WHAT IS MESMERISM?

AN

ATTEMPT TO EXPLAIN ITS PHENOMENA

ON

THE ADMITTED PRINCIPLES

OF

PHYSIOLOGICAL AND PSYCHICAL SCIENCE.

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PREFATORY NOTE.

THE substance of this paper, under the title of "Contributions towards the study of Certain Phenomena, which have been recently denominated Experiments in Electro-Biology," was read before the Medico-Chirurgical Society of Edinburgh, and subsequently published in the "Monthly Journal of Medical Science." As the subject of which it treats has excited no small interest among the non-professional public, a few copies have been thrown off in a separate form.

The original title sufficiently indicates the nature of the paper. It prefers no claim to be a complete disquisition on the whole subject, far less to account for every one of the very singular phenomena which, as has now been demonstrated, can be produced at will by one human being in another; it will have sufficiently fulfilled the end intended, if it is found to accomplish the humbler task of acting as a guide to farther inquiry, and, by attempting to show how many of the experiments can be accounted for, to lead to the discovery, in other hands, of some general laws which may eventually be found adequate to the solution of the whole.

Those who believe in the real existence of certain mesmeric phenomena, are divided into two classes. The first attempt to account for them, by supposing the existence of some imponderable or other mysterious agent by whose operation they are caused. The second content themselves by referring the matter to certain mental peculiarities,—and there they leave the matter, much as the child who, wearied with conjecturing how the motions of some ingenious toy are produced, throws it aside with the exclamation, "Oh, it is all done by machinery!" The author of the following paper, while professing to belong to the second class, and therefore disclaiming all novelty in his views as regards the conclusions to which he has come, has attempted a more minute analysis of the connection between the particular phenomena observed, and the particular mental states by which he believes them to be produced, than, as far as he knows, has elsewhere been tried.

WHAT IS MESMERISM?

It would be a most interesting investigation to trace the progress of medical science, comparing it at each stage of its development with the peculiar characteristics which the corresponding period in the history of other sciences exhibited. Unfortunately, the materials for such a task are neither very numerous nor very accessible, but they are nevertheless sufficient to show that characteristics of the ages of "dogmatism," "empiricism," &c., as they are styled in medicine, were due less to causes of an intrinsic character, than to peculiarities of popular belief affecting it in common with every other science.

The present age may surely be denominated one of strangely-blended scepticism and credulity. Strangely-blended, however, they appear only to those who have never observed that these two apparently extreme states of mind often co-exist; and that a sceptical spirit in regard to truths which rest on evidence or authority, is very commonly associated with a peculiar credulity in regard to supposed facts or theories which all evidence and all authority would concur in disproving. While, then, there is no science which has not been more or less affected by this pernicious tendency, there are some which it evinces a peculiar disposition to haunt; and nowhere has it ever lingered with more deleterious effect than over that debatable land which separates the world of matter from the world of spirit. Call this "the night side of nature" if you please, and let each fantastic dreamer reckon it his or her peculiar privilege to people it with the airy visions of a disordered imagination, even here must stern philosophy claim obedience, and compel submission to her rigorous laws.

Ignorant as we are of the precise nature of that connection by which the spiritual and corporeal entities of man are linked together, it is not wonderful if the mysterious influences which they mutually exercise on one another, should offer many tempting subjects for theories, often of the most crude and baseless kind. It has been so

in the ages that are past; it is so in the age in which we live; and it will continue to be so till the end of time, unless before that the nature of the connection ceases to be a mystery at all.

Of these various theories, the one which has perhaps attracted the largest share of attention, is that which seems to have been first propounded by Anthony Mesmer, about the middle of the last century, and which, under various names, viz., Animal Magnetism, Mesmerism, and more lately, Electro-Biology, and in many diversified forms, has largely engaged public attention.

Many theories of mesmerism have been propounded, and some of these have been supported by much ingenious, as well as absurd reasoning; they all rest on, and derive strength from, certain phenomena which are exhibited to wondering and credulous spectators, by itinerant performers who feed on popular credulity.

But it will not do in the present age for physicians to stand with folded arms, and regard such proceedings with the sneer of scornful contempt. Some of the phenomena elicited are of an interesting and instructive kind, and while we refuse to admit their production by the agency to which their exhibitors ascribe them, it is a duty incumbent on us to endeavour to ascertain the laws by which their development is regulated. The thorough supporters of animal magnetism as a distinct science, demand our belief in two classes of phenomena, differing widely in the amount of credibility which each may claim.

First, Those which may be denominated analogous, and which have their analogues in many diseased states.

Second, Those which may be termed heterologous, such as the alleged manifestations of clairvoyance, the phenomena presented by which not only have no analogues in the body, healthy or diseased, but seem totally opposed to all the recognised laws by which the physical or psychical phenomena of the living body are regulated.

With regard to the second class, it is sufficient simply to assert, that, in the present state of the evidence regarding them, they are utterly unworthy of the consideration of a society such as this. Why should we occupy our time in discussing the rationale of supposed facts of a marvellous and extraordinary character, until we have satisfied ourselves that the evidence for the existence of these supposed facts, is sufficient to outweigh their very great and serious improbability? It may be unhesitatingly affirmed, that every case of alleged clairvoyance, when examined, is found open to so many sources of fallacy, that it is more easy to suppose that some of these had escaped detection, than that the marvellous phenomena recorded actually did occur in the manner which their annalists have supposed. Indeed, many of the most surprising of these cases which for a time baffled the minute and careful watching of observers, have been eventually found deceptive.

In a little work published by Dr Forbes, entitled, "Illustrations of Modern Mesmerism from Personal Observation," we have the examination by that exact and honourable physician of four or five

cases of clairvoyance, and a perusal of these will serve to show how little any, even the most apparently well-substantiated narration, can stand the test of real scientific investigation. An examination of the evidence adduced in it will be sufficient to secure a general acquiescence in the following passage extracted from the preface.

"No one conversant with these proceedings, as hitherto conducted, can deny that few, if any, of the greatest marvels recorded by the mesmerists, and promulgated as unquestionable facts, repose on more sound foundations than before trial seemed to support those which the investigations detailed in the following pages proved to be utterly baseless and false. As *all*, then, *may* be untrue, are we not authorised to demand a new course of inquiry, or a new series of evidences, before we are called upon to admit the truth of clairvoyance, and the other transcendental phenomena of mesmerism? Are we not justified, for the future, in refusing to receive from the mesmerists marvellous statements as truths and facts, unless it is, at the same time, proved to be *impossible* to explain or account for them on other ordinary, or what may be called natural, principles?"

Restricting this inquiry, for these reasons, to the first class exclusively, it is proposed to consider the phenomena which it includes under the following divisions:—

1st. Certain physiological and psychical laws will be laid down which seem to offer a probable explanation of the phenomena exhibited by patients in the mesmeric trance.

2d. An attempt will be made to refer the various mesmeric phenomena to these laws respectively.

3d. It will be shown that these views are in strict accordance with the recently received doctrines of the anatomy and physiology of the nervous system.

4th. It will be considered to what extent the power of producing at will these phenomena, and the manner of their production, can be explained on any known principles.

I.—WHAT ARE THE ADMITTED PHYSIOLOGICAL AND PSYCHICAL LAWS TO WHICH THE PHENOMENA EXHIBITED BY PATIENTS IN THE MESMERIC TRANCE CAN BE MOST SATISFACTORILY REFERRED?

A. Volition—Its power and its offices in the body.

The greater proportion of the outward actions of an intelligent being in its ordinary state, result from what we call volition—that spontaneous power which the will can exercise at pleasure. From the manner in which the various powers of the mind are ordained to act on one another, the will is usually regulated by the reason, and thus man is constituted a reasonable being. Thus Bacon says (*De Aug. Scien.* V. i,)—"The philosophy that regards the *intellect*, and that which regards the *will* of man, are, as it were, twins in their origin. For light in the understanding, and freedom in the will, arise and fall together."

Volition must be regarded as the product or expression of a purely mental change. Now we find in the human brain, a part apparently destined to be the bodily organ of such mental states.

The cerebral or hemispheric ganglia are the bodily organs by which ideas are formed, by which reasoning processes are carried on, and by which the reason directs the will. It is of great importance to remark, that supreme as is the control of the will over the voluntary muscles in most cases, the power which it exercises is not direct. It determines that a certain action shall be performed, and the necessary muscles begin to act, but it does not command the particular muscle, but leaves their selection and combination to be effected by that apparatus under the control of which muscular power is directly placed. This function is evidently seated in the spinal cord, and just as impulses on the peripheral extremities of the nerves of sensation excite in it *automatically* motorial power, so do the impulses of the will, conveyed down to it by the fibrous strands connecting the hemispheres with the rest of the brain, produce *automatically* also, in one sense, an exertion of power.[1]

Dr Todd (*Cyc. of Anat. and Phys.*, art. *Phys. of Nervous System*) thus explains it :—

"The impulse of volition excited primarily in the brain acts at the same time upon the grey matter of the cord (its anterior horn), and through it on the anterior roots of the nerves implanted in it. This grey matter, in virtue of its association with the brain, becomes part and parcel of the organ of the will, and, therefore, as distinctly amenable to acts of the mind as that portion which is contained within the cranium. If we destroy the commissural connection with the brain through the pyramidal fibres, the spinal cord ceases to take part in mental nervous actions; or if that connection be only partially destroyed, that portion of the cord, which the injured fibres had associated with the brain, is no longer influenced by the mind. Again, if the seat of volition in the brain be diseased, the cord, or part of it, participates in the effects of the disease as far as regards voluntary actions." Thus it is seen,—

1*st*, That the operations of the will are usually regulated by the reason.

2*d*, That the will, though a purely mental affection, acts through bodily organs, and that the cerebral hemispheres are its corporeal seat.

3*d*, That the will can exercise no direct power over the muscles, but affects them secondarily through the spinal marrow, the ordinary prompter of muscular action, and thus in a certain sense automatically.

4*th*, That by destroying wholly or partially the commissural connection, subsisting between the corpora striata and the automatic

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[1] Dr Cairns, in his work on moral freedom, seems to have had a clearer perception of the bodily relations of volition than is usual with pure metaphysicians, and divides volition into simple and complex.

apparatus, the power of the will over the muscles can to a corresponding extent be impaired; or if the seat of volition in the brain be affected, the same result will follow.

B. Volition—Its power and its offices in the mind.

The power of the will, however, is not limited to the direction of the motor nerves; it also influences the mental operations.

In the human mind, there is a law implanted by which the order and succession of our thoughts is regulated, one idea naturally suggesting another.

> "For when the different images of things,
> By chance combined, have struck the attentive soul
> With deeper impulse, or, connected long,
> Have drawn her frequent eye, howe'er distinct
> The external scenes, yet oft the ideas gain
> From that conjunction an eternal tie,
> And sympathy unbroken. Let the mind
> Recall one partner of the various league,—
> Immediate, lo! the firm confederates rise,—
> And each his former station straight resumes:
> One movement governs the consenting throng,
> And all at once with rosy pleasure shine,
> Or all are saddened with the glooms of care.
>
> (*Pleasures of Imagination*, Book iii.)

But, though the train of our thoughts depends immediately on the laws of association, it is much under the control of volition. We can stop the current at will by singling out one thought, and making it a special object of attention; we can also divert that current into a new channel. Farther, by study and by practice, we acquire a command over certain classes of our ideas, so that we can at pleasure call them before us.

The objects of our knowledge are derived from two sources, consciousness and perception; but ideas once received are not lost, but may arise spontaneously, or be summoned up by the powers of memory, conception, and imagination. As the contrast which exists between perception and conception is of importance in accounting for the mesmeric phenomena, it will be necessary briefly to advert to some points in their philosophy which more directly bear upon the subject.

By perception, we obtain ideas of external objects through the medium of the external senses. By conception, we form ideas of past objects of perception, or of sensations formerly felt, and which cannot then be made the subjects of perception. This power is well styled by Shakespeare (*Hamlet*, Act i., Sc. 4) the "mind's eye." By imagination we combine the parts of different conceptions together so as to form new wholes of our own creation (*Stewart's Elements*, ch. iii.).

Of course, the ideas received through the external senses, or the objects of our perception, are believed to exist, and justly, unless there exists some lesion of the organ of sense, depriving its informa-

tions of their wonted correctness. The ideas, which the objects of conception (or imagination) suggest to the mind, are also believed, but their impression is so momentary, and, if wrong, is so immediately corrected by the surrounding objects of perception, that in the ordinary state of our minds, they never produce that permanent conviction which influences our conduct (*Stewart, op. cit.*).

It is very different, however, when conceptions become the sole tenants of the mind. Then the belief which the illusions of imagination produce, is as strong as that ordinarily arising from the informations of the senses, so that we ascribe to them as separate and independent an existence as we usually do to the objects of perception.

The relation of this to volition is very simple. The power which it gives us over the train of our thoughts, enables us at will to recall or dismiss the image before us. We cannot do this in regard to the perception of an external object—hence we learn by experience to acknowledge its independent and permanent existence; we can do it in regard to the creations of fancy—hence we learn to consider them as illusory and vain. But let the influence of the will be suspended, and this test can no longer be applied, and we come to attach the same notion of reality to the products of conception that we have been accustomed to do to the objects of perception.

But another test, by which we are in the habit of trying the ideas brought before us by this mental power, is that of comparing them with surrounding objects of perception; should the external senses, however, be closed, this other means of correction is withdrawn, and the mind has no choice, but to receive as real existences any strange or fantastic images which the fancy may present.

Hence the clear and defined impressions of our senses are adverse to the development of the imagination; hence the highest activity of that power is manifested, not in the broad light of day, but as the shades of evening creep on; at such times it is, that our fancy, uninstructed, or at least uncorrected, by the sober test of clear perception, invests with its thousand forms of beauteous or terrific aspect, the surrounding objects whose shadowy outline has failed to produce a distinct impression on the mirror of the mind.

> "A thousand fantasies
> Begin to throng into the memory,
> Of calling shapes, and beckoning shadows dire;
> And airy tongues that syllable men's names
> On sands and shores, and desert wildernesses;
> These thoughts may startle well, but not astound."—*Milton.*

Under this head, then, it may be concluded,—

1*st*, That the will in the natural state has a power of regulating and controlling the current of our thoughts; and that these, when not so governed, fall under the regulation of the ordinary laws of mental association.

2*d*, That, independently of consciousness, the materials on which

the mind is exercised are supplied by the faculties of perception and conception.

3*d*, That we learn by experience that the objects of perception have a real and independent existence.

4*th*, That we learn the unsubstantial and illusory nature of the conceptions: *first*, by finding that we can recall and dismiss them at will; *second*, by comparing and contrasting them with our perceptions of external objects.

5*th*, That when the power of volition over the mind is suspended, and the external senses are wholly or partially closed, we cannot apply either of these tests; and hence we come to regard the creations of imagination as equally real with the objects of perception.

C. Sources of Motion, other than a simple exercise of Volition.

I. *Emotion.*—The various motions are usually arranged in three classes—voluntary, emotional, and automatic. Of the first, mention has already been made; and it is of importance to observe, that in it the spinal cord seems to be the direct originator of the motion to which the volition acts as an excitor, and the efferent nerves as the channels of motive power.

The emotional actions are often exerted independently of the will, and sometimes in direct opposition to it. Two circumstances prevent us from allowing to them their full share of importance in the production of muscular motion. *First*, That, unless when very strongly developed, they are more usually displayed in one class of muscles only—those, namely, receiving their supply of nerves from the medulla oblongata, mesocephale, or crura cerebri. Thus the connection of the fifth nerve with the lachrymal gland seems to point to it as the conductor of that power which causes the tears to flow at the moment of grief. Sobbing, crying, and laughing, again, are all performed by the same muscles, and all these muscles are supplied by the portio dura, the glosso-pharyngeal, the fifth, the phrenic, spinal accessory, and other respiratory nerves. But these nerves are not the exclusive channels by which emotional feelings can be conveyed, neither are the muscles which they supply the only ones which can exhibit emotional excitement. The thrill of horror or of joy, the involuntary shudder at the very idea of danger, involve a much wider range of command. The phrenzied gestures of violent rage, the mute dejection of abject despair, are the witnesses of its power. Call to mind the description of anger given by the old Roman moralist:—"Ut furentium certa indicia sunt; audax et minax vultus, tristis frons, torva facies, citatus gradus, inquietæ manus, color versus, crebro et vehementius acta suspiria; ita irascentium eadem signa sunt. Flagrant et micant oculi, multus ore toto rubor, exaestuante ab imis præcordiis sanguine! labia quatiuntur, horrent ac subriguntur capilli, spiritus coactus ac stridens; articulorum se ipsos torquentium sonus, gemitus mugitusque, et parum explanatis vocibus sermo præruptus, et complosæ sæpius manus, et pulsata humus pedibus et totum

concitum corpus magnasque minas agens, fœda visu et horrenda facies depravantium se atque intumescentium. — (*Seneca de Irâ*, i., 1.)

The *second* circumstance which tends to prevent our being fully aware of the power of emotion over muscular action, is the fact of the propensities and passions frequently affecting the muscles through the will rather than directly. It is only in extreme cases that we recognise their full power—these extreme cases being of two classes, the one, those in which the vehemence of the emotion has overcome the will; the other, where the power of the will has been from any cause diminished, so that even comparatively weak emotions may act directly on the muscles.

The last class are sometimes interestingly illustrated in pathology. Thus Dr M. Hall records a case of hemiplegia, where the paralysed hand and arm were convulsed whenever the patient met an acquaintance (*Memoirs*, p. 102). Dr Magnus, of Berlin, had a patient in whom the muscles of the face were paralysed to volition, but she smiled, and even laughed, under the influence of mental emotion.—*Brit. and For. Med. Review*, iv., p. 500.

II. *Reflex Motions*.—These reflected motions are prompted by some sensitive impression made either on the organic or animal nerves. The healthy movements of this kind are not of much interest, as regards our present inquiry, but occasionally, as an effect of disease, phenomena are presented which may be found to have some bearing on the mesmeric state. Thus, under the head of "Case of Cerebral Reflex Action," Dr Laycock has published (*Lancet*, vol. ii., 1845, p. 364), a case communicated to him by the late Dr Cowan, of Reading, because "evincing very strikingly reflex, visual, and auditory phenomena." [1]

"The shadow of a bird crossing the window, though the blind and bed curtains are closed, the displacement of the smallest portion of the wick of a candle, the slightest changes in the firelight, induce a sudden jerking of the spinal muscles, extending to the arms and legs

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[1] When this paper was read before the Medico-Chirurgical Society, my friend, Professor Simpson, objected to this case being regarded as one of reflex action. It is, however, so considered by both Dr Cowan and Dr Laycock, and I think a consideration of the whole facts abundantly proves them to be correct. Dr Cowan expressly states:—"The sensorial impression, and the motion consequent upon it, appear irrespective of every painful sensation or mental emotion, and are only noticed by the patient in consequence of the resulting movement." The will did not produce them, emotion did not influence them; to what, then, are we to refer them, if not to reflex action? In an admirable article, to all appearance from the pen of Dr Carpenter, on the "Physiology of the Nervous System," in the "British and Foreign Medico-Chirurgical Review," No. ix., we find the following remarks, completely confirmatory of the view taken above, basing it on the data of comparative anatomy. "Interpreting the anatomy of vertebrated animals, then, by that of the articulated, we should view the spinal cord, the medulla oblongata, and the whole series of ganglionic centres connected with the nerves of sensation, and lying along the base of the skull, in man *as far forwards as the olfactive ganglia, as constituting the apparatus of automatic action.*"

when violent, and this without the slightest mental emotion of any kind, beyond a consciousness of the movement. At times the vocal organs are implicated, and a slight cry, quite involuntary, takes place. At these periods she is usually equally susceptible of all noises, especially the least expected and least familiar. Movements in the next house, inaudible to others, the slightest rattle in the lock of the door, tearing a morsel of paper, and a thousand like sources of sound not to be catalogued, induce similar results to visual impressions. Tactile sensibility is also great at these periods, though not to an equal extent.

III. *Movements arising from Ideas in the Mind.*—This class merits our most attentive consideration. The physiological action is often seen. Let a ridiculous idea pass through our mind, instantly we smile, or even sometimes laugh outright, despite the opposition of the will. The idea of yawning will at once excite the act. The thought of a fearful or disgusting object will cause an involuntary shudder, and the recollection of the latter will often produce vomiting as readily as its actual presence.

It is recorded of the illustrious Boerhaave, that, riding in the heat of summer, he chanced to pass a place where the carcass of a horse was rotting in the sun; at the very moment, when distended by pent-up gases, it gave way, and such was the overpowering stench, that he fainted. So strong with him was the association of ideas, that ever after, on passing the same place, the mere recollection of what he had encountered, caused a repetition of the fainting. In hydrophobia, not only does the sight or contact of water produce spasms, but the very idea of it, whether obtained by the eye, the ear, or the memory, has the same effect.—(Vide case by Dr Marcet, *Lond. Med.-Chir. Trans.*, vol. i., p. 13; and case by Mr Thornhill, *Med. Gaz.*, vol. xvii., p. 220.)

IV. *Movements arising from Imitation.*—Its power is especially strong in weak minds, and prompts to the performance of many actions independent of the will. "There is scarcely," says the author of the article "Imitation" in Rees' Cyclopædia, "an irregular action of any organ of the body, which has not been caught (to use a common phrase) in consequence of this tendency to imitation, by different individuals; thus *squinting*, *stammering*, *winking* with the eyes, and various unseemly habits, have been frequently acquired by associating with those to whom they were already habitual. Every physician knows the frequency of the propagation of hysteric and choreic affections, by imitation." These are the more common phenomena; but there are others, whose connection with this principle is not so readily recognised. Dr Symonds says, "Any set of muscles may acquire particular actions and assemblages of actions, by passive imitation only, and to such a degree, indeed, that desire (volition?) is often vainly employed in opposition to this principle. One person yawns, or sighs, or laughs, because another does so; a child or susceptible female, if frequently in company with a person who winks

or stammers, or falters in his gait, will fall into similar habits, notwithstanding there may be a variety of inducements for attempting to avoid them."[1]

The well-known account of Boerhaave's cases at the orphan hospital at Haerlem, is illustrative, as are also those cases of epidemic convulsions, which, too often associated with religious excitement, have manifested themselves in various quarters of the world. Of this nature was the malady which appeared in 1796, in the Island of Anglesey, attacking *females* between the ages of ten and twenty-five, of which Dr Haygarth has left us an account. The Shetland epidemic, of which the minister of Unst contributed an interesting narrative (*Ed. Med. and Surg. Journal*, vol. iii.) or the Tenessee epidemic in 1803 (*Inaugural Essay on Chorea*, by Felix Robertson, Philadelphia)—as well as many others, reports of which have been handed down to us from remoter times.

There is one fact regarding imagination, which may perhaps explain the readiness with which the mesmeric state can be reproduced in one who has repeatedly been in it—the excessive or often-repeated imitation of mental emotions may in the end bring on similar ones. After Garrick had acted his Lear or Othello, he passed some hours in convulsions in bed.

V. *Influence of the Will of Another.*—This must chiefly affect us through the emotions, and therefore might have been considered under that head. The power of the mind of one man to sway that of another, and even of whole bodies of men, is of a complex character, and need not now be analysed. Those who thus acquire power to guide the understandings of others, display themselves a volition which overmasters all opposition. The instinctive propensities in them give place to the strong volitional power by which their every action is guided,—that power, however, acts under the direction of reason.

How willingly does the weak mind surrender itself to the guidance of the strong! or how instinctively does it render homage to that determination of character which claims universal obedience! How often does the physician recognise the mastery which this confers, when, at some moment of unforeseen and sudden danger, all around are yielding to the instinctive propensities, and acting by impulse rather than reason, his self-possession restores composure, and irresistibly compels the necessary obedience!

The poet, too, has taken advantage of this, and thus beautifully expresses it:—

> "Ac veluti magno in populo cum sæpe coorta est
> Seditio sævitque animis ignobile vulgus;
> Jamque faces et saxa volant, furor arma ministrat:
> Tum pietate gravem ac meritis si forte virum quem
> Conspexêre, silent, arrectisque auribus astant:
> Ille regit dictis animos, et pectora mulcet."—(*Virg. Æn. i.*)

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[1] On the Relations between Mind and Muscle.—West of England Journal. Vol. ii. p. 169.

To a similar principle, too, we believe the power of oratory may be ascribed. Its effect on the emotions is well known, and has often prompted to deeds which reason would have restrained; and which the judgment condemned.

"In the ancient republics," observes an acute and beautiful writer (Thomas), "eloquence made a part of the constitution. It was it which enacted and abolished laws, which ordered war, which caused armies to march, which led on the citizens to fields of battle, and consecrated their ashes when they perished in the combat. It was it which, in the tribune, kept watch against the tyrant, and brought from afar to the ears of the citizens the sound of the chains which were menacing them. In republics, eloquence was a sort of spectacle. Whole days were spent by the people in listening to their orators,—as if the necessity of feeling some emotion were an appetite of their very nature. The republican orator, therefore, was not a mere measurer of words, for the amusement of a circle or of a small society. He was a man to whom nature had given an inevitable empire. He was the defender of a nation,—its sovereign,—its master!"

Well might Milton speak of those whose resistless eloquence

> "Wielded at will that fierce democracy,
> Shook the arsenal, and fulmined over Greece
> To Macedon and Artaxerxes' throne!"

If, then, in all states of the mind, the influence of another acting with the concurrence of the mental associations, and chiefly through the influence of the emotions, has been found powerful in overcoming for a time the restraint of reason, can we wonder if, in persons prone to emotion, and in whom the will is already spell-bound, the same power should be adequate to compel obedience to its imperious mandates?

From the foregoing facts, it may be concluded, that the following sources of motion are found to exist in the body, independently of volition:—

1*st*, *Emotion*.—Often conjoined with volition, often independent of it, sometimes even opposed to it, always strongest the less powerful the volition.

2*d*, *Automatic Action*.—Usually confined to the muscles of respiration; sometimes, in diseased states, involving others.

3*d*, *Movements from ideas in the Mind*.

4*th*, *Movements from Imitation*.—Accounting for the propagation of many hysterical and choreic affections, and often producing stammering, lisping, squinting.

5*th*, *Influence of the Will of Another*.—Controlling the weaker and less volitional minds of others.

II. WHAT ARE THE ACCREDITED MESMERIC PHENOMENA, AND HOW CAN THEY BE EXPLAINED ON THE PRINCIPLES LAID DOWN?

A. Summary of the phenomena observed.

"Among the instances supposed to be made good as facts during the late exhibitions," writes the clear and cautious Edinburgh correspondent of a London journal, "are the following":—

"That the arm of a susceptible person being stretched out at right angles to the body, can be rendered cataleptic to the extent that it will remain in that outstretched state, in spite of the efforts of the owner to let it drop, till it please the mesmerist to dissolve the charm; that a susceptible person may be made to put one foot across the other, notwithstanding his efforts to keep it on the floor; and, *vice versâ*, that he may be deprived of the power to put the one foot across the other, if it be the mesmerist's desire that it should remain on the floor; or that the fists may be made to spin round each other against one's will, or be rendered powerless for that movement, at the desire of the operator. Again, that a susceptible person may be made to believe that plain water is sweet or bitter at the bidding of the mesmerist; that the arm, or any other part of the body, may be rendered insensible to the pain, for example, of pinching; or that the subject may be at once put fast asleep, so as to be incapable of being roused by violent shaking, or loud shouting, or ringing a dinner-bell in his ear; and, lastly, that he may be forced to laugh or weep, or may be restrained from laughing or weeping, as the operator thinks fit."—*London Med. Times*, vol. ii., *N. S.*, p. 129.

Such is a succinct summary of these wonderful manifestations, for the explanation of which philosophers have thought it necessary to "call spirits from the vasty deep;" although it appears that "these spirits" have not shewn a very decided inclination to obey the summons. Be it now our task to endeavour to see how far these phenomena are explicable on admitted principles;—how far what is mysterious in them can be solved by reference to laws known and recognised.

B. In the magnetic trance, the power of the will, over both body and mind, is either suppressed or greatly weakened.

To form an accurate view of the pathological state of somnambulism, it must be traced through those gradations by which it is connected with health. Sleep and dreaming seem to form the connecting link. Let us examine,—1st, their causes; 2d, their conditions.

"The approach of sleep," says Stewart (*Elements*, p. 321), "is accelerated by every circumstance which diminishes or suspends the exercise of the mental powers, and is retarded by every thing which has a contrary tendency."

Its causes have been tabulated as follows:—

1. Fatigue, *i. e.* suspension of active power.
2. Absence of thought.
3. Stupefaction (through certain drugs).
4. Mechanical pressure on brain.
5. Monotonous sounds.
6. Yielding to reveries.

An examination of these, shows that certain of them act by diminishing the vital powers in the organs of sense and motion, and checking the manifestation of the will over both mind and body (1, 3). Others, again, without much lowering of power, impede the manifestation and activity of the will (2, 5, 6). They all have the effect of withdrawing the mind from its own thoughts, without at the same time supplying it with anything to engage its attention. Children, and those who are more occupied about external things than accustomed to mental exercise, fall asleep whenever the objects of perception cease to engage their attention. In the 4th, the connection between the sensorium commune and the mind is probably impeded by some physical change.

A consideration, then, of all these causes of sleep, leads irresistibly to the conclusion adopted by Stewart, "that the will loses its influence over all our powers both of mind and body, in consequence of some physical alteration in the system, which we shall never probably be able to explain."—(See, on this subject, *Stewart's Elements*, chap. v. *passim;* and *Feuchtersleben, Med. Psychology*, § 57, 58.)

In this state, agreeably to laws already laid down, dreaming takes place.

> "While o'er our limbs sleep's soft dominion spread,
> What tho' our soul fantastic measures trod
> O'er fairy fields, or mourned along the gloom
> Of pathless woods, or down the craggy steep
> Hurled headlong,—swam, with pain, the mantled pool,
> Or scaled the cliff, or danced on hollow winds
> With antic shapes, wild natives of the brain."—*Young.*

The mind, having no external objects to engage it, and no volition to control it, is entirely occupied with the pictorial world of fancy. The illusions of imagination are not dispelled by clearer and more lucid images; and hence the existence of realities corresponding to them is believed, and influences our actions. Just as in the body, during sleep, the vegetative powers go on unimpeded, while the volitional are weakened or suspended; so, in the mind, those powers which volition habitually controls cease to operate, while those which can be exerted independently of the will continue in active exercise.

Carry the physiological state of dreaming into the pathological state of somnambulism, and you find, as usual in nature, no very abrupt distinction. No wide gulph separates at any time the limits of health from those of disease. The exercise of the external senses is usually either impeded or perverted. The images of fancy have become so strong, that, with volition weakened or suppressed, they now act as suggesters or exciters of the centre of motive power. The vitality of the cerebral nerves seems paralysed,—automatic activity is increased. These phenomena indicate, as Feuchtersleben has shown, "not a more exalted, but a more fettered, state of the mind, in which it is subject to the will of other men, to the sway of its own instinct, and of fancy."

Such we believe to be the real key to the solution of those appearances which have so delighted the foolish, and in some instances seemed even to mock proud philosophy itself. Let us now attempt to classify and explain them, agreeably to those principles which have been laid down.

C. Many of the phenomena are clearly traceable to the operations of fancy, the images of which are either developed spontaneously, in accordance with those laws which regulate the association of our ideas, or are suggested by the magnetiser,—the mind, in either case, being no longer under the control of volition.

First Class.—Perversions of the External Senses.—When the strong assertions of the operator cause the patient to believe that the same water is at one time sweet, at another bitter, it is evident that the only change is in the assertion, and therefore that it must be the cause of the phenomenon. In attempting to explain this, we must bear in mind, that the qualities of bodies are changes in the state of the mind which they affect. All sensation, therefore, resolves itself into a mental effect produced by a material cause; and by finding that the effect usually succeeds the operation of the cause, we come to associate them together. The feeling in the mind, then, is all of which we are conscious; and if it does not follow the application of the external body, there is no sensation. In somnambulism it does not. In the eye this is evident:—"A candle may be held so close to the eye, as to burn the eye-lashes and eye-brows without the slightest indication of sensation." (*Feuchtersleben.*) In the ear it does not:—"Even the report of fire-arms does not wake the dreamer." (*Ibid.*) In the smell it does not:—"Brimstone and phosphorous are said to have a pleasant scent to the somnambulist; often the sense of smell wholly fails, as in the case of the apothecary's assistant, who held to his nose the tincture of castor, and murmured to himself, as if in excuse, 'I have a cold;' or, as in the case of the man whose snuff-box was filled with coffee, which he took for tobacco." (*Ibid.*) And so in the case of taste. Of the two parts necessary to produce sensation, one is wanting,—the external impression is made, but the mind is asleep, and does not follow it by the internal change. In this case no taste would be perceived; and, just as the dreamer may be unaffected by sound, although the undulations of the air reach his tympanum as usual, so may he remain unconscious of tastes. But at the fitting moment the operator suggests to the patient the idea of a taste,—sweet, sour, or bitter; this idea, following immediately the bodily act, takes the place of the internal change with which this is usually associated, and is thus mistaken for the ordinary consequent mental change, and appears to him to be the real taste.

In conversing with a victim of this delusion, he informed me, that while asserting before a large audience the sweetness and bitterness of the water, he was throughout satisfied that the strong

affirmation of the magnetiser had caused him to believe what he was all along sensible was really not the case. In him, as was often seen in these experiments, the control of the will was not completely suspended, but only partially overcome, by the operation of a more potential agency.

Much of the accuracy of our taste depends on the exercise of volition, not over the mind alone, but over the bodily organ likewise.

The epicure, over his savoury dish, or while tasting the aroma of his wine, rolls about his tongue and smacks his lips by voluntary effort. Even in the waking state, and in the exercise of full mental powers, this sense is subject to various deceptions, of which many amusing examples are recorded. One may suffice, for which I am indebted to a friend, on whose veracity I can place the strongest reliance :—

At a dinner-party given by a gentleman, himself a connoisseur, and at which, among others, a gentleman of acknowledged taste, often employed by the wine houses, was present, the host, after dinner, promised his guests a glass of "some superlative whisky."

The dram went round, the mouths were duly twisted, the lips smacked in orthodox style, and the liquor pronounced to be "*first class.*" It may be imagined what surprise was depicted on the face of the host, and what must have been the mortification of these renowned judges, when it was discovered that a bottle of gin had been circulated by mistake for the whisky.

Not less amusing, apparently surprising, or readily explicable, are the apparent perversions of the sense of sight. Closed against real perception, the mind readily mistakes for the informations usually received through the eye the obscure ideas of fancy acting under suggestion. Thus, in the account of the Edinburgh experiments already quoted, it is stated—

"That an officer in Edinburgh was persuaded that a piano was a horse, which he intended to buy, for which purpose he went forward in a business-like way, and attempted to take up the feet of this supposed horse for examination."

Another case, also alluded to, I myself witnessed :—

A young man was persuaded that a gaping audience was a murmuring stream, and a thorn stick a hazel fishing-rod. To this, in idea, he attached an imaginary line, to which was suspended an imaginary hook, which he baited with an imaginary fly, and with inimitable gravity he proceeded to hook an imaginary fish, whose leaps he grotesquely followed over the stage. In him Johnson's definition of angling was scarcely realised; for though the fool existed in admirable perfection at one end of the apparatus, the fly was wanting at the other.

In these instances, no doubt whatever can be entertained, that an illusion was practised on the mind through the medium of the imagination, and that the manner in which this was done is readily explicable on the principles previously laid down regarding Perception and Conception.

Second Class.—Perversion of Common Sensibility.—One of the most remarkable effects of the magnetic sleep, is the complete insensibility to pain, which seems in certain cases to be produced,

the patients bearing to be pinched, pricked, or even burnt, without any apparent suffering. Well authenticated instances are also recorded, of severe operations having been performed without pain while the patient was in this state; as, for example, an amputation of the leg by Mr Ward ("British and Foreign Medical Review," xix., 434), and another by Mr Toswill ("Zoist," October 1844), and a number of severe operations performed in the same way in India by Dr Esdaile ("Mesmerism in India"). This state of insensibility has its analogues in nervous disorders, and many cases accompanying hysteria have been recorded.

It may help to throw some light on this subject, if we remember that certain muscular actions seem to relieve pain, such as screaming out, a fact which Dr Darwin seeks to explain, by supposing that it carries off so much nervous energy, that it does not leave enough for common sensation.

In order to produce the feeling of pain, two prerequisites are necessary:—

1st. That an impression should be made on the sensorium commune, or that part of the brain in which the sensory nerves are implanted; and,

2d. That that change should be recognised by the brain-proper, or, in the words of the report made to the French Academy of Sciences on the Memoire of M. Flourens, the "cerebral lobes are the sole receptacle where the sensations can be consummated and made perceptible to the animal."

If, then, we suppose that by some temporary cause the action of one or other of these is suspended, or the connection between them interrupted, it may help to account for the insensibility to pain which is displayed by many persons when in the magnetic sleep.

Third Class—Perversion of Voluntary Motion.—In certain cases, those operated upon appeared unable to assume or alter certain positions, or, in other words, to call into play certain muscles. Such experiments are equally explicable on the principles laid down. The power of volition being either weakened or suspended, the patient might believe that he put forth a volition to execute a certain change, or might even feebly do so; but the firm assurance and determined aspect with which the operator asserted the impossibility, acting through the medium of his disordered fancy, produced the effect which his enchanter desired. This is surprising—not so much in the kind, as in the degree, of the effect produced. "The idea of our own strength," says Müller (*Physiology, by Baly*, vol. ii. p. 1398), "gives strength to our movements. A person who is confident of effecting anything by muscular efforts, will do it more easily than one not so confident in his own power. The idea that a change is certainly about to take place in the actions of the nervous system, may produce such a change in the nervous energy, that exertions hitherto impossible become possible. This is still more likely to be the case if the individual is at the

time in a state of mental emotion." If an idea of the mind can, as is here stated, supply strength, there is surely no difficulty in the supposition that it may also abstract it. If, in the ordinary state of mind, with all the faculties in full play, the confidence of being able to effect anything by muscular exertion confers the power of doing so, there is surely no difficulty in admitting the possibility of the converse in the extraordinary state in which a patient is thrown while in the mesmeric trance. To the influence of the ideas on muscular motion, and to this alone, we believe that the phenomena of muscular rigidity, as well as muscular activity, are due.

One interesting experiment is sufficient to illustrate this.

At a private magnetic soirée, a celebrated operator, at the request of certain parties present, undertook to magnetise the arm of a young lady, whom he had previously affected in a similar way. She was seated on a chair in the centre of the room, the rest of the party stood in silent expectation round the observed of all observers. Opposite her was placed the operator: an expression of resolute determination was thrown into his countenance. His eyes were fixed on, and his hand pointed to, the arm. Not a pass, not a motion, was made. Slowly the muscles of the arm began to contract, the arm was gradually elevated, and eventually became rigid—so rigid, that an ordinary drawing-room chair being suspended over the wrist, no deflection was produced.

I ventured to express a doubt that this case proved too much for the maintainers of the doctrine of odyle or the magnetic fluid. How had it passed from the operator to the patient? No attempt was made to communicate it by the ordinary passes or wonted excitants. Of course, the ready explanation was, that the operator had willed it to pass from his eyes to the arm, and that, with the ready obedience so characteristic of all its movements in certain persons, it had complied.

Having cited this case, in illustration of rigid contraction of the muscles evidently produced by the influence of the imagination, I may also refer to the striking analogy which it offers to certain cases, arising from similar diseased states. "Jam autem in catalepticis vides dum e. g. elevamus brachium, id non delabi, sed tumere et durescere elevatores; manifeste enim Deltoidem turgere sentimus, et si relinquamus brachium non delabitur" (*Tract. Path. de Catalepsi, auctore C. Fabri*). Fernelius records the case of a student who was seized with catalepsy while at his desk, and who continued, during the fit, with the pen in his hand, and in a fixed attitude of intense application. (*Ambians. Pathol.*, lib. v. chap. ii.) Sauvages remarks of the same disease, that if the patient happens to be seized while laughing or weeping, the laughing or weeping will continue throughout the entire attack. (*Pathol. Meth.*, p. i. class vi.) One attacked while in the act of drinking, continued to hold the cup to the lips, and apparently to continue drinking throughout the entire fit.

In the various anomalous cases of chorea recorded by authors, similar phenomena have been observed. Thus, in Magendie's "*Physiology*," two remarkable cases are preserved, one from M. Pudagnol, of a man who was seized with an irresistible tendency to move forwards, only stopping when exhausted; and another by M.

Laurent of Versailles, of a girl who was irresistibly propelled backwards, and with some rapidity, being unable to avoid obstacles or hollows, and, in consequence, receiving falls and bruises in her course. M. Magendie also records a still more extraordinary case, justly entitling this disease to an appellation once given it, of "insanity of the muscles," in which the will entirely lost its control over them. "It is impossible," he says, "to paint by language the variety and oddity of his motions and positions. * * * * At certain times his motions would pass into the train of ordinary actions. Thus, without the least participation of his will, he was seen to rise and walk with rapidity, until he met with a solid body that opposed his passage. Sometimes he walked backwards with the same readiness, and was only stopped by a similar cause." Dr Watt of Glasgow has related, in the fifth volume of the "Medico-Chirurgical Transactions," the case of a girl from Ayrshire.

"After suffering from headach, vomiting, loss of speech and motion, for about a month, she was suddenly seized with a propensity to turn round on her feet like a top, with great velocity, always in one direction, and was gratified when the attendants assisted her in increasing the rapidity of her motions. After a time these motions ceased, and she would lay herself across the bed, and, turning round like a roller, move rapidly from one end to the other. The fits continued at first for about two hours; but they were gradually increased to six or seven hours daily. A month or six weeks later, the movements became of an entirely new kind. The patient now lay upon her back, and, by drawing her head and heels together, bent herself like a bow, and then allowing her head and heels to separate, her buttocks fell with considerable force upon the bed. She repeated these movements ten or twelve times in a minute, at first for six hours daily, and at last for fourteen."

Still more close is the resemblance presented to that disease called by some authors *malleatio*, and consisting principally of a striking of the knees with one or both hands like a hammer. Dr Andrew Crawford mentions a case of this kind which he saw in the Hampshire County Hospital, in which there was a constant and uniform striking of the palm of one hand upon the side of the thigh, to such a degree as speedily to wear out the part of the dress on which it fell.

In considering the cases above related, all of them can without any difficulty be classed under one or other of the heads to which motion occurring independently of volition has been already referred; most of them would be ranged under the first or third. In some cases it would appear that choreic, and therefore other analogous affections, seem to arise from some obscure painful affection, or peripheral irritation, which might on further inquiry, enlarge the number of cases in the third section.

C. Certain of the phenomena produced during the magnetic trance are clearly referrible to the faculty of imitation which, always strong in weak minds, becomes especially manifested when the volitional control is withdrawn.—Fully to understand this, we must distinguish qetween that imitation exercised at will, as in the mimic, and that

which involuntarily, or even against every effort of the will, copies the peculiarities with which it is brought into contact. It is the latter to which reference is here made:—Cabanis gives an account of a man in whom the tendency to imitate was so strongly marked and active from disease, that he experienced insupportable suffering when he was hindered from yielding to his impulses.

One case will sufficiently illustrate its effect in mesmerism:—

At an evening party, at which a celebrated magnetiser was present, a lady long resisted his efforts to make her stammer. She was a bad subject for him,—not very susceptible of the influence. Again and again, he issued his commands,—again and again with considerable effort, she succeeded in disobeying; at length he thundered out his mandate, and immediately thereafter, putting his face close to hers, and protruding his chin, he made his own jaw to imitate the convulsive twitches of the stammerer. The effect was irresistible.

Laughing and weeping may either be produced in the same way, or arise from emotional excitement.

D. Attempt to explain the power manifested of controlling certain of the involuntary muscles.—Hitherto our attention has been confined to the muscles usually employed in voluntary motion, but the believers in odyllic influence appeal to the power they possess over organs not usually controlled by the will, as a proof of their theory, which cannot be gainsaid. "The heart and lungs can be affected by us" say they. "Power over the voluntary muscles may be explained away on your theory, but this you cannot account for." But we can. Dr Holland, in his Medical Notes and Reflections, observes,—"There is cause to believe the action of the heart to be quickened or otherwise disturbed, by the mere centering of consciousness upon it without any emotion or anxiety. The same may be said of the parts concerned in respiration. If this act be expressly made the subject of consciousness, it will be felt to undergo some change, generally to be retarded at first and afterwards quickened." Such facts readily explain a class of cases of which the following may be quoted as a fair example:—

The patient, a young gentleman who had been previously magnetised, was seated opposite the operator; we were all told *in his hearing* that the motion of the heart was to be controlled; the magnetist stood with his hand and fingers stretched out and directed to the heart; I remained to watch the pulse. A few passes were made, and suddenly the pulse rose; a few others, and it fell.

E. Attempt to explain the cases in which one person supposes himself, while in the magnetic trance, to be another, and acts the character which he has assumed.—Of all the vagaries which a person in the trance can be made to play, this perhaps is the most amusing, but certainly it is not, as has been sometimes alleged, the most surprising. It might have been referred to a former head,—that, namely, in which the illusions of the senses were considered; but such has been the prominence assigned to it, and such the marvel-

lous character attached to it, that it has been thought more advisable to make it the subject of separate consideration. We must go back to first principles, and determine on what the aberration depends. I dismiss all metaphysical subtilties at the outset; I will not discuss the question of intuitive truths at all; in reference to them, Reid and the Scottish school of philosophers have laid themselves open to the attack of Priestley and the Materialists, and the latter have not been slow to take advantage of the opportunity afforded them.

All this, however, need not occupy our attention, for it is evident that just as we derive our knowledge of the existence of the external world by our external senses, and just as the information which they afford is strengthened and corrected by experience, so we come to understand our own existence by internal sense, the ideas which it supplies being rendered more definite and distinct by our experience of the differences between our sentient body and the various objects by which it is surrounded.

And again, just as our external senses, or ideas supposed to arise from them, but in reality referrible to another source, may deceive us into the belief of the existence of some nonentity, or of the transformation of one object of perception into another,—whether of a horse into a piano, or a walking-stick into a fishing-rod,—so our internal sense may in a similar manner deceive us into the belief of changes and transformations in those states of the existence of which it is its office to inform us.

But further, metaphysicians have failed altogether to advert to the amount of evidence which the operation of our will affords us as to our self-consciousness. The condition of our body we change by an exercise of volition; things without us alter independently of this. We will an action, it is performed; that performance is attended with sensations, and these we learn to distinguish from the sensations caused by external objects. This means of distinction we lose, then, when volition is suspended; and just as formerly it was shown how its arrest suspended the tests we had for the truthful representations of one class of ideas, so now it will be seen how the same change deprives us of all means of ascertaining the fidelity of this other large and important class. Let us next glance at its derangements in disease, from the slighter and more transient to those analogous to what are observed in the mesmeric trance.

A certain corporeal sensation seems to exist in all organised beings, whether they are possessed of a nervous system or not. Each individual having a ganglionic system of nerves, possesses farther a common feeling by which the state of the body is revealed to the mind.

When this common feeling is altered, it deceives the patient into the idea of the existence of corporeal conditions which are not real. Examples of this are frequent at magnetic exhibitions. A patient will at one moment be too hot, and throw off his coat; the next he shivers with cold, and buttons himself up; or a snow storm descends, and he seeks to protect himself from the cutting blast. In

all these states it is the bodily feeling which is deceived, much in the same way as the external senses were in other experiments already referred to.

Passing on to a higher degree of the same derangement, we encounter in the diseases of hysteria (or hypochondriasis) the resemblance of many of the phenomena to those of the magnetic trance, which have already been considered. The will, and mental powers generally, are for the time weakened, the bodily sensations acquire an undue preponderance, and eventually the mind becomes its subject, —its slave. "Non raro aegrum ab hoc sensu, et medicum ab aegro falli, cum aeger ex sensu communi hausisse hinc inde affirmat, quod imaginatio et præcepta etiam opinio illi suggesit." (*Hartmann, Pathology.*)

Still further ascending to the higher degrees of disordered manifestations originally springing from the same root, we arrive at delusions. These are admitted by the most esteemed writers on these subjects to own two sources of origin,—1st. The alterations of the individual feeling which we have just been considering, and the delusions arising from them, as displayed in the severer cases of hypochondriasis and hysteria. 2d. The hallucinations of sense which, as has been already shewn, exist in persons in the magnetic state. "Un homme qui a la conviction intime d'une sensation actuellement perçue, alors que nul objet extérieur propre à exciter cette sensation n'est à portée de ses sens, est dans un état d'hallucination : c'est un visionaire."—*Esquirol des Mal. Men. Tom.* i. p. 159.

Instances of delusion of this kind have not been uncommon in the history of man. In Arcadia, as Sprengel informs us, the shepherds often believed themselves to be changed into wolves, and imitated the actions and howls of these animals.

According to Hippocrates, an epidemic insanity at one time prevailed among the Scythians, and those seized with it imagined they were changed into women, and this idea was so strong as to influence their actions. In modern times innumerable instances of a similar kind have occurred. "Bishop Warburton, in a note to one of his works, speaks of a person who thought he was converted into a goose pie; and Dr Arnold saw a man who fancied himself in the family way. Pope describes, in his 'Rape of the Lock,' many of these fancies." (*Elliotson*). "All lunatic asylums," says an esteemed author already quoted, "are full of princes and princesses, kings, popes, seers, and even sons of God. The unfortunate poet Wetzel arranged his writings before him, and inscribed on the back of the binding '*Opera Dei Wetzelii.*' The more fortunate Professor Titel rejoiced as being a Roman emperor, possessed of an immense dominion."

Such are the analogues of this condition in disease, and they, like the others already considered, ought to suggest a caution to medical men how they trifle with patients, by producing phenomena so closely allied to the most serious and afflictive maladies. Such

fancies, if encouraged and frequently repeated, may pass into fixed delusion, and then what distinction can be drawn between them and insanity?

It may be objected, however, that in all the instances given the delusion *was* already fixed. This is true; but it is not difficult to find similar ones of a less permanent character.

In intoxication, which resembles sleep and the magnetic trance in its power to suspend the control of the will, while it differs from them in the fact that it stimulates the brain, the fancy excited by the emotions, passions, and desires, propels through the mind a crowd of images which it cannot control. The similarity of many of the phenomena of intoxication to those of the magnetic trance need not be pointed out. And surely it is scarcely necessary to show that, in that state, self-deceptions, similar to those we have now been considering, frequently occur. On this Dr Geddes's celebrated Scottish song of the "Wee Wifukie" is founded.[1]

III. THE EXPLANATIONS OF THE PHENOMENA WHICH HAVE BEEN NOW OFFERED, ARE IN DIRECT ACCORDANCE WITH THE RECEIVED DOCTRINES OF THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

The power of suspending certain functions of the nervous system,

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[1] We suppose, in the composition of this song, the author studied the facts rather than the philosophy of his subject. It is, therefore, all the more interesting to observe how the several stages of the mental state of the "Wee Wifukie" illustrate some of the views on which an explanation of the magnetic phenomena has been rested.

First we have the cause:—

> "There was a wee bit wifukie, was comin' frae the fair,
> Had got a wee bit drappukie, that bred her meikle care.
> It gaed about the wifie's heart, and she began to spew,—
> Oh! quo' the wee wifukie, I wish I binna fou."

The packman laddie having clipped her hair, she comes to the conclusion on which the song turns—

> "And when the wifie wakened, her head was like a bee,—
> Oh! quo' the wee wifukie, this is nae me."

The deceptions of fancy, however, are not complete, and she tries to test their reality,—1st, By memory; 2d, By appealing to the objects of sense.

> "I met with kindly company, and birl'd my bawbee!
> And still, if this be Bessukie, three placks remain wi' me;
> But I will look the pursie nooks, see gin the cunyie be,—
> There's neither purse nor plack about me!—this is nae me."

Still, however, not thoroughly persuaded, she seeks familiar objects to assure herself, but in vain, till, dropping asleep, the fumes of the liquor are dispelled, and Bessukie is herself again, to the great delight of Johnnie, who had been at the parson's, seeking advice in his perplexity.

> "Now Johnnie he cam' hame again, and oh! but he was fain
> To see his little Bessukie come to hersel' again.
> He got her sitting on a stool, wi' Tibbuck on her knee.
> Oh! come awa, Johnnie, come awa to me;
> For I've got a nap wi' Tibbuckie, and this is now me.'

has, if not proved, been at least assumed; while, at the same time, it has been farther contended that the others still continued to act independently of this change. This necessarily presupposes the existence of separate and independent organs for each of these; for whatever be the change by which the magnetic trance is produced, the agent who produces it must act on the bodily organs of him who is its subject, and the effects which are observed are probably due to some inappreciable change in the nervous centres. It is not for us as pathologists to determine what this change is; the physiologist must pave the way for such an inquiry, by showing what those changes are by which ordinary nervous action is produced. If the one is undiscoverable or undiscovered, so must the other remain, for many errors would be avoided in pathology, did we sufficiently admit, that a knowledge of healthy function must precede all inquiry into its conditions under disease. The following facts, then, seem to be admitted in regard to those points in the anatomy and physiology of the nervous system which concern our present inquiry.

A. The brain-proper—the bodily seat of intellectual actions—has no power of directly effecting muscular movement.[1]

The grey tract in the spinal cord proves, that it is more than a mere conductor of nervous power from the brain,—while the demonstration by Mr Grainger of some of the roots of the spinal nerves terminating in the grey substance, seems to indicate that these nerves are the conductors of a power generated in the cord itself. Besides, were the brain constructed, so as *directly* to operate on the muscles through the nerves, these nerves would have to go as *directly* to the brain, in which case the white matter of the cord would gradually increase in bulk from below upwards, which is not the case, as has been conclusively established by the observations of Volkmann. These facts seem conclusively to establish the doctrine, that the spinal cord is the chief centre for the roots of the spinal nerves, and consequently, that in those acts called reflex, it operates directly on the muscles through the efferent nerves proceeding from it; and, also, that in muscular acts originating in, or controlled by the mind, the cerebrum does not itself act directly on the muscles, but merely exercises an influence on the spinal cord, from which their nerves directly proceed. Thus all muscular action proceeds directly from the spinal cord, and that portion of the nervous centre can be stimulated to act by any other portion which can originate such a power, and which has a medium of communication with the cord.

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[1] For fuller details, and for proof of the doctrines here advanced, I beg at once to refer to the articles from which I have borrowed them:—"Physiology of Nervous System," by Dr Todd, in *Cyclopœdia of Anatomy and Physiology;* a review of "Noble on the Brain," in the *Brit. and For. Med. Rev.*, October 1846; a review of Dr Todd, in the *Brit. and For. Med.-Chir. Rev.*, January 1850.

B. That the corpora striata and adjacent parts are the centre of volition; that this nervous centre is independent of, although connected with, the central hemispheres, and that it has ample communications with the spinal cord.

According to the experiments of Longet and Lafargue, animals remain immoveable after removal of the corpora striata; and pathology teaches us, that even a very slight lesion of that part of the nervous centres is invariably followed by paralysis. In short, the connection of these bodies with voluntary motion has been admitted by all physiologists, from the time of Sir C. Bell.

Then, supposing the corpora striata to be the seat of volitional impulse, that, as we have already shown, is closely connected with the judgment,—the material organ of which is in the cerebral convolutions, and, therefore, ample means of communication should exist between them. It is so in fact, extensive radiations of fibrous matter pass from the hemispheres to the corpora striata. But, again, it is no less evident that they must have the means of transmitting their volitional impulses to the spinal cord as the centre of motion, and so we find that the pyramidal bodies connect them with the grey matter of the cord.

C. That there also exists a centre of sensation, independent like the others, but at the same time closely connected with the centre of volition, because sensation is a frequent exciter of motion, and voluntary motion is always, in health, attended with sensation. This centre of sensation must also have ample communications with the hemispheres that the sensations received by it may be made to act on the mind.

These conditions are all found to exist in the thalami optici. All the nerves of sense are connected more or less directly with them, or with the olivary columns, which are continuations of them. These, conjointly, appear to form a ganglion for the sensations communicated by the nerves of touch, and therefore destined for the reception of sensitive impressions. The close association between them and the proper optic ganglia, is explained by the close association between the senses of sight and touch, which is apparent both from the manner in which our ideas of external objects are communicated to us, and also from the joint operation of these senses in directing muscular movements. The first of these farther presupposes a close connection with the central hemispheres, which is found to exist through the inferior crus cerebri; the second with the centre of volition, which is maintained by the passage of innumerable fibres from one to the other; while, through the olivary columns, it is connected with the sensitive nerves which join the spinal cord, chiefly in the posterior horn of the grey matter.

D. That there farther exists a separate centre of the nervous system for the emotions, and that it too must have connections both with the seat of the intellect, and with the special originator of muscular motion.

This is to be found in the mesocephale, of which Dr Todd remarks—" Its influence extends upwards to the central convolutions —backwards to the cerebellum—downwards to all the nerves of sensation and motion. Through its connection with the posterior horns of the spinal grey matter, it can excite the sensitive as well as the motor nerves of the trunk. Hence it is not to be wondered at, that a highly disturbed state of this centre is capable of deranging all the sensitive as well as the motor phenomena of the body, and even the intellect. Hence we may explain the extraordinary movements in hydrophobia and general chorea, in both of which diseases this part of the nervous centre is doubtless affected."

E. That another centre, also independent, and at the same time closely connected with the others, is found to be the instrument of mental operations — perception—memory—judgment—imagination, &c., and that the cerebral convolutions form this centre.

This is abundantly evident from experiments, and still more from pathological anatomy. It is necessary, to perfect soundness of action, that these centres should be able to communicate with each other, and to co-operate in action, " that," to quote again from Dr Todd, " the centre of intellectual action should be capable of exciting, or of being excited by, the centres of volition and sensation. This connection and mutual influence is effected through the innumerable fibres which pass from the one to the other."

F. That, in addition to the four centres already described, there is also a centre for the co-ordination of muscular movement, and one for respiration and deglutition, but these have no sufficient connection with the present subject to require attention.

G. General conclusions in regard to the anatomical relations of this inquiry.

After reviewing these anatomical facts, we are, I think, entitled to come to the following conclusions respecting them :—

1*st*, That the great centre of muscular motion is the spinal cord, and that its functions are unimpaired during the mesmeric trance.

2*d*, That the great centre of volition in the brain is found to be in the corpora striata, and that their functions are impaired during the mesmeric trance.

3*d*, That the centre of sensation lies in the optic thalamio and olivary columns, and that their functions are more or less impaired in the mesmeric trance.

4*th*, That the close anatomical connection which subsists between the corpora striata and optic thalami explains the frequency with which lesions of the one affect the other, and also explains their joint affection in the mesmeric trance.

5*th*, That the true optic ganglia are very closely connected with

the thalami optici, and hence the latter may be affected through them, and in their turn affect the functions of the corpora striata.

6th, That the central convolutions are the great centres of intellectual action. That their functions are not impaired, but that, owing to a temporary suspension of some of those sources of information which they ordinarily depend on, they may suggest erroneous ideas.

7th, That the upper and posterior part of the mesocephale is the seat of emotion, and that it can either act on the muscles by volitional impulse, or directly, as the case may be.

8th, That the central hemispheres can excite the cord to motion, independently of the other centres; hence ideas in the mind may produce motion, independently of volition.

IV. To what extent can the power of producing these phenomena at will, and the manner of their production, be explained on any known principles?

Hitherto, in tracing the phenomena of mesmerism, we have been guided at almost every step by analogical resemblances which have been found to exist between it and certain pathological conditions; and in this last branch of the inquiry such guides are by no means wanting, although the information they supply is less definite and precise than that which was procured in reference to some of the other points discussed. It has been shown that, in the mesmeric state, the manifestations of volition are repressed, and therefore its power of directing the mind and body suspended; and that in it, therefore, the energy of some of the nervous centres is as it were paralysed, while that of others predominates. This cannot be regarded in any other light than that of a pathological state; and hence, in accordance with the usual arrangements of pathology, its production may be considered under the heads of predisponent and exciting causes respectively.

A. Predisponent Causes.—Every one is not found to be susceptible of the mesmeric state. There are certain individuals more prone than others to hysteria, chorea, and the other allied affections. The causes of the predisposition seem somewhat similar in all, viz.,—a delicate and susceptible state of the nervous system, a predominance of feeling over judgment, an absence of commanding energy of the will. On the other hand, the mesmerisers, like all who in any way are destined to control and direct the minds of others, are usually persons of strong powers of volition, and whose wills exercise a supreme control over their own instinctive tendencies.

B. Exciting Causes.—It has already been shown that, in order to give free scope to the play of the imagination, the external world must be to a great extent excluded; for, otherwise, the perceptions of the true will neutralise the conceptions of the false, on which the subsequent delusions hinge. Of all the senses, those of sight and touch are the ones most evidently concerned, both in the origination

of mental perceptions and in the direction of muscular movements. The sense of sight, then, must first be suppressed. To accomplish this end, the eye is directed with fixed and steady gaze, and, if possible, in a fatiguing position, to some object which is not of a kind to occupy the mind. In these circumstances the organ of sight is fatigued, it ceases to be able to distinguish, and demands that repose which is the consequence of all continued action; for tension must ever be succeeded by relaxation. Many who try the fixed gaze cannot succeed in maintaining it; their eyes seek relief by glancing to surrounding objects,—and in them the process fails. It is not difficult to understand the reason of this. The monotonous attention soon fatigues, while change and variety dispel the lassitude which would otherwise be induced. But this fixed gaze affects the mind as well as the body. It is sufficiently engrossing to withdraw it from other perceptions, and thus to suspend its activity, and throw it into reverie. We endeavour to induce common sleep by ceasing, as much as possible, to exercise our different powers; and the magnetic state, which in some respects would appear to be a deeper manifestation of the same phenomena, is probably produced in a similar way. Dr Braid informs us (*Neurypnology*, p. 58) that the magnetic sleep cannot be produced unless by the eye, except in persons who have been previously magnetised. May not this be in great part explained by the connection which, in the anatomical section of this paper, was shewn to exist between the thalami optici and true optic ganglia. I think one great difference between natural sleep and that produced in magnetism is this,—In the former, *all* the nervous centres are tired out, and *all* repose; in the latter, those of sensation and volition are chiefly affected,—and they being lulled to rest, the others retain their wonted activity. "It is long since it was observed that inordinate attention to one subject caused dreaming rather than sleep."—(*Braid, op. cit.*, p. 46.) Cullen also states, "If the mind is attached to a single sensation, it is brought very nearly to the state of the total absence of impressions,—or, in other words, to the state most closely bordering on sleep. Remove those stimuli which keep it employed, and sleep ensues at any time." In farther confirmation of this, it may be remarked that distraction of mind prevents it. By the kindness of Professor Simpson, I am enabled to give the following case, which I saw along with him:—

A lady, after repeated experiments, became so susceptible, that she would go to sleep when desired. A painful operation was to be performed on her, and it was determined to try whether, during the magnetic trance, she could bear it without suffering. Every attempt, however, to produce insensibility failed, although sleep followed the efforts. The patient herself explained the cause:—"She was sure the mesmerism would not be a sufficient protection from pain; and to prove this to her attendants, and induce them to give her chloroform, she resisted as much as possible the tendency to sleep."

When induced by the fixed gaze, sleep seems to arise partly from the connection between the optic ganglia and the corpora striata

through the thalami optici, and partly by the exhaustion of volition consequent on the powerful effort required to maintain the gaze. In this last way, of course, the corpora striata are directly affected. But again, recalling the intimate connection which has been shown to exist between the centre of volition and the centre of sensation,—so intimate, that disease can scarcely affect the one without impairing the functions of the other, we are led to see how the various medicines, such as opium and chloroform, which, when applied locally to a nerve of sensation, have the power of deadening it to impression, should, when carried to the central seat of sensation by the blood, have the power of suspending its operations, and, by virtue of its connection with the centre of volition, arrest the control of the will over mind and body. This explanation, so far as I know, has not been before proposed, and it seems to promise some assistance in clearing up some of the mysteries of the magnetic sleep. Opium, for example, blunts sensation, shuts up the avenues of perception, and excites the liveliest mental conceptions, which sometimes prompt even extravagant actions. Sir Humphrey Davy thus describes his sensations on inhaling nitrous oxide gas:—"By degrees, as the pleasurable sensation increased, I lost all connection with external things; trains of vivid visible images rapidly passed through my mind. I existed in a world of newly-connected and newly-modified ideas." But whatever be the manner in which the process is conducted, its effect is manifestly to deprive all those powers whose exercise depends on the will, of the influence by which the mind usually controls them. The precise manner in which this is accomplished, it may be less easy to explain. Certain it is, that the attempt to explain these phenomena by the supposition of a fluid allied to that developed by magnetism or electricity, and passing from the body of the operator to that of his victim, is the most improbable of all. In not a single experiment which I have witnessed, could the results have been satisfactorily explained on this hypothesis, and in most of them there were conditions observed, sufficient to neutralise the passage of any such fluid, if obedient to those laws by which the transmission of similar imponderables is usually regulated.

In conclusion it may be remarked, that it were well that both operators and patients were more distinctly aware that the phenomena induced are those of disease. The predisponent causes are the same as those of chorea, epilepsy, and insanity. The phenomena accompanying the manifestations are, when otherwise induced, known to be most dangerous means of producing such diseases. Excessive development of the imagination, or undue subjugation of that judgment which should direct the will, can never be mentally beneficial, but will in all probability be the reverse. Intense exercise of the fancy has a powerful effect on the organs both of mind and body. "The visionary," says Feuchtersleben, "is a candidate for the lunatic asylum."

To the pathologist, such exhibitions are undoubtedly interesting,

as specimens of disease, and he will no more be inclined to turn from them with disgust, than from the morbid preparations so loathsome to the unprofessional eye. The philanthropist, however, will regard them in other light. He will consider them as additions to the catalogue of human woes—morbid states induced to form the ground of philosophical investigation,—or, worse still, to wile away a passing hour. A calm consideration of them will serve to show that the physician is scarcely warranted to induce them, unless by their means he can banish a more powerful disease, or alleviate severe suffering; and were the non-professional public made aware of their real nature, they would surely come to the conclusion of the poet Spenser:—

> "Of all God's works which do this world adorne,
> There is noone more fair and excellent
> Than is man's body, bothe for powere and forme,
> Whiles it is kept in sober government;
> But none that is more foule and indecent,
> Distempered through misrule and passions bace,
> It grows a monster, free from all restraint,
> Doth lose its dignity and native grace."

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