greater portion of the ocean's superficies, the elevations and depressions of the waters will be consequently rendered infinitely less apparent, from the great superficial extent of them thus acted upon at the same instant. The tides from repulsion must, I conceive, be generally higher than those from attraction, on account of the moon, in the latter instance, having to contend against the earth's attraction in the elevation of the waters; while the tide on the opposite side of the earth must be naturally lower than that under the moon, on account of the greater distance at which her influence is exerted. The highest spring-tides will, I conceive, be those when the sun and moon are in conjunction, and at their greatest repulsion with the earth, the next highest when the moon is at greatest repulsion, and the sun at attraction with the earth, and both in conjunction as before; while the lowest spring-tides will necessarily be those where the moon and sun are neutral lines with the earth, and in opposition to each other; and the next lowest species when they are both at greatest attraction with the earth, and in opposition to each other, because their opposing attractions, by diminishing the density of the electro-magnetic zone at the points of

the earth between them will, I conceive, thereby enable the earth's centrifugal force to bulge out the waters there, and consequently counteract the elevation of them at the places directly opposed to the sun and moon.

The lowest neap-tides will, I conceive, also be those where the sun and moon are in the neutral line with the earth; and the highest when they are in greatest repulsion with her, at that period of the moon's quarters when the above tides take place.

The foregoing deductions I have made somewhat at hazard, it being difficult to decide by inductive reasoning alone what effects the complicated influence of the sol-lunar attractions and repulsions may produce upon fluid matter exposed thereto in various positions. The earth's southern hemisphere vibrating with the sun, the latter will have consequently greater influence over the waters there than in the earth's northern hemisphere; his pressure, however, during repulsion (the northern winter), by forcing the waters of the southern hemisphere into the northern, will necessarily produce higher seas and tides in the latter than in the former; while his lifting up again, as it were, of the southern waters during attraction (the northern summer) will draw those of the northern hemisphere into the southern, and thereby produce higher seas and tides in the southern hemisphere than in the northern; the moon naturally tending to increase the above in consequence of being always propelled into the wintry hemisphere through the sun's repulsive influence upon her.

The attractions and repulsions of the sun and moon upon the earth will, by reason also of the easterly movement of the latter, produce a westerly-setting tide and current in the great electro-magnetic ocean surrounding her; the tides causing by their attraction a little easterly variation of the needle at the rising, and a little westerly variation at the setting of these luminaries, while the current caused by them will tend to produce a permanent westerly variation of the north point of the needle in the northern hemisphere, and a similar westerly variation of the south point in the southern hemisphere, in consequence of the passing atoms of the current attracting the respective points of the needle westerly after them. Each of the points will naturally dip downward in its own hemisphere, on account of the downward attraction of the latter; it being indeed solely owing to the balanced attractions of the two hemispheres that the points of the needle are directed toward the poles. The more powerful action of the moon in the northern hemisphere will produce a greater acceleration of the current than in the southern, which in the latter will be more influenced by the sun.

As, however, the local attraction of a piece of iron in a ship is capable of deflecting the needle, hence it is evident that similar causes at the bottom of the ocean, or in the adjoining coasts thereof, may produce similar deflections, independent of electro-magnetic currents, while the latter will be necessarily affected by the direction as well as the height of the great mountain ranges of the earth, and thereby tend to create a still greater uncertainty in the needle's variations; which uncertainty, however, from changes of current, will apply more to the extra-tropical latitudes than to the tropical, from the diminished sol-lunar influence in the former enabling other influential causes more readily to vary the direction of the above currents. The variation and dip of the needle, will be also necessarily affected by the annual changes of position of the sun and the earth with respect to each other, through which the electric and magnetic zones will be moved alterately north

and south of the earth's equator, and the variation and dip be consequently made to undergo a small annual change in the respective hemispheres in unison with the above change of position of the zones.

That the needle is influenced in its pointings by the southern or magnetic hemisphere, as well as by the northern or electric, is manifested by the opposite variation and dip of the southern and northern point in the opposite hemispheres, and the nearly horizontal pointing of both in the vicinity of the equator, where the opposite attractions of the two hemispheres are balanced. Much of the uncertainty, however, relative to the pointing of needles, must be occasioned by the varying amounts of electricity and magnetism in each, as well as in the *opposite* poles of each. Thus if a needle contains a greater amount of magnetism than electricity, it will give a greater variation and dip in the northern hemisphere than when containing equal amounts of each.

Should the views, previously taken, relative to electricity and magnetism prove correct, I conceive that needles of superior power and uniformity of action may be constructed in the following manner. Take two equal bars of steel fit for needles, and insulate them on separate non-conducting plates, placing each on end, with a similar steel bar of double their length on end in contact with the end of each, the small bar intended for magnetism being the *undermost* on one plate, and that for electricity the uppermost on the other; apply the magnetic wire of a galvanic battery to the *under* end of the *first*, and the electric wire to the *upper* end of the *second*;—on being sufficiently impregnated, remove both at the same instant with non-conducting tongs, and, placing end to end, insulate them together in a glass tube cast to fit, and seal up with wax or resin. Magnetism being undermost and electricity uppermost, in bodies upon the earth's northern hemisphere, by the above mode the magnetism and electricity from the wires would respectively expel their opponents from the small into the large bar, by which there would be magnetism alone in the one and electricity alone in the other, while the bars being equal, their quantities would necessarily be equal also, by which a more equal as well as more powerful action would be insured. In this way the electric and magnetic currents would circulate freely in the needle as now; but should a separate insulation of each be deemed best, the bars might be made to extend the whole length of the needle, having the magnetic bar the undermost in the northern hemisphere and the electric bar undermost in the southern.

Mass-electricity and magnetism being found, however, to occupy principally the surface of bodies, it would be advisable to have the needle constructed of a series of thin steel plates joined at the ends, but separate through the remainder of their length, by which a great increase of power in an equal bulk would be obtained. The great point, however, is the possibility of thus separately insulating the above bodies, a possibility which I think agreeable to reason, from their always existing separately in the opposite poles of bodies, as well in taking routes in the galvanic trough. Neither do I conceive that their power would be much lessened by this insulation, seeing the manner in which compasses are boxed round on board a ship to secure them from injury.

Should this mode of impregnating prove as effective in practice as it is consonant to reason, a moving power may thus be formed applicable to many mechanic purposes. By similarly impregnating and insulating two separate series of steel plates, having a pendulum with magnetism and electricity insulating separately on its opposite sides to vibrate between, a moving power might thus be created of al-

most unlimited capability; for the magnitude of the moving power being unlimited, the capability thereof, as a motorial body, would be almost unlimited, also. Cotton might be thereby spun, cloth wove, and clocks made to denote the passing time, without further expense than first cost, or even labour of winding up, keeping up in fact a perpetual motion. when once set going, so long as the machinery was preserved in a serviceable state.

This species of pendulum would vibrate between the electric and magnetic bodies like the poles of the planets with the sun, alternately attracted and repelled, in the same way indeed as the pendulum of Deluc, but with a greater power and a less risk of that power being weakened, in consequence of the protection thereof by insulation. The theory of the motion of Deluc's pendulum is, that electricity is alternately given out and received in its alternate vibrations; but a reference to the attractions and repulsions of electro-magnetic bodies with each other, evinces that this motion may be kept up by the above actions alone.

As the conducting power of bodies seems evidently referable to their attraction for the bodies they conduct, therefore the attractions of electricity and magnetism being the *reverse* of each other, the bodies which conduct them will, according to the above view, be of a reverse nature from each other also. Thus electricity having a strong attraction for combustible bodies, these will be good electric but bad magnetic conductors; while magnetism having a strong attraction for non-combustible bodies, these will be good magnetic but bad electric conductors. The modes, indeed, by which electricity and magnetism are produced through means of friction favour the foregoing view: electricity being called vitreous electricity from its ready production by friction against glass, and magnetism resinous electricity from its ready production by friction against resin, the glass being a non-combustible body, and consequently attracting the magnetism while repelling the electricity; and the resin, a combustible body, and consequently attracting the electricity while repelling the magnetism: so that the electricity is made thereby to accumulate on the surface of the glass, and magnetism on the surface of the resin. If the above view be correct, therefore, a resinous insulation will be required for the magnetism, and a vitreous one for the electricity; combining the two, when insulating, electricity and magnetism together.

MISCELLANEOUS.

PHILOSOPHY OF SOUND.

A bell rung under water, returns a tone as distinct as if rung in the air.

Stop one ear with the finger and press the other to one end of a long stick or piece of deal wood, and if a watch be held at the other end of the wood, the ticking will be heard, be the wood or stick ever so long.

Tie a poker on the middle of a strip of flannel two or three feet long, and press with the thumbs or fingers the ends of the flannel into your ears, while you swing the poker against an iron fender, and you will hear a sound like that of a very heavy church bell. These experiments prove that water, wood and flannel are good conductors of sounds for the sound, from the bell, the watch, and the fender, passes through the water along the deal and flannel to the ear.

It must be observed that a body while in the act of sounding is in a state of vibration, which it communicates to the surrounding air, the undulations of the air affect the ear, and excite in us the sense of sound. Sound, of all kinds, it is ascertained, travels

at the rate of thirteen miles in a minute; the softest whisper travels as fast as the most tremendous thunder. The knowledge of the fact has been applied to the measurement of distances.

Suppose a ship in distress fires a gun, the light of which is seen on shore, or by another vessel, 20 seconds before the report is heard, it is known to be at the distance of 20 times 1.142 feet, or little more than four miles and a half.

Again if I see a vivid flash of lightning, and in two seconds hear a tremendous clap of thunder, I know that the thunder cloud is not more than 760 yards from the place where I am, and should instantly retire from an exposed situation.

The pulse of a healthy person beats about 76 times in a minute; if therefore between a flash of lightning and the thunder, I can feel 1, 2, 3, 4, &c., beats of my pulse, I know that the cloud is 900, 1800, 2,700, &c., feet from me.

Sound, like light, after it has been reflected from several places, may be collected into one point or focus, where it will be more audible than any other part—on this principle whispering galleries are constructed.

Speaking trumpets, and those intended to assist the hearing of deaf persons, depend on the reflection of sound from the sides of the trumpet, and also upon its being confined and prevented from spreading in every direction. A speaking trumpet, to have its full effect, must be directed in a line towards the hearer. The report of a gun is much louder when towards a person than in a contrary direction.

EXTRAORDINARY DISCOVERY.—We copy verbatim, the following notice of a late French discovery, from an English paper. Whether it is of any importance, or whether it is any discovery at all, we are entirely ignorant, but hope some of our inquisitive readers will test it:

"The injection of a solution of chlorure of aluminum into the aorta or main arterial trunk of an animal will preserve it fresh for an indefinite period, without imputing to it the slightest taste. The chloric acid of salt renders the gelatine or decomposable part of animal matter incapable of decomposition, perhaps by destroying some alkali, for which the acid has a greater affinity than for aluminum. The latter substance, thus deprived of its acid, becomes an insipid powder. The particulars of this discovery, by M. Gannal, will be found in the bulletin of the French Academy of Sciences for the sitting of March 22, and in the Literary Gazette of that meeting. From two to five pounds of salt, dissolved in twice or three times its weight of water, is sufficient for an ox. Persons disposed to make experiments on the subject, need scarcely be reminded that the smaller animals, such as rabbits or cats, should be employed. Subjects for anatomical discussion should also be prepared in this manner. Here is a new field opened for commerce of a most important description.

Thousands of oxen on the coast of Spanish America are slain for their skins only, the flesh being cast upon the dunghill; it may now be preserved and shipped for the West India market as fresh meat. The health of seamen on long voyages will be preserved, and the comfort of emigrant passengers to Sydney will be materially improved, by the application of this important discovery. The table of the Academe des Sciences, on the reading of M. Gannal's memoir, was covered with legs of mutton, fowls, "et id genus omne," which had been preserved for many months by the new process. The chlorure of aluminum would be very cheap when made on a large scale for commercial purposes."