ART. VII.—WHAT MOVES THE TABLE?

"*Table-Moving Explained,*" by "VIVIAN," in the London Leader.

Report on Table Moving, in the London Medical Times and Gazette.

Letter of Professor Faraday to the Editor of the London Times.

Professor Faraday on Table Moving, from the London Athenæum.

WHEN Archimedes exclaimed "give me a fulcrum and I will move the world," his mind was wholly intent upon machines and mechanical contrivances. He was not soaring in the cloud-land of metaphysical speculation, but standing upon *terra firma*, hurling immense stones from his engines, or superintending the operation of his cranes, as they snatched up the enemy's ships from the water as easily as their long-legged name-sakes snatch up from the same element the finny tribe. He was—although he would have opened his eyes at being told so—a Baconian philosopher. He argued from experience. He proceeded from the known to the unknown. Profoundly versed in mathematical and mechanical sciences, and proud of the feats which through their assist-

ance he had performed, he seemed to think that there was scarcely any limit to their application, except the trifling circumstance of our being confined to this petty orb. But, fortunately, the philosopher held down by the inexorable law of gravitation could not fly off at a tangent—could not reach the desiderated που στω from whence "to fright (or shake) the world from its propriety." We say fortunately, on Sir Isaac's account; for how in the face of such a fact could he ever have established his theory of universal gravitation? Or how could he ever have framed his chronology, if the precesion of the equinoxes had been violently disturbed by a shove from the philosopher's lever. Well, although neither Archimedes, nor any mathematician since his time, has ever found the fulcrum through which to move the material world, yet has there ever been a fulcrum, steady, reliable, immoveable, from which the intellectual and moral world has been, and ever will be moved by thousands of operators far feebler than Archimedes. That fulcrum is Human Credulity. The applied lever is, alas! too often charlitanism and imposture. Had Archimedes boldly asserted "I can move the world," and asked with an air of confidence "do you not feel the motion!"—the chances are a thousand to one that people would have begun to think that they *did* feel a sort of tremulous movement—many would have positively averred that the earth did somehow quiver in a most surprising manner. But whenever a real philosopher advances a proposition, he does it so cautiously and diffidently—in a word so *philosophically*—that the mass of people pay little attention to what he says. Besides, he appeals to their reason—calls upon them to examine and compare—*to think*. Now Coleridge has very well said that most men would sooner be torn asunder by wild horses than submit to so racking a mental operation. It is not, therefore, after all, so very surprising that the real philosopher is contemned and neglected, while the bold and bare-faced juggler, the cheat and impostor, have always a mighty following—a credulous crowd, a-gape, admiring wondering—ready to believe what their leader so confidently asserts, partly because he asserts it so confidently, and partly because, as a

foregone conclusion, they are not required to examine or reason about it. When scientific men of a past generation first announced in the most cautious, and, as events soon proved, most unexaggerated terms, their belief that carriages might be propelled without horses, and at a rate of ten, or even fifteen miles an hour, they were laughed to scorn as dreamers and theorists. In vain they appealed to experiments—courted examination—offered to show that what they advanced was in perfect accordance with the well known and established laws of nature. They either could not get a hearing, or were listened to with civil contempt, as poor, half-crazed enthusiasts. And yet, at this very time, thousands upon thousands believed that an old bed-ridden hag could fly through the air astride of a broom-stick—pass into locked chambers through the key-hole—and give her neighbour's cattle the murrain, and his children convulsions by a glance of her eye. And such has ever been the history of the slow progress of truth on the one hand, and the almost limitless capacity of human credulity on the other.

Besides, there is a love of the mysterious and the marvellous no doubt, which is innate in the human mind—a sort of unconscious assertion, perhaps, on its part, of its spiritual nature and spiritual aspirations. It instinctively turns from "the sphere of the logical understanding"—to use the technical language of metaphysicians—the objective, the sensuous, the actual—to lose itself in the ideal, the boundless, the unexplored. Here it may revel, without control, in the indulgence of its dreams and its fancies; may speculate and authorize; demolish and construct systems; and, by ingeniously selecting its own tests, prove or disprove the truth of almost any thing it has a mind to. And if this has been the case with those who call themselves *par excellence* philosophical thinkers—and we think no one will deny it who has ever looked into even a few of the various Psycological and Theological systems which have been spun out of the restless brains of men—how much more must the unthinking, undisciplined, untrained minds of the masses be prone to embrace wild and extravagant notions on subjects out of the range of their daily experience. The history of every

age is filled with instances sometimes ludicrous, oftener lamentable of popular folly or madness, the result of popular credulity. But the present time seems most fruitful of them. Almost every year produces some new one. Mesmerism, Electro-Biology, Millerism, (which, clumsily enough, from its very assumption, assigned a limit to its own existence and is now defunct.) Mormonism, have all had a very successful run. But "Spiritual Rappings" and "Table-Tipping," twin-sisters; the youngest born of Human Credulity, begotten by Imposture, but delivered, nursed and reared by Weakness, Ignorance and Folly, seem likely to drive all rival humbugs from the stage of public attention. About "Spiritual Rappings," we have not the patience to say more than a few words. We cannot dismiss it with a jest when it is daily producing consequences so horrible—hypochondriacism, madness and suicide. We cannot gravely discuss a subject so revolting to every dear and holy sentiment of our nature. That any one we have loved, esteemed or respected on earth, should obey the summons of such vulgar, illiterate creatures, for instance, as those Fox women—spend hours in their back parlour pushing about their chairs, or making unintelligible thumps upon their tables, is, we confess, to our minds a sort of impropriety, or rather indecency, of which scarcely *anything* could convince us—and surely not the hap-hazard, blind, hit-or-miss replies which the Pythoness interprets to her visitors at a dollar per head. Neither can we reconcile it with our ideas of a just, wise and benignant Deity, that he should allow his human creatures to be perplexed, distressed and crazed by communications from the spirit-world, which, so far as we can learn, have never tended to advance his glory, to further truth, or promote the happiness of men. But we are wasting serious words upon a subject unworthy of serious attention, and concerning which we would not have said this much, were it not for the melancholy fact that it has already exercised a baneful influence upon many even of the educated and cultivated. We are content to leave the matter to time and common sense, assured that it must sooner or later share the fate of its great prototype humbug, the Cocklane Ghost.

Perhaps it may amuse our readers to recall to their memories Horace Walpole's account of his visit to this specimen of the Spirit Rappings some ninety years ago.

"I could send you volumes on the ghost, and I believe if I were to stay a little, I might send its *life*, dedicated to my Lord Dartmouth, by the ordinary of Newgate, its two great patrons. A drunken parish clerk set it on foot out of revenge, the Methodists have adopted it, and the whole town of London think of nothing else. Elizabeth Canning and the Rabbit-woman were modest impostors in comparison of this, which goes on without saving the least appearances. The Archbishop, who would not suffer the Minor to be acted in ridicule of the Methodists, permits this farce to be played every night, and I shall not be surprised if they perform in the great hall at Lambeth. I went to hear it, for it is not an *apparition*, but an *audition*. We set out from the opera, changed our clothes at Northumberland House, the Duke of York, Lady Northumberland, Lady Mary Coke, Lord Hertford, and I, all in one hackney coach, and drove to the spot; it rained torrents; yet the lane was full of mob, and the house so full we conld not get in; at last they discovered it was the Duke of York, and the company squeezed themselves into one another's pockets to make room for us. The house which is borrowed, and to which the ghost has adjourned, is wretchedly small and miserable; when we opened the chamber, in which were fifty people, with no light but one tallow candle at the end, we tumbled over the bed of the child to whom the ghost comes, and whom they are murdering in such insufferable heat and stench. At the top of the room are ropes to dry clothes. I asked if we were to have rope dancing between the acts? We had nothing; they told us, as they would at a puppet-show, that it would not come that night till seven in the morning, that is, when there are only 'prentices and old women. We stayed, however, till half an hour after one. The Methodists have promised their contributions; provisions are sent in like forage, and all the taverns and ale-houses in the neighbourhood make fortunes. The most diverting part is to hear people wondering *when it will be found out*—as if there was anything to find out—as if the actors would make their noises when they can be discovered."—*Walpole's Letters, Vol. IV., p.* 204.

With reference to "Table-Tipping," which the amateurs who dabble in it vehemently protest is a very different affair from "Spirit Rappings," (although they *will* interrogate

the mahogany as if it were a sentient a prophesying, nay! an omniscient spirit,) we have recently met with so thorough and satisfactory an explanation of it, by a writer in an English newspaper, (the London Leader,) that we have penned these pages chiefly for the purpose of laying it before our readers, in the hope that with the majority of reasonable people it will set the matter at rest for ever. Without further prelude, we will let the writer (whose *nom de plume* is "Vivian,") propound his theory of Table-Moving.

"The *fact* that if three or more persons stand round a small table, with their hands resting on it, each little finger touching that of the hand belonging to a neighbour, after a lapse of about ten or fifteen minutes, the table will commence a slow circular movement, which becomes rapidly accelerated, and forces the persons to follow it—this fact, we say, is indisputable.

"But what does this fact imply? What is the explanation of the seeming marvel? Have we here the revelation of a new agency, or is the fact referrible to well-known agencies? The question is not without its importance; not only from the interest now following the subject, and the eminence of the names which countenance the absurd theories thrown off in explanation, but also from the light which it may shed on many very delicate questions of organic action and of popular credulity. It is high time that those who pretend to lead opinion, through the press, should rigorously examine this matter, when a journal like the Literary Gazette, which has high scientific pretensions, can print, without disavowal, an article by one of its contributors, wherein the following passage occurs. Alluding to the men who have borne public testimony to the fact, the writer remarks:—

"'These gentlemen are not gullible fools easily imposed on; and it is not to be supposed for one moment that they would deliberately tell falsehoods for the sake of imposing on the public. *We have then the established fact, that the electricity from the human body can, so to speak, animate inanimate substances, and give life, and it may almost be said intelligence, to inert wood.* This is evidently one of those 'things not dreamt of in our philosophy,' of which the poet spoke. The speculations to which it has given rise are very curious. Some people will have it that it is nothing less than a marked advance towards the *discovery of the great and mysterious secret of what composes human life*, or at least that it is the opening of a wider and nobler field of human

knowledge than any now possessed; whilst others opine that it is a sort of unconscious magic, and hence they assume that the art of the Baptista Portas and the Michael Scotts was not only no imposture, as our ancestors and ourselves have sagely decided, but the greatest of all arts—the most wonderful of all sciences. So convinced is one of the principal daily papers that something extraordinarily great is destined to flow from this magnetism, or magic, or whatever it may be, that it has resolved to set apart a certain portion of its space daily to records of what may be done in it.'

"Very instructive, and not a little amusing, is it to note, in the foregoing passage, the almost universal tendency to confound facts with inferences. The *fact* observed is, that tables move; the *inference* that it is moved by 'electricity,' is supposed to be 'established' by the fact, and away the theorist flies into the 'immense inane' of speculation.

"Cautious thinkers will cry, 'not so fast! All that is at present established is the simple fact of a table (or a *hat*, for both objects are in favour,) moving when a chain is formed by persons round it. When we come to interrogate the *meaning* of this fact, we shall require something more than the rash assertion of 'electricity'—a world always dragged in to cloak ignorance, and always more used by those entirely ignorant of electricity, than by those acquainted with some of its properties.'"

With many people "electricity" seems to be the *open seseme* to every mystery, from the theory of life to that of table-moving. The writer, whom we are quoting justly, says that it is a word oftener in the mouths of "those entirely "ignorant of electricity" than of "those acquainted with some of its properties." By way of illustration, we may mention that Humboldt, who has profoundly studied electricity and magnetism, and whose researches have thrown great light upon the latter subject particularly, has pronounced that neither electricity nor magnetism have anything to do with table moving—and he evidently considers the whole matter, as Mr. Thackeray would say, "a dreary and monotonous humbug." His explanation as well as Arago's, seems to be very much the same as "Vivian's" At least, we may fairly infer so, from various brief and imperfect notices which we have met with in the foreign correspondence of some of our leading American journals. Of M.

Arago's opinion more by and by. Let us resume the thread of "Vivian's" remarks:—

"The table moves. It may be moved by spirits; it may be moved by electricity; it may be moved by the unconscious muscular action of persons forming the chain round it. Here are three explanations, not to suggest more, which the investigator may severally examine.

"1. *Spirits.* Table-moving issued out of spirit-rapping. Indeed we may claim the first article published in this jornal as the origin; for it was owing to the translation of that article in Germany, and the sensation there excited by it, that Dr. Andree first commenced his experiments of table-moving; from Germany it spread rapidly to Paris and London. Those who believe in the spirit-rappings, will have no difficulty in assigning a cause to the table-movings; but for more cautious thinkers there will be these difficulties;—First, the *existence* of the spirits requires proof; secondly, their *presence* requires some more definite proof than lies in an assumption. Indeed, it should be stated here, to exonerate the sensible people who occupy themselves with the new phenomenon, that table moving has no necessary connexion with spirit-rapping, and is investigated by hundreds who are fully aware of the ignoble imposture practised under the title of spiritual manifestations. As we are of the latter, we may dismiss this first explanation without further discussion.

"*Electricity.* This is more plausible, and entraps all but those accustomed to scientific analysis. But we are bound to call attention to the following points:—First, there is absolutely no proof whatever of the *existence* of the current of electricity passing from human beings to the table; it is a pure assumption, made to overarch the chasm of ignorance. Secondly, although what is called nerve-force has many striking analogies with electricity, yet every well-informed physiologist knows that the *identity* of the two forces, far from being proven, is, in the present state of science, to be rejected. Thus you have to prove the existence of the very *agent* you assume, and then having proved it, you have to prove that its *mode of operation* is that which you assume! For, granting that nerve-force *is* electricity, we have still to learn that this electricity passes in a stream from our fingers to the table; we have still to learn that electricity, when it passes into a table or a hat, makes that table or that hat gyrate. These are difficulties which will prevent the scientific mind from accepting electrical agency. At present the question stands thus:—The table moves; by no *known* laws of electricity or physiology can this movement be explained as electrical; and to

suppose that the movement itself is the proof, is to indulge in the most vicious circular reasoning, by which an assumption is made to demonstrate the validity of the assumption."

Any body who has ever seen the commonest experiments with an electrical machine, is aware that you cannot "charge" any substance with electricity unless you first "insulate" it. One standing upon the floor, may grasp the nobs of the machine from whence the stream of electricity is flowing, and feel no sensation when touched by another person not in contact with the machine. But let him insulate himself by standing upon a glass stool, and he will feel his hair at once begin to rise, and when touched will experience quite a sharp, pricking sensation at the point of contact, just at, or rather a little before the moment of contact, accompanied with a distinct spark. So when one receives a shock from an electrical jar, it is simply in consequence of his establishing a connection between the *insulated surface* of tin-foil, within the jar which has been charged (like the man on the glass stool,) with positive electricity, and the surface of foil which coats the ouside of the jar, which has (by *induction* as it is called,) been charged with negative electricity. The touching the nob of the jar, which communicates with the interior, with one hand, while we touch the outside of the jar with the other, established the connection, and the sudden restoration of the equilibrium produces "the shock." Now it is very amusing to see the gravity with which people will sit around a table, *not insulated*, but resting upon the floor like themselves, and proceed "to charge it with *electricity*." Still more amusing is it to hear Susan say to Jane—"O, Jane, don't let your sleeve touch the table, it carries off the *electricity!*" The sleeve (of silk) being one of the worst conductors, or, more properly, one of the best *non-conductors* of electricity with which we are acquainted—while the dear little palms and taper fingers, are admirable conductors, and communicate, through the body, directly with the floor! These are pressed closely, firmly—aye! even until *the finger nails are white* sometimes, although the innocent creatures, we know, are perfectly unconscious

of it, upon the hard mahogany. Ah! We always feel our skepticism shaken when we see that show of fair hands brought out in strong relief by the dark and polished back ground. Do you not feel an "electric thrill" at the most casual touch of those rosy-tipped digits? Reader did you never have the happiness of sitting at a small table (they always say "the smaller the better,") between two of these fairy electrical machines, with a sweet, tiny little finger imprisoned under each of yours "so as to complete the circle?" Did you not feel conscious of a decided electric current? If not, we have only to say that your humble servant and yourself are differently constituted—or, as the "Rappers" express it, of "different spheres." We believe it has generally been found that the "table-tipping" succeeds best when ladies are the operators. May not the "hard wood" of the table be "stirred," even to dancing, like a whirling dervish, under the wooing pressure of the soft, warm, caressing palms, just as the "Talking Oak" was thrilled to the core by Olivia's kisses?

"Her kisses were so close and kind,
That, trust me on my word,
Hard wood I am and wrinkled rind,
But yet my sap was stirr'd:

And even into my inmost ring
A pleasure I discern'd,
Like those blind motions of the Spring,
That show the year is turned."

At any rate is not such an explanation quite as satisfactory, and much more poetical and graceful than "electricity," which, after all, turns out to be something entirely different from any electricity which Ben Franklin experimented upon? But there is an electrical attraction about this phase of the subject—a facination in the pursuit of this modern *palmistry*—which has seduced us into a digression, which, we fear, some of our readers will consider somewhat flippant and indecorous. Let us return to "Vivian," and follow him through his third, and, as he believes, true and entire explanation of the phenomenon of table locomotion.

"3. *Unconscious muscular action.* Instead of unproven 'spirits' and questionable 'electricity,' it would seem more natural to try the simpler explanation of unconscious muscular action, did we not know that in such cases the simple explanation is always the last to be thought of. Appetite for the marvellous will not be appeased by common places! Let us, however, inquire a little more closely into this said muscular action, and see if we cannot, by the aid of known laws, explain all the phenomena.

"In standing or sitting round a table for many minutes, with the hands lightly resting on it, and the *mind eagerly expectant*, the fatigue of the muscles causes you to rest with your weight on one leg, if standing; on one side, if sitting; and this gives a *stress* to the table (unless you are very vigilant,) which may cause it slightly to move; no sooner does the movement begin, than all the expectant circle, now gratified at the result, unconsciously aid in the movement, (in a way hereafter to be explained,) and thus, although no one is conscious of effort, but fancies the table moves without his co-operation, yet, in fact, all, or most of the persons forming the chain, do really co-operate in moving it.

"We must beg that no captious verbal criticism be applied to this explanation of the process; we are aiming at an intelligible explanation, and hope, in succeeding remarks, to clear up every point involved. The reader must bear in mind, that *expectation* of the result is necessary, otherwise the table will not move. Those who adopt the magnetic hypothesis, explain the necessity of this condition, (as the mesmerists explain failures,) by saying that 'scepticism destroys the influence." Truly it does so; because the muscular action which produces the movement in obedience to what is called an 'expectant attention,' will *not* be brought into play unless expectation be there.*

* We have been kindly furnished by a friend with a copy of the London "Medical Times and Gazette," of June 11th, containing "a Report on Table-Moving," from which we extract the following remarks:—"It is well known that the movements of the human body may be divided into *voluntary* and *involuntary*. The actions of walking, of playing musical instruments, etc., are instances of the first; those of circulation and digestion are examples of the second. But there is also a class of actions comprising the ordinary phenomena of motion, which are certainly not under the control of the *will*, but which, nevertheless, are directed by the emotions or the *ideas*. Thus the somnambulist walks in obedience to some mental impulse, while the will is dormant; and the person who dreams, often executes movements in which the will has no part, but which are excited by *ideas* or emotions. Again, although the will has no control over the action of the heart and arteries, yet the *ideas* and *emotions* exercise a distinct influence upon those organs; and when attention is directed to their pulsations in nervous persons, the

"Scepticism, however, is a word of loose signification. There are two classes of sceptics. There is the class of men who are, it is true, perfectly *in*credulous with respect to the *fact*, but as perfectly credulous with respect to the *inference;* they approach the table with laughter, or with an emphatic declaration of 'It's all humbug;' yet no sooner does the table move, and they believe in the honesty of those moving it, than their incredulity is suddenly changed to a credulity as rash! They doubted the fact; no sooner is the fact proved, than they no longer doubt the inference! But the scientific sceptic, knowing *where* lies the source of most fallacies, is willing enough to believe the fact; he is only sceptical of the immature hypothesis suggested to explain the fact. It is thus that spirit-rappings convert the incredulous. When something is told them which 'it is impossible that the medium or any one present could have known,' they—forced to accept the *fact*—believe they are forced to adopt the *inference* which the impostor wishes them to accept; but a cautious thinker would accept the fact, and examine closely the inference. He would say, 'it is true I have been told such and such things; but does it, therefere, follow that they were told me by departed spirits? May there not be some juggle in it?'

"We dwell on this distinction between scepticism of facts and scepticism of inferences, because it is important, and because men commonly fancy they are bringing strong evidence in support of their opinions, when they preface it by saying, 'I assure you I approached this subject as complete a sceptic as you can be; I thought it a monstrous humbug; I laughed at the idea; but I was forced to own the truth at last.' If you interrogate these sceptics, you will find that they all imagine the fact proves the hypothesis—as if no *other* hypothesis would explain the fact!"

Those who will not admit that there is a profound and wonderful mystery about "table-tipping," are constantly asked, "well how do you account for it? The table moves. We all say we are not pushing it—although when we feel it move *we follow the motion*—what else *can* it be but "electricity?" And then the enthusiastic believers confidently affirm that it is impossible to move the table merely by the

movements have been accelerated, or retarded, or have become intermittent. In the case of table-turning, the ideas are concentrated upon the expected movement, and the muscular apparatus of the fingers obeys, unconsciously to the experimenter, the dominant impression in the mind." The writer says, "the term *ideo-motor* may very properly express the action in question."

strength of ones fingers. In vain you may whirl the table about by a *voluntary* effort of the muscles—they don't see any thing in those motions like the electric gyrations. O no! They are entirely different! But we will not again interrupt "Vivian."

"The explanation of 'table-moving' we have from the first suggested, has been this week strengthened by a reprint in the Journal Des Debats, of an article written twenty years ago by M. Chevreul, the celebrated chemist, an analysis of which had already been given by Longet, in his "Traité de Physiologie." We will reproduce its leading points.

"In 1833, Paris was amused by the oscillations of a pendulum, as recently London was by the oscillations of gold rings under the pretended magnetoscope of Mr. Rutter. 'Electricity,' of course, was the explanation of the following fact:—If an iron ring were suspended by a thread over mercury, and held there by the right hand, it began to oscillate; on introducing some other substance between the mercury and the suspended ring, *the oscillations ceased, to recommence with the withdrawal of the foreign substance.* But Chevreul showed that this was the result of insensible muscular action, by various experiments, of which it is enough to say, that on supporting his arm by a wooden rest, the oscillations decreased in proportion as the wooden rest approached the wrist, and disappeared when placed under the fingers which held the thread. The curious part of his experiment, however, was this. He fancied that *while his eyes followed* the oscillations of the pendulum, he detected in himself a disposition or *tendency to movement*, which, perfectly involuntary, was always the more satisfied the larger the oscillations were; but, on *bandaging his eyes, the oscillations rapidly ceased, and then the interposition of foreign substances between the mercury and the pendulum exercised no sort of influence on the oscillation!* His interpretation of the phenomena is simple and satisfactory. In holding the pendulum, an insensible muscular movement of the arm set the pendulum slightly oscillating, and when once the oscillation commenced they were augmented by the influence exercised by vision, which caused him to assume that 'tendency to movement' before mentioned; this tendency, however, is so delicate, and so unconscious, that the mere thought of arresting it does arrest it. The two necessary conditions for a successful result he found to be—1st. A belief that the pendulum will move of itself without muscular aid. 2d. To *see* the oscillations, which become greater by the influence of vision in directing the muscles.

"We should be glad, if space permitted, to cite examples of this un-

conscious *tendance au movement* referred to by M. Chevreul; but every one will remember how, in fixing attention on a moving object, we involuntarily lean in the *direction* of the movement; and many have, doubtless, amused themselves with the experiment of suspending a book by means of a key, and willing the book to turn in a particular direction—an experiment we have proved over and over again to depend on the muscular action induced by 'expectant attention.'* The reader is referred to Dr. Carpenter's 'Human Physiology,' fourth edition, 923 sq., for interesting matter we have no room here to reproduce.

"With the light thus afforded, let us examine the phenomena of hat-moving and table-moving; and in relating our own experiences we shall attempt to give the rationale. In perfect conformity with what has been said of 'expectant attention,' or 'faith,' for a successful result, we have to declare that, although the table has moved in our *presence*, it has never moved when we formed a link of the chain, although we were really waiting with strong desire to analyze the sensations which accompany the phenomenon. The objection that we are 'anti-magnetic', and that our scepticism produce a 'cross-current,' is too frivolous for refutation. The main reason of the failure has been the knowledge of our scepticism on the part of the others, and their want of full conviction that it will succeed with us; another reason is this—we have placed them on their guard against the sources of fallacy, and told them how they moved the table unconsciously.

"A negative result cannot, we are aware, determine this question.—But we have positive results to offer. One evening, two believers—an indifferent person and the "terrible sceptic" who writes this—stood round a table, with hands lightly resting on a hat. After about twelve minutes the sceptic's hands were trembling slightly from tension of the muscles, and his legs becoming fatigued, he rested the main weight of his body on the right leg. Presently the hat began to move. We all asked each other, 'Are you moving it?' and received a conscientious negative; nevertheless, the hat continued moving, with occasional pau-

* "Let four or five persons place their distributed fingers upon some surface, and retain their position for a few minutes, unrelieved by change; let there be *an expectation of some possible result*, and there will soon be perceived a tingling in the skin, along the course of the muscles, and a degree of tension, which, without volition altogether, eventuates in *reflex*, or, as it would be styled in common language, *involuntary* action. In table-moving there need not be any voluntary movement, for muscular tension provoked by irritation, sensation, emotion, or fixed attention, will produce sufficient action to accomplish the *expected* result."—*Report in Medical Times already quoted.*

ses. The idea occurred to the sceptic that, as the hat was moving in the direction in which he leaned, perhaps the slight *stress* so produced might cause the moving: to test this, he changed from right to left leg. The hat stopped; presently it resumed its motion, but this time *from left to right—i. e.* the reverse way! He was still perfectly unconscious of any *effort* to move the hat, although he felt convinced it was occasion by the slight stress of his body: he suddenly stood erect on both legs, and the motion ceased. It never moved again during that evening.

"At the house of a gentleman who has made frequent experiments, and who for a fortnight was a firm believer in the electrical theory, but whose confidence became shaken by the suggestion of certain doubts, the 'sceptic' stood with five other persons round a table which moved with extreme facility on a pivot. This time we waited five-and-forty minutes without the slightest result; yet the five persons had been eminently successful on all previous occasions in less than fifteen minutes. Whence failure? Because we were all on our guard. We determined to remain entirely *passive;* to stand erect on both legs; to watch our sensations; to be vigilant in neither aiding nor preventing the movement. Yet these very persons, on the day before, had made the table move with considerable velocity in the direction any one *willed* it: the will of the one person, and the expectant attention of the others, producing a result impossible in the sceptical passive state of mind.*

"We now ask, whether the phenomenon of table-moving is not more probable when classed with known phenomena of *unconscious* muscular action following expectant attention, than when classed with 'mysteries' and 'magic?' Of electrical action, in this sense, we have no proof, no evidence, no analogies; of muscular action we have abundant analogies.

"That all believers will renounce their belief, and accept this explanation, we do not expect. After the stolid mass of credulity which resisted our exposure of the trick on which spirit-rapping depends—after the perverse ingenuity of the arguments brought forward in reply to that exposure—we can have little hope that the foregoing explanation will find much favour. But if our exposition has been intelligible, it will make every watchful investigator capable of testing its truth."

Scientific men, especially the medical profession, are often

* "It (the table) is moved more easily by females than by males, because, in the former, the muscles are more mobile, *the will less strong*, the emotions more acute, the ideas more vivid. It is said, that young persons succeed better than persons advanced in years—a fact which may be readily explained upon the same principles."—*Rep. in Medical Times.*

accused of wilfully and blindly refusing to give credence to or even investigate new and startling phenomena. They are sometimes supposed by the vulgar to be opposed to new theories, inventions, remedies, &c. simply on the selfish principle of not wishing their monopoly interfered with—of not desiring their gains to be curtailed by outside competitors. Hence the believers in magnetism lifted up their voices and cried aloud with bitter indignation at the narrow prejudices and stubborn incredulity of the M. D's. They regarded their opposition as the result of either a mercenary spirit or a self-sufficient and dogmatical one. But with reference to table tipping, surely the savans and doctors can have no interest in the *suppressio veri*. Is it not more reasonable, therefore, if people are unwilling or incompetent to investigate the matter thoroughly for themselves, to accept the explanation of those who are specially qualified to decide upon it, rather than of those whose explanation is really no explanation at all—of those who exhibit the most profound ignorance of the very agent which they so complacently assume to be the motive influence?

Since writing the above we have read Professor Faraday's letter to the editor of the Times,* which is so admirable that we cannot refrain from laying it before our readers.—His ingenious contrivance and careful and minute investigation still further establish his reputation as the Prince of Manipulators and Experimenters. We would call special attention to the last sentence of the Professor's communication, which we have taken the liberty of italicizing.

"Sir—I have recently been engaged in the investigation of table turning. I should be sorry that you should suppose I thought this necessary on my own account, for my conclusion respecting its nature was soon arrived at, and is not changed; but I have been so often misquoted, and applications to me for an opinion are so numerous, that I hoped,

* We regret that our limits will not allow us to give Prof. Faraday's more detailed and elaborate account of the method pursued and the results obtained in the investigation of this subject. Our readers will find a republication of it in the National Intelligencer of July 16th. Other of our papers, no doubt, have published or will publish this very ingenious, interesting and satisfactory account.

if I enabled myself by experiment to give a strong one, you would consent to convey it to all persons interested in the matter. The effect produced by table turners has been referred to electricity, to magnetism, to attraction, to some unknown or hitherto unrecognized physical power able to effect inanimate bodies—to the revolution of the earth, and even to diabolical or supernatural agency. The natural philosopher can investigate all these supposed causes but the last; that must, to him, be too much connected with credulity or superstition to require any attention on his part. The investigation would be too long in description to obtain a place in your columns. I therefore purpose asking admission for that into the Athenæum of next Saturday, and propose here to give the general result. Believing that the first cause assigned, namely, a quasi involuntary muscular action (for the effect is with many subject to the wish and will) was the true cause, the first point was to prevent the mind of the turner having an undue influence over the effects produced in relation to the nature of the substances employed. A bundle of plates, consisting of sand-paper, mill-board, glue, glass, plastic clay, tin-foil, care-board, gutta percha, vulcanized caoutchouc, wood, and resinous cement, was therefore made up and tied together, and being placed on a table, under the hand of a turner, did not prevent the transmission of the power; the table turned or moved exactly as if the bundle had been away, to the full satisfaction of all present. The experiment was repeated, with various substances and persons, and at various times, with constant success, and henceforth no objection could be taken to the use of these substances in the construction of the apparatus. The next point was to determine the place and source of motion—i. e. whether the table moved the hand, or the hand moved the table; and for this purpose indicators were constructed. One of these consisted of a light lever, having its fulcrum on the table, its short arm attached to a pin fixed on a card-board, which could slip on the surface of the table, and its long arm projecting as an index of motion. It is evident that if the experimenter willed the table to move towards the left, and it did so move before the hands, placed at the time on the card-board, then the index would move to the left also, the fulcrum going with the table. If the hands involuntarily moved to the left without the table, the index would go towards the right; and, if neither table nor hands moved, the index would itself remain immoveable. The result was, that when the parties saw the index it remained very steady; when it was hidden from them, or they looked away from it, it wavered about, though they believed that they always pressed directly downwards; and when the table did not move, there was still a resultant of hand force in the di-

rection in which it was wished the table should move, which, however, was exercised quite unwittingly by the party operating. This resultant it is which, in the course of the waiting time, while fingers and hands become stiff, numb, and insensible by continual pressure, grows up to an amount sufficient to move the table or the substance pressed upon.

"But the most valuable effect of this test apparatus, (which was afterwards made more perfect and independent of the table,) is the corrective power it possesses over the mind of the table-turner. As soon as the index is placed before the most earnest, and they perceive—as in my presence they have always done—that it tells truly whether they are pressing downwards only or obliquely, then all effects of table turning cease, even though the parties persevere, earnestly desiring motion, till they become weary and worn out. No prompting or checking of the hands is needed—the power is gone; and this only because the parties are made conscious of what they are really doing mechanically, and so are unable, unwittingly to deceive themselves. I know that some may say that it is the card-board next the fingers which moves first, and that it both drags the table and also the table-turner with it. All I have to reply is that the card-board may in practice be reduced to a thin sheet of paper weighing only a few grains or to a piece of gold-beater's skin, or even the end of the lever, and (in principle) to the very cuticle of the fingers itself. Then the results that follow are too absurd to be admitted; the table becomes an incumbrance, and a person holding out the fingers in the air, either naked or tipped with gold-beatter's skin or card-board, ought to be drawn about the room, &c. but I refrain from considering imaginary, yet consequent results which have nothing philosophical or real in them. I have been happy thus far in meeting with the most honorable and candid though most sanguine persons, and I believe the mental check which I propose will be available in the hands of all who desire truly to investigate the philosophy of the subject, and, being content to resign expectation, wish only to be led by the facts and the truth of nature. As I am unable, even at present, to answer all the letters that come to me regarding this matter, perhaps you will allow me to prevent any increase by saying that my apparatus may be seen at the shop of the philosophical instrument maker—Newman, 122 Regent-street.

"Permit me to say, before concluding, that I have been greatly started by the revelation which this purely physical subject has made of the condition of the public mind. No doubt there are many persons who have formed a right judgment or used a cautious reserve, for I know several such, and public communications have shown it to be so; but

their number is almost as nothing to the great body who have believed and borne testimony, as I think, in the cause of error. I do not here refer to the distinction of those who agree with me and those who differ. By the great body, I mean such as reject all consideration of the equality of cause and effect, who reference the results to electricity and magnetism; yet know nothing of the law of these forces; or to attraction—yet show no phenomena of pure attractive power; or to the rotation of the earth, as if the earth revolved round the leg of a table; or to some unrecognized physical force, without inquiring whether the known forces are not sufficient; or who even refer them to diabolical or supernatural agency, rather than suspend their judgment, or acknowledge to themselves that they are not learned enough in these matters to decide on the nature of the action. *I think the system of education that could leave the mental condition of the public body in the state in which this subject has found it must have been greatly deficient in some very important principle.*

I am, sir, your very obedient servant,

M. FARADAY.

Royal Institution, June 28.

It was rumored some time ago that Prof. Henry of the Smithsonian Institute, was engaged in an investigation of this matter, with a view to the publication of an elaborate report. We are informed by a lady that she recently questioned the Professor, in Washington, as to the conclusion at which he had arrived. He laughingly replied that it was an empty humbug—that there was nothing in it—or words to that effect. Now here we have the concurrent testimony of four distinguished philosophers of the highest representation and character—Humboldt in Germany—Arago in France—Faraday in England, and Henry in America—all declaring that there is no electricity or mystery in the matter, (except that inscrutable mystery, the wonderful power which the Imagination has over Human Credulity,) and that it is entirely explicable by the recognized laws of physical and human nature. Having referred to the opinion of Arago, it may not be uninteresting to insert the following account which has appeared in several of the papers of the day.

"*Table Movements.*—The subject has been presented to the French

Academy by M. Seguin. It has, however, found no favor with the veteran philosopher, M. Arago, the perpetual Secretary of the Academy, as will be seen from the following statements made by him at the sitting of that body on the 2d of May last:

"'After communicating, as was his duty, the note of M. Seguin, M. Arago referred to some old experiments of M. Ellicott, a clockmaker, which are printed in the Philosophical Transactions, which are explanatory of these table movements. The phenomenon, which is most extraordinary and difficult of explanation, consist of the fact that the infinitely small impulses, so to speak, communicated by the fingers to, the wood composing the table, eventually result in producing very considerable motion. Thus, says M. Arago, in the experiments of M. Ellicot, two clocks, with pendulums attached, in separate cases, were suspended from a long wooden strip or bar affixed to the wall, and at the distance of two English feet from each other. The first of these clocks was set going alone, the second remaining quiet. After a certain time had elapsed, the second clock was found to be in motion by means of the imperceptible vibrations transmitted from the first clock through the medium of the solid particles of the bodies on which the two machines rested. Besides this, a very singular circumstance was noted, that after a certain time the second pendulum, which was originally left at rest, was swinging over the widest arc its construction would admit—the first, which was originally set in motion, had come to a state of rest.'

"'The Secretary remarked that he did not propose to enlarge upon the consequences which may be and really are, drawn from the facts here referred to, his object being only to show that we are already, and have long since been, in possession of a knowledge of the communication of analogous movements to those presented recently by the table-tippings, and an explanation of which does not need a recourse to any mysterious influences.'"

No doubt, after reading the above, some marvel-loving "tippers" will say, "well, but how do you know but what this curious phenomenon of the clocks may be the result of '*electricity?*' The electrical machine has brass about it—the works of the clocks are mostly brass, *ergo*, &c., &c." *Quod est demonstrandum.* "There is a river in Macedon, and there is also moreover a river at Monmouth."

But we have already far trangressed the limits which we originally assigned ourselves. We thought the explanation

by "Vivian," which we have given in extenso, worthy of preservation in a more permanent form than the columns of a daily newspaper. We believe many will thank us for having done so. To many the explanation will seem as complete and satisfactory as it does to us. Many, too, who have been puzzled, startled, almost frightened,* by the oracles from the mahogany tripod, by the drunken staggerings and wheelings of the old tea table which had stood quietly and soberly for so many years in the parlour corner—who have sometimes been tempted to exclaim with Ferdinand in "The Tempest," "May I be bold to think these spirits?"—will, perhaps, be calmed and soothed by finding that a large part at least of the mystery has been cleared up by a temperate, sensible and ingenious observer. They may thus take confidence and believe that all the foundations of our knowledge—all the hard earned treasures of philosophy and science—are not to be suddenly and completely overturned. They may rest content that if we will only be patient, careful and laborious in our search after truth—if we will not allow ourselves to be driven about by every new wind and wave of doctrine, but steer our course by the compass of reason which God has given us for the very purpose of preventing our being drifted about by every fantastic current of imagination—above all if we will confide in the wisdom and benignity of that Great Being with whom the wisdom of

* We would respectfully invite the attention of this class of persons—who we fear are more numerous and more respectable than is generally supposed—to the following remarks in the report of the "Medical Times and Gazette," which we have already several times quoted.

"It is *weakness* and not *strength* of will which readiness to assume these involuntary actions testifies. The more powerful the higher faculties of the mind, the less quickly do the muscles act on the impulsion of the ideas only. In men, where the intellect is naturally stronger, and in adults, where it is strengthened by use, the manifestations of ideomoter acts are pressed. And we would call attention to this fact—for a practical purpose, viz: with the object of cautioning the public, through our readers, against trying these sort of experiments too often. It is very certain, that each trial renders the 'table-mover' more ready at exhibiting the required phenomina, more under the dominion of ideas, and less under the dominion of natural will. Each trial, then, must weaken the intellectual powers, must make the experimenter less a man, and more an instinct-governed animal. The peculiar state of mind induced, is not, perhaps, either hysteria or insanity; but it is akin to both."

man is but foolishness—we will finally reach the light not only upon this subject, but upon far higher and more important ones—and the human race will achieve still nobler triumphs than it has yet done in the realms of matter and mind. There is a third and larger class of people however who are as incapable of being convinced by logical argument as they are incapable of accurate and philosophical observation.—These will still fondly cling to their "spirits" or their "electricity." They are as insensible to "a train of reasoning" as the sluggish cattle upon the railroad path to a train of cars. "Ephraim is joined to his idols, let him alone." People of this class—and their name is legion—make us almost despair of the final triumph of truth. With such persons in view we are sometimes tempted to fold our arms and exclaim with a famous wit and cynic of the last century, "It is idle to endeavour to cure the world of any folly, unless we could cure it of being foolish."