Tetanus

Its Varieties, Symptoms, Pathology and Treatment

Henry R. Reid

Mound Place
Of all the Spasmodic Diseases which the medical man is called upon to meet, the most terrible and pathologically puzzling is least known. Tetanus (from ντέτανος, oritch) occupies the first rank.

Tetanus is defined by catarrh, fever, or feverishness and extensive contraction of the muscles of voluntary motion attended with tension and extreme rigidity of the parts affected.

In the following pages I shall first enumerate the varieties, symptoms, and causes of the disease, then the pathology and treatment. Four varieties of Tetanus have been described.

1. Tetanus, when its effect are confined to the muscles of the throat or jaw.

2. Tetanus, when a great number of muscles are involved, but the trunk retains its ordinary strength.

3. Empysemothornus, when the body is bent forward.

4. Episthenus, when the muscles of the back are principally affected. To these four varieties, some authors add a fifth, which is a combination of these, characterized by the body being bent to one side, (Tetanus, latrocalis, or Severeus) (the different terms applied to the affection-
As in simple or acute paralytic diseases, but only
the seat and various depri of the brain complex,
this may be naturally a particular of the.
Another important division of
Tetanus is into acute and chronic. The former
are dangerous and usually prove fatal.
While the latter is accounted its slower approach.

Tetanus is also divided into traumatic or that
injuring from wounds (sometimes called amyloid).

Which case generally leads to the loss of the firm
and into insidious or that proceeding from other
causes. Having enumerated the divisions,
I shall now go on to the consideration of the
symptoms presented by each.

Tetanus, as its name implies, is characterized
by violent and acute, painful spasmodic
contractions of the muscles of voluntary motion.

I am now considering traumatic tetanus
as form in which the disease most frequently
occurs. The muscles most affected being
those of the neck, jaw and face.

In some cases, the disease comes on soon after the
accident of the injury. The most rapid cases
are considered as those coming under the description
(9)

of Prof. Robinson of Edinburgh, who was once a stahl, when a hypodermic injected his arm by the
fracture of a china dish,

She was seized with convulsions almost instantly, and died with delirium symptoms in a quarter
by an hour. Such a case as this, known instances
of the usual cause of delirium, and probably (Spy
Dr. Park) was mainly caused by fright.

In the case of Miss Ancester's, Appearance (An
Anesthesia, when it begins slowly and gradually. The feeling
is first noticed at the back of the neck. This symptom
increases and causes an unpleasant sensation, attended
with intense pain. The muscles
of the neck become stiff to such a degree, that the
With the family died, accompanying the stiffness of the
neck there is also a peculiar sensation, of a tingling
or prickling; the tongue, and a difficulty of
articulation. There is also an acute pain at the
lower part of the sternum, stretching down the
back, this symptom in agitation caused by cramps of the
diaphragm. The arm extends to the muscles
of the neck. The abdominal muscles are also
powerfully contracted and feels hard and
tense as a board. By the relaxing these
contractions the Recti muscles have been stretched
(4) Lactation; in fact, it afflicts all the muscles—fingers of the hand, the large muscles of the leg and arm—fascia of the back and even the muscles of the tongue. When the disease reaches its last stage, the patient muscles of the head and trunk contract insomuch that they counteract the force of the extensors and hold them paralyzing at unmovable position. This state the term tetanus more properly denotes. The muscles of the arm, often remaining unaffected, as all the other are subject to frequent occurrence of spasms, the paroxysms taking place every ten or fifteen minutes, and generally lasting for twenty or thirty minutes at a time. And it has been observed, that the period

The natural relation of the paroxysms requires in the patients danger. Dr. Whitaker remarks that the spasms are sometimes relaxed during sleep. Dr. Meigs also recorded a case of tetanus occurring in a boy.

He says that on one day on visiting a nephew and sign alseep and all his muscles relaxed the morning of the log and immediately all the muscles became rigid—left two-thirds of the time relaxed, and again on being a second time massed relaxed.
Wrist let your arms be in a resting position. In many cases, building the muscles of the back can become involved. I say affected as to overcome the toxin in the body, the consequence being that the body is in the shape of a arch, sitting on the head and pulling the arm. In this form of tetanus, the term of opisthotonos has been applied. At times the teeth, the nasal, temporal and internal pterygoid muscles, which were before affected, become now contract with increased force, in an attempt to maintain the lower jaw in inseparable contact with the upper. This last state which has been considered as a particular affection under the name of girasse or lock jaw, began convulsions. The symptoms of tetanus which in some individuals most cases are limited to such an affection of the jaw. In some few cases, the head is bent forwards. The head resting on the knees and the patient resembling a hale. This forms the complaint in classical literature. In a low circle comparatively rare; Blegen notes how often it was frequent in Egypt. The term opisthotonos, the the latter term more generally fatal. It may also mention the erroneous opinion entertained by Lysag. Concerning the contraction
by the muscle of the face cheek. He supposed that the instant extension of the trachea of the neck and the gristle manner in which the head is thrown back, caused strong compression by the Trachea and Pharynx. It is evident however this result could not occur since the compression would also at once destroy the patient, or cause paralysis of the muscles supplied with nerves from the cord, and immediately arrest previous contractions. Thin mixture and by dilatation takes the form of vitious denominated pleurisy when the body is bent to one side.

All these varieties occur in the inability of modifications of the same disease. The countenance is pale and contracted: the mastoid and veins appear together with others concerned in the Edematous and the deltoid and retro muscle are most violently contracted so that the shoulders are strongly raised forward, and the arms with stretched out or drawn across the body but the wrists and fingers seem not to be affected. In a few minutes the permiph eral pulse is not felt entirely, but the throat...
Such a collapse of rigidity remains as persistent after its commencement as when it is attempted by another person. The patient's breathing may, for some time, be shallow and violent, preceded by the pulse is small, fulminating and irregular. The face is sometimes pale in its natural red, often flushed. And the whole countenance is pervaded by the most acute distress.

The patient for the most part remains in a state as much as possible and avoid all attempts at recovery, trembling or any kind of motion, all of which the effort to make a return of the hemorrhage or of any other disease. In extreme cases, there are hardly any of the voluntary muscles that remain in the natural state. The face and eyes are distended; the tongue is elevated out between the teeth and often abundantly lubricated from their closing at the same moment. Even the small muscles of the face are palpable, of the general phrenmination, to generally forwards the system. The countenance becomes contracted, the general sweat, heat, or, perspiration, and liquefied, and a pale blood from.
Pneumonoultramicroscopicsilicovolcanoconiosis. Icterus in these individuals is perhaps the most painful disease which can affect the human frame. Its exquisite agony of pain would scarcely be compatible with life. Dust is not occasionally assayed by their lungs in perfect equilibrium, which occur. Intensive and extensive examinations usually finish the tragedy, and relieve the unhappy victim from all his misery, still too exhausted to admit of final bodily termination. Allusions of often ensuing poisons are blended into a happy insensibility after the suffering and death. The patient's death, which is then preceded by a general relaxation of the muscles, such as the symptoms which peculiarly belong to yellow jaundice, and which, perhaps, the most remarkable circumstance attending this, is hardly any function is primarily affected besides muscular motion. The sight, and appetite are perfectly preserved, the intellectual functions are undisturbed, and the natural functions proceed in their usual course. Eumen Keister, an essential part common attendant to the next...
In the first stage, when the spasms are confined to a few muscles, the pulse is not affected. It becomes accelerated only when the spasmodic action can accelerate the wind. In consequence, as it would appear by the mechanical effect produced on the blood, by the contraction of the muscles, which hurry on the circulation and thrust the blood upon the heart in larger quantities than usual, unless the pulse contracted, quiet, and regular. Air aspirations hurried from the same cause, and the temperature of the body increased in the same proportion. The symptoms are not the effect of fever, appears from the concretion of the blood, which is noticed to be of a lower texture than nature, and from the presence of the buffy coat. This fact is particularly noticed by Dr. Blepharo and Salmen. On some occasions including the disorder, very violent. The arterial action is increased and a while state prevails. They appear to take place more frequently when the animal has originated from cold, than when elevated by heat. The skin is at first natural, but—
Disease advances is covered by a cold dew.
The tongue is always moist, sticking
Adhering to Place ear; in the disease, the breath
In the proper places. The urine is sometimes voided
With great pain and difficulty; the stool, on
Found sometimes to be obstinately constipated,
Partly perhaps owing to the quantity of sperm
Regurgitated into the intestinal canal
It is mentioned by Leclerc that a military
Eruption has in some cases appeared on the
Skin; but this has perplexed about whether this
Was a symptom of the disease or the effect of a
Certain treatment.
I conclude what I have already concerning
The symptoms of tetanus, and shall now pass
to the consideration of the various causes
"In the nature and disagreeable quality of Tetanus, which include a proneness, activity and irritability in the muscular part of the body."
(Dr. Rush)
I shall briefly enumerate without discriminating
Them, as pointing out when they act
Singly, or when they act in conjunction
With each other.
It occurs in various parts of the body, but without exception the most frequent causes of such abrasions. There is usually no outward sign of the effect of a wound, which partially deserved a longer name; but we now know the consequence of eleven which affect the body in a superficial manner.

The following is a list of such wounds and lesions, which are known to induce the diseases:

1st. Wound in the bridges the foot, and part of the head, under the nails, by cutting nails, and pulling them by force.

2nd. Amputations and fracture of limbs.
3rd. Cut from horns.
4th. Snap nets.
5th. Extracting a tooth and inserting a new tooth.
6th. Interposing a Scheiner.
7th. Mitigation of the purulent.
8th. Rounding the tongue.
9th. Injury which is done to the foot, by foot.
10th. Injury which is sometimes done to the foot.
11th. Making it (or it is called) in the ring.
12th. Letting a hair or corn too closely.
13th. Wearing of shoes so tight as to break the skin of the toes.
13th, Throat, not vein. Then the lightest dressing, upon WAVENHEAD
14th. Wal King upon upon a broken limb.
16th. Cutting the umbilical cord in newborn infants.
17th. The stroke of a whip upon the arm, which only
No Right Arm.

Between the time, nobody in their infancy or childhood,
and the time in which a disease makes its appearance.

Dr. Rush mentions the case of a man who had been
swimming in the sea, an hour after it received. By saying,
Dr. Banks mentions the case of another, from
running nails into the foot, which did not depart till
six weeks after. In most cases, the disease becomes, after
a total absence of pain and inflammation, in very
moderate signs of them, and in many the wounds have
entirely healed, before any of the symptoms of the disease
make their appearance. Wounds and lesions in most
cases, after the wound, is dead the body; hence its greatest injury from near
cause, in warm than in cold climates. And warm
Dew in cold climates, in northern countries
Secondly, for a clean bed, is, Cold Applied
suddenly & directly, after it has been out intermin.
heat. Of this Dr. Fuller mentions many instances, in his treatise upon epidemic effects in India. It was most commonly induced by exposure, after a warm day, to a draft from the sea breeze. In one part of that country, Dr. Fuller says, the heat, that was always found dead next morning, if the cooper were not placed as a certain height above the surface of the earth, it was only in the winter and in the evening and in the morning. In Philadelphia, on the evening of a day, in which the mercury in Fahrenheit's thermometer stood at 90°, Mr. Balm, who is a man of business, having been relieved by exposure, was brought without a night cap, after having his head. Dr. Balm, the other, that he had known a draught of cold water produce, in a man who was in a freezing state.

The cold air was certainly good on, in disease, especially those who were the body of the tons. A cancer

The stiff neck, which is sometimes called, after exposure to a streaming cold, air from an open window, in such cases, tendency to lock after, or a stiff and partial tetanus.

Stems away from this cause.

Firstly, certain poisonous vegetables. Here are several cases recorded of it being produced by the
Datura stramonium or jimson weed.

Secondly, it is sometimes a symptom of the bilious
Assisting and irritating poison. This is said to occur more frequently in those living near
The island of Malta, than in any other part of the world.

Lastly, it is a symptom of the malignant
State of some which is very contrary. Living in a
Child animal, also by hysteria and fear.

Incidentally, the grating voice produced by being
with a horse before a master's table excited it in a
Younger. While he was waiting upon his master's table
Eighty, certain emotions of the mind.

From there, it is in the case of a man
mentioned by Dr. Rush. He had been previously
by great danger, but violent winds. That man
caused his heart to be clogged, and to occur
by great agitation of mind, occasioned by being
a girl she had seen.

Fear excited it in a soldier. Who became
down to the earth. Upon being pardoned he
was unable to dress, from a sudden attack of tetanus.
Partial or sometimes general to this disease. It must be kept in mind that all the causes and exciting causes act with more or less intensity and force in proportion to the greater or lesser degree of fatigue which have preceded them. Under which the nervous system seems prone to assume the morbid impressions which give to the disease whatever characteristics it is said to bear. It is not known whether diseases of the nervous system, which are not brought on by overmuch excitement, are equally dependent upon excitations produced upon the part of the mind, and reflected upon the machinery of the nervous system or whether these produce morbid excitement or disease.

The result is disease, whether the exciting cause act upon the indigestion, or upon the mind by strong emotions. Alike communicated to the muscles, which being primarily in a state of excitation and marked irritability, are easily thrown into a state of pharmacological action, and it is believed that from muscles which are more generally
Some authors have indeed mentioned Aphorism II, section 6, as occurring in these parts but they were doubtless the effects of the disease or by the remedies employed for its relief.
in a state of alteration (as from the anatomy) are the first affected by the morbid action. the Agenor in decent orders are more subject to the disease than white people, this may perhaps be owing to the irritability of nerveous systems.

Having enumerated the causes of the disease I am come to the consideration of the pathology. it is to be regretted that notwithstanding the careful investigations by many scientific men, the pathology of insanity is not thoroughly understood.

The inspection of patients living of this disease tends at first little to enlighten upon this fatal disorder. Most of the seductions that can be discover being a mystical character. By observing the phenomena of the disease I think we can now, first the thoracic and abdominal viscera are not primarily affected, and that the disease doen not take its rise in the nervous substance supplying these organs, for when it is, these organs must immediately suffer on diseased action.

Hence we may conclude that the ganglionic system is not the seat of the disease. The same argument is applicable to the cerebral system, considering the intellectual powers and the fine senses.
which generally remain unimpaired till the last.

Sometimes slight affections are found within the
Cranium; but in general no morbid appearance
whatever can be found within the brain.

Cranium. Then in all instances, let your inflam-
matory appearance in the Oesophagus, and the
Villon Coat of the Stomach about the Cardia,
there are circumstances (Lev. & Reid) which,
even then, that these systems (Splanchnic and Cerebral)
have rather a tendency to oppose the disease,
than to participate in its effects.

Thus we observe, that the tongue, which is the principal
organ of taste, retains its power of motion, until
the Cerebral system becomes affected.

Now, we know that the Glandular Nerve is a
Branch of the First pair, which supplies both
the Cerebral systems, while the heart supplies
Acknowledged to the those which supply the
Muscular parts of that organ, and are found to
arise from the Ganglia in parts of the Corpora
Pyramidalia, and to pass out of the Skull at the
Anterior Condylar foramina.

The also observe, that the principal organs of touch
are in the hands. The nerves of touch should
then in this situation, be most affected by the disease.
And this, indeed, to the first case, that upon extirpating remaining for a long time symptoms from the disease; since the dangers, often continuing till the end. This opposition to cerebral, to the action of the spinal system, is various, in every plain, born at the commencement of the affection, when in a mild state. For the disease, on most frequent, on the patients inclining to sleep. Having thus explained how these two systems do not afflict the theory of the disease, we must conclude, that in all probability, it rests entirely in the spinal canal.

Every circumstance of the disease confirms to substantiate this idea. Then let us observe that the only parts of the body which are engaged in the disease, from the commencement, are the muscles; but upon inspection there is not the slightest sign of the disease in their structure. Some autors, however, observe that the muscles do not show any symptoms of disease, and are therefore not involved in the disease. We know that they are, which are distributed to their parts, and from whence all proper stimuli, to muscular action, in the living body, illus.
terse their origin from the nervous system of the spine. It is, therefore, natural to conclude, in the case of Nupants, which are affected by the disease, show no indications of morbid change in post mortem examination. The morbid changes should be looked for in Nupants which afford the stimulus to muscular action;

hence we must look for the origin of the disease in the nervous system of the spine; and hence, explain the causes of death in which the disease had proved fatal.

We have strong arguments in favour of this supposition.

I am aware that many persons on this subject do not consider the spinal system as the seat of the disease, nor as they are understood to mean a treatment, and this is partly their want of knowledge on the subject. They are quite undecided as to when they would place the seat of the malady.

Thus, in the 5th volume of the Medico-Chirurgical Transactions, when Sir James Macgregor, the physician who treated the British Army, during the Peninsular War, wrote to

"In the opinion of one of the most skilled surgeons, the seat of the disease, which was too frequently fatal among the Army, was the spinal cord. It was one of several hundred cases attached, there"
"In few when this disease had made any progress,
in which the cerebral symptoms had, seemed to
have any influence on it."

Yet notwithstanding the numerous opportunities he had,
of investigating the morbid changes resulting from the disease, he terms (as would appear from his
next observation) to have come to no definite conclusion.

As to the treatment or nature of the affection,

The remedies which have been chiefly resorted to,

for the cure of this formidable disease, are—

Sulphur, Mercury, bine, the warm and cold baths,

Chlorodyne, silver nitrate, and digitalis in

Large doses, enlargement of the operative wound and

Amputation of the time."

They have been tried

alone and in various combinations: and I am

obliged to confess, that the whole failed in

almost every case. Acute tumors, which

occurred: the three first have been administered

in unlimited doses, without effect;

An cold, either in the throat, and I

am obliged to confess, that little or no advantage

is to be placed on any of the remedies;

And to reply, that the method of curing

"as yet to be discovered."

The necessity therefore, that in four cases, when he
inquired into the state of Mr. Bowles, the evacuation there not being free, and he proposes, as a question, in investigating the cause, "What is the state of the bowel between the
inception of the injury and the appearance of this
acutest malady?", and in another place he expresses
his opinion that "it relates to the disease should be
looked for in the stomach."

This idea probably suggested itself to him, from
finding flaccidous membranes in the stomach,
presenting a dull and inflammation appearance similar
to that which Dr. Bailey mentions, as occurring in the
pharynx and oesophagus as persons dying of this
disease. The appearance in both cases, however, must
have been the effort and not the cause of the disease.
In some cases published a few years ago by Dr. Dixon,
with respect to the pathology of the same disease,
he says, "I am unable to say anything satisfactory; nor
have the objections then supposed against me
as to allow us to judge, how far it is an essential
connection with such mucous appearance as head
them discovered." Dr. W. has hesitated some
cases, when he says, "A yellow matter,
found in the stomach, and patients, with any
other disease," and asks, is it the concomitant
a symptom of the disease or is it merely
components...
by the quantity exhibited.

Slight allusions to observations by numerous other ancient authors, any which would tend to support the idea that the then state of the article has been

discovered in all climes and at all times.

I shall now go on to the considerations of the method of appearance, as described by some modern authors, which tend to show that the phenomenon is in the original canal.

Dr. Rich gives some valuable information on this subject in his work on Egypt, from which I shall extract one or two lines in full:

In the 23d of February, having occasion to visit about three miles from town, I ascended the

hill, and beheld a scene then on the tops of the pyramids.

The sun seemed to be in a region of the heavens above the town, shone down on the tops of the pyramids, and the sun, when in the western horizon, during the evening season. And that the sun was then set, he went to receive him, when he was grafted, kept long, in the state I saw him. Remaining to receive, or habitation;

Amazed at that the humble abode of the Richmond Surgical Hospital, when the patient's days were numbered and treatment for some or five days, when

It was soon over, with all kinds of symptoms,
And in 86 hours after the first attack, when I did not know, in him again till after he died. On an examination of the body, after death, the viscera of the abdomen and thorax appeared perfectly natural, and the lungs were of the same appearance as in the muscular parts.

The brain appeared healthy in every respect except some increased vascular in its internal membranes. Upon opening however, the cavity of the spine, from the base of the skull, the brain appeared to be a gelatinous substance, deposited in the cellular spaces, investing the dura mater, for the extent of several of the spinal vertebrae.

On removing the nervous mass (with its dura mater entire) from the spine, the brain appeared considerable effusion of blood into the cellular spaces, commingled with the upper cranial and lower cerebral vessels. On lifting up the dura mater, on its anterior surface, in that part the bodies of the vertebras, the nervous mass appeared highly vascular, and the parts of every description remarkably tender.

In the part which was situated opposite the hind brain, the great vessels, the brain appeared a thick substance very hard, resembling the medullary matter of the brain. The leptomeningeal
pia mater, occupying the space about an inch and a half, and covering about half the circumference of the human head. On bending the membrane enclosing it, I could wipe it off, and then could not be the slightest moisture discovered in the pia mater, or any of its vessels.

The only appearance in the nervous substance itself, that I could discern, was a depositing of a more natural, in its cortical and medullary parts.

The intimately circumvallated appearance, by which the extravasation of blood, which have been the subject of investigation, may produce an appearance naturally like one to imagine, that there was a tendency to local injury, which is in some species of animals, may be produced by some Indian poisons.

Then, it seems, that in animals, polluted by disease, by another, by large deposits of phlegm, the cortical and medullary matter in every instance found apparently thickened.

The surrounding tissue, especially the lamina, were dyed with blood; of a bluish color.

The whole was universally diffused with air. But the brain was up indicating some effect, then the presence of the phlegm, and at times,
In some instances, it was perfectly natural.

Then again, the post mortem appearances of the body, by detection, were very different. The discovery of the abdomen and thorax were found nearly in their natural state, as were the effects leading to and from them.

The brain and dura mater, on the contrary, exhibited marks of violent action. In some instances, the expansion of the brain and dura mater was within a few days after the first appearance of the symptoms. The blow, previously alleged, thus can be referred to the many of the ancient writers in their diseases, must have obtained their morbid appearances in the dural canal; and therefore, claimed little advantage from their observations, as they seldom had any influence on their practice.

To illustrate this, mention a case of a young man, who, from a recent fracture of the arm and contusion of the finger, which produced tetanus, died fatally. The brain, examined, revealed the whole spinal cord within, and found the spine sound, except in the cervical portion, where the dura mater was thickened and had evidently run the heel of inflammatory action.

Beneath the dura mater, the spinal cord in the cervical portion was thickened and inflamed for
At the place between one and a-half and two inches. As far as I could determine, the hair at the point which gives origin to 3 is connected with those branches of the cervical plexus which descend and chiefly from the brachial plexus.

In this case and in the one before mentioned, (Dr. Reid) we have good exemplifying the extreme cause of tetanus, the subsequent inflammation, in one carrying the nerve of the foot, and in the other of the ulnæ nerve, being reflected to the spinal origin of those nerves, and then including inflammation and irritation of the spinal portion, followed by softening; but then when the cause of the tetanic symptoms and their field termination, we can have little doubt. The post-mortem appearance presented by the majority of cases of tetanus with, I think, warrant the conclusion, and, in general, the irritation is propagated from the injured part in a reflex action to the spinal connection of the nerve. But then it is followed by another irritation and inflammation of the spinal nervous, and then it lasts with the effects of tetanic effects. This further being more terrible, when we consider, that some time elapsed.
Between the Alps, by the expedition of the Injury, and
Not by the Development of the Pathological

From the medical appearance, clear of various
 centuries, I think the conclusion
laying down the following propositions, regarding
the contumacious pathology of this disease.

That the disease is of an inflammatory nature;
that it is essentially a disorder of the excretory
apparatus; that it results from irritation of a peculiar
kind, affecting that part of the nervous system;
that the exciting cause may be centric—within
the spinal canal itself; that, again, it may be,
and often is, eccentric, situated at the extremity,
or somewhere in the course, of one or more of
the apparent spinal nerves; and that a certain
predisposition in for the most part necessary, under
the body susceptible of the disease, under the
operation of the exciting irritation.

It would also appear that the disease is its
principal seat in the nervous system of the head
or, rather, neck, first commencing in the
membranous structures, that neck; for we can
observe how peculiar characteristic of
membranous inflammation, in the
remarkably: within state, the effect of the fact.
It is evident from dissection, that the nervous
map of the spine, is affected with this disease
with such local injury, as has been described;
and we can at a satisfactory manner account
for many peculiar circumstances, which
occur in the course of the disease; it seems
probable that the various forms the disease is
liable to assume, depend upon the situation
of the spinal cord, when the effusion may
chance to take place. It is much to be regretted
that the pathology of the disease is a subject
"ad use et judice," that it is a disease
essentially commencing in the spinal system,
receiving confirmation from Michael Brown.
Antigens proposed by Dr. Marshall Hall,
which have already furnished a key to
many problems, previously perplexing
pathologists; and which, as I anticipate
the problem of the two distinct nervous
centres: the brain and the spinal cord

I have now to say a few words respecting the
symptoms of the disease which has hitherto
been always most unpersuasive.
Dr. Lincl Chamber of South Carolina State, "But when the disease forms very quickly, and invades the unfortunate limb with the whole train of its mischief, symptoms in a few hours. The danger in proportion to the rapidity of the attack, and the number of patients thus seized generally dies in 26, 36, 48 hours, and very rarely survives the third day. But when the disease is of slower acuteness, and the patient survives till the ninth or eleventh day, the prognosis is much more favorable. The disease less often yields the much more favorable fatal. When arriving from wounds there from any other cause. It is the opinion of most medical men, that, when the disease has once taken a hold, recovery is hopeless in nearly 10, but that if timely measures be taken, it may in some cases be forestalled.

I must proceed to consider the treatment of the wounds. A subject of infinite difficulty, because the disease often blossoms early. Monthly treatment alone in certain instances is not well under the sign...
In other similar cases of uricemia, many plans have occasionally succeeded, and many plans have still more frequently miscarried. The uricemia uricemicmotoptes has been treated by a cementitious plaster one. Hippocrates says, "Uterus supervenientia medicamenta". But this opinion holds good, with very few exceptions, even in the recent age. Hernandez de la monzae a cura, Acute Arthritis. In the person of Dr. Dickson found all the medicament put in Mr. Bungay. Upon these facts, "Thalassemia de la medicamenta," and it is be alleged that the present State of our Knowledge of the disease, daily the uricemia employed, does not lead to a more favorable prognosis, all we know is that the patient himself. The first two or three days, in the generality of cases, he ultimately recovers under the whole treatment, but to what degree, one. Then another. This fortunate result would be attributed, because we have no long certainty to decide. From this great variety of uricemia, uterine supervenientia medicamenta, we should avoid wasting our time in idle speculations, but as one provoked pent, from uricemia, which has taken
considered most efficient in the curing of the disease. I shall briefly mention the various remedies that have been tried and explain what success they have attended these exhibitions.

Opium in a dose from which it would actually expel the worm proved to be derived on account of its analgesic and antispasmodic action, and as the intense pain which in present fetters the system against the action of narcotics, it must exhibit it in very large doses.

Dr. Watson mentions a case of a lady attacked with typhus, who in twenty-one days, administered the morphine, quantity of 40,000 grains of quinine. The lady recovered. Cases occurred in the account of Dr. Mitchell, in the volume, in which an amount of solid opium was taken in divided doses, every ten, for twenty-two days. The patient in the list from to exhibit this case, for then it is sometimes found undigested in the stomach. We may also apply an opium plaster optionally to nux vomica, in this form it is sometimes useful. The intense pain that arises, the remedy from morphine in
The idiopathic and mild forms of the disease, and of little use in the acute forms except as an anodyne. Dr. William Budd, indeed, denies the propriety of giving any opium in this disease. Today, it has long been ascertained that \textbf{morphine} is not only to excite, but to quiet, the motor functions of the spinal cord.

\textbf{Bladdering.} When the disease has once gained access, it is not so readily subsistent. If used with moderation in the beginning, it disease is often removed, by promoting the action of other remedies, and particularly of perspiration. Which can partly do so in clearing the \textbf{urination sensation}. Which can freely to collect on the intestinal cavity. \textbf{Belladonna} is perhaps one of the best \textbf{urination} irks in the disease from its easy administration and its promptitude of action. The \textbf{urination} is much affected by \textbf{turbulent injection}. \textbf{Belladonna} has been using considerable service, in allaying the violent \textbf{urination}, but no case of \textbf{urination} can be described at this time. Of all the \textbf{urination} remedies which have been tried, \textbf{Uranica Indica}, not only, perhaps the highest.
place, particularly in warm climates.

On this subject Prof. Miller remarks:

In the country, its sweep has no parallel to the
injury; and from a fully trained practitioner's
point of view, I can now record three fortunate cases.

Under the care of a trained and experienced
practitioner, the first case was as follows. I can now record three fortunate cases.

Under the care of a trained and experienced
practitioner, the first case was as follows. I can now record three fortunate cases.

Under the care of a trained and experienced
practitioner, the first case was as follows. I can now record three fortunate cases.

Under the care of a trained and experienced
practitioner, the first case was as follows. I can now record three fortunate cases.

Under the care of a trained and experienced
practitioner, the first case was as follows. I can now record three fortunate cases.

Under the care of a trained and experienced
practitioner, the first case was as follows. I can now record threefortunate cases.

Under the care of a trained and experienced
practitioner, the first case was as follows. I can now record three fortunate cases.

Under the care of a trained and experienced
practitioner, the first case was as follows. I can now record three fortunate cases.

Under the care of a trained and experienced
practitioner, the first case was as follows. I can now record three fortunate cases.

Under the care of a trained and experienced
practitioner, the first case was as follows. I can now record three fortunate cases.

Under the care of a trained and experienced
practitioner, the first case was as follows. I can now record three fortunate cases.
The object being to produce and maintain narcosis, judging from the effects of Mercure, in New France, by marked examples of Midazolam, I am inclined to think it is not only possible, but in sufficient quantities to produce its narcotic effects, in the possible.

*Digitales* and *Tobacco* are two medicines, which Hanlin employed not only, in the same principle. Their effects being

when given in large doses, being very similar, great palsy, dizziness, fluttering of the voice, lesional faintness, copious perspiration, extreme alarmed and sometimes vomiting, with that relaxed state of the muscular system which belongs to syncope. But when we come to

consider the influences of these substances, upon voluntary muscles, more particularly

the heart and whenever we reflect the tendency

towards by asthenia, in this disease, which included various the state of course,

in not making lossy* Mercuremies,* particularly in the advanced stage

by the disease, some being argued because,
I have fancied hypodermic : Dr. James McVey
mentions a case in which it caused elevation of
the pressure; and the man afterwards died
apparently from the effects of the remedy.
The toil of the employee's return either to the
form by smoke, in an enclosure of the lair;
by a similar form it is given the effect that
it matched very carefully, and stilled the rep-
A turbine of constant in its operating presence.
lethorform has been tried, and in the we
have no authenticated instance of its cure an-
prising been cured for its agency, it has
Certainly affected temporary relief from one
by the most laxer symptoms.
We learn from the report of Dr. James McVey,
that, after injection, our men and other
autopsia nodos, as well as various alkalis
been tried in our military camps in Spain,
and found ineffectual.
Nurse, however, in large doses, has been
strongly recommended by Hennier et al,
the climate or twenty days or four weeks.
Mr. de Aragon, in eleven days, Aragon
been injected in the corner of the eye
and in the eyelids. Nurse de Aragon then
adjective on than anything else he had tried
Another remedy said to have affected a cure
in Tetanus is Mercury. Mercury in the form of
practiced as Olieum on a great affection
of the mouth, and in an early stage of the disorder,
was in general employed. Other drugs acts
effectively as well when given by the mouth.
Whether, benefit, however, they have been
experienced from this treatment in mild
cases, it completely fails in the acute
form of the disease. In Egypt several
medications, alleged to Banon Lewis has
aggravate the acute symptoms.

The sub nitrate of mercury combined
with Olieum in the acute stage, in chronic cases
by keeping open the stools, but it is generally
used in acute cases. Another method of
healing Tetanus is that by administering
the most powerful tonics and stimulants.
The introduction by Dr. Mead was chiefly
during the Dr. Rush by Philadelphia, who
considered Tetanus as a disease especially
connected with the horse. Considerable
screeps is reputed as having attended the
practice. Dr. Elliotın was induced they
The effects of severe iron poisoning or other cases of traumatic tetanus, in consequence of the damage which it had been believed in cases of paralysis agitans, Chorea.

The method by which the remedy was adopted was this: The carbonate was made into an electuary by mixing it with twice its weight of treacle. The electuary was mixed with warm water, and given. The patient was about to drink it, but at that moment appeared. The third, which was one, when the patient was convulsively violent, and the pulse 120, was to inspect it in its proper form an efficient trial of the remedy. The patient being the day after the commencement of the plan.

Stychnium had been suspected as a remedy in these cases. When first
Stychnium acts upon the spinal cord, affecting apparently the parts, and the functions of the cord which are affected in tetanus.
And he to avoid a malady, it would justify to give the Stychnium, in hope that if this occasion a morbid action should
In purely and method the action of the latter.
I shall now conclude my digression with a few remarks on surgical or operative treatment of tetanus. Amputation of the affected limb has been proposed and performed by various operators, but it is now generally known that this treatment will not arrest the disease. When it has once taken hold, arrestance to this subject Mr. Stewarty made the following remarks: "The state of the part is not rendered even by amputation. In cases of tetanus there are often amputated injured fingers: and this does not always escape the patient; yet I trust the symptoms, though mitigated after each amputation, "in fact cases, the shoulder not amputating considerably. Now even a few days, unless I thought that from the injury sustained, it would produce fibrosis in its progress, even for the case would terminate fortunately."

The tourniquet has been applied to the limb but with no good result. Of all antiemetics which surgery offers, that of cleansing the bowels preceding from the affected part is perhaps more..."
The advice on: I also propose the advantage of keeping up, hazards, and immediately to place up, thriving of the patient. They say that the division that is performed before inflammation has set in: for if this has made proper, the practice would be useless and even dangerous.

The practice of nearly surrounding the wound by a deep incision, has been practiced in University College Hospital, and many the cases have been in favour of the plan. Although the present state of our knowledge, there is no remedy for them. On which, we can rely for the certainty of great difficulty, but may confidently by subsequent rules, the success of which will render the patient the more chanced in favourable result.