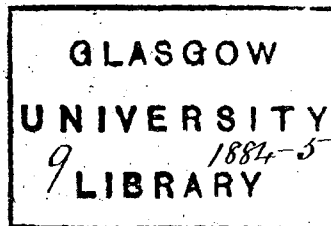


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Thesis.

by

John Robertson Lewis. M.B.

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Chorea

In selecting the above as a subject for study, and knowing full well that it has been treated ~~most~~^{so} thoroughly by previous writers; as to leave but scanty gleanings for those who come after; my only apology if such there needs be for the introduction of this subject, was the unusual large number of cases that passed under my observation in the course of a year. And that it was confined to young folks at a period of life, varying from five years, to fourteen years old, with two exceptions twenty two, and twenty four years old both females. The name Chorea Sancti Viti has rather an interesting history, it is derived from χορεία a dancing, or jumping, from χορος a dance, and is popularly spoken off as St. Vitus' Dance. When we bear in mind what a dissimilarity there is in the present or modern application of the word, as when used or spoken off by ancient writers, and how the Sancti Viti of old, came to be spoken off as the Chorea Sancti Viti of the present day; or who were the earliest writers that employed the name, it is not easy to determine satisfactorily. It was as early as the fourteenth century, and close upon that memorable period known in history as the Black death, when the ravaging effects of which had not yet subsided, and the graves of millions of its victims had scarcely been closed; that the people of certain districts of Germany were possessed of strange

delusions, by some supposed to depend on supernatural causes. by others ascribed to a demoniacal possession. But we may regard it as a weakened state of the mind, the after result of the Religious frenzy that overran the country at this time. In the summer of 1374 at the town of Aix-la-chapelle, a multitude of men and women, but more especially women, collected in the streets and danced, and jumped about, taking one another's hands until at length they fell to the ground in a state of exhaustion. During this state they were it appears insensible to external impressions through the senses, but were haunted by visions, their patron saint was St John the Baptist. and to find release they at certain seasons of the year celebrated a feast in his honour. But now they had associated with the feast an ancient pagan usage, the "kinding of the woadfyr", whereby the individuals would leap through the flames, and thus believe that a years immunity from this strange malady could be gained. Horstius an ancient writer says that this dancing or jumping malady, sometimes recurred annually and at the same period. The sound of music, or certain colours often increasing it to a state of frenzy. "One in red clothes they cannot abide, music above all things they love." These individuals did not confine themselves to one district, but travelled from place to place and thus it was propagated to others.

till it had spread like wild fire over the whole of Germany,
and neighbouring countries which were already pre-
pared for its reception; by the excited state and the unhealthy
religious tone of the times. In 1418 a second epidemic
broke out at Strasbourg in every respect similar to that of 1314.
The sufferers real or pretended were so numerous, that the
city authorities divided them into companies, and
appointed musicians to play to them, and conduct them
to the chapel of some patron saint; either that of saint
John, saint Guy, saint Vitus, as well as to protect, and
restrain them by the way. For we are told that they dance,
jump, or run over stools, tables, and forms, and dance
so long that they can neither stir hand, nor foot, but
seem quite dead. They were taken to these chapels,
the latter St Vitus being in most repute; their belief
being founded on a legend "that Saint Vitus when
suffering martyrdom under Diocletian in the year
303 A.D., had in answer to prayer received power to
protect from the dancing mania, all those who observ-
ed the day of his sufferings, and fasted on its eve." Hence
the origin of the name St Vitus' dance; but how different
from the malady as it is known to us. The Physicians
of this period seem quite to ignore St Vitus as
a disease in itself, we find no account of
treatment, all that is said is that nothing

tends so much to abate the violence of the malady, as allowing them free scope to exercise themselves till nature be exhausted. No mention is made of its being peculiar to any age, sex, or condition of life. That St Vitus' dance has been recognised by early writers is judged, from the similarity in description, though presented under a different name. Galen describes a disease not unlike Chorea Sancti Viti, though he calls it *Scelotyria* meaning by that "an agitation of the limb." He says it is a species of atony, or paralysis, in which one is incapable of walking straight on, and is turned round to the left, when the right leg is put forward, and to the right, when the left is put forward alternately. Sometimes he is incapable of raising the foot, and hence drags it awkwardly. In the writings of Cullen we find from his description that his remarks are founded on a closer observation of this malady, and although convulsive disorder is the prominent feature, he is able to particularise and says; "partly voluntary, and for the most part of one side, attacking either sex before puberty, generally between the tenth, and fourteenth year. The motions of the hands, and arms resembling the gesticulations of players, one foot being rather dragged than lifted in walking." Sydenham whom we regard as the English Father of Medicine, was the first

to give a graphic and accurate sketch of this malady
"St Vitus' dance, says Sydenham, is a sort of convul-
-sion which attacks boys and girls, from the tenth
-year, until the time they have done growing. At first
it shows itself by a halting, or rather an unsteady move-
-ment of one of the legs which the patient drags. Then
it is seen on the hand of the same side. The patient
cannot keep it a moment in the same place; whether
he lays it upon his breast, or any other part of the body,
do what he may it will be jerked elsewhere convulsively.
If any vessel is filled with drink be put into his hand,
before it reaches his mouth he will exhibit a thousand ges-
-tulations like a mountebank. He holds the cup out-
-straight, as if to move it to his mouth, but his hand
curved elsewhere by sudden jerks. Then perhaps he
contrives to bring it to his mouth, and if so he will
drink the liquid off at a gulp; just as if he was trying
to amuse the spectators by his antics. Such are the
striking features of Chorea or commonly St Vitus'
dance as recognised by us. It may be so very slight
that a stranger might regard the little shrug of the
shoulder, or twitch of the cheek as only the result of
habit; usually that which first attracts attention in
the patient, is the restless and fidgety state of the
body generally; but on closer observation it may be

the hand which is chiefly affected, thrown carelessly about giving rise to great unsteadiness in feeding themselves, or in lifting, or laying down of objects.

Should they feel that they are being watched, then it will be with some difficulty that they will be able to perform their usual duties; and probably also some other muscles will take part in these jactatory movements.

Those old and intelligent enough may for a few moments be able to steady these involuntary ^{movements}, by holding the breath, that is taking a deep inspiration and resting on it; but soon they are overcome and for a time the convulsive movements are worse than before. Such movements not only take place when a voluntary action is performed, but even when sitting still, or in sleep especially if they be dreaming; they are moderate in intensity as a rule, and painless. We may sometimes see them trying to steady the affected arm, by the hand which is well; and if the case be at all prolonged the muscles of the leg, of the side first affected begin to twitch.

These jactatory movements to a bystander may appear as if they were designed, but all will or power of co-ordination over the muscles is lost, or greatly impaired for a time. The muscles of the face, and head, are generally affected causing the head to be moved about in various directions, and the face presenting,

such peculiar grimaces, owing to the lightning like movements of the different muscles. The mouth may now and then be pursed up, and closed, then suddenly open and shut, now spreading into a smile, now drawn down as if going to weep. The tongue in badly affected cases performs all sorts of movements, at one time you would think they were making an effort to swallow it, again it may be pushed up in the cheek; and if asked to show their tongue it is quickly thrust out, and protruded for a few moments when it will be quickly withdrawn with a snap of the jaws.

If the movements are at all rapid, and general, mastication will be with difficulty performed; owing to the want of full controlling power over the tongue, and partly to a want of due harmony in the action of the pharyngeal muscles; and as a result the food is either swallowed in a bolus, or worked out of the mouth by the tongue. But liquids are more easily partaken off. Articulation at times is performed with great difficulty, speech being thick, jerky, and very indistinct. at times, accompanied by a peculiar grunting, or croaking sound, effected at the glottis, rarely speech is absolutely abolished. Dr. Bristowe records a case where for a period of three weeks, the little patient had lost all power to utter articulate sounds and to phonate. These muscles of the larynx and respiration, but seldom take part in these jactatory movements; if so the respiratory

movements are irregular and jerky. The muscles of the Pharynx, and Sphincters, are probably never affected: in some cases we may find that micturition is performed with difficulty, but this may be explained by the jerky state of the body. If the movements are general, that is all the muscles of the body being affected, we will find that the patient is neither able to sit, stand, walk alone, or lie in bed, in such cases the fears are that the patient may die from exhaustion; but happily such a result is rare though D^r Duchénon, Roberts, and other hospital physicians record several cases of deaths from cholera at the period of puberty. In bed there is the danger of tossing themselves over the sides, or their arms, and legs may get bruised from their constant action against one another. It is therefore necessary to have the sides of the bed protected by padding, or secured down by a broad sheet made fast at the sides. It's more general to find one side of the body affected than the other, and in some cases confined entirely to one side; the right side more frequently than the left, or it may be only the upper extremities, the legs remaining unaffected. Seldom do we find the lower limbs to be exclusively affected.

D^r Brown Sequard relates a case where the muscles of the back of the head were exclusively affected, ceasing during sleep, and no Choric movements elsewhere; there was a history of an attack of Chorea seven years ago lasting three

weeks, at this time no jerking of the head as in the present state. It may also be noticed that there is impaired sensation in those muscles affected, pricking and pinching being borne without making any complaint. The special senses are seldom indeed affected, unless the patient has had repeated attacks. Those who are predisposed to become affected by this disorder, are usually of a nervous temperament, and of a delicate constitution, as a rule spare, and thin, pale, languid, suffering from cold hands, and feet, and this is a prominent feature. Pupils dilated. In some cases tall for their age, at times complaining of obscure flying pains about the joints, which at the time are overlooked as being of a rheumatic nature, more correctly to be viewed as the slow growth of the epiphysis and by the old nurse regarded as growing pains. Their complexion is as a rule fair sometimes dark, seldom ruddy, a few may have the actual appearance of health, bright, sharp, and intelligent looking, that were it not for the restlessness we would think ^{they} enjoyed the best of health. But we may meet with some cases, and this refers to those who have had several attacks where the expression has a vacant look bordering on fatuity, with more or less mental impairment or febleness of intellect. The malady affects both sexes, but it is more often a girl than a boy that is the subject; quoting from the Collective

Investigation Record 1883. It is said the preponderance of this disease in the female sex is well illustrated, there are ninety females to thirty-two males. It may occur at any age, it has been noticed as early as the third year, and as late as the fifteenth year. A baby aged seven months was brought to me the mother complaining of the restless state of the right arm and the following week the leg of the same side was alternately drawn up and pushed down, and this would be repeated whenever the child was undressed. a few days latter it was noticed that the head was drawn backwards (opisthotonos) and thus fixed whilst the arm and leg still kept up these jactatory movements the left side being perfectly quiet. No doubt this was an example of reflex irritation from teething, though there were no indications in the gums for lancing, the child naturally sank from exhaustion. Probably why this malady is so much a disease amongst children, may be explained by the greater mobility or excitability of the motor department of the nervous system in them, than in older persons. What would be a neuralgia in the latter, or some other form of nervous disturbance or perhaps emotional, takes that of a muscular jactitation in the young. Also there came under observation a young person aged twenty four a table maid

whose past history is good, and health has been fair till lately; now complains of feeling always tired (June 1877). Whilst waiting at breakfast table witnessed an accident with a knife, after this as she described it herself "she was all over in a state of agitation" didn't sleep well that night, next morning found that she was unable to dress herself; her right arm, & leg, were in constant movement, that she was unfit for duties, never had such a malady before. It has been said that if chorea occurs for the first time after Puberty that they are more liable to relapse and that each attack will be worse than the preceding. How far this is true a sufficient number of cases have not yet been witnessed to form an opinion. But in the case of the parlour maid now some time since her first attack, there has been no recurrence as yet (Nov. 1883), though relapses are not infrequent the same individual may have two, or three attacks. It is believed that if a case is long and protracted in its recovery it may result in either mania or epilepsy. Dr. Steiner records two cases that were followed by epilepsy, and Dr. P. Shingleton Smith records a case where there was chorea and epilepsy together at the same time, I have occasionally noticed chorea associated with Hysteria, but permanent mental derangement is rare. It is a malady that gains upon the patient in an insidious manner, and we will find that previous to the onset the individual

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has been very much below the standard of health. As we noticed previously the patients are pale, and want energy; in the mornings their faces especially the tissues around the eyes may be puffy, and a similar condition we will sometimes find around the ankles indicating a feeble circulation. The appetite is poor, sometimes voracious, with large swollen abdomen and bowels as a rule constipated. Their weakly condition may have been brought about by previous illness, insufficient nourishment, clothing, as well as residence in unhealthy neighbourhood, or from the effects of grief. They are very timid as a rule, and thus highly susceptible to the emotional impulses, and some would say from overwork either bodily or mental. In addition to these personal traits, there is over and above an important factor which plays a great part in the causation of Chorea in the patient. That is hereditary tendencies. Where a family history as that of aunts, uncles, grandfathers, and mothers, is free from any disease of a neurotic origin, as well as an absence of Rheumatism, paralysis, epilepsy, and insanity. And the parents as well of a non-rheumatic diathesis, and a temperament equally devoid of ^{over} excitement, and hysteria, then the offspring all other conditions (good health) being equal will be less liable to an attack, or if so probably will be of short duration. Regarding previous

illness' none is more disastrous in its after effects than Scarlet Fever, and Rheumatism, it is a common expression for mothers to date any weakness in her children from scarlet fever; how often do we hear in our rooms, or at the bedside, the mother or friends say that ever since the children have had the scarlet fever, they have never been so strong. It may be noticed occasionally during the progress of Scarlet Fever, that pains are complained of in the joints accompanied by fever but no swelling, so that in chronic patients having a history of scarlet fever, it would not be surprising that during the progress of Chorea for rheumatism to develop itself. As a pre-disposing influence and whose action is most marked by the condition of the heart, is the vice rheumatismal. Sometimes it may be found that Chorea is developed during the progress or towards the subsidence of a rheumatic attack, occasionally though rarely it precedes the development of rheumatism; very frequently it occurs some weeks or months, after the rheumatic affection of the joint has disappeared. But cases not unfrequently crop up in which no other attendant morbid condition can be found than that of "Valvular disease of the Heart," and this may sometimes happen in individuals belonging to a Rheumatic family, and in whom therefore the rheumatic diathesis may be regarded as the cause. Whilst in another group we may fail to have sufficient

evidence of the rheumatic tendency, to account for the cardiac mischief, nor any proof of the evidence of any other ailment likely to explain the chorea. In those cases that came under my own care, there was an uncertain history of pains, at one time in the muscles, at another time in the joints, no definite history of an attack of rheumatism affecting the joints, and accompanied by fever; but there has been a decided hereditary history affecting in this particular case the mother of the child, as well as affecting the maternal grandparents, in this case there was painful palpitation, with a mitral regurgitant murmur. See cases 4^o 6. and 9. Sir Thomas Watson in alluding to rheumatism associated with chorea, did not regard it as at all a common occurrence. In some districts this relationship of chorea and Rheumatism does not exist, as for instance in Geneva. where rheumatism is very common. and chorea exceedingly rare (Dr. Pillel). But then are some observers that would claim for rheumatism the largest share in the production of chorea, if the various pains, and aches, felt in the different parts of our bodies at different times, are to be interpreted as signs of rheumatism. These pains and aches that the youthful patients occasionally complain of, I should regard as but an expression of the growth of the bone with the epiphysis or of the bone in itself. That rheumatism does occur in Conue-

-tion with chorea we must admit, still it does not explain or account for those cases in whom no such history can be unravelled. We are all related to rheumatism more or less both past and present. The question is how much and until that question is determined, until we know (that is to say) what proportion of rheumatism is to be assigned to the community at large, it is obviously impossible to give any exact value to the figures, which represent the proportion of Rheumatism in choreic patients. And further the occurrence of an endocardial murmur even as ^{an} apical one, unless it be situated outside the vertical line of the nipple, or be permanent has but little value as evidence of rheumatism. Even in actual rheumatic fever, murmurs are not infrequently heard in the vicinity of the left apex, which afford no sufficient evidence of endocarditis. That there are cases having a similar history, and which have reached the period of adult life without an attack of chorea ^(is admitted). Though the heart has been affected shows that it doesn't necessarily follow, that given a young person with a history of rheumatism, and cardiac affection, that there should be developed at some time or other chorea. All that we are justified in saying, or inferring is that this same condition of the heart, the result of a rheumatic diathesis, acts as a predisposing cause, upon a constitution very much below the standard of health. There are

some cases that no matter how carefully examined from day to day, still we are unable to detect a murmur even up to the last day of life, yet after death there has been detected unmistakable signs of recent acute mischief about the valves. This is explained by the thickening, swelling, and other changes in the mitral valve, including fibrous depositions, ^{which} have been observed exclusively on the Auricular surface of the valve, above the free margin, which was thus uninterfered with in its power of closing, and preventing regurgitation. Again there is another group of cases, and this refers to the Anaemic, (which is also a very great predisposing element of Chorea.) that if the heart is carefully examined from time to time, we may detect some functional disturbance manifested by a blowing soft sound, varying in its appearance, absent at one time to be heard again, but heard at the base, characterised by its total disappearance as the case tends towards recovery, this we speak of as the anaemic murmur. Likewise dynamic apex murmurs from weak relaxed condition of cardiac muscle, allowing of regurgitation, disappear as the Chorea gets well. (Balfour) but as a rule remain as permanent organic murmurs, from dilatation of mitral orifice, and of ventricle. Some writers would seek to explain the causation of these murmurs by the irregular contraction of the musculi papillares,

and so giving rise to valvular imperfection, and regurgitation; but if this was sufficient explanation, how would this explain that systolic murmur, which remains permanent, although the Chorea has got well. It is more reasonable to suppose that the anaemic murmur, is the result of an impoverished condition of the blood; and the systolic murmur, is produced by the after effects of this *materies morbi* of rheumatism, that circulates in the blood, and which becomes deposited on the margins of the valves, as little bead like excrescences. This malady Chorea per se is free from fever, unless there is present some complication. And what may seem surprising is that the hands, and feet, are often remarkably cold in spite of the Chorea's movements. One would be inclined to think that if the more action of the muscles, had any influence on the heat of the body, that we would have a temperature above normal; the rule however is the reverse, seldom in acute cases is the temperature above 99° Fah.; but is more often below normal, and this too when the chemical action in the body as manifested by waste of tissue is considerable. In some of the cases under observation there was a very slight difference between the affected, and non-affected side, (see case 49: 2) the affected side being a fractional part of a degree higher, but was this only an accident; for whilst in some others there was no.

appreciable difference. The urine is typically febrile, with its high specific gravity, excess of urates, and the tendency to rapid putrefaction. In any of the urines examined there was not any trace of sugar. Dr. Walsh who has paid particular attention to the urine says "that during the first five days of an acute case, the urine was of high specific gravity, of deep brownish colour, strong urinous smell, and depositing lithates in abundance. Secondly there was a period during which a great excess of urea gave a special character to the fluid. Next there appeared oxalates in the urine, passed on the 26th day, on which day the improvement in the case was so marked, that the child might have been considered convalescent. Subsequently an abundant precipitation of phosphates took place, the indubitable result of previous nervous waste." In addition to the weakly state of the young patients with their predisposing influences, there are also external causes that acting in conjunction with a debilitated constitution, favours the appearance of chorea. It may often be traced to some strong emotional impulse as fright, and so large a part does this play in the production of chorea; that we may safely say about one half are due to such. Dr. Hughes says that next to fright, rheumatism may be regarded as one of the many causes. Anxiety or other depressing mental

influence have their share. In some cases it has commenced gradually, and the origin has been contemporaneous either with the appearance of some peripheral irritation, as worms, dentition, or loaded bowels, or with some general disturbance of the system as the establishment of puberty. From the "Collective Investigation Record 1883." of the 104 cases where the exciting cause has been traced, fight is mentioned in 29 cases. Bodily overwork occurred in 10 cases. shock is given as the exciting cause in 6, anxiety in three⁽³⁾ grief in 1. Irritation is blamed in 4 cases and worms in 4." Some of the cases have been attributed to onanism. The season of the year exerts an influence on those who are already predisposed, to chorea, in the winter months more cases are met with than in summer. Dr. Hughes, from his experience extending over a period of thirty years with 209 cases, has presented a table showing the numbers in the two seasons.

Winter		Summer	
October	14 cases	April	12 cases
November	17 "	May	8 "
December	19 "	June	10 "
January	13 "	July	12 "
February	14 "	August	12 "
March	17 "	September	12 "

Diagnosis. From the accurate description already

given there can be no difficulty in recognizing this disorder. Supposing by way of illustration that we introduce a would be similar disorder "Paralytic tremors", here the age is vastly different, the latter as a rule occurs at a late period of life, the part affected, usually limited to a single limb, or part of the body; the nature of the movement in the latter tremulous, than spasmodic, and an absence of starting, twitching, and ludicrous characters possessed by Chorea, and the cause would also be different. That it never can be confused with "Tetanus" in the latter case the spasms are rigid, those muscles over which the will has power are unbound. In Chorea the movements are constant, independent of the will. In Tetanus the expression is that of fear, alarm, in Chorea the expression may present all sort of ridiculous grimaces. Further it is not to be confused with the tremors of old age (Chorea senilis) nor the tremor of disseminated sclerosis when as in the latter case the tremor is manifest only on voluntary movement, or the unilateral spasm of localized surface lesions (intra-cranial). There are few diseases in which the symptoms are so characteristic of this one particular malady (Chorea). **Prognosis.** It is a safe rule

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always to give a particular, guarded opinion with respect to the duration of this disease. The average time given when that we may expect recovery is usually from four, to ten weeks. The shortest duration that is given is fourteen days, a case is recorded where the movements suddenly ceased, the patient was being conveyed to an hospital, and on the way witnessed an accident that she thought they would be killed, she was seized with a fit and on her recovery her friends noticed that there were no choreic movements. Dr. Skinner records two cases that have had the movements ever since they were eight-years old, their present ages are fifty, and sixty. But in forming an opinion much can be learned by being acquainted with the patient's family history, and when the family history is good, and the case simple, and uncomplicated, the heart itself free from any blemish we can predict a safe recovery. If the family history is rheumatic and the patient very young our opinion should be given with great reserve as a rule the cases get well, but that they will not have another attack, we cannot with certainty say; for relapses do occur, but if preventive measures be taken, much will be done to avoid a relapse.

Pathology At the very outset we must admit that a definite pathological knowledge charac-

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-teristic of this disease is still wanting. Jossseau has said that as in the case of other neurosis, pathological anatomy teaches us scarcely anything as to the material alteration of the nervous centres as St. Vitis dance, and Sir Thomas Watson gives it as his experience, that we shall seek in vain to discover the nature of chorea through the revelation of morbid anatomy.

From the many facts, and opinions, adduced as the result of post mortem research, they are not agreed as to what part of the nervous system is the seat of disease nor yet are they unanimous as to the nature of the morbid processes going on in the affected part or parts. Dr. Witt's and Moxon eminent physicians, and pathologists, who have examined many fatal cases of chorea, have never seen any microscopic embola in fact they have discovered no constant, morbid appearances, in the nervous centres. To record the morbid appearances as seen by the different observers would be to enumerate the different parts of the Brain, and spinal cord, in the varying degrees of congestion, or softening, suffice it here to give as an illustration the post mortem appearances of seven cases as seen by Dr. Dickenson

In one case found thickening of edge of mitral valve with vegetations on its auricular border.
Intense injection (arterial + venous) seen in Brain especially the corpora striata, and dorsal region of cord.
Serous exudation and debris of blood distending the central canal of the cord.

In 2nd case. Found mitral valve, as above.

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Corpora striata - congested by arterial and venous, with little haemorrhagic spots
Cord, its grey matter presented erosions in the dorsal and lumbar region.

In the 3rd case Found same condition of mitral valve

Brain (optic thalami) vessels congested

Cord, vessels congested in dorsal and lumbar regions

In the 4th case Found Brain (corpora striata) veins congested

Cord. presented infections and erosions

In the 5th case Found similar conditions

In the 6th " " " "

In the 7th case Found Brain (corpora striata) spots of sclerosis in grey matter symmetrically
" Cord, in cervical region contained undulations into the grey
matter no decolourised plug observed.

From this great diversity of morbid appearances which we have seen, it only goes to prove that whatever lesion is found after death, it bears no relation, nor offers any clue, as to the convulsive phenomena of this malady.

Causation or nature of this disease.

Where there has been divided opinion as we have seen regarding post-mortem appearances, so may we be prepared for the different views, or hypothesis explanatory of the phenomena of Chorea. Some have maintained that a certain portion of the spinal cord, extending as far as the pons varolii, contained the seat of mischief, and that it was produced either from some projection within the vertebral canal pressing unduly on a certain portion of the cord, or from irritation of some other kind supposed to be transmitted by the phrenic nerve to the spine (M. Jacound's) And thus have they reasoned that Chorea being a disease characterised by want of coordination, and the spinal cord regarded as

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the seat of co-ordination, so any part in its length thus morbidly affected would produce the characteristic features of the malady (Chorea). But the unilateral character of this affection, in the great majority of cases proves the inconsistency of the spinal theory. Another class guided by the convulsive nature of the disorder, agreed that the true seat of the disease was to be found in some morbid condition of the posterior columns of the cord; but affections of the cord are rarely unilateral ("if sensation and motion be both affected), the impairment of sensation implicates one side of the body, while that of motion implicates the other" In the case of Chorea if we have got impairment of sensation, and motion it is limited to the one part or region. Others again guided by the characteristic feature of its unilateral tendency have concluded that the origin of disease was to be found in the crus cerebri, or in the corresponding corpus striatum, and optic thalamus, but this fails as we notice in Chorea that there is the tendency to be affected on the other side of the body, and even the muscles of deglutition and respiration to be implicated. There has been a growing tendency of late years to recognise the rheumatismal element in connection with Chorea, and those who uphold this theory maintain, that they have the only satisfactory explanation of the convulsive phenomena of this disorder. Amongst its supporters it ranks Dr. Hughlings

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Jackson, Bastian, and Broadbent and others, who in the main agree that it all results from the blocking of the smaller arteries, of the middle cerebral artery that go to supply the sensori motor tract by minute emboli; but as to the nature of this emboli they are not quite agreed; one party consisting of Dr. H. Jackson & others say, they are the result of inflammatory products derived from the inside of the valves, whilst the other party maintain that they are clumps or minute bodies of agglutinated white blood corpuscles (Bastian). And further that one side is supposed to get blocked at one time, and at a latter period we will have the same state of affairs going on in the other half of the sensori-motor tract and its contiguous parts; with this result an increase in quantity of blood at the terminal parts of middle cerebral artery, that to naked eye appearances they would look like minute patches of congestion, and softening. What naturally follows will be an impairment in the function of that part. Hence it is inferred that lateral movements result from the determination in quantity of blood in minute patches, as a result of this blocking; but this obstruction of these terminal branches of the minute arteries, has only been noticed in a small number of cases, and even then it was doubtful whether the obstruction was embolic, or thrombotic. Again it is difficult to understand, how only one side of the sensori-motor

tract should be alone affected, and then at a latter period there should be a similar limitation of such embolic patches to the parts supplied by the middle cerebral artery of the other side. And further, how is it that larger emboli do not exist as well as the minute emboli, and thus give rise to sudden hemi-plegia. In addition to this we have the theory of Dr. Jodda, Beqbie, Watson and others, and though not agreeing on the whole with this theory of obstruction, maintain that there is a something common to Cardiac disease, rheumatism, and chorea. Regarding Rheumatism as a humoural disease depending for its cause upon some qualitative changes in the blood, hence the blood in this morbid condition circulating through the several organs, gives rise to the articular, cardiac, as well as this malady - chorea. And this may help to explain, how that chorea occurring in families or individuals inheriting the rheumatic diathesis, to chorea associated with pericarditis or endocarditis. But this latter theory is entirely conjectural, and unsupported by post-mortem evidence, and this fails, as also does the embolic theory to explain the true nature of chorea; because how are we to reconcile this blocking of minute arterial vessels, with those cases of chorea that we know to be the result either from frights, or some other powerful emotion, and after a time get perfectly well. Dr. Dickenson whose results of post-mortem appearances I have already quoted, showed

that there was a general tendency to dilatation of the smaller vessels, and more especially throughout the substance of the brain, and cord. This dilatation was attended by an exudation into the tissues immediately surrounding, in some cases by small haemorrhages, indicated by the presence of blood crystals, or by limited patches of sclerosis; and these changes were found most advanced in the corpora striata, in the nervous matter in the neighborhood of the trunks of the middle cerebral arteries, as well as in the posterior, and lateral portions of the grey matter of the cord, especially at its upper part. In all these regions, the morbid element tended to be symmetrically arranged. So the infero chorea depends on a widely spread hyperaemia of the nervous centres, not due to any mechanical mischance; but produced by causes of two kinds. One of these and which is universally admitted at the present time is the Rheumatic diathesis, and the other comprising the various forms of irritation, mental, & reflex belonging especially to that region of the nervous system called the Centre of emotion. The remarkable frequency with which an attack of chorea is traceable to fright as the cause, points clearly to this part of the Brain, as the primum movens in the production of choreic convulsions. The chain of phenomena would then be a peculiar diathesis with more or less enfeebled nutrition, and lastly a

strong mental emotion which disturbs the centre of emotion, and through it disarranges the action more or less of the nervous system. "The tendency which the vascular changes have to induce sclerosis in the tissues which surround the vessels, (as Dr. Leukenson shows), explains the wasting of the muscles, rigidity of the limbs, and permanent paralysis which occasionally complicates Chorea, or supervenes upon it.

Treatment. In dealing with the subject of treatment we might sum it up in a few sentences. An eliminatory, and corrective of the various secretions of the body, a supply of more nutritious food, an improvement in the condition of the blood by tonics, removal of any possible cause of peripheral irritation worms &c, attention to the hygienic state of their dwellings. Bracing up of the nervous system by a regulated course of baths, and daily exercise short of fatigue. And finally by sound sleep and rest in bed, and this rest in bed no doubt is most essential, as it is here that the muscular, and nervous system will be in the greatest attainable repose. Still it will be interesting to note the different methods adopted, as well as the numerous, and sometimes conflicting remedies which have from time to time been extolled. Some.

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would discredit the influence of medicine, and say that this is an affection, which in general subsides spontaneously, or if not slowly pursues its course under any mode of treatment towards its recovery. Sir Thomas Watson says that when a vast number of drugs are recommended as specifics in any given disease, we may sometimes infer from that very circumstance, that the disease is difficult to cure, and generally intractable under all plans of management. But again he says, there is another class of diseases which a variety of drugs are supposed capable of curing, those namely which tend to terminate in health. I believe that many cases of Chorea, most cases would at length get well without any aid from physic. I believe also that many of the boasted specifics have been quite innocent of any share in the recovery of the patients to whom they were administered; at the same time I am quite certain treatment has a great influence on the disease". Amongst the earliest records regarding the treatment of this affection was that practised by Sydenham, bleeding, and purging. He advised about eight ounces of blood, or a quantity best adapted to the age of the patient to be taken from the arm. The next day prescribing a common purgative, to be followed in the evening by some anti-spasmodic, or

sedative, again bleed and purge as before. In this manner bleeding, and purging was to be repeated a third, or fourth time; but allowing such intervals between these alternate evacuations as to prevent all danger therefrom. Then we are told that in order to avoid a relapse they bleed, and purge as before some days about the same season of the following year wherein the disease first appeared. Such a course of procedure is quite unknown in our treatment of this affection as seen by us. As a rule there is more often a deficiency than super-abundance of arterial blood.

Purgatives. The late Dr. Hamilton treated all his cases entirely by purgatives. The late Dr. Marshall Hughes in speaking of purgatives, did not regard the simple purgative plan as desirable, or successful in chorea. He had tried it alone, and in conjunction with wine, and good diet; but in severe cases has never been satisfied with it. In cases accompanied with great vital depression it is inadmissible. In combination with tonics, purgatives are more efficient. He recommends a cold infusion of rhubarb in port wine, (steep rhubarb half a dram wine eight ounces macerate twelve hours and strain) The dose two or three table-spoonfuls in twenty four hours. Such was particularly suited to the ill fed, and anaemic subjects, as a purgative

no doubt beneficial, but as a tonic and for that class of patients who as a rule are anaemic it is of no service. What we want is a drug, capable of altering the character and composition of the blood, and through it influencing the whole system such will be found amongst the Analeptic or Blood-tonics. But each case should be studied per se and treated according to its individual merits, an important consideration is at the same time to attend to the proper hygienic surroundings. This no doubt accounts for the great benefit that cases derive when treated in hospitals, where they have abundance of light and pure air - M.B. Oct. 15 yrs. dark complexion, menstrual melenia had been established, lived in a room much beneath the foot-paths & of course very "close & badly smelling", worked in a boot factory. had for some time complained of headache and general lassitude that she was unable to follow her occupation. During the rest at home choreic symptoms appeared on the second week (her first attack) now removed to our Infirmary was quite steady in 14 days, only weak requiring rest and good nourishing food.

Iron. Foremost amongst the remedies suggested by the anaemic condition of the patients, are the various preparations of Iron. Many cases seem to do well under their use, but from their astringent nature

a combination with some aperient salt will prove very beneficial. Chief amongst these we note the saccharated carbonate, given in the form of an electuary - the dose from half teaspoonful, to two teaspoonfuls three times a day. The "Sulphate" and this given in the old fashioned form as the *Mistura Ferri Composita* (Griffiths Mixture) only suitable for those bordering on puberty and where possibly this (retarded menstruation) may be the exciting cause. The "Ammonia Citrate" preferable when the stomach is irritable, but sometimes we will find that an alkali combined with the Iron renders it more easily borne. The *Liquor* or *Tincture* are usually objected to, on account of their rough styptic taste, and constipating effect. A more agreeable preparation now introduced is "Dialysed Iron" the *Liquor Ferri Dialysati*, dose varying from $\text{ʒ}\text{iii}$ to $\text{ʒ}\text{ss}$ mixed with double the quantity of glycerine (this only aids the action) and water this neither blackens the teeth or tongue nor constipates and its taste is palatable. The *Symp. Ferri Iodidum*, the Bromide of Iron, *Ferri Phosphatis*, *Symp. Ferri lactophosphati* and "Easton's Symp." (a preparation containing iron phosphate about $\text{ʒ}\text{i}$, phosphate of quinia $\text{ʒ}\text{i}$ and phosphate of strychnia $\text{ʒ}\text{ss}$ in one drachm) all these are agreeable forms and can easily be taken. *Ferum redactum* given as the powder, on buttered bread is easily taken,

as well as being from aetiology. *Vermum Ferri* is also another form in which Iron may be given. But in addition to this tonic treatment by Iron the patients generally require a liberal supply of the hydro-carbons especially fat, and this in the form of cod oil. And where the patient has never taken oil previously the secret will be to begin with drop doses in some pleasant vehicle either about an hour after meals or at bed time and this is a good time if there is a tendency to be sick. In some cases it may be advisable to combine it with an equal quantity of lime water, (*aq. Calcis*) if it causes diarrhoea. There has been introduced various preparations and numbers is still few of these can surpass the pure cod oil. In addition to the internal treatment there should be carried out Baths, and this suitable to the patient it may be tepid and combined with a Shower bath. This with Iron internally together forms the mode of treatment described by Dr Todd wittingly as "washing and ironing"

Arsenic Next in importance is Arsenic, by some regarded not only as superior to all other remedies, but as a specific. Dr Romberg speaking of remedies as worthy of trial says that the foremost amongst these was Arsenic. Dr Hammond says the mineral solution of Arsenic is the strongest tonic known. Dr Begbie says that in his experience of over 30 years he has never known Arsenic fail, the choral movements have been more and more modified after each dose, till at last it

has entirely yielded to the drug. He would recommend m^{ss} of the Liquor Sodae Arseniales twice a day an hour after meals, adding m^{ij} every third day, until the specified effects of the drug begin to be observable on the system, when it should be withheld for a time. I must say that the improvement was scarcely so marked in those cases under my care. I usually begin with m^{ij} of the Liquor Arsenialis three times ^(a day) after meals increasing one minim daily, until the therapeutical effects showed themselves, either as headache, sickness, or puffy appearance of the lids; when it would be necessary to stop the medicine for a few days, then when these symptoms had subsided begin with the dose where we left off at and gradually increase. Those instances where we are told that Arsenic has failed, we may be sure that it has not been pushed freely enough. It is surprising to see how large doses can be borne if taken after meals, and freely diluted. I have given m^{xxx} of the Liquor three times a day to a child ten years old, and no unpleasant results, but a feeling as if she would be sick if increased, so this was ^{the} quantity the system could tolerate and now the dose should be gradually decreased a few minims daily till we had reached the dose from which we had started, and by this time there was marked improvement as a rule. Some cases may not agree with a pure Arsenical treatment, that a combination should be adopted as with Bromide, or with F^{r} . $\text{C}^{\text{m}^{\text{ch}}}$. C^{o} ; + Bromide, the latter.

being of great service as a sedative if the case is at ^{all} severe, another pleasant combination is *Liq. Arsenicæ with Acidum Bromhydric*, the latter drug soothing any irritation of the stomach, as well as the system generally. One great objection to the use of Arsenic in private practice is the difficulty in regulating the increasing doses, and the unpleasant symptoms that it readily sets up in some individuals, these are itching, & swelling of the eyelids, redness of the conjunctiva, nausea, and uneasiness at the part of the stomach, seldom accompanied with tenderness, and a peculiar silvery appearance of the tongue. If Arsenic fails to be tolerated by the mouth owing to idiosyncrasy, then it would be useless to adopt any other means to introduce it into the system either by hypodermic or endermic.

Zinci Sulphas. Dr. Marshall Hughes in his experience says that this salt is much superior to Arsenic, and Iron. Dr. Barlow of Guy's Hospital introduced a *Syrup Iodide Zinci* (of the salt grⁱⁱⁱ syrup ℥j.) which was highly useful for strumous individuals. Dr. Golding Bird regards Zinc, as having a peculiar, and specific influence on the nervous system. Dr. Anshie regards Zinc as very unreliable. Those who have had any experience with this salt, must admit the wonderful toleration of the drug. Dr. Hughes tells us he has given gr^{ss}℥℥ three times a day. I had under my care a little girl aged six years taking gr^{ss}℥℥

three times a day with no other effect, than if it had been simple water. (see case N^o 6. A.D.) it is a drug that I should advise never to prescribe in general practice for this malady.

Conium. Regarded as a special sedative, Dr. Harley maintains that it is a restorer of muscular power.

Its primary action upon the system is that of paralyzing the extremities of the motor nerves, and so exerting a depressing influence over the motor centres, or on the extremities of the nerves distributed to the restless muscles. The succus is the only reliable preparation, and to be of any use should be given in large doses, and pushed till the physiological effects are produced. These it is said will begin to show themselves within half an hour after swallowing half an ounce, or an ounce of the succus. Vision becomes a little affected by a paralyzing influence over the third nerve, which causes slight drooping of the lid, slight dilatation of the pupil, and impaired movement of the eye-ball followed soon by general diminished motor power, as is seen in a wavered unsteady gait. Dr. Anstie has given ℥vj daily of the succus, increasing up to ℥viii with no more effect than if they had taken water. Dr. R. Stimpson Smith has observed toxic symptoms with one ounce dose of fresh succus Conii; the same patient had previously taken ℥iij of another preparation with no effect of any kind: the new preparation gave rise

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alarming symptoms, but did not put a stop even temporarily to the choreic spasms. Still I think that those who have used Conii will agree that they have never been able to produce the physiological effects as recorded above (see case 7 = 6. A.D.)

Strychnia. This is one of the favorite remedies in repute in the French hospitals, and said to be most useful in those cases that lag under other treatment, or just bordering on the period of puberty. As recommended by Dr. Broseau, it is given in the form of a Symp. (gr^{ss} of the sulphate dissolved in syrup $\frac{3}{8}$) to be given in increasing doses of a Teaspoonful to those of 5 to 10 years old till the physiological symptoms are induced, which are slight stiffness in the neck, or jaws, some headache, and confusion of sight. The object is to produce the full physiological effect, and so keep them under it for a little. As the system becomes more deeply effected, the stiffness will extend from jaws, and neck, to the limbs and more especially to those limbs most affected with Chorea. The duration of this treatment is said to be thirty three days for girls, and seventy four for boys. We may also adopt a solution of the sulphate of strychnia of half the strength of that of the British Pharmacopoeia, which for accuracy, and facility of regulating the dose, surpasses that of Broseau. in this case m^{ss} represents gr^{ss} of the

alkaloid, and we increase *minim* by *minim*. Dr West recommended the *Liquor Strychniae* giving as much as ʒvi every six hours, gradually increased up to ʒx for a child 7 yrs old. This is a preparation that requires close observation, I have noticed ʒv . three times a day, produce twitching in an adult, so that for young choreic patients it should be laid aside.

Physostigma Sida. Dr Ogle had given it a trial with what results we do not learn, He recommended one dram of the bean, to the ounce of *Spiritus vini rectificatus*; and gives half a dram of this tincture increasing by ʒx three times a day. It has also been prescribed in pills ($\frac{1}{40}$ gr. - $\frac{1}{6}$) but pills, or pilules, not an easy mode of administration for children.

Eserin. This is the alkaloid of Calabar bean and said to be valuable, but its dangerous properties prevent its frequent use. Dr Bochart of the *Hospita des enfants malades*, was in the habit of giving it either by hypodermic method, or by the mouth having fasted. ($\frac{1}{25}$ gr three times a day, and half that dose hypodermically for a child 12 yrs old.) It arrests the movements during the continuance of its action, and gradually modifies them during the intervals, so that the cure of the disease is effected in a period of time in ten days.

Sulphate of Aniline.

This has been regarded by Dr Turnbull as a specific for Chorea, whilst it may have been successful in his hands it has.

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proved worthless in the hands of others. This reason for its administration in chorea was founded upon facts observed in its administration to dogs, & rabbits, here the functions of the brain proper are arrested, while those of the spinal marrow are highly exalted as demonstrated by the extraordinary clonic spasms, and hence inferred that the abnormal muscular movements of chorea by the action of aniline, became arrested and gave place to the normal voluntary movements. It is supposed to increase the oxygen of the blood, producing after several doses a peculiar blueness of the lips, tongue, nails, and a dusky appearance of the complexion, which disappears within twenty four hours after leaving off the medicine. This coloring is of a much lighter tint, than the cyanotic tinge caused by venous congestion. The dose advised to be given, is from gr̄i, up to gr̄vii, but as much as gr̄sxxviii, three times a day have been given with no benefit.

Ammonia Sulphate of Copper.

In Italy this drug has gained considerable reputation in the cure of chorea, it is there known as the specific of Striscero. The late Dr Roe of Westminster Hospital had tried it, giving from gr̄i/2, to gr̄ssii, daily with what results not known.

Monobromide of Camphor.

The above has been recommended by Dr Bourneville to be given

either by pill, or hypodermic method, for this latter purpose we use a solution (grs xlv of illonob: camph: ʒj Alcohol, Glycerine ʒviij) injecting from mxx to mxxl. But as a pill beginning with grss and increasing as desired I have given as large a dose as grsxxiv, and with no effect on the twitching of the shoulder, or bobbing of the head. (See case no 8).

Curare.

The above is said to relieve the jactitations speedily, and for this purpose is best given hypodermically, (grs Curare aq: distill: mxxii) injecting from 1/20 to 1/5 of a grain. Regarding it I have no experience and those of my friends who have attempted it, had fears to repeat the injections, they naturally fall back upon some more familiar treatment.

Hyoxyamine

Has been introduced as serviceable in chronic cases. This alkaloid is best given in the form of a pill in doses of 1/20 grs: increased till about 1/3 of a grain was taken twice a day.

Bromides as the potassium and ammonium may be given where a sedative action is required, as in those cases where the movements are violent, or we wish to procure sleep. Sometimes it is useful to combine this drug with some tonic, as Arsenic the latter would prevent the Bromide rash, or we might adopt a combina-

-tion as Pot. Brom. Chloral Hydrate and Arsenic or Imit. Cuck. Co.
or Liq. Ferri dialysati still bearing in mind simplicity in our
prescriptions.

Chloral Hydrate This belongs to the same class as the
Bromides but to be of service should be given in heroic
doses. My own experience has convinced me that the
benefits are to be obtained quite as well by small doses
repeated if necessary, at any rate with a happier conscience
to the physician. Dr. Bouchut tells us he has given
pro XLV to a child keeping the little patient asleep for eighteen
hours at a stretch, then waking it for its food and after the
meal has been taken repeating the same dose again. In
some cases it is necessary to give the Chloral Hydrate by
enemata. Two injections of a drachm each of Chloral were
administered for fifteen days, and by this time the Chorea
movements had quite ceased. This drug in combination
with pot. bromide is a very valuable sedative.

Chloroform. In the manner by inhaling, Chloroform
was resorted to as an easy mode of subduing the move-
ments should they be violent, and fears may be apprehended
that the patient was going to sink from exhaustion. This
carefully watched has proved successful in competent hands.
The foregoing are amongst the most popular as well as
useful remedies in the treatment of this disease and still
the list is not yet completed, for we shall at times read.

of the specific action of such other remedies as Valerian (am-
 -moniated tincture), oil of Zirc, Antimony and this said
 to be useful in cases attended with febrile excitement,
 Nitrate of silver, Cannabis Indica. Stramonium. Further
 our already over stocked list, must if we are to keep step with
 the progress of science include the lauded specifics of our
 American Congress. as Scutellaria, Cimicifuga. But with
 regard to the choice of a remedy let me say, choose only
 those whose Therapeutical action is well known. as Iron
 and Arsenic, further treat each case upon its own individual
 merits, supplying cod liver oil, cream and fatty foods when
 -ver it is necessary. At this moment my memory carries
 me back to my student days at the back-door dispensary
 for medical cases, (G.R.I.) where the presiding physician
 no doubt anxious to do the greatest amount of
 possible good, in the shortest space of time allowed
 for seeing the very large number of cases, would as
 a case presented itself in the Doctors room. Say, -Gentlemen
 this is a case of St. Vitis dance, the following suits
 them well. and here would be given the oft repeated
 prescription, ^{but} possibly it may have done them all good.
 In addition to internal treatment - local applications
 have also been tried, - the spinal ice-bag, and ether spray. -
 the same in their action have a marked effect in controll-
 -ing the violent paroxysms. The latter introduced

by Zimberlin I have used frequently, in one case particularly which to all appearance looked hopeless, the result was surprising, for a few minutes at a time I passed the spray along the course of the spine, on the second day of admission the little patient could swallow fluids more easily. Some would say that by itself it is curative. See cases 7-3
 Liniments.

Friction with liniments along the spine have been tried, M. Gassier introduced a liniment composed of equal parts of chloroform and sweet almond oil rubbed night, & morning, along the spine from its first employment it is said the violence of the muscular movements were moderate and in six days there was a cure. A liniment "Belladonna cum saponi" might be tried as producing a sedative effect. I have tried painting the spine with Fluid Belladonna (Millon) every other day till a thick coating was produced & this with rest in bed, the usual diet and no internal treatment resulted in a cessation of the movements, no doubt much was due to rest and warmth in bed. Blistering and then the topical application of Belladonna, has been adopted in very chronic cases where they have resisted the usual treatment by tonics. A blister about an inch in breadth, and eight inches in length, was applied along the course of the spine in twelve.

hours afterwards when the cuticle was risen, & removed, a thin plaister of Belladonna was applied. In half an hour afterwards ~~where~~ there was manifest improvement, and within four hours the convulsions ceased and there was scarcely any movement of the muscles. Dr. M. Simon of Dublin several years ago called attention to this treatment by blistering, and the remarkable fact that the convulsive movements first ceased in the limb, where the blisters were placed. Chorea as a rule being almost always more intense upon one side, than the other. The blisters were applied on the more affected side - on the arm placed below the insertion of the deltoid, and on the leg below the head of the fibula. After a blister was risen the cuticle was removed, and the sore was dressed with some sedative application, and generally on the second or third days dressing the disordered movements were much lessened; not only on the limbs were the blisters applied, but on the other limbs also. If the head was affected, a blister will be necessary on the neck, but to guard against relapse recourse ought to be had to tonic treatment. Seton in the neck. such was the mode of treatment adopted on a little patient aged 10 years, after as the writer says that bleeding from the temporal artery,

blisters, purgatives had been tried without any benefit,
 then recourse was had to the Seton, and improvement took
 place within three days. Such measures as blistering,
 & Seton, point to an unenlightened period in medical
 history and though now wisely long fallen into disuse,
 are here introduced as interesting facts of what has
 been attempted at one time in the treatment of Chorea
 Splints. Though seemingly a novel plan was tried
 on a case at the suggestion of the late Dr. Stokes. The
 patient aged 13 years was suffering from violent Choreic
 movements of all the voluntary muscles. The usual
 anti-choreic Remedies with the addition of tepid
 shower baths was of no use. The "Splints" was adjusted
 on the upper and lower extremities, as if in the case
 of a fracture. The night they were applied he slept
 well, and on their removal in the morning there
 was scarcely any voluntary motion of the muscles
 to be observed. Their use was continued for a few
 days, and - nights, and soon he was restored to conval-
 -escence. This is a more preferable method to adopt in
 severe cases, than having a sheet drawn tightly over the
 patient and fastened down at the side of the bed;
 of course it is understood the splints are padded.
 Galvanism. This has been frequently adopted and with
 successful results. After the little patients are allowed

to leave their beds, and move about in the convalescent ward; there is a usual complaint of pain, or soreness in the calves of the leg, or sometimes in the head of tibia, and fibula. The little folks may sometimes ask to get back to their beds, as their legs feel so tired but a weak application of the constant galvanic current daily to the muscles of the limb, soon imparts tonicity to the individual muscles of the lower extremities. But some would suggest the use of galvanism from the first appearance of the jactations, and that alone, using a current just strong enough for the patient to feel it, and pass it slowly along the spine while they are being assisted to stand erect; if daily carried out produces good results.

Gymnastic Exercise

The above combined with galvanism, was the usual course adopted when the patient was sufficiently steady to leave bed in the day time, usually their force of will was more at command, and they were able to master to a certain extent the wandering movements of their legs, and arms. By the accompaniment of music, they should perform marching exercise as well as certain movements of the arm thus they are taught to resist the involuntary motions. At the Hospital des Enfants at Paris we are told how they manage their severe cases, first thing to be done was to use friction, and passive movements of the limbs, and body, the patient

lying upon their back in bed the meanwhile. Afterwards they are taught to go through certain regular, rhythmical movements, the time being indicated by music, and last of all they were sent into the gymnasium, and put through the usual exercises. Under this treatment the aching pains which are so constantly complained of by choreic patients speedily disappear, and the mind and body rapidly acquire tone. The gymnastic exercises were kept up for almost fifteen or twenty minutes so as not to induce fatigue and palpitation.

Baths.

In addition to the use of the foregoing preparations and other modes adopted in the treatment, baths will be found a valuable adjunct, they should be given in the mornings on the patients rising, the temperature of the water varying with the season and the re-action produced. Some have said that if a case was seen early the course of the disease could be checked, by exciting free action of the skin, by warm, or hot air baths followed by saline medicine, or small doses of tartar-emic. Dupuytren believed in baths and he adopted the cold plunging; his plan was to immerse the patient suddenly four times in twenty minutes. These were continued for a fortnight or a month, but he does not ^{say} if to be taken daily.

I am afraid that if Dupuytren's plan were to be practised with the delicate nervous children as we see them, we would have some deaths to record. M. Baudeloque introduced warm sulphurous baths (sulphuret of Potassium 3j. Aq. Sulfur. ℥ii.) The bath is kept at a temperature of 90°, generally amelioration takes place after the second or third bath, and on average about the twenty second they are well. I can only speak of the great benefits derived from use of Baths (simple) with a shower douche for the younger members, & the ordinary shower bath for those older & not so timid. As a rule when they returned to bed they were much composed. So far I have spoken of the different remedies that have been tried or experimented with, as well as the varied local applications and other valuable adjuncts, still this account of the treatment of Chorea would be incomplete if it did not take into consideration the method adopted by another class. Who have laid it down as law that this is a disease which should not be treated but managed. Its rare fatality they say, limited duration, and usual mode of amendment, suggests that this disease like some other, pursues a constant course which needs no more than rest and watching. Hence on that belief the Expectant plan as suggested by L^{ts} Wilks and Jackson which is rest, and watching, with patient watching for the end. They maintain that

if the case is left alone they would get well of themselves
 Keep them in bed see that their food is properly assim-
 ilated and their bowels regular is all that we are
 advised to do. The violence of the facitations is no
 test of the severity of the disease if the facitations be very
 violent the patient is generally well in a week or two
 this is questionable, whereas when they are less severe
 a longer time is required for their abatement and
 if the facitations take the form merely of a fidgetty
 movement all treatment is unavailing. They sum up
 as follows but knowing that something must be done
 pepper mint water was given with equally good results
 My experience has been that treatment has had a good
 effect in mitigating as well as shortening the
 disease. if they dont sleep well then suggest some
 simple sedative or combine it with a tonic to allay this
 It is a painful sight for the parents to witness their little
 one tossing their arms, sleep about, and to be told that
 just wait it is only a question of time, unless the physician
 in attendance endeavours to ameliorate the apparent
 sufferings and uses his best endeavours, his professional
 reputation as a physician must be at stake.

Cases continued

No	Name	Age	Cause	Character of movements	Treatment	Duration of treatment	Time in Hospital	Result
10.	G. H. f	10	attributed to excision of Tonsils.	Affecting the left arm & then the leg	Pt: Monob: Camph: ---	Days. 21 in	Days 8 in Bed " 13 " CW	Well.
11.	E. K. M	6	Uncertain	The upper part of the body + Right side	Prophylamin... Syr: Fer: Iod: ---	Days. 31. " 35	Days 32 in Bed. " 34 in CW	Well.

History

For some time had suffered from enlarged tonsils that gave rise to deafness. The operation for their removal was performed and the mother thinks that the child became alarmed at the quantity of blood expectorated. Within a fortnight after operation the child was observed to be weakly in his movements & was brought in an out patient, but owing to its sickly appearance it was admitted. After receiving full diet & Pill of Monobromide of Camphor three times a day the iron records. - The chief feature was the aserquid cause.

This patient has always been delicate, body badly nourished. About three months ago had as the mother describes it - low fever. - probably this was Rheumatic fever. As the mother who has to walk in all weathers a distance of four miles to her work. (laundry) at times suffers from Rheumatism, may go to bed perfectly well and in the morning find one or both feet Swollen & red and painful. The whole of the upper part of the body, right arm was markedly than the left in a constant state of movement. Was put upon Prophylamin & Syr: Fer: Iod: three times a day. There was no complaint of pain but on Auscultation over Cardiac region there could be heard a loud systolic bruit at apex, distinctly heard also over the whole Cardiac region & at the base. After four days, murmur was now $\frac{3}{4}$ Mute in edy. By the end of the week the murmur was less loud, and heard over a much smaller area hardly distinguishable at the base. A Venous hum could be heard under the Right Clavicle (the sternal end) and over the jugular vein. The Chronic movements were also much improved. By the end of the month Prophylamin was discontinued for Syr: Fer: Iod: The bruit was now very soft & scarcely heard beyond the apex. There was an interesting case in watching the condition of the Heart. With regard to use of Prophylamin but having had my experience beyond this one case. I can scarcely express an opinion, but at any rate, patient rapidly gained strength when put on the Syr: Fer: Iod:.

The foregoing cases have been selected from my Case Book as being the most interesting not only from the nature of the case itself, but also as showing some variety in treatment, as well as the toleration of certain of the remedies.

J. R. Lewis.

Cases that have been under treatment, and quoted in the text

No.	Name	Age	Cause	Character of movements.	Treatment	Duration of Treatment	Time in Hospital	Result	History																																				
1	L. G. f.	11	Cont. say.	First appeared in Right arm near leg (R) afterwards in left side.	Ether Spray to Spine Sedid Base (dosed) Most: Aperiens Ullast: Lig. Arsenicatis	Days 6 " 12 " 14.	18 days	Well	This is rather second attack, but first was two years ago. The chief feature in her case was the history of constipation before admission and since her residence in Hospital. Her condition gave her no concern until quite unnoticed made the remark "I'll soon get well when the seven days come again" Her history of Rheumatism or Cardiac disturbance could be detected. The only tonic treatment was Lig. Arsenicatis given in increasing doses till it reached eight times a day. Left Well. Had been ill for 2 1/2 days before admission into Hospital.																																				
2	H. I. m.	11	Cont. say	Movements general, though he has less power on the R. arm than the L.	Ullast: Aperiens Rt. Zinc Phos. Ullast: Sulphas Sedid: Ullast: Zinc Com Ullast: Sulph. Ullast: Zinc Com	Days occasionally " 21. " 43 " 29.	Days 48 in bed " 38 in Convalescent ward	Well	Rheumatism, with a large bow or side of nose aggravated by picking. Has had measles, Scarlatina and Pertussis before he was nine years old. The history of Rheumatism or Cardiac disturbance could be detected. At times under bow and crying, Disturbance constipation. Had the bowels 11 weeks previous to admission. Since now bowels are in normal condition. The temperature low, but for a few days when the movements were general. An improvement took place that was more marked between the right and left side. Temperatures were taken in the axilla. <table border="1"> <tr> <td>7th M.</td> <td>Rectal: 100.5</td> <td>Temp: 99.5</td> <td>Pulse: 110</td> </tr> <tr> <td>8th M.</td> <td>"</td> <td>97.5</td> <td>97.5</td> </tr> <tr> <td>9th M.</td> <td>"</td> <td>102.5</td> <td>100.5</td> </tr> <tr> <td>10th M.</td> <td>"</td> <td>100</td> <td>99.5</td> </tr> <tr> <td>11th M.</td> <td>"</td> <td>101</td> <td>98.5</td> </tr> <tr> <td>12th M.</td> <td>"</td> <td>99.5</td> <td>99.5</td> </tr> <tr> <td>13th M.</td> <td>"</td> <td>99</td> <td>98.5</td> </tr> <tr> <td>14th M.</td> <td>"</td> <td>98.5</td> <td>98.5</td> </tr> <tr> <td>15th M.</td> <td>"</td> <td>98.5</td> <td>98.5</td> </tr> </table>	7 th M.	Rectal: 100.5	Temp: 99.5	Pulse: 110	8 th M.	"	97.5	97.5	9 th M.	"	102.5	100.5	10 th M.	"	100	99.5	11 th M.	"	101	98.5	12 th M.	"	99.5	99.5	13 th M.	"	99	98.5	14 th M.	"	98.5	98.5	15 th M.	"	98.5	98.5
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3	E. R. f.	10	Fright from a dog jumping on her	Movements general, every muscle of the body seemed to have part in the convulsions.	Emulsion of Strach with Chloral Hydrate Ullast: Aperiens Ether Spray Lig. Arsenicatis Ol: Morhuac Stimulant: Repetition	Repetitio Jucis Days 3 " 11 " 25 " 18	Days 48 in bed " 18 in Conv. Ward	Well	The child of highly excitable and nervous parents. Has only had measles with an attack of Bronchitis. She is very dark with jet black eyes. Her first attack two years ago, attended as an out-patient at Birmingham. Hospital got well soon. This second attack is attributed to a fright by a dog which sprang upon her. Before admission into the Children's Hospital had been attending two weeks as an out-patient, but was getting worse. Her black hair hanging over her face a ragged sore on the side of her nose and lip and the saliva dribbling from her mouth, altogether presented a sad spectacle. Unable to support herself she had to be held by two, and placed in a padded bed. Her movements were at times sufficient to throw herself over the side of the bed. Feeding was enabled to be swallowed on admission. Very large and emphysema with an offensive smell on her breath. Owing to the muscles of deglutition being affected, it was necessary to give an Emulsion of Strach with Hydrate of Chloral, to be repeated every four hours if necessary. Had sleep a little now then. On the morning of second day appeared Ether Spray. To the length of the spine for about five minutes, this was repeated every four hours, but on the morning of the third day there was a certain amount of improvement that I managed to get the little patient to drink beef tea. Improvement was so marked on the fourth day that she was now able to feed & move and her articulation not so indistinct. On the seventh day after taking 7j of Lig. Arsenicatis complained of sickness and diarrhoea. Medicine discontinued for two days, and was substituted Ullast: Ferri. At the end of twenty six days was well enough to go to Convalescent ward, and given Stimulant: Repetition. In this case we note the great benefit from Ether Spray, as far as there was some difficulty in keeping the child fed, that it was necessary to have human help for the first two or three occasions. The mode of application is to be preferred to inhalations of Ether vapor, or repeated draughts of Narcotics. The Bowels as a rule wanted attention. The temperature 99.5 at time.																																				
4	F. H. f.	5	Imitation	Confined to Right arm.	Zinc Sulphate	Days 28	Days 28 in bed " 4 in C.W.	Well	This has been seen as given an example by Imitation. She was a stout healthy-looking child and has now well from an attack of Bronchitis that she was allowed to sit up in bed. Owing to scarcity of beds a Choreic case was passed into this Ward. In a short time (five days) the little Bronchitic patient became unable to get herself up and put upon Zinc Sulphate with increasing doses till she was taking gr. xv three times a day.																																				
5	F. H. f.	11	Frightened by a dog	Both sides but more especially the Right.	Lig. Arsenicatis Rt. Bromide Camphor St	Days 7 " 20.	Days 17 in bed " 18 in C.W.	Well	A highly nervous and excitable child. Hair dark, eyes blue and prominent pupil both dilated. No history of Rheumatism or trace of Cardiac disturbance. The first attack occurred on the second day, the dose now reduced to 7j. Three times a day. Still returning sickness. Had Rt. Mm. Camphor 7j three times a day. The chief feature was intolerance of Arsenic.																																				
6	A. D. f.	6	Hereditary Rheumatic history	Both sides affected as well as the facial muscles.	Succus Cornii Zinc Sulphate	Days 9 " 25.	Days 46 in bed " 6 in C.W.	Dead	Her first attack, delicate from birth. Body fragile and badly nourished, with puffed breast to a great extent, marked depression in both nipples. Stomach prominent on lower part. Zygomatic protruding (like the parents), pupils dilated. Heart sounds at this time normal. (November 1877). Respiration normal. She has never been ill since the child of her complained of pains in the legs and feeling tired. At present nothing definite of Rheumatism. The maternal grandparent on both the sides of Rheumatism as well as an Aunt (mother's sister). In her case the heart is affected. The twitching of the facial muscles was the prominent feature. She was given Succus Cornii beginning with ʒj. Three times daily increased up to one ʒj three times daily at times felt sick with no improvement. Zinc Sulphate was next given beginning with gr. j. daily increased by a grain till the dose reached gr. x. Three times a day - with no more effect than if it had been cold water. Left the Hospital no improvement. About a year after leaving the Hospital the choreic movements returned with great severity. She has recovered to Child's Department and after six weeks stay was discharged. Well but to be taken to the sea-side for a couple of months. Returned home free from any paralytic movements. Within a year of this event.																																				
7	A. B. f.	9	Unknown	General, speech affected.	Succus Cornii Ullast: Sulphate Zinc	Days 15 " 23.	Days 39 in Bed.	Well	Attack she had her first attack of Rheumatism. The smaller joints were much more affected than the larger. And it was during this attack that her heart became affected. A good recovery was made from Rheumatism, but the child at times often complained of severe palpitation. In the summer a systolic murmur heard loudest at the apex, and accompanied at times with a painful upheaving action of the heart. It was in the month of March 1880 she got a fright that resulted in excessive painful palpitation which caused her death. This case has been interesting that I have been able to follow it up to death. And also as showing the hereditary influence of Rheumatism. The benefit from Succus Cornii and Zinc Sulphate is also remarkable especially with regard to the heart.																																				
8	A. H. f.	12	Fright	Limited to left arm, + twitching of the muscles of the face	Rt. Monochlor. Camphor Lig. Arsenicatis	Days 26 " 28.	Days 56 in Bed " 12 in C.W.	No improvement	Has always been delicate and of a highly nervous temperament. Residence harsh and still is unhealthy. Father and Mother both the subjects of Rheumatism upon admission no Cardiac mischief could be detected, but about a week afterwards there was detected a rough blowing murmur heard at the base with accentuated second sound. Though discharged as free from movements still the child looked delicate, with very slight improvement on the Murmur Bowels as a rule very obstinate was much annoyed with these worms.																																				
9	E. F. m.	11	Unknown	Affecting both sides with a history of Rheumatism and pain over the region of the heart.	Lig. Arsenicatis Dr: Digitalis Ferri Am. Cit Ol: Morhuac	Days 28 " 30 " 39	Days 29 in Bed " 39 in C.W.	No improvement	This attack was noticed a year ago before admission. She is thin and of dark complexion. Heart sounds loud the second being accentuated, action irregular no murmur except for history of previous attack of Rheumatism. Has had Scarlatina and Pertussis. Father delicate looking and very nervous. Mother had St Vitus' dance when young. Think she always been nervous. Took Rt. Monochlor. Camphor ʒj three times a day after six days the facial muscles seemed to be in abeyance, less grimaces. An extra pill of ʒij was added to each dose and this was continued till she had taken ʒxxx. That was ʒv. three times a day. When for the first time complained of headache and pain in the Epigastric region. Upon taking digitalis nausea kept that she had a fit and was then sick. When I saw her the fit or seizure had passed away and she was sitting up in bed, the muscles of her face were in constant movement and it was further noticed that she had lost the power of speech. When asked how she felt she answered yes. When shown her Bant's Box and asked what it was only answered yes. A slate was given to her to write her name - She wrote A. H. K. K. Walked out of room. Placed in bed again she dropped off to sleep. Next day was well but choreic movements of face and head as bad as ever. She remembers the questions asked at her, but had not the power to express herself. Her bowels discontinued and put on Lig. Arsenicatis after some time a general improvement was noted, but the struggling upwards of the shoulder still continued. The chief feature was the aphasic seizure more I am inclined to believe the result of the drug than embolism. The intelligence of this little patient was much above the standard. Complained of pain in large joints (especially ankle) and suffering from palpitation. He had an attack of Rheumatism about three years ago. And a month previous to admission complained of severe pain over the region of the heart. At present there is a soft mitral systolic bruit heard at the apex. Choreic movements soon improved but owing to the condition of the heart was kept for a time longer under observation.																																				