The Convulsive Diathesis of Infancy.

by William Gay. MB.
The Convulsive Twitches of Infancy

I fear my doctoral thesis pales more of the character of an essay, stated that which the name implies. If it be necessary to put myself in order, I shall endeavor to establish the very intimate connection which exists between the convulsive twitching of rickets. But I do not limit myself to this. I propose to venture further afield to enquire how far our knowledge of the subject has increased of late years. I discuss another point of clinical and pathological interest. It might be well at the outset to define my position. I say, what I understand by the "convulsive twitching of infancy". As manifestation of the former, I include laryngism, arteriosclerosis, tetany, general convulsions, and what has no scientific synonym, but is in homely language known as "wax convulsion". By infancy I mean roughly that period of life corresponding with the first dentition, which might with more correctness be called late infancy or
late babyhood. I
At every crisis of our life new
diseases wait upon us. Development
considers with instability - as at
this period of life with which we
have specially to do, other the brain
is the organ for excellence which is
being elaborated, we find都想
instability. its most marked feature.
As far as we know the liver,
spleen, kidneys, to perform their
function, very much in the same
manner as they do in the adult.
But with the brain, how different!
Reflex acts are supplemented with
voluntary action; coordination of
muscular movements, allowing of
walking is that most elaborate of
all human machinery, the act of
talking, are taking place. The
higher centres begin to exercise their
authority over the lower; initiation
de regulation come under the sway
of the will. This assumption of
power by the highest centres of the
brain, the coordination of movement
and development of voluntary acts,
mark especially this period of the
child's life. So it life unfolds
that the period of first functional activity of the brain is accompanied with much functional instability.

Pari Passu is going on a process involving the child to lead an existence separate from its mother, the eruption of the teeth. Physiologically connected it is of course accompanied, with little or no general disturbance, but not infrequently it is far otherwise. The evident debility, pyrexia, faecal-natalile disorder, and perhaps bronchitis testify that the local condition has had a general effect. Is it merely a coincidence that the period of eruption corresponds exactly with the development of the convulsive disorder, or is it that the same irritation, the frequent presence of which one will deny, is sufficient to upset the reflex barriers of restraint to allow the various manifestations of the convulsive tendency?

These are questions not easily answered.

Different opinions have been very freely expressed. Dr. See comments that the relation of debility to convulsions seems this — that the back-*

Wonders of heath and spending; concomitants, concomitant parts of the pathic delirium. On the site hand in hand and then admit that this is a period of entire reflex excitability. Thus, Watteau says, "The excitability of the special tend to the excitability of the surface seem sometimes to become as great as they may observe like in jugs, when narcotised, when you may throw with astonishment merely shaking the table on which they are placed." And Stenger, "It is not fanciful, but a strict writing out of Nature's method to maintain that in infancy we have the highest degree of excitability on the part of the motor centres as a condition of existence; so surely that in a vast number of instances, this reflex excitability is so excited as to make extraverted life impossible."

If all this be so, if we allow that in many cases delirium is accompanied not only with local irritation, but with symptoms pointing to a general effect on the system, then I think the Diseases of Children, 6, 25, p. 400.

conclusion justifies that under certain conditions, dental trenching may be a frequent, potent, but by no means an always practicable cause of convulsive seizures. This question has an important therapeutic bearing, for if convulsive attacks depend upon the irritation of teeth, then the proper treatment is to lance the gum. As long as I am concurred, if I were equally so, that by such a procedure one would expel the origin of the tooth or diminish the irritation. The only active lancing can have when the tooth is still deeply seated, as that of local dehydration. I am not sure that even that my suspensions be advisable. But if the tooth is nearly this, the gums acutely inflamed, or actually, say, of large ginkgo, frequent, I should have no hesitation in lancing without fear.

In fact, I think the reaction of reception about lancing has been pushed too far, as they have been in regard to every remedy once regarded as a panacea.

The various expressions of the convulsive tendency are all closely related; in fact, they seem almost inseparably to
From one into the other. As long ago as 1815, S. J. Clarke noticed the "clenching of the fist with the thumb inserted into the middle of the palm of the hand, often exists for a long time in children, without being much observed; yet it is always to be regarded as an unfavourable symptom, frequently as a precursor of convulsive disorder, being itself a spasmodic affection.

Here then by itself we find the capital contraction, a simple spasmodic affection, the only expression of the convulsive diathesis. But this is also one of the most salient features of laryngismus strienis. Have indeed not been able to find it so often as the book would lead me to suppose, but it is very frequently present if looked for. Let us imagine this simple spasmodic affection not transient, but more prolonged, remitting perhaps, but occurring for hours or days, as we see the most characteristic feature of tetany. Again, laryngismus not-unfrequently accompanies tetany, or the latter then appears to resolve itself into a case of convulsive movements. Commentaries on some of the most important diseases. Schere 1859.
I largepnes with more prolonged 0 permanent catapodcal contraction. Limiting these two diseases also is a sign of some importance. For it is found with few exceptions, under no other condition - I mean "facial irritability" we shall return to this again. It would seem also that largepnes proceed by insensible grades into attacks of grand convulsion. 2 that the two frequently occur in the same individual. Out of 50 cases of largepnes, 19 had grand convulsion. 3 Lord had noticed the same coincidence 8 times out of his 30 cases. Of 20 cases of my own, 7 are noticed as occurring 7 times in "mixed convulsion" once.

"Mackenzie speaks of the extension of the largepneic affection to other parts so that the diaphragm & inter-costals also become affected. "Shulgin gives further the assent that not only is the diaphragm affected, some times alone, but that the limbs may

1 Disease of largepne. p. 480 Vol. 1.
3 Bat's report Vol XI. 1875.
4 Disease of children. p. 250.
be concluded. Kernoch has such an important paragraph bearing on the subject that I may be excused quoting it at length. "The further extension of the convulsive affection must not be overlooked. Although confined to the abdominal muscles in the milder form, the spastic irritation is often propagated to other parts of the respiratory apparatus. (Thoracic muscles, diaphragm) giving rise to irregularities in the respiratory system. . . . The vascular muscles also take part. I have observed in a few attacks, though not in the attacks, the muscles of the head, at least of the temporals, muscles at loss of sensibility, unconscious. They are often wanting to clamp the disease as eclamptic. So far as I have been able to judge, I believe indeed that a very short loss of consciousness occurs during severe spasm of the gullet. This explains the fact that spasm of the gullet very often alternates with eclampsia or the former opens the scene to convulsion."

Thus, then from a simple spasmodic contraction of the gullet, by gradual extension of the spasmodic process, we have Disease of children. p. 71.
at length arrive at general conclusions. The importance of all this seems to be that— if occurring at the same period of life, under the same predisposing and exciting cause, for the most part (as we shall see presently) there occur certain affections gradually running into one another as regards their symptoms & frequently occurring epilepsia in the same individual is it unfair to conclude that their pathology is very similar; or in other words, supposing we are able to come to conclusions about any one of them, is it a fair process of induction to apply that conclusion to the solving of the others?

Intimately allied to the consumptive diathesis in the way of a predisposing cause is Rickets. The recognition & study of this is of the more importance, since Rickets is a considerable infant a preventible disease. Not entirely so far I am told that among the wealthy, whose children are under the most favorable hygiene conditions, are nourished with nursing care, who are exposed to as much sunlight as the London atmosphere will
allow care in no way subject of specific disease, that even among these Rickets is not uncommon. The absolute prevention of Rickets is impossible until its ultimate causes are more precisely known. In this can be no doubt that utter ignorance of the elementary rules for the protection of infants plays the most important part in the causation of Rickets. The foundation of the convulsive diathesis, as seen in our great hospitals, Ridget's proof to have much blame for in the death of the innocent if he or those who preceded succeed him in the same line; had never tried we should have lost a great opportunity of studying Rickets, and its various complications.

Dr. Lee first drew attention to the close connection between Rickets and convulsions, at large. In 50 cases of large, in 20 less than 48 did he find evidence of Rickets. In each of the remaining two, cataract was present. "Treat in putting him, for that all the three statistics were obtained from the poor, he doubts whether these figures would much exaggerate the truth, when applied to the rich, in whom main
degrees of Rickets were by no means uncommon. Sir E. Jenner says that out of a vast number of cases of largepismus, he found a condition of Rickets absent in only two.

Both Horsch and Hirsch consider that at least 3/4 of the cases occur in rickety children. Goodhart on the other hand was only able to get a history of Rickets in 20 cases out of 34 examples of largepismus. Of my own cases, a distinct history of rickets was obtainable in all. Elsässer considered that spontaneous largepismus was always associated with Ricketts. Altho' these figures differ somewhat, they nevertheless conclusively prove the close connection existing between the two conditions.

The occurrence of tetany in children has not been much noticed, but Abercrombie records 14 cases of tetany in children, from 2 to 11 yr. or under, collected by him at St. Bartholomew's Hospital for sick children, in all of whom some of the active signs of Rickets were found.

I have been able to find only 2 other


"Der weiche Hirnzkopf." Stuttgart, 1843.
Since writing the above I have had the opportunity of seeing and taking notes on four cases of tetany in infants, all of whom were clearly very cachetic.
reports of cases occurring in children so young. One of these is an admirable description of a case by Huxley.

For boy, aged 3 yr. 5 mos., who was having his 5th attack it was marked nickety. The site case is reported by Medical Jr. and was again a boy, aged 3 yr. I do not mention it made 7 nickety, but he remarks that it's boy was remarkably fine and muscular.

We are again indebted to 1 for its paper on the presence of Wooler for pointing out the connection between nickety and convulsions. Fee's paper is based upon a record of 102 cases, of which 24 were the 12 local cerebral causes - meningitis, fever, abscess etc. The O.M. corroborated the diagnosis in 12 cases. The following causes were assigned to: 7 - loss of blood 1; cancer 1; acute exantem 1; syphilis 1; exhaustion from large ulce 1; chronic Bright 1. 61 remain 1 of these 56 were nickety 1 no other local or general cause was obtainable. Of the 56 3. W. Sec. Times & Gazette.


4. Guy's Hospital Reports 1870 3, p. 279.
I was not unprofitably a case of meningitis & might not unfairly be classed as rickets. These observations are the more weight coming as they do from such a very careful clinical observer as see.

Let us look at the question from another point of view. I have after 22 cases of Hutchinson's so called meconium teeth, in all of which except one a history of Rickets was forthcoming. 14 had had fits during sensation or 4 of these laryngismus as well. Laryngismus alone occurred in one. Only had no convulsive attacks at all or in 2 a history was not obtainable.

The evidence I have adduced demonstrates very forcibly the intimate connection of the spastico-diatetic with Rickets, whether the Rickets is the cause or whether the two are only expressions of the same state of malnutrition, it is impossible to decide. Indeed their relationship must remain veiled in mystery until we know more about the nature & origin of Rickets. But the therapeutical value of the coincidence of the two conditions cannot be over-estimated. See says that if we treat
laryngismus as if it were wholly dependent on Pockels, it ceases to be a purely disease. The same may with equal truth be said of helminthiasis. We will now discuss a symptom which is almost peculiar to laryngismus and tetany. This is of itself very suggestive of a close relationship between the two diseases. "Facial irritability," was introduced into England by Dr. Barlow, but its clinical importance has been worked out specially by Abercrombie. It is best obtained thus—setting in front of the patient the forefinger of the right hand is made to brush gently but firmly over the skin of the outer side of the external angular process of the left orbit. Immediately thereon, follows a contraction more or less pronounced of the orbicularis palpebrarum and often the corrugator supercilii participates. In extreme cases by going thus the same process over the main branches of the facial nerve, one may obtain a very lively contraction of these muscles. Injected with the zygomaticus, levator labii superioris, levator labii superioris alaeque nasi. Facial irritability is obtained on the right side by using the
left forefinger in a similar manner. In fact flatly children one may get a movement en masse, but this is not likely to be mistaken for facial irritability. It is guarded against by using the forefinger very gently.

The extent of the ommocercal contraction varies considerably, from the faintest wave of contraction of the orbicularis to the extensive movement mentioned above. Very frequently it is equal on both sides; but it is sometimes greater on one side, which is usually the left. This may perhaps be due to one's performing the operation with greater neatness with the left right hand. In the only case in which I found it recorded, it was present on the left.

Also in all cases, in which it is likely to occur in any many in which it is not, I make the attempt to get facial irritability, I have been able to obtain it in only 3 cases over 3 yrs old, all of which belonged to the same family. As they present urgent features I will relate them shortly.

Maggie. M. aged 9 yrs. the eldest of a family of 5. The 2nd child died of pneumonia at 2 yrs; would have been...
I have lately found that in many cases of facial inactivity one is able, by pressing with the broad end of the stethoscope on the infra-orbital region just below the malar bone, to get a more or less level contraction of the muscles supplied by the infra-orbital branches of the 7th n. viz. the pyramidalis nasi, levator labii superioris alaeque nasi, levator labii superioris & the depressorii. Sometimes the contraction of the orbicularis oculi & corrugator supercilii is the greater & sometimes that of the other muscles. Frequently the former is obtained & the latter not, but this is generally in the case of children with very flat & flabby cheeks, in whom the nerve does not lend itself so easily to contraction, on account of its adipose clothing.
7 yrs old now. 3½. Florence cd. 5¾yrs. 4. Ethel cd. 4½yrs. 5½. Born cd. 2 yrs.

The mother's youngest brother had TB & paternal great-great-grandfather was epileptic. No insanity known. The only evidence of collapse is heaving of the ribs. Walked at 1½ yrs. Legs always straight. Head 2½ considered large. No history of fits, convulsions or convulsion-like attacks as a baby.

Facial irritability well marked on left side. None on right.

Florence H. cd. 5¼yrs. Suckled 1½ yrs. No Teething until 1½ yrs. When she got a cold, always a cough. Walked at 1½ yrs.

Romance 2 preceeds. Suckled 1½ yrs. No convulsions or convulsion-like attacks.

Always good health until recent chest infection from which she has not recovered. Marked facial irritability.

Ethel H. cd. 4 yrs. Suckled 1½ yrs.

Teeth early & easily. Walked at 1½ yrs.

Coughing of ribs. Legs straight.

Coughs 2 yrs. ago; lasted one week. Whooping cough 2 weeks last September, he had the cough ever since. For the last week cough has assumed a different character. Head is thrown back. Breath completely lost. Finishes up with a cough sound. These attacks at night & earl...
morning. No vomiting afterwards. No teat. Facial irritability well marked.

These cases present the peculiarity of the occurrence of facial irritability in all the children of the family, 3 of whom were over 3 years; of its being present even in the eldest; of the absence of any evidence of the spasmodic diathesis except in one, unless indeed we think the long continuance of the Whooping Cough (6 mo.) any evidence in that direction.

The youngest age at which I have been able to obtain facial irritability is 5 mo.; the eldest, leaving out the above anomalous cases, 3 years. Its presence therefore corresponds roughly with the period of life at which Ricketts is in its acute phase. In fact 27 out of 30 cases of facial irritability of which I have notes, presented some of the active stage of rickets.
to be therefore justified in laying down as a general rule, that from facial virility, the achitic process is in active progress. The converse of this, given, Rickets, we shall find facial virility — is any thing but true. I have examined again and again the severest cases of Rickets, patients say of 2 yrs old unable to stand or even sit up, with 5 or 6 teeth, large anterior fontanelle, collapsed chest, etc., yet with no facial virility. How is this? There is another condition which seems almost as necessary for its development as Rickets itself, that is a nervous personal and very generally hereditary history as well. The latter is the usual one to include, epilepsy, syphilis, migraine, insanity, asthma, etc. The former is very generally laryngismus. During the last year or so, I have collected 20 cases, 2 facial virility; of these 19 had laryngismus, 2 fit only, 1 tetany, 1 frequent 2 severe night terrors; in 7 only was I unable to obtain any evidence of virility of the nervous system, most of these cases have only been under observation for a
very short time & it may be that
when these cases have been followed for
a longer period some such evidence will
be forthcoming. At any rate the presence
of facial convulsibility should put us
on our guard & suggest a course of
treatment directed not only against the
infectious disease, but against the
probable development of some spasmodic
condition. And it seems not at all
unlikely that by means of the usual
treatment of sickness & doses of poisons
at night, we have been able to reach
some such attack in some of these 7
cases. If indeed it be so, the value
of facial convulsibility cannot be over-
estimated.
I was unable to obtain this sign in
only one, very doubtful, case of hepatic
recession in an infant, 1 mo. old, it's
age & the indefinite history obtained
throws great doubt on the diagnosis. In
all the others it was well marked &
in some a lively contraction of all the
muscles on one side of the face ensued
on irritation applied over the J. trunk.
I do not know if the onset of hepatic
or facial convulsibility is synchronous;
but in one case I was able to trace
the diminution & gradual disappearance
of the latter some time before the
attacks of laryngeal spasm ceased.
B. Abercrombie has able Bolten faci
ereditability in all the cases of tetany
 upon which his thesis is based. I
have myself only seen 3 cases of tetany
in 2 of which there was very marked
facial ereditability ; the other occurred
before I was acquainted with that ep
Which now is the nature of facial ereditability?
Does it depend on increas ed ereditability
of the nerves, the nerve or muscles?
If the first it would have to be of the
nature of a reflex action - the affage
impulses being conveyed by the 5th
nerv would correspond with the other superficial
reflexes, plantar, abdominal, cremasteric
et. What might have passed a valuable
test, I have been unfortunately unable
to obtain in children on account of the
pliability of their cheeks - the zygomatic
reflex. Altho' uncertain in its presence
at the best of times, yet if facial
ereditability were indeed a superficial
reflex, it should have expected the
zygomatic reflex to be more easily elicited
or more marked than usual.
That it is not a superficial reflex is i
Facial contractility was extremely readily obtained in the four cases of tetany, which I have recently seen; the contractile to percussion was very marked.
Think sufficiently show that in order to obtain it one must apply the irritation just over the motor points of the nerve; points more over, which on account of the underlying tone, allow of easy stimulation. It even so little distance from these no contraction results. This seems also a sufficient proof that it is not due to increased irritability of muscle. As an a priori piece of evidence James states that all these superficial reflexes may be fast, increased or decreased, that is no analogous instance in which one is developed in disease. From the fact that irritation applied over the nerve, trunks alone elicits a response of that only three trunks are available which over very long structures, allowing of easy stimulation, it seems that the hypereactivity belongs to the nerve itself and not to the centres or muscles.

In locomotor ataxia it sometimes happens that although the knee-juice is entirely absent, yet by tapping the extensor muscles sharply, its inner side over a motor point a lively contraction ensues, simulating a normal or increased knee-juice. As Dr. Bayard puts it "allos' reaction to tendon percussion is 0, reaction 25
strict persuasion is + . In such a case it cannot possibly be reflex, for the reflex arc is intact. Even if it seems not at all unlikely that it depends on + excitation of the nerve this strictly comparable with some facial irritability. Although the action is often strictly localized to the contraction of the orbicularis, yet the + excitation is equally distributed throughout the facial nerve, but manifested only through the branch supplying the orbicularis, on account of its lying almost immovably over bone or thus allowing more easily of irritation.

Conclusions.

Conclusions are the external manifestations of very various conditions of the central nervous system—conditions, which may depend upon cause pathological lesion, which however do not help us in discovering the immediate cause of the conclusion. Others again in spite of the most carefully conducted autopsy reveal nothing for no microscopic change. These are termed idiopathic conclusions or epelipsei et cætera et cæteræ engage our attention.

It must not infer that idiopathic conclusions are necessarily expression of the same pathological condition of the central
but the term is convenient & indeed necessary, until we are able to differentiate the various processes, if there be more than one, which act them along. From the similarity in symptomatology & the fact that infantile convulsions may develop into definite epilepsy, we may safely infer that what is the pathology of one is that of the other. What that pathology is, or whether the lesion is situated in the cortex or nuclei, I will not attempt to discuss.

Some children have convulsions as Easily as some have delirium or some dreams.

"Convulsion is, by Exellence the nervus symptom in Infants & young Children" that it should be so seen in no way seems in no way remarkable when we consider as Humphry's Jackson further points out that the nutrition of the brain is far in excess of the expenditure of the expenditure & that by developing the brain becomes so unstable that even by such distant source of irritation as worms & Sentimen convulsions are easily induced.

Can local irritations such as these:

Humphry's Jackson Reynolds' Jottings vol 2 p 266
Rousseau Clinic lecture vol 1 p
can set up convulsions in a healthy child? Willies says "it is very doubtful whether in a healthy child, these causes can produce convulsions at all; in a predisposed subject they no doubt excite them. Some authorities even doubt if such form of local irritation as worms & irritation are sufficient to induce convulsions even in predisposed subjects, but it seems probable that slight the continuous irritation may by a kind of summation of stimuli under the centre so unstable that relapses occur at last result.

What then is the nature of the predisposition of which Willies speaks? The question has been already answered. It found to be that peculiar instability which is so marked a feature of the rachitic diathesis. This is shown not only by the fact that a history of rickets is nearly always obtained, but because the most important element in the treatment is that which is of such value in rickets.

The relationship of dentition convulsions & epilepsy is well known, a that of the former to Rickets led me to wonder how far Rickets was responsible for...
many cases, epilepsy. The connection was amply confirmed by observation and subsequently found that Ewen had made it one of his studies in his work on "Epilepsy." Of 120 cases of epilepsy which commenced in the first 3 years of life, in which he was able to get information, dentition was blamed in 72 cases. In nearly all he found a well marked history or sign of sickness, indicating what we do of the connection between the enamel seen in such teeth, it would not be unfair to suppose that all or nearly all, owned the same relationship. If this be so, then 7% of the whole of the cases thus examined (1450) were related in some way to minutes. But in all these 72 cases, the symptoms were continuous or gradually merged into epilepsy. In 27 cases, in whom a history of sickness was obtainable, there were frequent fits during infancy, which ceased with dentition and recurred at a later period. If there be added to the former then nearly 10% of epileptics are much or less dependent on sickness for the origin or nature of their disease.
Malang considers that the relationship of epilepsy & Rickets requires further investigation & ventures no opinion of his own. He says however, "So calm an observer as Haeze thus expresses himself that disturbances of nutrition (as seen in rickets 
& scrofula) are uncommonly liable to affect a person's position, in the presence of which proper exciting causes may lead to the outbreak of epilepsy. Very careful & comprehensive statistics alone can determine the question."

Although few could doubt the causal connection between rickets & epilepsy, each owns percentage of 60% is probably too high an estimate. For this reason we are too apt to forget what may be called the physiology of statistics. Rickets is far less common. At least, almost five, it is the great exception. How to find some degree of active rickets in the infant's throat there. If this be so, it must happen that an appreciable percentage of all people, at any rate in London, will give a history of rickets; & perhaps some combined disease. Whence this maybe, should be deducted from the 10% to arrive at a proper conclusion, "Encyclopaedia" vol.1. p. 265.
Most people regard headache being peculiar as an important element in the causation of the disease. The fact that fever obtained a numerical history in 34% of the cases commencing in infancy or in 35% of the whole of his epileptic cases, be sufficient to mark its importance. But again, what are the physiological statistics in regard to this? i.e. what is the percentage of people who have headache preceding an epileptic fit? Schellinger studied the question from the opposite point of view. He examined into the state of 533 children, 136 named epileptic, no less than 35% died in infancy. Of convulsions, 14% were epileptic; 3% who died; 2% insane; 7.5% paralysed; +19% only were free from nervous trouble. If these figures are suggestive, these should be convincing.

But Staphs, Jackson regards convulsions as a symptom as such only transmissible with other nervous symptoms, as so many expressions of the nervous temperament, which may be believed in. He contends that the occurrence of convulsions in several children of the same family, easily.
accounted for if these all having had 
rickets. "At the best it is very difficult 
but the best it is very difficult 
to obtain certainty as to heredity, 
and to obtain certainty as to heredity, 
as convulsions are so common in children 
as convulsions are so common in children 
to occur it is presumable from numerous 
to occur it is presumable from numerous 
pathological processes" (Dr. C. L. 270) 
Morpert, he seems very sceptical as to 
the heredity of such symptoms as convulsions. 
A paper of this Dr. C. L. 270 relates 
a paper of this Dr. C. L. 270 relates 
a case of Dr. D., of a woman of 34 years, who had had frequent convulsions 
a woman of 34 years, who had had frequent convulsions 
up to 47 yrs. & who was the mother of 
up to 47 yrs. & who was the mother of 
16 children. 5 died before the end of the 
16 children. 5 died before the end of the 
second year from convulsions; 1 at three 
second year from convulsions; 1 at three 
years. The remaining 4 also had convulsions. 
years. The remaining 4 also had convulsions. 
I remember myself a case in which 
I remember myself a case in which 
11 of 12 children of an epileptic 
11 of 12 children of an epileptic 
mother had been the subject of infantile 
mother had been the subject of infantile 
convulsions; of epilepsy.
convulsions; of epilepsy.
Without placing too much value on 
Without placing too much value on 
statistics, I think it must be abundantly 
statistics, I think it must be abundantly 
plain that rickets is a hereditary 
plain that rickets is a hereditary 
and convulsive history play an important part 
and convulsive history play an important part 
in the causation of convulsions.
in the causation of convulsions.

The exciting cause of convulsive convulsions 
The exciting cause of convulsive convulsions 
is often found in some local irritation, 
is often found in some local irritation, 
e.g. denition, or some gastro-intestinal 
e.g. denition, or some gastro-intestinal 
irritation indeed if an overloaded stomach
rooms, or improper feeding. Improper feeding may thus be responsible not only for the setting up of the first predisposing cause, but it may, when the diabetic condition is established, act as the exciting cause also. In this category of cases, depending on digestive derangement much probably be included those remarkable cases in which a child, who is still being suckled, has a fit or scene of fits soon after the mother has experienced some great fright or mental emotion.

It seems more reasonable to suppose that such reactions under these circumstances become irresistible or even assume a tonic character, than that there exists a subtle and mysterious influence between the mother and offspring which we may call Dr. Roth's case of the following interesting cases as an example of these maternal impressions -

"3 days before the birth of her 6th child, a lady was obliged to send home a little girl, her foster child, who lived with her own children at the house she was mostly attached. She was delivered safely but was suckling the infant, when 5 days after her confinement the news was brought her that her foster child 'breasted of children' by J.
has been accidentally burnt to death. She continued to suckle, but 12 hours after the news, the infant had a severe attack of convulsions, the fit recurring daily for 3 mos, when the child died. Townsend records another case in which a child had clamped quickly following suckling by the nurse, who had just had a violent fit of temper.

To these cases, I can myself add one. J.C. of 18 mos. came to St. Almon St. Feb 8, 1876 with well marked convulsions affecting chiefly the head & spine. When 13 mos old his father was run over & brought home on a stretcher. This mother, meeting him, experienced a great shock. She suckled patient the same night & the next morning he had severe convulsion & remained unconscious for 4 days, vomiting during the time. He has not had any recurrence, "but has not been the same child since". There was no hereditary history of fits or insanity, but the father & her relations suffer from asthma.

Fits to a great extent also be recognized as exciting causes, but as D'Arcy points out these cases are those in which the "Diseases of children" 1885 p. 68.
fit are likely to degenerate into
convinced epilepsy.

During the acute specific (variolae, scarlatinae, measles) convulsions occur at 2 stages of the disease. First as an initial symptom, when it corresponds with the rigor of adults, which indeed are slight convulsions unattended with loss of consciousness. And secondly at the height of the fever when it is comparable with the delirium of adults, which seems only an incoordinate, impulsive, convulsion of the highest intellectual centres. The former is rare (I have only seen 2 cases) it is not I believe of any prognostic value, the latter is of fatal augury it usually ushered in the end. It could be quite impossible to decide whether in these cases, the convulsions were due to the action of the specific poison of the pyrexia. In these cases, which occur at the commencement of pneumonia, we have no specific means to lay the blame on (unless indeed that it be ultimately proved that the four or five small is some bacillus or coccus, eg the pneumonococcus) I must therefore attribute the occurrence of convulsions to the pyrexia. In plenary of acute enteritis, the reflex theory may be invoked to explain their presence, as an occasional symptom.
Remarking symptoms are by no means universally present. In fact a child apparently in the best of health may suddenly, with no warning, be attacked with convulsions, which may become severe convulsions, in which the child may ultimately die. Often however the mother has noticed what she calls "minor convulsions" at these often meet from the doctor as illomened omen. Often however they are evidence of an unstable equilibrium, easily upset by any little local or general disturbance. We should carefully examine the child's condition before we venture to post post the manifest fear of the mother. We probably get a history something like this - the child lies with his eyes open, only the white visible; he gives general start or perhaps only twitchings of the limbs; a month are seen, or grinding teeth. On the slightest sound he start from his sleep a convulsions from fear. Sometimes he seems torment with horrible dreams. Now, all this may mean very little or be due only to slight intestinal disturbance or what not; but it should put us on our guard and doubt the stability of the brain which is...
so easily disturbed.
The symptoms of a fit vary within very wide limits. The younger the child, the less is the tendency for the limits to be affected. Here is suddenly absolute loss of consciousness, the chest is fixed or rigid, the limbs as I have seen may be altogether unaffected, granii result a death seems imminent, when the chest muscles suddenly relax & regular attempts at respiration are made. The child may even seem all right as a condition of status ensues.
As the child grows older, the fit more nearly approximate to epileptic attacks. The 3 chief phases of epilepsy are nearly always present, but in varying degree. Tone contraction occurs in the process, the following by clonic convulsions or condition of status. Although a general rule, it is not without exceptions. The tonic stage may be so short as to go unnoticed. The clonic may be conspicuous by its absence. And occasionally the patient recovers consciousness almost immediately it seems as lively as before.
In a typical case, pallor of the face is the first thing noticed, but not always, for sometimes one sees the face flushed.
the anterior fontanelle pulsating wildly. 

There is no preliminary shriek, but sudden unconsciousness. The chest is fixed 
and the limbs may assume those strange, purposeless attitudes so characteristic of epilepsy. Very often however the hands are clenched and the arms held out in rigid extension and the legs may assume a similar position. The initial pallor gives place to congestion that length 
egonor indicating a condition of asphyxia from which the child occasionally dies 
when the tonic stage is prolonged. 

The eyes may be directed straightforward, very frequently upward or downward. At one end of the spectrum only the sclerotic are seen. This is not a little strange for the upward movement of the eye is the most difficult to maintain, in all people soon causing a feeling of tiredness, but in many persons it is faint. It is also the position of the eye in which hypnagogic is most easily induced. In adult fit, squinting is strongly suggestive of their hypnagogic origin, but in children it is not uncommon, according to Parke. He finds the eyes strongly converging it rarely diverging. I have not myself ever observed strabismus in convolution.
of children. The pupils are generally dilated, at any rate in the early stage. The tonic stage generally gives place to the clonic, characterised by rapid contractions of various muscles. It may be general, crescendo, localised to groups of muscles, or it may be limited to individual muscles, unconnected with nervous supply or function. The spasms may cease, break at odd and irregular times during the succeeding stage of coma. Although the child have teeth, biting of the tongue must be very rare during this stage. I have never myself seen it, and am unable to get the history of it only once. Mykles' Jackson has also noticed the rarity of this symptom. Urination and defecation are common, but often go unnoticed, probably the child is still in nappies. The state of coma is also of great variability. It may be almost, amounting to stupor only, or be very profound. I have noticed on a few occasions that the fits terminate in vomiting, and it is by no means uncommon to get a history of it from the mother. After one fit there may be no recurrence; more generally there is a series occurring during the convulsive period, having no very definite apparent causation, but sometimes seeming to have a path of relationship to the
irruption of the feet. Sometimes, the
comparatively rare, tenderable epilepsy
commences in infancy. In these cases,
fits in no way distinguishable from those
of less serious moment occur at odd
times during infancy, and continue into
toddlehood and adult age. More often
these fits occur rather as the precursors
of the epileptic condition. They cease
with dentition; they occur spontaneously at
puberty, or they may seem to owe their
subsequent recurrence to a fright, blow
or...

Sometimes, though rarely, one fit
inauspiciously the condition of status con-
vulsions, in which the child usually descends.

Sequelea. (1) Loss of speech — this may
be transient or permanent, or if the
convulsion happen before speech occur, it
may never be developed. Dr. Bastian records
a remarkable case of a boy who had fits
from 9 mos. till 2 yr. old. At 6 yr.
the boy had never spoken, but was other-
wise quite well. "On the occasion of an
accident happening to one of his legs, he
cried out "What a pity!" though
he had never spoken a single word before.
The same word could not be repeated
as were the words spoken as if understanding all entertained, for a period of 2 yrs.
Thereafter he progressed very rapidly with speedily becoming much healthier. When
seen by the writer (Dr.) at 12 pm he spoke in an ordinary manner without
the least sign of impairment of speech.
Rushkin, Jackson (p.c.) believes that the "loss of speech" is not the result of
the concussion, but another result of the
death of the brain, which permits the
concussion. I may observe parenthetical
ly that the association of defect of speech with
symptoms pointing to disease of the left
side of the brain is not so striking in
children as in adults. But it is nevertheless
less occurs more often with concussion.
I analyze of the right side of the body
more often than of the left. This is of
course in all fours with the well known
fakd that localization of brain disease
generally is very unreliable in children.
(3) Idiocy. Of course such a result seldom
ever occurs as the infrequent telampanic
attacks, during ridicule. But if the continue
it is surprising sometimes in how short a
time with 'depersonalization' & loss of all control
ensue. Luckily such cases are rare. It
must sometime remain a question whether
The convulsions cause the disease, or are indeed one of the first manifestations of it. (p) Hemiplegia. So much interest has been excited lately to so many theories, as to account for the occurrence of the hemiplegia of children, that it may be well to inquire if it is in any way related in the way of causation with the convulsion which causes it in. If so, there are two ways in which it may happen (a) It has suggested by several authors, which suppose that during the convulsion there is cortical conception, leading to meningeal haemorrhage and to hemiplegia. (b) It has been found by Hufeland’s Jackson, which regards the hemiplegia as nothing more nor less than a kind of post-epileptic hemiplegia. This is however so slight a transient as a rule that it is difficult to imagine that a condition which has such a strong peculiarity appearance of organic change, should depend upon it for its origin. When we consider that the attack is severely during the course of some exhausting illness, that the convulsion then occurs for the first time & that it is followed by a state of prolonged coma. The public’s sense rather that it is due to organic "Disease of children" p. 445. Dr. W. H. W. P.
trouble, probably of the nature of a
meningitis, or the central venous (as Jowes
has supposed) or that the convulsion ocurs
as the first symptom.

Prognosis. It is not always easy to decide
whether convulsion is of organic origin or
not; but supposing we can establish
that the case is one of simple eclampsia,
we are but a short distance on the way
of forming a prognosis. As a matter
of fact we should be very chary in
giving one, for generally we are quite unable
today whether that convulsion will be the
last, or is the forerunner of a series
occurring during the convulsive period, or
will develop eventually into confined
epilepsy, or is inaugurating the static
convulsion. The presence of rickets is encour-
aging to the discovery of some probable
removable cause, unless make us hope
for the best", but even then a decided
prognosis would scarcely be warranted.

Ridgley's Jackson says on this subject
"I submit that at least we can only
deal with probabilities. The older the child,
the more seemingly harmless the fits,
the slower its successiveness — say a fit
every other day or fits scattered at irregular
intervals."

"Shelley" p. 126. 2 of cit.
intervals of days or weeks - I perhaps we may say, the lessucket the child, the more likely are the fits to be epileptic, i.e. the more likely is the child to continue for years or for life subject to fits.

Treatment is often unsatisfactory. It should be carried out on the following lines: (a) treat the rachitic diathesis if such exist. (b) remove any probable cause, paying especial attention to the gastro-intestinal functions. (c) allay the nervous irritation with bromide of potash or chloral. Henoch strongly recommends cheliform, from which he has never observed unpleasant results. He does not regard cyanosis of face as a contraindication. In only a few cases, due to the treatment fail. Compression of carotids is attended with very uncertain results.
Laryngismus Stridulus.

Let us now come to the study of the second
of the manifestations of the convulsive States.
According to the received pathology of the time,
and reference to its leading symptoms it has
been variously named—spasm of glottis,
spasm of adductor of the vocal cords, chief
spasm of the vocal cords; spasm of the
larynx, spasm of the vocal chords; cerebral
spasm; laryngismus stridulus; angina apatetica,
angina infantum; angina interna; angina
infantum; angina intermittens, angina
infantum, etc. It has also been called
Guller's angina of infants, since Guller
was among the first to describe the condition
with any accuracy. The name now in
general use is a very satisfactory one, as
the "laryngeal spasm" points to the seat of the
disease at the stridulus, as its most prominent
symptom. A sketch of its history
may be of some interest, it will serve to
introduce its chief symptoms, and will tend
towards how little our knowledge of it
has increased of late years.

Apparatus would seem to have had a
pretty clear conception of the disease, for he
speaks of it as likely to occur at the same
time of life as asthma, etc., just subsequent
at the time when the first teeth begin to appear.
It also speaks of it as connected, or confounded
with the children's Rh, Dec. 3 Afl. 26.
with or constituting an attack of epi-
lepsy, using for the latter "Epilepsi
" which Julian identifies as "to the convulsive
fits". He also makes the following observation
which seems to make it very probable that
the condition he refers to is none other than
laryngismus stridulum. "It is particularly
likely to occur in winter, in areas whose
confined situation precludes them from the
exposure to the evaporating influence of the
sun & winds; where the inhabitants are
subject to the violent alternation of
hot summers & cold winters & where
the only water is from springs, to standing
pools. This is particularly interesting
in the light of his observations, in which
he shows that laryngismus stridulum is
almost confined to the winter & spring
months. From Jan. 1856 to Dec. 1865
he investigated 63 cases of these 53 occurred
during the first 6 mos. of the year, a proportion
of 11 3/5 : 1. (See opp. page) My
own 20 cases spread over 16 mos are not
of much value, but as far as they go they
fully corroborate the above. 1 case occurred
first in Oct., 2 in Nov., 1 in Dec., 1 in
Jan., 9 in Feb., 5 in March, 3 in
Bart's reports vol. XI 1875.
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Notes as occurring in winter. Interestingly in this relationship is the fact that Dr. Buggard has drawn my attention to the fact that in confirmed cases, epileptic attacks are much more common in cold damp weather. We have already seen the very close connection between laryngismus and the utricular dermatitis, it is seen probable from above that Pappino, first of the former, it seems a fair conclusion that laryngismus was not a new disease when first described by Glisson in 1650, but that it existed even in the time of Hippocrates.

Galen also seems to refer to laryngismus consider the time at which he is most often seen as from the first eruption of the teeth, till 12 or 13 yrs.

Coming from modern times, Dr. John Bell and Joseph James Simpson (the saltate infarctus, that is, the effect that it occurs at the commencement of dentition, is rare. It occurs until the completion of that process. He says that the paroxysm is most of the mast potent paroxysm of asthma accompanied with a shrill sound, occasionally destroying the patient in a single attack, but generally remitting very quickly. In the asthma it whooping cough 1769. "No. 105. Wolcott 1. p. 134."
If the reproduction by any visible agitation of the body, e.g. laughing or crying. There is no accompanying cough, or if there be any it is slight only. Parke himself adds, "children at play are sometimes seen, but it presently comes on at night."

A child who was 12 years old in perfect health, awoke one hour or two aftermid in a fright with his face flushed or sometimes of a livid hue, incapable of describing what he felt, breathing with much labour and with convulsive motions of the belly, the return of inspiration and expiration succeeding one another in such a particular manner, which is deemed to be in gastric paroxysms. The child's terror sometimes augmented the disorder. The close the child's nurse. If he is not quickly relieved by coughing, belching, sneezing, vomiting or purging, the suffocation increases and he dies in the paroxysm.

But if any of these things happened or was exerted by art, the paroxysm ceased and the child seemed perfectly well, slept during the remainder of the night, and continued to breathe easily until the next morning, when if not worse he suffered a paroxysm more violent of longer duration than the former. In very young
children of the was written, peculiar to cried more than usual a return of the disease was to be expected. As a second stage to this, Miller evidently describes a typical case of trumps; in fact in all the accounts written of the disease about this time, it is very plain that trumps or laryngismus were not sufficiently differentiated.

Dr. Jane Clarke drew attention to the clenching of the palm with the thumb inserted into the middle of the hand as a symptom of laryngismus. It followed with his masters thesis, but added little to the symptomatology. He endeavored to reestablish the connection of stumus with enlarged glands with the disease. He points out that the disease corresponds with the cutting of the deciduous teeth, but saw one case of a 4-5 yr old child and the other at 6 yrs. or so. Referring to the common report of laryngismus during sleep, he states that there is then an accumulation of mucus in the larynx or back of the just below as a "prodigious rattling", which is scarcely sensible when they are awake, but very.

"Laryngismus Stridulus": Lond., 1836. Commentary on some of the most important disease of children. P. 89. 1815.
great when they are asleep. Parents, on discovering this, by arousing the child, prevent the paroxysm. He states that laryngismus is much more common during what would call an open season, the combination of cold with a degree of damp emaciated increasing the tendency of the complaint. He also speaks of its relation to bad ventilation of great houses of Liverpool & the effect that 'it is more commonly met with in the children of the poorer inhabitants'. Marnhall Hall 5 or 6 yrs. later criticises the pathology suggested by Prevost, stating that applied his reflex theory to the elucidation of the condition. He shall have occasion to speak of these in our enquiry into the pathology. 2 yrs. later still Würtem endeavours to establish the connection of laryngismus with craniastale; this has since been proved to be entirely unfounded. In none of my own cases have I been able to find it. The enquires of more recent date only seem to establish its connection with the malarial diarrhoea & the presence of feverish irritability, both of which subjects we have already investigated.
As to the age of onset there is a general consensus of opinion that it coincides with the period of the first dentition.

Mackenzie quotes from 21 cases. 1 case existed from birth; 1 commenced at 4 mos.; 6 at 5 mos.; 5 at 6 mos.; 7 at 7 mos.; 3 at 8 mos.; 1 at 10 mos.; 2 at 11 mos.; 3 at 15 mos.; 1 at 17 mos.; 1 at 23 mos. See also from 48 cases. 1 occurred at 6 mos.; 9 from the 6th to 12th month; 16 from the 12th to 18th month; 12 from the 18th to 36th month. Henoch says that it occurs almost exclusively between the 6th and 24th month, hardly ever later. He has seen it as early as the 5th to 6th week. From these figures it will be seen that the onset is a little before or exactly coincides with the cutting of the deciduous teeth. The case of Mackenzie sounds suspiciously like a case of recurrent epiglottitis, in which we know almost there is more or less constant difficulty in respiration (as indeed is the case in some rare cases of large isom) yet excitation occur under excitement i.e. closely simulate spasms of the glottis. "Dr. Newman Range"

record the case of a boy, aged 8 yrs, who
first had laryngismus at 6 yrs. The attacks
lasted 1-6 hours! & sometimes recurred
every day for a fortnight. He did not get
the disease. During attack his pulse was regular
& not rapid. Larynx rather enlarged.
This does not read like laryngismus at all,
but if it be, the date of onset is the
latest I have been able to discover.
Of five cases, 3 occurred in males & 2 in
females. Of my own, 12 were in males & 8 in females. I also notice the frequent
occurrence of the disease to attack males,
but says it is a fact which all authors admit.
This is interesting for as we shall presently
see the same holds good as regards tetany &
the condition have their analogue in adults,
in whom their occurrence is almost limited
to the female sex.
The great predisposing cause of laryngismus
is as we have already found the psychoneuritic
condition & to a lesser degree hereditary.
Predisposition. Laryngismus itself does not
seem materially hereditary, but a few cases,
are on record in which several members of
the same family have been affected,
predominantly because all have suffered from weets.
A case of a nervous shock, but such has
not been noticed in the case, I have discussed.
Gerhardt records a case in which 7 children were attacked out of 9. And another, in which 2 1/2 children, only one escaped an attack and proved fatal. He refers to the family of Mr. Clay, all of whom succumbed to paroxysms; and to another family in whom had it in succession. I found in one of my cases (that of a girl who had extremely severe attacks, recurring every winter until she was 5 yr.) that the only brother had died during a paroxysm of laryngismus. Defective hygiene must also be considered a predisposing cause, at any rate that is the conclusion which I drew from the fact that the disease is almost confined to the winter months. I agree that as much as faecal-intestinal disorders are more prevalent during the last 6 mos. of the year and that dentition occurs all the year through, neither can have anything to do with the causation. I consider that the cause of the much greater frequency during the last 6 mos of the year is to be found in the weather, which necessitates the children being kept indoors, it may be in one room for a long time. 

1 Loc. cit. p. 53.
2 "Lancet" May 12th 1846.
3 "Debuch der Kinderkrankheiten" 1871 p. 283.
time, thus begetting a nervous irritation which shows itself in a spasmodic manner. Hence independently ventured the same explanation, about the same time.

In many cases, such a history can be obtained in the case quoted above, it was sufficiently striking. Having already lost her son, the mother kept patient (her only child) during the whole of each winter in one room, which was kept very warm; a screen was kept in front of the door. She called the child “snuggled in.” She soon began to get better, under a course of fresh air and cold water. In another case however the mother told me that she made a rule of giving her children (including patient) 2 hours fresh air every day unless the weather absolutely forbid it. I have obtained other very similar histories, so that this explanation cannot be said to be proved, but as yet it is at any rate the only most feasible explanation of a very curious fact.

Exciting cause of the most painful of all would seem to be the sleeping state, in which frequently the first attack occurs. Generally the patient sleeps well and comfortably for an hour or perhaps two, when a paroxysm suddenly occurs.
Frequently a warning is given in the shape of a settling in the throat, due to the presence of mucus. Parents learn to recognize this by an almost the child in causing emesis or even incontinence. It seems likely that the paroxysms in this case are due to the accumulation of mucus in the larynx or reflex irritation of the medullary centre. Some, however, believe that the larynx is in a more active anemic state during sleep so the respiratory centres are rendered unstable so explosions very liable to occur. A somewhat analogous condition is the laryngemic fit during sleep is found in the nocturnal dyspnoea which occurs in the course of cardiac, Bright's disease. The patient-free to sleep and suddenly awakens in a state of extreme dyspnoea. Known aptly termed the "nightmare of the medulla".

(3) crying or laughing are often causes of the paroxysm. That this should be so seems when the condition is established seems in no way extraordinary when we remember that nothing is half made up of a portion of the adductor of the cord; it again the respiratory catch which occurs in some people under the influence of emotion is due to the same cause. so that there seem a
tendency in emotional states. It is that condition which finds its highest development in large muscular structures. (P) Sometimes its ashes that "dandelion in arms" seem to induce the paralysis. Hence Inaenge ingeniously accounts for it by comparing it to the holding of one's breath, succeeding a short inspiration which is made when a vessel takes a dip. (Q) Dr. West thinks that when once the habit is contracted, the slightest cause may induce an attack—a current of air, sudden change of temperature, excitement, sleep, etc.

The symptoms naturally resolve themselves into 2 groups. (a) those depending on spasm of the adductors. (b) capapetal contractions. The former is always present; the latter may vary. According to the classical description of the fit, there are a few crampy inspirations when all respiration ceases. The head is thrown back in a condition of cervical ephileptones, the eyes stare or are directed upward, the face becomes flushed, lips 2 pale in succession, death seems imminent, when suddenly the spasm relaxes somewhat and a few long crampy inspirations are taken. These become

B. e. t. 2. Diseases of children. 6. p 140.
gradually less until normal respiration again occurs. Meanwhile the thumb is strongly adducted, and the fingers are flexed over it, whilst the band is flexed at the wrist. A similar condition of the feet is sometimes found—the foot is drawn away from the other, and the foot is flexed and rotated slightly outwards.

Besides, there is sometimes evident constriction of the veins of the face is flushed, the head hot, the pulse frequent, but these flushes of the face are usually temporary, the skin is generally pallid. When the affect has continued for some weeks, the countenance often assumes a miserable haggard aspect.

It may come on in children apparently in good health. I have never known the health continue good after the disease even in a mild form has lasted for some time. This then alludes to the classic picture of the paroxysm, the condition accompanying it, is not that which one most commonly meets in the adult patient now. It is certainly a true description of the fit as it occurs in older children, but in those of 6mo. - 2 yr. it is somewhat rare. To get attacks of such severity in them we generally find that the spasm is one of 6 mo. at p199.
of the adductors is less complete but more frequent, so that on crying, swelling &c. there are cry-like inspirations, but not that urgent approach which West depicts. In one of my cases there was constant but incomplete spasm of the adductors, causing a continuous inspiratory difficulty, which however was only heard by careful listening. When it ceased the paroxysm of the facial crampability, which accompanied it, disappeared also. From my very limited experience I should imagine capsular contractions to be limited to the severer types of the disease. In another case the presence of facial crampability made me examine carefully for laryngismus, & I found that although there was frequent & complete loss of breath, no crying sound had ever been heard. In such a case as this the value of facial crampability is very evident. I suppose that in the silent form of laryngismus, the relaxation of the cords is sudden & complete, so that respiration is normal both immediately before & after the attack.

We have already seen how some authors assert that the spasmodic condition is propagated to other parts of the respiratory apparatus & even to distant parts of the body, I have...
Brock believes that he has actually noticed loss of consciousness, thus establishing a close connection between laryngismus and ordinary attacks of stramonium. We have also seen how invariably facial irritability is to be found, except perhaps at the extreme commencement or end of the case.

The dangers of laryngismus are mainly two—the prolongation of the spasm till asphyxia results or the possibility that the limited may become a general convulsion in which the child may die.

Pathology. From the interest excited by laryngismus at the beginning of the century it is not surprising that theories about it account for its occurrence. In fact nearly every one who wrote on the subject at that time started a new pathology, not as a rule with much success, for it was generally based entirely on theoretical observations or very imperfect observation. Even now we are very much in the dark as to what might be of some interest to pass in brief review some of the theories suggested.

Dr. J. Clarke evidently regarded laryngismus as a species of convulsion due to the same causes. Unfortunately he regarded it as p. 92.
all convulsions (including epilepsy) that may result from some great lesion, whatever it may be. He observed that in another place that it is no other than tubercular meningitis, but he thought there were lesser degrees of it which went unrecognized. He says "a long and very attentive consideration of this kind of convulsion has led the writer to conclude that in every case of convulsion there is an enfeebled cause whether it may be the enfeebled cause whatever it may be. The brain is organically affected, either directly or indirectly. Directly, when convulsions arise from phrenitis, hydrocephalus, or the sudden retiring of extraneous pus, or of inflammation of the eyelids or ears! or when they are occasioned by an overtasked stomach, or by indigestion; by perforation or inflammation or suppuration of the ears of the pericardium; by glandular or other humours pressing on the large vessels leading to the lower extremities; or when they take place in the progress of infantile fever or scarlatina. "No one can doubt that in phrenitis, from the very character of
the disease the brain must be liable to pressure in consequence of the greater influx of blood into it by the cerebral cerebral arteries. The skull cannot expand at the resistance of the brain becomes therefore compressed between the blood and the bone.

This position I have seemed to be this.

Laryngismus is a convulsion. Convulsions are always due to some organic cause, chiefly phrenitis. Phrenitis is accompanied with turgescence of cerebral vessels compressing the brain. The cause of laryngismus will therefore be found in this vascular turgescence.

Perhaps the only fact of the above with which we should now agree is the statement that "laryngismus is a convulsion." I give the next expression more on account of its quaintness and oddity than from its scientific value. "It is most probable that if the diet of children were perfectly natural, if their heads were not kept artificially too warm, they would not suffer as they do during dentition. But so long as the present practice of managing children shall prevail, the blood will be increased in the head, increased inflammation of the gums will be produced during dentition or fulness of the vessels of the head. whence in many cases, convulsions will be produced."

The next but for... his enlarged thymus theory. It has never met with much support. In the light of... pathological experience. To see it... for 20 years attached to a hospital... large number of children came, he never once saw a thymus large enough to give rise to the accidents. Besides, its enlargement could cause constant dyspnoea through pressure on the trachea. And if supposed to press on the recurrent laryngeal it would of necessity press first on the trachea, causing more or less atonic or dyspnoea. Finally, no enlarged thymus is found in laryngismus, if enlarged it is not necessarily accompanied with laryngismus. Could anything be more convincing?

It is recognized that the constitution... prone to the disease... that the complaint arose from causes... in its situation. In essence, some seated in the chest, some in the mouth or gums, some on the surface of the head, some in the interior of the cranium, he thought he found the connecting link in the enlarged glands of the neck ot thymus.

He shows that these glands do not mechanically obstruct the air tubes, the vessels, or the lymphatics, they must therefore press on the nerves. In this the most critical part of his argument he comes to a fact, for in order to arrive at such a conclusion he must premise that the enlarged glands are the cause of the laryngismus, whereas that is the final conclusion he is endeavoring to prove. He then goes on to show that if there be no enlarged glands in the neck, the bronchial glands may be enlarged & press on the recurrent laryngeal or the par vagum itself may be implicated. The superior laryngeal are not implicated "as supplying the closing muscles of the larynx," so that the lining membrane of the upper edge of surface of that chink. The pressure must therefore be on the par vagum or recurrent. In 19 cases out of 20 he asserts that these enlarged glands have been found near the recurrents. It be conceded that the symptoms are due to partial paralysis of the muscles of the glottis. MacLell Wall says that innumerable cases have occurred in which no enlarged glands could be found in any part of the course of the vagus. That is a crushing argument against "dysfunction of nervous system".
the universality of Dr's theory. He says again, "pressure on the vagus tends to produce paralysis, causing partial but constant closure of the larynx, with paralysis of the interior part of vagus, congestion of lungs, paralysis of cardiac," etc. "In the light of our comparatively recent acquired knowledge of laryngeal paralysis, this argument of Mr. Hall's is still sound. Pressure on one vagus would at first produce paralysis of the abductors on the same side; it only rarely on the opposite; that on the recurrent laryngeal would produce paralysis of abductors on one side only, for it contains no afferent fibres. This paralysis of course be constant until indeed, the process has been longer continued, when the abductors also would become paralyzed and the cord assume the cadaveric position.

It is thus apparent that simple paralysis can in no way account for the laryngeal symptoms of laryngismus. Much less can it account for the capo-pedal contractions. But are enlarged glands to be held quite free from all responsibility in the causation of laryngismus? We have already seen that Brodush was unable to get a history of neckles in 14 of his 34 cases of laryngismus;
to be accounts for the disease in these cases by supposing them due to worry of the mediastinal branches of the vagus by various enlargements of the mediastinal glands. These be considered powerless of themselves to set the disease a-going — the individual prostration has always to be superadded. Something of the same kind (i.e. as large yums occurs in the course of pneumothorax) plane". Blake as a matter of fact describes a well marked case complicating pleurisy. He also says "upon some occasions I have had reason strongly to suspect that simple bronchitis has by contiguous irritation caused enlargement of bronchial glands & the rendered the original disease more intractable & occasioned the cotton inspirations." Marshall Hall also says that if the contingency of enlarged glands has any share in the causation of the disease, it is as an incident excitator serve it not as a mere motor. This view of the relation of enlarged glands to large yums seems not at all unreasonable. Their frequent presence cannot be denied & the worrying action on the terminal fili of the vagus very probable. And seeing how often necks is complicated
with bronchitis & bronchopneumonia &
these with enlarged mediastinal glands,
one may make use of that theory in
accounting for some of the cases in which
necks is a prominent feature.
I see that Sutten* says that neck &
hysteria as a cause of spasm of the gullet,
in adults, is stimulation of the organ or
recurrent laryngeal by tumors or aneurisms.
The pressure is not great enough to cause
paralysis; it is also not constant, but
influenced by circumstances especially position.
The instance a case of forcible in which
the left lobe was much hypertrophied
& spasm occurred whenever the patient
lay on the left side. From all this
it seems possible that enlarged gland
in various ways may play a more important
part in the causation of laryngismus than
most of our recent authors are prepared to admit.
(8) Marshall Hall was not clear in applying
his reflex theory to the elucidation of
the disease & it was indeed a most important
advance upon previous knowledge. He
arranged the reflex arc in the following
schematic form:

2. MacBird's Trans. p. 171
Excitó

Terpal
Pneumogastro
Spinal

Centró
Medulla Recurrente Rapida

Instó
Intestinó
Dorsalenstrony

In his view therefore gastro-intestinal disorders or dental irritation play the all important part in the causation. He says, "I have never seen measures suggested by this view of the causes when early effectually enforced fail in remedying the disease." There then was a theory which not only explained the cause of the disease, but put its treatment upon a distinct basis. Its importance few will deny; its universal application is more doubtful. However, I do not think that we believe that the disease was always dental, but that it originated occasionally in the centres themselves. We have little difficulty in defending the theory which regards the condition as one of organic causes pointed to the obviously spasmodic nature of the affection and its frequent association with a relation to other cerebral affections, e.g., atypical contractions, convulsions, epilepsy.

2. Laënnec then propounded his cranial-bone theory, which supposes that "Laryngismus" is "Der weiche Hirnteil" 1843.
always associated with craniopharyngeal, case which allows of pressure on the brain. There is no such association. (5) Dr. Hood was struck with the connection between large heads and enlarged livers. He suggested a mechanical cause, ascribing the nervous affection to an impediment to the descent of the diaphragm. Whether he reject the mechanical theory seems to strike that fact here may be an important element in the causation, by impairing nutrition generally. Now the liver and spleen are often frequently pressed down in sickly by the characteristic contraction of the thoracic pia, due to an account of this an enlarged liver has once considered one of the signs of sickness. Thomasian admits that he had previously made a mistake in supposing that hypertrophy of the liver occurred in sickness & says “it is therefore a mistake to suppose that there is hypertrophy of the liver in sickness, whereas the erroneous belief is so common that “large livers” is a synonym for liver with a sickly child. I think therefore that Hood’s enlarged livers were probably not large livers at all, but only depresed in” "Clinical Medicine" vol v. p. 57, "On selected parts of nervous irritation" 1857.
by partial contraction of the cheek.

As some time before the publication of Dr. Rush's monograph "Rush's Philadelphia Thoughts," he wrote a convulsive theory to explain the occurrence of laryngismus. This is the first thing which has been able to discover on the subject so far as it is known, which is generally not held to be a spasmic nature, its association with the evidence of the spasmic character of the extension of the other part of the respiratorv apparatus, namely, the chest, all points which combine so well. But if so, why should the convulsion often only affect the laryngeal angle or those at times for the flexion of the arms and legs? The laryngi Jackson a paper to this effect, and made the following very pertinent remarks: Not only is rapid development and differentiation of the various centers in the brain found, accompanied with a corresponding instability, but the various nerve centers are not isolated to each other in the infant as in the adult, or partial convulsion such as is seen in laryngismus points to an imperfect union of different sections of the nervous system. And the most delicate spells are motor acts are thus performed by the larynx in phonation, by the hands as a prehensile organ, or perhaps the foot in walking.

"Reynolds' System Med. vol 2 p. 220"
It does not seem remarkable then that these centers, which are undergoing the greatest differentiation, should be those which are peculiarly liable to limited convulsions or that their order of disturbance should be larynx, hands, feet.

But why it may be asked do we get spasm of the adductors and not abductors of the cords? The answer to this seems to be that the adductors are concerned solely in the regulation of the inspiratory and expiratory processes in the larynx, by antagonising the action of the adductors whose function is chiefly that of phonation. This at any rate is the view of Lémon who regards the larynx as something interpolated on the organ of respiration in the production of the voice. He believes this, because an experienced laryngologist may observe in a patient at ease, that the cords remain motionless or nearly so, during normal respiration. According to this view the adductors would be concerned in phonation & the abductors in antagonising their action & allowing of respiration. The abductors thus constitute a mechanism for the primary automatic movements of respiration. They are therefore seldom & though undoubtedly represented in
the higher brain have their chief centre in the medulla. They are therefore little influenced by the various cerebral conditions. But the functions of the adductor corresponds to a "defended primary automatic movement" (Bastian) or what Hart by prefers to call it a "secondary automatic movements". Such are under the control of the higher cerebral centres & therefore little & become changed with them. Thus in infancy during the existence of the convulsive cramps, spasm of the adductor occurs at the same time as other evidences of the a disorder of the higher centres of the brain. In older children we have in sobbing evidence that the adductor centre is easily influenced by emotion. In adult life we find the adductor muscle, reflected subject & with spasm & paralysis, which plainly point to the instability of the centre. Both are symptoms of that condition which generally goes by the name "hysteria", but the spasm (the hysterical strangulation of the brain) is much the rarer. There is extreme difficulty in treating, terminated perhaps by a cramp-like sound & comparable with the spasm induced by the presence of foreign body in the larynx, or indeed with laryngeal spasm itself.
Many neurasthenes, who do not for the length of time experience actual hysterical symptomation, often experience a catch in the throat under emotional circumstances, and this again is nothing more than a slight spasm, the adductor centre being all through life in peculiar health, to be functioning in the way of functionally affected, rather than a spasm or paralysis. But when we look at the more phlegmatic centre of the adductors we find it never affected either in the way of causing paralysis or spasm from functional causes. In fact, the only well-authenticated case of spasm of the adductors on record is one described by Dr. Pitt in which it accompanied one of the spasms of hydrophobia.

As regards to the irregular contractions, we find that they occur in the adult as an hysterical condition under the name of spasm. Dr. Jackson has also pointed out the frequency with which epileptics have commence on the hand. It suggests that the spasm commences in those muscles which are put up to most varied uses, that there are innervated by small cells, which are in a less stable condition than the larger ones.
As regards the causation of the convulsive inspiration. Dr. Chese says, "all breathing is suspended, the infant seems to die rather from syncope than asphyxia. But what seems to arise from the fault itself of large oral spasm is an answering spasm on the part of the diaphragm. A sudden enlargement of the chest cavity is thus made by the descent of the diaphragm, if it is not by a corresponding insufficiency of air, inflating the lungs, an insufficiency enough to overcome the large oral closure, yet not without such resistance, as may give rise to inspiratory stridor. It is this readiness of response on the part of the diaphragm, which gives safety in large spasm." It seems to me much more possible to assign credible causes that just as in epilepsy, from absence, the tonic is succeeded by a convulsive stage i.e. that there is no sudden termination of the fit, so in large fit the cord do not at a sudden assume their proper position to the deep drawn inspiration over its convulsive character & its being drawn through is, as yet, contracted opening. It is not necessary to institute spasm of the diaphragm. Baccardi reports for the convulsive inspiration.
I would therefore regard laryngismus as a convulsive process occurring in a centre of very unstable equilibrium - that for phonation. The convulsion may not be so limited, but may spread to other centres or even become general. It may arise spontaneously as the result of conditions of which we know nothing (except that they bear some relation to the paroxysmic diathesis) or it may be excited by any of the apparent fibre of the vagus & enlarged mucosal glands, or perhaps even (this is much more doubtful) by pressure on the par vagum & enlarged cervical glands. The question whether laryngismus depends on a lesion of the medullary centres or those above, belong to the speculative pathology of convulsions generally, upon which I do not feel competent to speak.

The only difficulty likely to arise is the diagnosis of laryngismus from a received epilepsia. The latter however is eminently, there is constant epilepsy, difficulty increased however on emotion so as to simulate laryngismus, but, it bears no special relationship to mental or climatic conditions. Facial cramp
is absent & there are no capillary contractions.

Progress. Judges from the regimental records, about the progress of the disease does not appear bright. In regimental records reports on mortality from 1857-1866 inclusive.

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In spite however of mortality of 7318 every year the progress is generally favorable. Perhaps the only exception are when the condition has been allowed to drag on untreated for some time or when general convulsions have been superadded to the laryngeal affection. These cases occurring in infants of about 9 years of age in which there are no definite attacks, but a frequent cough under emotion it always responds kindly to treatment. Treatment is very clearly indicated. Careful attention should be bestowed on the casual dietary irregularities rectified. The usual combination of K. monal. Vin. ferr. is as yet without a rival in the treatment of this general chilotic condition. In the way of hygiene, plenty of fresh air should be prescribed during the day and at night a bedroom well ventilated, but free from 'smoke' Mackenzie (cited from) p. cit.
draught. Cold baths with, and rubbings afterwards, every morning have an excellent effect, but it is difficult to get parents to carry it out effectually. To combat the anaemia, toning cordials, solcomt may be used; I have myself found them very useful, prescribed at night, but through consider the same as reliable results, although brilliantly successful at first. The only specific supported in one of 'Mural Mackenzie' as follows:—

14 Moch. frt., Sacch. allies, frt.
Rub. acaciae frt., Fr. Amand. (en mg XX
34 c. of.) The child frequent for 24-36
hours. Alsos recommended Zouch an authority
I have not tried it.

As regards the parasuggest many things are recommended. Mackenzie says 'the little patient should be raised a put in a sitting posture, he should then be slapped on the back, cold water should be dashed on the face, ammonia or strong Aethi acid held before. Of these remedies are all successful the warm bath should be used
a bath till the lower part of the child long should be placed in a bath of
95° F., whilst cold water is dashed on the face. Emetics must be given as soon as there is any evidence of stool, for when

The paroxysm is present, the chief complaint,\textit{\textsuperscript{1}}

The paroxysm is present, the chief complaint, the face turned with a feverish flush, much in vogue in Germany, & one of my patients' mothers finding that drenches stopped the onset of a paroxysm, frequently carried vomiting. It was the best result. Her next morning there was a severe case of laryngismus, with pronounced croupal contraction, in a boy at 3 a.m., with face flushed, pupils dilated, pulse full & bounding, crying into the moment he was touched. Wees were applied to the temples with little effect. He was blest next day by the use of a cold applied to the head. The contraction were much lessened, present condition ameliorated, the paroxysm of dyspnea ceased. In 5 days he was well.\textit{\textsuperscript{2}}

Some cases, in order to put a stop to old recurring attacks, colloidal has also been recommended in some cases; in others, I should have no hesitation in lancing the gums if they looked red & inflamed.
I do not propose to say much about Jetäng, for not only is it a somewhat rare disease, but very little is known about it. Dunez first described it in 1831 in his paper “Observations sur une espèce de Jetäng intermittent” in the archives générales de médecine. Its present name was bestowed on it by Corviius, in 1832, who described a case occurring in a child of 21 mos., who also had laryngismus with swelling on the back of the hands & feet. In 1841, I find Dr. Wells probably describing a case under the heading of “a case of larynx with true anaesthesia.” The following is an abstract of it: W.R. at 10 mos. Died suddenly, with screaming, tenderness of abdomen, inability to pass water, hot feet & ankles, much swollen. Face flushed, sneezing &iffusion of eyes. Laryngismus with capo-pedal contractions.” From Wells' description of the capo-pedal contractions of laryngismus, it is evident that he was acquainted with the disease, and regarded it as only an extreme condition of laryngismus. After describing the character of capo-pedal contractions, he says “at last the state..."Loc. cit. p. 183-2 for cit."
is temporary, but it does not cease on
it occurs simultaneously with attacks of
expiring inspiration, though generally much
exaggerated during the paroxysm. Some-
times a child in whom the expiring inspira-
tion has been heard will awake in the
morning with the hand stiffly flexed
albeit he may not have had any attacks
of difficult breathing during the night.
At this time, though seldom this state will
subsist during sleep, while very often it
is impossible to assign any cause for its
cessation or return. The hands may often
be unflexed by bending the fingers, but
they will resume their former position on
the withdrawal of the force of such attempts
are painful to the child. When the contraction
are but slight, children can still use
their hands but when considerable they
cannot employ them. They sometimes cry
as if the contractions of the muscles was
painful to them. Coupled with these ceph-
opal contractions, the back of the hands
at wrists are sometimes reddened, and
sodic or occasionally there is slight puffiness
along the face. There then is a most
admirable description of tetany as really
learn, little to be added.
Trousseau (Clinical med. Vol. 1, p. 370)
describe the condition as it occurs chiefly in adults, although he says it is not uncommon. The disease is said to occur in children of 1-2 yrs old. The greatest medical authority in fact states that it has held an established position in France for some years, before it was described in England. This is I think explicable on the supposition that it is really in adults an hysterical manifestation, an intermittent hysterical contracure, and it is well known that the French enjoy a much greater field of observation in all the various expressions of hysteria than ourselves. Attention was directed in England to the disease by Wells, who described the case of a boy at 3 yrs. This was quickly followed by descriptions of 3 cases by Broadbent, 3 by Ritchie, a remarkable clear and graphic account of a case by Brown; 3 by Hadson. All these however except those specially mentioned occurred in adults. But Abercrombie made a most valuable addition to our knowledge on the subject, as it occurs in young children, in his doctoral thesis, in 1880. Since that I have no other record of a case.

The purifying causes of tetany are as we should expect the same as those for laryngismus, viz: neckets + to a lesser degree an hereditary or nutritic predisposition. 

Perhaps we may add reason also.

If there were so many cases all were neckets, Moros's case had enlarged ankles similar to the achritis case, and had no mention of neckets in his case, and says the boy was "remarkably free from muscular".

Trousseau says of one of his patients at 21 mos that it was of weakly constitution, suffering from ulcerative stomatitis. Here was another neckets in a case of my own. It is not easy to judge from so few cases, how far hereditary nervous predisposition is responsible for its occurrence, but it is very much less so than neckets. The season at which tetany is generally found in young children, as we have already found in laryngismus, corresponds with the cold bleak months of the year.

The main exciting causes are partly intestinal. Of course the inevitable coaction of neckets enters, but we have sufficiently discussed that before. In Trousseau's opinion the real exciting cause is diarrhoea, for not only is it generally present at the
The four cases, of which I have already referred as having seen them lately, all came S St. Ormond St within a fortnight. They occurred just at the time when the cold, dry, frosty days of the beginning of March suddenly gave place to a warm, damp atmosphere.
commencement of the attack, but he
has noticed tetany especially after choler
& typhoid. According to a certain
entirely confirms this for half of his
cases had diarrhoea at the commence-
ment & 3 had constipation. Hence
describe a typical case of tetany
following severe irritation. "Child
at 5 mo., said to have cried from birth,
before each act of micturition. Had a
fit 2 weeks ago followed in a week by
another. Since first attack toes have
remained in plantar flexion; after the
second, the fingers & knee joints were
similarly affected; attempts at extension
very difficult. Though 2 weeks milder,
very rapid with impaired mobility of legs.
Nine acid convulsions found in 24 hrs.
for 3 wks. Purpura spleno occurred just
after the convulsions. A week later, after
keen arrow bran meal, & discharge of
3 calculi the contractions diminish less
consistently, but repeated twitchings
occurred in the limbs. Remede of
lower lids, left leg & foot. First purpura
spots. 5 wks. later child quite well.
Treatment. Bron salts & small doses
of iron.
"Diseases of children p. 75"
Symptoms. Capsaicin contractions are the essential feature of the disease. These consist in adduction of thumb, flexion of the fingers, a peculiar flexion of the fingers. The toes are flexed under the sole of the foot strongly arched to the heel drawn up. Sometime, the knee, elbow, and hips participate. Are these contractions always symmetrical? Henoch thinks not, but admits the exceptions very few. It is added that such a condition should make us suspect a cerebral lesion, especially tubercle. These capsaicin contractions are paroxysmal at first, but may become more or less constant, in fact, Abercrombie thinks there are no definite intermissions, but occasional "emissions," which latter always leave sufficient contraction to enable us to diagnose the disease. Henoch says the spasm disappears during sleep which Abercrombie and Bonchak deny. And now we come to a very important point in comparing the history of children with that of adults. Frumceanu says "even the" the patients have been free from contractions, for 24-72 hrs, they are easily induced by compressing the affected part in the direction of the
peripheral nerve trunks, or over the blood vessels, so as to impede the venous or arterial circulation. The contractions cease as soon as the pressure is removed. With remarkable unanimity all authorities agree that this is quite impossible in children. We shall refer to this again. Accompanying these carpopedal contractions is adema of the dorsal aspects of the hands & feet; some also have noticed a puffiness about the eyelids. The former varies considerably in amount from a slight edema to a swelling which makes the skin tense & shining. It is generally more or less proportionate with the amount of the spasm & dies away in the intervals. Not always, however, for in the case I saw recently at Peat D'umont, there was a marked amount of adema, although at that time there were no real carpopedal contractions. Laryngeal sounds seem a very constant symptom; it was noticed in all these cases. In the second case described by Mr. Hall, from the markedly moist state of the face that it is not a necessary feature of the disease is shown. If the fact that in my own case it was wanting from this point of view it is interesting to note.
The second of 3 children. Paternal pauper.

Mother in an asylum.

Never sucked. Fed on cow's milk alone until 6 mos., after that bread &c. 3 attacks of

convulsion when 3 mos. old.

Doesn't walk or talk. Has 16 teeth. Fontanelle not closed, measures alt. 1 in x 1 in.

Hips beaded. Forehead prominent. Chest--

Tendy to collapse at sides.

Facial irritability. Never combed or left alone.

Considerable swelling on dorsum of hands & feet. These are no capo-pedal contractions now, but I the mother asserted that the toes had been bent to and the soles, on top, for 3 mos.

The fingers at the same time were strongly clenched, but the thumb stood out stiff

straight outside them. No history of diarhen.

I have not seen the child since.

We have already seen how constantly facial irritability is to be obtained in this disease.

Such then are the main symptoms of tetany; how closely it is allied to laryngism is

at once apparent. Many laryngism patients have with the spasm of the adductors of the

larynx, capo-pedal contractions as well; it

nearly all the subjects of tetany have laryngism. But as laryngism may

be unaccompanied with the capo-pedal contractions, so the capo-pedal contractions
Supposed condition had been

and then after all evidence of the

on the boy's eleven feet for a

considered until that of the coffee-pot

in that case, this would be

other hand, without it
may exist apart from carbuncles. Between the two, facial eritabiliity forms a connecting link, for as far as we know at present it is invariably present in both.

Is the tetany as it occurs in infants of the same nature as that which is found in adults? I think not. There are many points about the tetany as described by Arnaean, suggesting its hysterical or quasi-hysterical origin. It occurs almost solely in women (whereas in children males are most frequently affected); at a time when such condition might be expected—during the premenstruum; more frequently among the mobile French than our own sympathetic sisters. M. J. Simon describes an extraordinary outbreak of tetany which occurred in a girls' school at Fontilly in 1876. Some 28 cases occurred in the course of 2 or 3 weeks, but none took place in a boys' school situated hardly 40 miles away. It is impossible to believe that these for the most part were not due to mineral of an hysterical nature.

A lesser degree of the same thing is asked by Buggant, who in describing a

"Practitioner July 1877 p. 11.

Pope's medical 1876. p. 833."
case of tetany says incidentally that
"after hands got bad", one of her schoolfellows
was affected in a similar manner, but
only for one evening. The inability to
make the spasm return if pressure on
the nerves & circulatory trunks, upon which
Trousseau so much insists, marks an
important difference, between the tetany
of adults & that of infants. I am
inclined therefore to believe that the two
are essentially different in their mode of
origin & indeed bear very much the same
relationship to each other as is generally
recognized to exist between large & small
arteries & the large & small spasm of genital
adults.

What then is the nature of tetany? It
is surely not rheumatic, as Trousseau
supposed the case in his adult tetany.
Bugg and adopting the central origin of the
disease, apply Stephen's Jackson's theory
of central & cerebellar antagonism with
some success. Roughly, according to this
view, the cerebellar intervention is from the special
p.e. is chiefly concerned in
the performance of one most voluntary
acts, whereas that of cerebellar intervention
is from the general & the special, &
"etc. etc."
This entirely agrees with the opinion of those who are as confident that the two conditions are entirely distinct, that he calls the latter of infants “idiotic contractures”.

“Disease of children. p. 74.”
concerned therefore in the execution of
our automatic actions, for the most part.
If now we take any the cerebral
influence, the cerebellar base is all in
our way to such a novelty and sense
as is seen in tetany. But its story
has not the universal application,
which its author once asserted. With
Mr. Bennett clearly at a
recent meeting of the Medical Society
(March 1 86) that it does not satisfactorily
account for later injuries to joints and
with force that if it can be divided
completely, as in transverse myelitis,
spastic symptoms subsequently develop, all the
all communication between the cerebellum to
end has been cut off.

It seems unable to determine whether
the disease is central or peripheral, i.e.
"extending uniformly along the spinal or
motor nerves". It must not be forgotten in forming a satisfactory explanation
of the disease, that one must account
not only for the cephalopodal apraxia, but
the dysphonia also, which is an almost
invariable concomitant, having the same
state of onset in a rule, increasing during
the same to diminish or disappearing.

"Reman's Cyclopaedia" Page 85.
during the permission. In peripheral disease cases, possibly accounts for the widespread occurrence of symptoms - the cranial symptoms, the laryngealismus, the facial and limbability, or the occasional occurrence of general convulsions. But we have already found reason to believe that laryngeal convulsions are limited convulsions, if convulsions be cortical in their origin as we believe (that we have no ventricle to discuss) M. Brauer's observation be correct that the phrenic centric is situated in the prefrontal region, near to the arm and leg centres, then a limited convulsion of the phrenic centric overrunning into the neighbouring centres for the arm and leg (in the converse) would intelligently account for the two main symptoms of the occasional occurrence of general convulsions.

I have a patient at Moorfield's Hospital, which strongly suggests the central or cortical origin of laryngeal convulsions. It was a boy of seven, who came to a very remarkable shock to his laryngeal convulsive very suddenly as an infant. He was markedly cachectic when I saw him, with prominent forehead and very healed ribs; he was not able to walk or talk till 5 years old.

He was the subject of occasional fits during section 1 up to the age 27 years, which always began with an aura, consisting of the familiar assumption of the characteristic position of the hands and feet, seen during his attack of tetany. This statement was volunteered by the witness in no way the result of leading questions. I would therefore regard tetany as an abortive seizure, a peculiar form of convulsive spasm, unattended by loss of consciousness, of a limited nature, but occasionally becoming general, when unconsciousness results.

The edema should never admit of any difficulty. The contraction, large at first, and facial irritability, despite constipation, constitute a disease quite unmistakable. It should be remembered that the edema, if wanting in ankles, persists for some time after the disappearance of the spasm, which would put us on the track if only the large issues remained.

The prognosis is generally good, although Alexander describes a fatal case, the P.M. which is the way recorded no gase changes.

The treatment is that for laryngismus, etc.
Fresh air, oil mouth was taken first (for the nekter), bromide (for the tumouric tendency), but in addition chloral hydrochloric
in quinsil to relieve the pain, which is sometimes excessive + ice + water bandage.

The spasm of calf was contracted for 3 weeks on account of the first relief, he was able to afford
by means of them in the cramps of choler.