

Remarks on hysteria, in connection with hydrophobia, and other convulsive affections : with a glance into the mesmeric mystery / by John Dalziel.

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Dr. W. L. Alison

*a tribute of profound respect from a quondam pupil
(11.) — the author.*

REMARKS ON HYSTERIA,

IN CONNECTION WITH

HYDROPHOBIA,

AND OTHER CONVULSIVE AFFECTIONS.

WITH A GLANCE INTO THE MESMERIC MYSTERY.

(P. p. 24 & seq.)

BY JOHN DALZIEL, M.D.

"FACTS AND ARGUMENTS."

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REMARKS ON HYSITERIA

PRELIMINARY STATEMENT

BY DOCTOR J. A.

The object of these remarks is to point out the
importance of the subject in the history of
the human mind, and to show that it is
not a mere curiosity, but a subject of
great importance to the human race.
The subject is now being treated in a
new and more scientific manner than
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PRELIMINARY STATEMENT.

Upwards of twenty years ago, a brief outline of the following Remarks appeared in the *Glasgow Medical Journal*, interspersed with sufficiently complimentary editorial criticism. For the satisfaction of the reader, the entire article, as published in that journal, is subjoined.

The original (*in extenso*) is now evoked from its long slumber by the sympathetic tones of Dr Marshall Hall, of London's ingenious disquisitions, lately published in the *Lancet*.

In now submitting his views to the public, the author trusts he is animated by higher motives than the mere desire of proving a priority of discovery over a rival writer:—He aims at the furtherance of the cause of truth. His argument is this:—There is a striking coincidence, without concert, between his own leading principles and those of Dr Hall. Now the very fact of a coincidence of this kind is, in sound logic, a strong *a priori* argument that the speculations of the respective authors are founded in truth.

There is yet another reason for the present publication:—It supplements, in several points, the views of Dr Hall. What these points are it is unnecessary

for the author here even to mention. They will be readily singled out by any who may choose to take the trouble of doing so ; and their importance will, he trusts, be duly estimated by the profession at large.

NOVEMBER, 1852.

REMARKS, &c.

It was from observing the phenomena which present themselves in cases of hysteria that I was first led to take the general views I am about to explain of the nature of nervous diseases.

I was particularly struck with a case which occurred to me about the beginning of June, 1829. The patient, a country woman about 35 or 40 years of age, of Herculean strength and robust constitution, had a hysterical paroxysm of dreadful severity. It lasted from a quarter of an hour to twenty minutes, and agitated, in succession, the various groups of muscles by which the different voluntary movements of the body are effected. During the paroxysm there were evident symptoms of determination of blood to the head, heaving of the shoulders, and a loud wheezing noise attendant on respiration. There were, however, momentary intervals of comparative quiescence, while the morbid action was shifting from one group of muscles to another, the wheezing and heaving of the shoulders suffering a very considerable abatement, almost to extinction; and, during these intervals, the patient was able, faintly, to articulate a syllable or two, as if the paroxysm had completely expended its force. The recurrence of the wheezing, however, with the consequent heaving of the shoulders, was uniformly a fresh signal of attack in some other quarter, till the convulsive agitation had run nearly

the whole round of the muscular system. The wheezing, moreover, appeared to my ear to proceed solely from the larynx.

Instead of endeavouring to explain the inductive process by which, in reflecting on the preceding and other similar cases, I was led to adopt the following opinions, it will be better, as appears to me, both for the sake of brevity and perspicuity, to explain them in a synthetical way. They may be comprised in the three following propositions :—

1st. That the *globus hystericus*, as well as the similar affection of the throat in hydrophobia, occasioned by the idea, &c., of liquids, is a spasmodic stricture of the muscles of the throat, (*glottis*,) whereby respiration is obstructed.

2d. That *obstructed respiration*, whether *suspended* or *impeded*, occasions cerebral congestion, as well as that feeling of *general uneasiness*, designated *sensation of suffocation*, which attends the paroxysmal exacerbation in both the diseases under consideration :—and

3d. That cerebral congestion, and the sensation of suffocation, separately or conjointly, may, especially in an irritable habit, occasion *Convulsion*.

Admitting the truth of these propositions, it naturally follows that, as a palliative measure in the treatment of hydrophobia, the operation of Bronchotomy might be expected to ward off, or at least abate the violence of the convulsive paroxysm. And, there are other consequences, (afterwards to be noticed) equally, or still more injurious, which this measure would tend directly to obviate.

The efficacy of the operation for one or other of the purposes specified will, of course, depend on the

truth of the preceding propositions. I am aware, however, that there are certain points in them that may be considered doubtful; and therefore, premising a few general observations, I shall attempt to occupy the debatable ground.

I may be allowed to state, *in limine*, that as the following Remarks are principally intended for the elucidation of hydrophobia, any references to hysteria are to be understood as illustrations of principles common to both these diseases; and that, though obstructed respiration be not, in every case, competent to the production of convulsion in healthy individuals, yet in the subject of each of these diseases there is a peculiar irritability of constitution, previous to the incursion of the paroxysms.—Hydrophobia is frequently ushered in by flying spasms over the body, and hysterical women are subject to the same affections. All that is contended for is, that *obstructed respiration*, acting upon this irritability, may be the occasion of its characteristic development in the form of a convulsive paroxysm. But on the modifying cause, or that peculiarity of diathesis which makes a hysterical differ from a hydrophobic paroxysm, I offer no conjecture; and on the proximate cause of hysteria, and the origin of hydrophobia, *i. e.*, the question whether it originate from a specific poison, or be only the result of simple irritation, I shall also be silent. It is enough for the present purpose to be assured that there has been in operation a cause of some description, sufficient to excite that degree of irritability which exists on the first manifestation of *water-dread*. The leading object of these remarks is, to combat that intractable distemper usually

described under the appellations of *Hydrophobia*, *Rabies*, *Lyssa*, &c

The *first proposition*, then, as regards hysteria, is pretty distinctly recognised by Dr Cullen, in his observations on that disease; and, in respect to hydrophobia, it is also admitted that the attempt to drink, the mere idea of drinking, or of liquids, excites "a spasmodic constriction of the muscles of the pharynx," (extending, of course, to those of the larynx,) whereby respiration is obstructed: and that a sensation of suffocation and a convulsive paroxysm ensue.

Now it is my express object to show that the convulsion is to be attributed entirely, though indirectly, to *obstructed respiration*, and not to the accompanying circumstance of the local spasm, or pain attendant on the spasm. The competency of obstructed respiration to occasion convulsion will be fully made out by establishing the second and third propositions; but the second term of the second proposition, and the first of the third are also admitted. The only link wanting, then, to complete the chain, is the proof that obstructed respiration produces cerebral congestion. If the one can be shown to be the invariable result of the other, the theory is complete; but, though there may not in every instance succeed cerebral congestion, there will uniformly be found the sensation of suffocation ready as a substitute.

On the question, whether Suspended respiration produce cerebral congestion, the opinions of different authors seem strangely discordant. Some state it as the uniform result of their observations on the brains of the drowned, that the vessels of that organ were completely distended with blood; others, again,

report the very reverse. The latter position is assumed by Dr Curry, and defended by Dr Good ; but the former seems to be held by our highest medico-legal authority, Dr Beck, with the exception of those cases where syncope from terror or other causes has occurred at the moment of submersion. *

It would be unfair to impugn the veracity of either party ; but the truth seems to be that this appearance is sometimes present and sometimes wanting. Now the fact of its occasional presence may almost be admitted as a proof of the natural tendency of suspended respiration to produce it ; and its absence may be accounted for by the resistance of the coats of the blood vessels to the distending power. Those who deny cerebral congestion from drowning, too, be it recollected, deny it in opposition to the exploded notion that drowning or hanging kills, chiefly, by inducing apoplexy. Now an excessive degree of cerebral compression produces profound torpor ; a slight degree, convulsion.

Indeed the nature of the case suggests to any person that there must be an accumulation, more or less, in the vessels of the brain, consequent on the sudden suspension of respiration, whether or not it amount to such a degree as to be sufficient to produce apoplexy, or to be cognizable by the senses on dissection. For, after a complete *expiration* (as will happen in drowning) the transmission of blood through the lungs, and, consequently, its return from the head is prevented, while the pulsation of the heart continues to send fresh supplies to the head.

* *Vide Beck's Medical Jurisprudence*, 3d ed. p. 292-4.

The event will be the same when respiration is suddenly suspended after a full *inspiration*. For, when a person takes a full breath, holds his mouth and nose, or, which is less objectionable, shuts the aperture of the glottis, by calling into action the appropriate muscles of the larynx, and then makes a forcible effort at expiration, which a hydrophobic patient, in such circumstances, one would think, could scarcely refrain from, he is conscious of a rush of blood to the head. The same event happens, upon similar principles, during vomiting. This is an essential point, and I shall immediately have occasion to recur to it.

But, turning from the effects of *suspended* to those of *impeded* respiration, the argument will gain an additional degree of strength.

Dr Good, as has already been stated, denies that there is any cerebral congestion from drowning, or suddenly *suspended* respiration. In death from hanging and from respiring noxious vapors, congestion, he alleges, is sometimes present and sometimes wanting. If the rope has been properly applied, and the "occlusion of the trachea complete," and if the noxious vapors have been in a sufficiently concentrated state, so that respiration, in both cases, be instantly and completely suspended, there will not, he maintains, be any cerebral congestion. But, on the other hand, if the rope be "bunglingly applied," so as to admit a small current of air along the trachea, and, if the noxious vapors be to a certain degree diluted with atmospheric air, respiration and circulation will be feebly prolonged, and, in both cases, he admits, there will be cerebral congestion, (convulsions, according to Dr Beck,) and finally, apoplexy or profound torpor.

There is, however, an obvious specialty in each of these cases of protracted suffering, which requires for each of them a different explanation. The pressure of the rope, in imperfect hanging, may be alleged as partly the cause of congestion ; but this effect, from noxious inhalations, must arise solely from the partial permeability of the lungs, (attendant on impeded respiration,) while they transmit so much blood as maintains the action of the heart. This appears to be Dr Beck's explanation.*

Now if *impeded* respiration, while the lungs are still partially permeable, be capable of producing the effect, it may be argued, *a fortiori*, that *suspended* respiration, as in drowning, while these organs are scarcely, if at all permeable, will produce it much more effectually ; and the reason why there has been detected, in dissection, a greater degree of turgescence of the vessels within the skulls of those who have died from inhaling noxious vapors, than of those who have suffered from drowning, may be partly found in the adage—*Gutta cavat lapidem, non vi sed, sæpe cadendo*. A comparatively slight degree of distending force longer applied, or more frequently repeated, has produced visible effects, which a greater degree of the same force, only once applied, has been incapable of manifesting.

Now, in transferring this doctrine to hydrophobia, there will be found another speciality—the subject adverted to in page 10—which will bear up the argument on the one side, as it is supported on the other by these analagous cases. In these, viz, drowning

* *Vide Medical Jurisprudence, 3d ed, p. 278.*

and suffocation by noxious vapors, there is no barrier to the extrusion of air from the lungs, and the accumulation of blood in the head must take place principally after the acts of expiration, when the lungs are least permeable ; for, after inspiration, when the chest is fully dilated, their permeability is complete. In hydrophobia, however, respiration may be suspended after either inspiration or expiration. When it happens after expiration, the arguments just now advanced will directly apply ; and, when it is suspended after inspiration, that speciality already noticed is equally valid, viz., that in such an event the extrusion of air from the lungs is prevented by the spasm of the throat, while there will at the same time be a powerful effort at expiration ; and the consequence, as has already been stated, will be determination of blood to the head. That respiration is frequently suspended or materially interrupted at this period, and attended with this effort, seems almost demonstrable from the fact that the lungs, or neighbouring parts, are frequently found emphysematous on dissection—an appearance which cannot be accounted for on other principles. These organs, so circumstanced, are forcibly compressed by the action of the expiratory muscles. The *Pneumosis Hysterica* of Dr Cullen, too, seems an illustration of the same principle.

The whole history of hysteria, indeed, and especially its occasional termination in epilepsy, goes to prove that cerebral congestion is the immediate cause of the paroxysm. Flushing of the face is a common symptom, and its occasional absence, with paleness in its room, may readily be accounted for, by admitting that the disease is combined, or alternates with syn-

cope, or a partial cessation of the action of the heart. In hydrophobia, however, we meet with no such tendency to syncope, consequent on the water-dread, but a state the very reverse of syncope.

To suspended or impeded respiration may, in general, be attributed infantile convulsions*—those attendant on parturition—on foreign bodies in the windpipe—and on local irritations,—convulsions, in short, of every description, excepting those which arise immediately from primary disease of the brain, and even the *post-mortem* appearances of that organ may frequently be the effects of suspended respiration, consequent upon local irritations.

There is not room here to particularize; but, in the meantime, I would suggest the following explanation, already hinted at, of the connexion between local irritations and convulsions, generally

Under acute local pain, as in violent muscular exertions, there is an instinctive effort to “hold hard the breath,” as it is phrased, with the view of palliating the suffering, and giving effect to our muscular exertions. But in these cases the breath is “held

* The Author has, on numerous occasions, by personal interference and instructions, prevented infantile convulsions. His instructions are: to watch the first manifestations of Interrupted Respiration, and to make an impression over the muscles of respiration,—an impression varying, in degree, from gentle friction to a smart *fillip*, which, in cases of still-birth, also, the Author believes to be a more instant and effectual remedy than any other, with the exception, perhaps, of his own “Apparatus for promoting Respiration, &c.” An account of the practical working of this apparatus, in the Humane Society’s apartments, in Leith, may be found in the *Edinburgh Medical Journal* for July, 1843 or 1844, or thereby.—J.D.—November, 1852.

hard" solely by the muscles of the larynx. For, whether we suppose the muscles of inspiration to be in a state of total abeyance or not, it may be safely affirmed that the action of the expiratory muscles predominates, and that just in proportion to the effort which we think we are conscious of making to hold in the breath will be the actual effort at expiration, and the tendency of blood to the head in the same ratio. Apoplexy, induced by violent muscular exertion, is a practical illustration.*

A full inspiration, we know, becomes subservient to violent muscular efforts, by affording additional leverage to the muscles; and "holding hard the breath" may perhaps mitigate the violence of pain by inducing cerebral compression.† By whatever mode of action, however, this is the opiate—the grand panacea which nature administers to alleviate the violence of pain of every description. Convulsion is a rare effect, considering the frequency of the appli-

* Did not Mr Liston's patient, who died apoplectic after the operation of Lithotomy, sacrifice his life to his own pusillanimity by "holding too hard the breath" during the operation? Can the advice commonly tendered during parturition be too severely reprobated? On this principle may not symptomatic fever be in a great measure explained; and, may not the various visceral, especially cerebral and pulmonary lesions, which supervene on operations and accidents, be referred to this cause? Is not cerebral congestion in fever, &c., often directly attributable to the failure or fatigue of the respiratory muscles? Is not sleep, in a great measure, to be attributed to fatigue of the respiratory muscles? Its cessation is generally announced by their preternatural exertion—a full inspiration.

† It may either be supposed to act in this manner, or as a counter-irritant, combating a local by a general uneasiness. It may possibly act in both ways.

cation ; and, when it does occur, marks only an excessive dose, or too protracted a use of the remedy, or shows some idiosyncrasy in the individual which disqualifies him from participating of it with safety. We have here then, a remedy, like many others, which, according to circumstances, is capable either of answering, to a certain extent, the purpose for which it was intended, or of creating an evil of a more aggravated description than that which it was intended to alleviate. For, though the suspension of respiration be often voluntarily resorted to, for the mitigation of pain, it originates the uneasy feeling of suffocation, which, preponderating at last, forces us to desist ; and, when it is involuntarily obtruded upon us, even in a state of health, is at all times a source of extreme uneasiness, which (within certain limits) increases in intensity with the continuance of the privation.

Now, waving the question of cerebral congestion altogether,—making no account of that irritation of the brain which a certain undue degree of pressure upon that organ, while under pre-existing disease, is calculated to produce,—we think the intensely uneasy feeling of suffocation may rationally enough be allowed to be a powerful auxiliary in the production of convulsion, if not a cause adequate to the effect. For, it is with difficulty if we can repress the agitative movements of a limb suffering severe uneasiness of any kind, and this is an intense uneasiness in which the whole system participates, with a tendency at the same time to a state of unconsciousness. Wherefore does an animal die *convulsed* under the exhausted receiver of an air pump ? Though from concomitant

circumstances this cannot be regarded as demonstrative proof of the immediate connexion between suspended respiration and convulsion, it yet affords another presumption in addition to the evidence already adduced. The excessive degree of pre-existent irritability in hydrophobia will account for the sudden succession of the convulsion to the water-dread, and consequent feeling of suffocation.

Now, considering the prominent symptomological niche it occupies, it appears strange that the sensation of suffocation or suspended respiration in the affections more immediately under consideration, and in all other cases of convulsion where it is mentioned as an attendant, should have hitherto been noticed only as forming part of a *confused and unconnected group of symptoms* rather than as an *essential link of a chain of causes and effects*. All the THREE PROPOSITIONS, indeed, which the present theory embraces, have, at one time or another, as isolated propositions, been distinctly recognised; but I am not aware that they have hitherto been catenated into a regular chain. When all the circumstances that they embrace meet, and are realized in an individual sufferer, then has almost every bond of connexion, as cause and effect, escaped the observation of the medical inquirer. Dr Cullen (in hysteria) glances rapidly from the first to the two last links of the chain—from the “spasm of the pharynx” to the affection of the brain, and the consequent paroxysm. He perceived the hiatus, but candidly confessed himself unable to fill it up. The intermediate links of obstructed respiration and cerebral congestion, or sensation of suffocation, were not observed *as connecting*

links of that chain of causation which I have been attempting to delineate. Yet the necessity of some connecting medium is evidently implied in the language he makes use of; and it argues much for his superior sagacity that, at the time he lived, he should have seen the necessity of a connecting medium. For, even at the present day, it is, in similar cases, scarcely ever looked for, or its necessity acknowledged; but the two extreme links are set down as if in the immediate relation of cause and effect.

Dr Beck, * in describing a method formerly resorted to, in Paris, for torturing criminals, evidently, I think, sanctions this notion. "The mouth," says he, "being forcibly kept open with a wedge, and the nostrils closed, a great quantity of water was poured into the person's throat. Respiration was thus prevented, while *the irritation of the trachea*, in resisting the access of fluid, *caused* faintings, *convulsions*, violent agitations of the respiratory organs, rupture of the pulmonary vessels, spitting of blood, and death. On dissection, the usual lesions observed in death from submersion were apparent." Among these lesions, be it recollected, too, he elsewhere enumerates "a greater or less fulness of the vessels of the brain." But suspended respiration is only mentioned, by the way, as a concomitant, rather than as occupying its proper place in the chain of consequences. Indeed, as far as I understand it, it seems to be the plain interpretation of the current language of surgery, that convulsions, from foreign bodies in the larynx, are the

* He gives it second hand, but apparently in his own language.
—*Vide* Medical Jurisprudence, 3d ed., p. 297.

immediate effects of the local irritation, or else of the local spasm immediately consequent on that irritation.

1st. That the local irritation is the immediate cause seems sufficiently objectionable, on the ground that it is imputing a general effect to a particular or local cause. Before we can admit local irritation to effect convulsion, we must suppose that the irritation is directly or indirectly transmitted to the brain, and that from the affection of this organ the convulsion directly emanates. Now I have already pointed out an indirect mode of transmission. But it may be alleged that the direct is going on at the same time. This may, likewise, be true. It is not for a moment to be imagined that proof of the *indirect*, in certain circumstances, necessarily disproves the *direct* transmission of such affections. But the objections to the *latter* are founded solely on what is conceived to be its own defective merits,—as a cause inadequate to the effect, even allowing direct transmission to take place. It is not, however, a settled question among physiologists, whether, in *common sensations*, of which this is a pure example, there be any physical change whatever propagated along the nerves, from the sentient point towards the brain.* But, even admitting what is thus doubtful, I appeal to any person capable of analyzing his own feelings, when a drop of liquid, crumb of bread, &c., come in contact with the glottis, whether he suffer more uneasiness from the irritation or pain which these substances occasion, by their contact with the tender surface, or from the

* *Vide* Dr Thomas Brown's Lectures on the Philosophy of the Mind.—Lecture XIX.

accompanying sensation of suffocation, and consequent violent efforts to respire. Even when *aqua vitæ* has been the exciting fluid, it may be stated, in plain terms, that the actual amount of *pain* which immediately results from the *contact*, abstracted from the *sensation of suffocation* and its consequents, is, *de facto*, a merely trifling uneasiness, and barely sufficient, as is too often proved by the *actual passage* of foreign bodies, to excite the adjoining muscles to contraction. The glottis, certainly, presents not a more tender surface than the eye; and who ever heard of convulsions from a foreign body being lodged within the eyelids? The moment of such an occurrence, however, similar to what happens in the other case, there is a forcible contraction of the orbicular muscle.

But I cannot make a direct transfer of this doctrine to hydrophobia, seeing there is such a degree of pre-existent irritability, and a new class of feelings—*morbid sensations*—may possibly be developed by the long continued local irritation of the throat. By *morbid sensations* are to be understood such feelings as the *aura epileptica*,—those lancinating pains which are felt darting along the course of a nerve, as in whitlow, &c., when the nerve may be supposed to be in a state of inflammation. Such a state may, perhaps, be predicated of the large nerves about the throat, in the course of this disease; and, from the proximity of the point of irritation to the brain, such a physical change of the state of these nerves may be directly propagated along their course to the Sensorium. But, except when the nerves are in a morbid state, we have no evidence of any such physical change being propagated along their course in that direction. A

blow or pressure, behind the internal condyle of the humerus, will readily occasion a pain along the course of the ulnar nerve, from the point of irritation to the extremities of the ring and little fingers ; but I have never heard that the pain darts from the same point of irritation, brain-ward, when the arm is in a state of health. It is absolutely necessary, then, to distinguish between these different classes of sensations. To the class of *common sensations*, unquestionably, belongs that irritation attendant on foreign bodies in the windpipe ; and, although the irritation *be* propagated along the nerves, it has been shown that in these cases *it* is insufficient to excite convulsion, and that, therefore, suspended respiration is requisite for the production of that particular effect. If it cannot be denied, then, that in hydrophobia convulsion may, *possibly*, be occasioned by the direct transmission of the *morbid sensations* to the brain, it can as little be denied that it will as readily be excited by that indirect communication which a simple surgical operation is quite competent to intercept.

2d. That the local spasm may gradually diffuse itself, from muscle to muscle, over the body, seems another possible way of accounting for the convulsion. As this seems plausible enough at first view, though I have not seen it directly insisted on, I shall make a brief estimate of the amount of probability on the subject. When a muscle is for any length of time either violently exerted or put on the stretch by its antagonist, it may, especially in an irritable constitution, become affected with spasm. Any muscle, or class of muscles, therefore, may, when under the influence of spasm, by putting their antagonists on the

stretch, subject the latter to the same affection ; and I am mistaken if something like this, as a subordinate law in the diffusion of the spasmodic action over the body, be not exemplified in *tetanus*.* But I know of no other relation besides that of *antagonism*, in virtue of which one muscle can communicate spasm to another, and I believe no other exists. Now, allowing such a connexion of the different muscles of the body to exist, as to render it possible for spasm of the muscles of the throat to extend itself, in this way, over the body, it must still be taken into account that a considerable time must elapse, after one class of muscles are affected, before the spasmodic influence can be communicated to their antagonists. The spasm thus communicated, too, is of the rigid, rather than of the convulsive character. But such a manner of accounting for the convulsion, in hydrophobia, will scarcely be resorted to ; and I have at present noticed these laws of spasm rather with the view of reflecting light on that singular symptom, from which the disease takes its name—hydrophobia,—and on that “spasmodic constriction of the muscles of the chest” which Dr Good mentions as an essential symptom of the disease, than from any pressing necessity of repelling objections from this source.†

* This law, in *tetanus*, seems almost entitled to another appellation than a “subordinate law.” To this, and one or two other physiological laws, perhaps the whole phenomena of most cases of *tetanus* may be referred.

† In connection with the preceding discussion, and closely allied to it, the Author offers the following exposition of the leading and indisputable phenomena of Mesmerism :—All *decided mental affections* operate directly and instantly, like a *break* in carriage-mechanism, upon the function of Respiration. The initial in-

A hydrophobic patient has little appetite for, and generally as little difficulty in swallowing, solids, while he is almost invariably incapable of swallowing liquids, "from their creating a painful convulsion of the pharynx," although he be at the same time tormented with thirst.* The very sight or mere idea of liquids will often produce the same distressing effects. Curious enough at first view!! But the laws of deglutition, in a state of health, if brought rightly to bear upon the subject, in a great measure explain this apparently incongruous combination of symptoms. For, it is generally admitted, and it is palpable to com-

fluence extends, of course, to the function of Circulation, and the Cerebral and Mental functions. Vary or complicate the initial influence, and you will, accordingly, have a modified result. The Author confines himself, at present, to the one illustration already indicated,—the Mesmeric "series of changes." In this process, the person operated upon has the mental faculty of Attention rivetted upon the operator. Attention, in due time, operates the series of changes already-indicated, commencing with Respiration. Here, then, is the initial step in the mysterious phenomena,—the germ of any rational solution that may yet be offered of this *questio vexata*.

The exertion of the faculty of Attention alone, however, would produce no very remarkable final result. But, additional and modifying mental influences are simultaneously brought into operation. The exciting Sentiments of Wonder and Veneration are obviously at work: and their co-operation seems to be all that is necessary for producing every credible result, in this fruitful field of delusion, imposture, and fraud.—J.D.—November, 1852.

* If the patient can swallow solid food, he would certainly bear the introduction of a flexible tube into the œsophagus. If the *sensation* of thirst proceed from the stomach, it might hereby be allayed. The attempt might be renewed, in *tetanus*, also, provided the operation of bronchotomy were previously performed.—*Vide* Cooper's Surgical Dictionary, 5th ed., p. 1059.

P.S. TO DR DALZIEL'S NOTE

ON

MESMERISM.

The victim of the Mesmerist alternately wonders and worships, and worships and wonders, in rapt devotion, at the shrine of a mountebank, till the whole man—soul, body, and spirit—is engulfed in a vortex of "Hero-worship." Is it not so? O *Carlyle*! In the depths of his moral and intellectual abasement—in the thorough prostration of the essential attributes of "erect manhood," the *really rapt pseudo-seer*, the living automaton, now all-obsequious to the *will* of another, exhibits, in his own person, only a miniature type, an intensely focalized view of what *You*, with master-hand, have so graphically sketched, or reproduced from the ample Panorama of History—the weaker-minded multitude doing homage to the master-spirit, the "Hero" of the scene.

No other agency than what is here alleged is really necessary to do the work: and, in all such cases, it is *unphilosophical* to assume more. So taught Sir John Leslie; and other high authorities acquiesce.

Nec Deus intersit, nisi dignus vindice nodus.
God never employs special agency, without special reasons. } HORACE.

Let the mystery-mongers of the day, the arch-impostors and their dupes, con well this sage maxim, and adopt its spirit in its utmost latitude of application.

The con-generic mystery of Table-turning, which has recently been so ably exposed by Sir Michael Farady, has been found to have its secret in mental power; and in the analysis of the phenomena of Water-dread—another mysterious subject, discussed in the succeeding pages—I have endeavoured to give mental agency due prominence, and nothing more. This analysis, too, discloses no new element—no new principle of action. The circumstances indeed are peculiar; but the laws of action under which Humanity is here exhibited are stereotyped for the sound and healthy of all time, all races, and all climes.

There is no known physical power in the universe that is not to be found in active operation in Humanity itself. But it has in addition the stupendous Power of mind; and it were well if a due *knowledge* of this Power and of its *modus operandi* were in more general use as an instrument of discovery in exploring the hidden mysteries of our complicated frame-work, in its varied states of health, of *freak*, and of disease.

J. D.

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*The varied states of our complicated
Being are thus extended to three categories:
But*

but, with the concurrence of the
Theologian, I may add a fourth
embracing the phenomena of the
Trance of Inspiration. This subject
may be comparatively stated thus:
"Between the sublime & the ridicu-
lous there is only a single step"; and
between the degraded condition of the
mesmerised & the most elevated state
of earthly existence - the Trance of
Inspiration - there are several (many?)
points of resemblance. But, there
is, at least, this essential difference:
- In the former, the initial influence
and final issue yeapt clairvoyance
are mental vagaries; in the latter,
that special agency indicated even
by Horace, & true prophetic visions,
- might not these, together with the
intermediate phenomena - corporeal
and mental, engage, with advantage,
the pen of the Theologian who should
have a sufficient store of physiological
and psychological knowledge at
command? From the "wreck &
ruins" of the mesmeric Gabel might
he not select materials for a bel-
lows - a tower of defence - against
the assaults of the infidel aggressor?
Is not the line of argument obvious,
the conclusion easily reached? • The

J.D.th
15 Aug. 1853. { points of resemblance & of
disagreement between the
two states will afford the
materials for the argument.

mon sense, although denied by Magendie, that it requires a greater effort, because a greater degree of contraction of the muscles of deglutition, to swallow a liquid than a solid.

Now, viewing these facts in relation with one of the laws of spasm already adverted to, the mystery, in a great measure, vanishes; and, still farther, when we bear in mind the extreme degree of irritability which pervades the whole system. For, if violent muscular exertion be sufficient to inflict spasm in a state of health, we may reasonably expect the same occurrence from no unwonted degree of contraction, when the disposition to spasm or general irritability is wound up to almost the highest pitch.

Again, there is not only a *greater degree of contraction absolutely required* of the muscles of deglutition, in order to swallow liquids, than is necessary for swallowing solids, but, from the sensation of thirst predominating over that of hunger, the solid morsel will be grasped with comparative indifference, while the refreshing liquid, provided its deglutition be at all possible, will be swallowed with avidity, and the *muscular contractions performed with preternatural force*. Hence the painful spasm, the origin of the water-dread.

Farther, it is just this very avidity for liquids, by a single degree or more intensified, which precludes the possibility of swallowing them, and virtually inspires the subsequent dread. The muscles of deglutition are hereby prompted, not only to a more vigorous, but also to a *premature* discharge of function, in accordance with a familiar law of the mind, as the schoolboy, from excessive eagerness to catch the flying ball, opposes its course with clenched fist

instead of open hand. The function of deglutition is actually performed with alacrity and force, but, from being performed prematurely, the object is not attained, while the suffering attendant on the effort excites a horror of the very liquid, in the extreme desire for which the painful effort originated. The appetites of hunger and of thirst consist each of two distinct elements, viz, a *painful sensation* and a *desire* for that which is calculated to allay this sensation. Now, in recording this complex group of symptoms, the *desire* is always omitted. "The patient suffers from thirst—a liquid is presented—its presence excites distress—so that he *dare not now attempt to drink*, and the liquid is *disliked*." All this is true. But has he not also *previously dared to desire* to drink? And, by a well known law of mind, on the very intensity of this desire merging prematurely into violation, does not the whole of the subsequent train of suffering and aversion depend?

It is by this desire being still farther heightened, and in combination with another familiar law of the mind, that the mere *idea* of liquids becomes capable of producing the same effects as their actual presence. For, *cæteris paribus*, in proportion to the intensity of our desire for a distant or absent object, will be the *vividness* of our *ideas* of it; and metaphysicians generally allow, and the dictates of common sense teach us, that a *very vivid idea* is sufficient to produce a temporary belief of the actual presence of the object,*

* Dugald Stewart, in his "Philosophy of the Intellectual Powers," argues that "the idea," or, according to the more modern expression, "the conception" of an object is *always* accompanied with a temporary belief of its actual presence.

and an object passionately desired will readily, as it has been shewn, be prematurely grasped at. The *ideal*, as well as the *actual* presence of water, will thus excite in the thirsty hydrophobian an instinctive and irresistible desire for it, and a corresponding effort at swallowing ; and the suffering attendant on the effort will, in rapid succession, occasion a dread of the very liquid which, but a moment before, was the object of an intense and passionate desire.

It is upon these principles, too, that we are to explain the pre-eminent dread of *water*. It is just because the thirsty hydrophobian, like every other thirsty creature, has a much keener relish for it than for any other beverage that he manifests on its approach a more appalling expression of horror.*

Such, I conceive, may serve for the resolution of a paradox, which has thrown an air of romance over the whole history of this disease, and tempted, I believe, even some professional gentlemen to deny its existence,—to turn away, in scepticism, from the best accredited records of apparently mysterious phenomena, which they would not pause duly to examine,—“to cut in phrensy the Gordian-knot which they had not patience to unravel.”

From the laws of spasm, already adverted to, some light is also reflected upon the “spasmodic constrict-

* Water-dread is an occasional attendant on *tetanus*, as well as several other diseases ; and the reason why it is less frequently manifested in *tetanus* than in the present disease, appears to be this :—that in *tetanus* the thirst is more moderate. Liquids are less *dreaded* because they are less *desired*, as in hydrophobia the more passionately they are *desired* the more intensely they are *dreaded*.

tion of the muscles of the chest,"—the muscles of respiration. These muscles, and those of the larynx, though not antagonists in a state of health, yet, under the peculiar circumstances of the disease, virtually assume the relation of antagonism. The constriction of the larynx prevents the free access of air to the lungs, and thereby opposes the contraction of the thoracic muscles, in their efforts to dilate the chest. They are thus forced to contract, with an increasing degree of energy, as respiration becomes more obstructed by the affection of the throat; and, though they had been free of spasm at the accession of the water-dread, the occurrence of this latter affection would have been sufficient to excite the former. If the affection of the chest, however, be an essential symptom, its origin cannot be ascribed to the constriction of the larynx, since this is only an accidental accompaniment of the disease. The water-dread, however, when it occurs, will always tend to exasperate the other.

But even the origin of the "spasmodic stricture of the muscles of the chest" may, in certain circumstances, be in some measure accounted for. For, being muscles of respiration, they behave to be in constant action; and *sighing*, which requires of them a preternatural effort, is a frequent premonitory symptom. Now, according to the law of spasm, already adverted to, we should naturally expect that the accumulated irritability of the system would be ready to burst out in regular spasmodic action upon muscles so situated. There is not, in the whole compass of the body, a single class of muscles which presents so inviting a theatre for its early and regular

operation. But, in whatever way we may account for its origin, the accession of water-dread will always be a source of aggravation.

But there are other symptoms which the obstructed respiration attendant on the water-dread tends directly to aggravate.

Inflammation of the brain and lungs is frequently detected in *post-mortem* examinations, and every person must perceive the pernicious influence exerted on these organs by the reiterated obstruction of respiration. This, even in inflammation from ordinary causes, would be sufficient to urge on the disease to a fatal termination, despite of the most active medical treatment.

From the frequent liquidity of the blood, and from passages in two authors, to which we have only room to refer, it would appear that death is often occasioned directly by the *sudden suspension* of respiration.* Is respiration suspended by the "spasmodic constriction of the muscles of the chest," or by constriction of the larynx, or by both? The water-dread, when it has occurred, has at all events hastened the fatal result.

Emphysema of the lungs, or neighbouring parts, is another afflictive consequence of the affection of the throat.

The direct tendency of the convulsive paroxysms, too, abstracted from every other consideration, is to exhaust the strength of the patient, both by the fatigue and the pain which they directly occasion.

Though water-dread be not an invariable, it is

* On this subject, see Boerhaave, Aphorism 1138, and Cooper's Surgical Dictionary, p. 704, 5th ed.

almost a never-failing symptom, and, when present, must be a powerful auxiliary to the original disease.

Convulsions and death by any of the terminations specified might, perhaps, take place from other causes, although the auxiliary were, in every instance, detached.* This is, indeed, probable enough. But, on the other hand, it may reasonably be inferred that, to all these modes of death, and these untoward symptoms, it, at least, liberally contributes.

Nay, we may, I think, safely proceed a step farther, and, without inquiring whether the disease originates from a specific poison, or be only the result of simple irritation—whatever the cause may be—allowing that cause to have worked up the system to that pitch of morbid irritability in which it usually is when water-dread is first manifested, and then to have ceased its operations—that a salutary crisis had just taken place—and that from this period respiration had been only *artificially interrupted* to that degree, and with that increasing frequency which it usually is by the spontaneous occurrence of the water-dread, I may safely hazard the assertion, that this system of artificial interruption, had it taken up the disease at this period of advancement, would, in most cases, have conducted it to a fatal issue, by one or other of the terminations already specified.

But, notwithstanding of this formidable combination, there have been, it would appear, instances of recovery. How natural the inference, then,—how irresistible the conclusion,—that if in every instance the auxiliary had been timeously detached from the

* *Vide Mayo's Physiology*, 2d ed., p. 428.

original disease, the recoveries would have been more numerous.

If a cure for so horrible a malady is ever to be discovered, there is a rational ground for hope that the operation of *bronchotomy* will at least make one step of approximation towards it; and it will, at all events, afford the disease ample opportunity of fully developing itself, in its undisguised essential character, and place the patient in circumstances more favourable for the salutary operation of medicine.*

It is thus, as in mathematical reasoning, that a grand object, in physical science, is generally attained,—by successive steps, rather than by a sudden leap to the conclusion. It is thus that an enemy is generally overcome,—a series of successful attacks in the field preparing the way for the siege and occupation of the Capital.

* To those who are satisfied as to the contagious nature of the disease, the operation will afford the means of solving some important questions, viz. :—Whether the poison reside in the saliva, or in the frothy mucus voided from the air-passages, or in both? and, consequently, whether mercury, by inducing salivation, hasten the elimination of the virus? and, by this property, be entitled to any confidence, as a therapeutic agent?

STATEMENT BY ANDREW BUCHANAN, M.D., PROFESSOR OF THE
INSTITUTES OF MEDICINE IN THE UNIVERSITY OF GLASGOW, &c.

GLASGOW, 13 MOORE PLACE,
25th August, 1852.

Dr Dalziel having put into my hands two manuscripts, I have, at his request, examined them, and hereby certify, that I recognise the one as the same which I perused in the year 1830, when it was sent to me for publication in the *Glasgow Medical Journal*, and of which a brief abstract appeared in that work, bearing date 28th August, 1830 ; and that the other manuscript is a transcript of the one just mentioned, with only a few alterations, chiefly verbal, and not affecting the subject matter.

ANDREW BUCHANAN.

The M.S. from which this publication is printed is the one referred to by Dr Buchanan as "a transcript, &c." It bears upon it the evidence of his hand-writing.

(Signed) WILLIAM GILCHRIST, PRINTER.

EXTRACT FROM THE GLASGOW MEDICAL JOURNAL, NOV., 1830.

“REMARKS ON HYSTERIA, IN CONNEXION WITH HYDROPHOBIA, AND
OTHER CONVULSIVE AFFECTIONS. BY JOHN DALZIEL, M.D.

“It was from observing the phenomena which present themselves in cases of hysteria that I was first led to take the general views I am about to explain of the nature of nervous diseases. I was particularly struck with a case which occurred to me about the beginning of June, 1829. The patient—a country woman, about 35 or 40 years of age, of Herculean strength and robust constitution—had a hysterical paroxysm of dreadful severity. It lasted from a quarter of an hour to twenty minutes, and agitated in succession the various groups of muscles by which the different voluntary movements of the body are effected. During the paroxysm, there were evident symptoms of determination of blood to the head, heaving of the shoulders, and a loud wheezing noise attendant on respiration. There were, however, momentary intervals of comparative quiescence, while the morbid action was shifting from one group of muscles to another, the wheezing and heaving of the shoulders suffering a very considerable abatement, almost to extinction; and, during these intervals, the patient was able, faintly, to articulate a syllable or two, as if the paroxysm had completely expended its force. The recurrence of the wheezing, however, with the consequent heaving of the shoulders, was uniformly a fresh signal of attack in some other quarter, till the convulsive agitation had run nearly the whole round of the muscular system. The wheezing, moreover, appeared to my ear to proceed solely from the larynx.

“Instead of endeavouring to explain the inductive process by which, in reflecting on the preceding and other similar cases, I was led to adopt the following opinions, it will be better, as appears to me, both for the sake of brevity and perspicuity, to explain them in a synthetical way. They may be comprised in the three following propositions:—

“1st—That the *globus hystericus*, as well as the similar affection of the throat in hydrophobia, depend on a spasmodic stric-

ture of the muscles of the pharynx, and neighbouring muscles, whereby respiration is obstructed. 2d—That obstructed respiration occasions cerebral congestion, as well as a feeling of general uneasiness, which may be considered as identical with the feeling of suffocation, and which is an attendant on the paroxysmal exacerbations of each of the diseases under consideration. 3d—That cerebral congestion, and general uneasiness, separately or conjointly, may, in an irritable habit, occasion convulsion."

Thus far Dr Dalziel. We regret exceedingly that in a work of this kind, devoted chiefly to practical subjects, we cannot follow Dr Dalziel in the full development of his theory of nervous diseases. He first considers the three preceding propositions, as independent of each other, and, as appears to us, succeeds in establishing them, bringing to the inquiry much acute reasoning and physiological knowledge. He next considers their relation to each other, and, concluding that they are linked together as cause and effect, he deduces from that connexion an explication of the origin of the convulsive movements of the voluntary muscles, and other symptoms of the nervous paroxysm. We subjoin the practical suggestion, with respect to the treatment of hydrophobia, which he deduces from his theoretical views, and can only add, that we shall have much pleasure in receiving communications, of a more practical kind, from so intelligent a correspondent.

"As a palliative measure in the treatment of hydrophobia, the operation of Bronchotomy might be expected to ward off, or at least abate the violence of the convulsive paroxysm; and there are other consequences equally, or still more injurious, which this measure would tend directly to obviate. From the operation having failed to alleviate the symptoms of the disease in dogs, it has been rashly inferred that it would be inefficient when performed upon man. But *rabies canina*, as it affects the dog, and hydrophobia, as it affects the human subject, are very different diseases; and it appears to me, that there is sufficient evidence to justify the expectation, that the operation of bronchotomy would at least be a most important step towards effecting a cure.

"HOLM OF DRUMLANRIG,
Aug. 28, 1830."



