Thesis on, "Hoopang Cough and some of its most frequent Complications."
The disease of Hooping Cough, was first accurately described by Willis in 1662, and by him named "Fussis Contumax". Hoffman calls it "Fussis ferina", but from Tydenburg in 1726, did it receive its now generally recognized name of Pneumonia. From universal familiarity with it, it has received many popular names; in England it is known as Hooping Cough, Chol. Cough, Rakk-scorfe, and in Scotland as Rink hoast.

It is a disease, with but few unusual exceptions, of childhood, and is the peculiarity in common with some eruptive diseases, of occurring but once, and as stated, and generally during childhood. That is, the first time the child is exposed to the exciting cause, whether that be epidemic pneumonia or contagion. It most frequently occurs between the ages of two and ten years, but this period is liable to exception, as cases are quoted in which it occurred at
To early a period of infant life as this, and three weeks. (Dr. C. Johnson).
Although boys and girls are subject to the same peculiar exciting causes of this disease yet several observers have noted, that more boys arrive at maturity without having had the disease than girls: Mrs. Blache gives the proportion of such cases to be, 7 boys to 6 girls, and Constant 3 boys to 2 girls. As in all cases of non-inflammatory diseases of the nervous system, Dr. West found the proportion of females affected to be, as to boys, 55.3 percent to 44.7 p.c. He also found more fatal, according to the lastnamed writer, to females, in the proportion of 3 girls to 2 boys.
Whooping-cough is a disease of all climates and though more common in the cold seasons of the year, yet its epidemics break out in all times: the epidemic of 1841-2, reached its height in the months of Dec. and Jan., whilst in that of 1845, the cases were most numerous.
During the months of June and July, symptoms. The disease has most frequently been divided into two or three stages, as by Desemelles and Lombard, into 1st a period of invasion, 2nd a period of increase, and 3rd a period of decline. Mackee and Williams divide it into inflammatory, congestive and nervous stages; others into the cataleptic and spasmatic stages. This the simplest, is perhaps the best and most practical division. Dr. West speaks of the disease, however, as dividing itself into a bronchitic and a nervous element. The period of decline as quoted seems to be but the termination of the spasmatic stage. The first stage commences with the usual symptoms of catarrh. The child appears to have caught cold; there is languor, listlessness, and irritability without cause with feverishness, loss of appetite, sneezing, coughing, and cough, with increased secretion of mucus from the bronchial tubes after the first day or two. A well marked, but not severe case
of Cataract. Seems the general form of invasion. Sometimes the catarhal symptoms from the commencement seem greatly intensified; in other cases in which these catarhal symptoms are not unusually severe, the child yet has severe paroxysms of dyspnoea, which generally come on at night, exciting much alarm on the part of the parents. These attacks do not seem to be induced by any previous fit of coughing, and after lasting from half an hour to an hour, they pass off altogether leaving the child quite for many hours; perhaps not returning until the following night. During the continuance of these attacks of dyspnoea, auscultation discloses no signs of serious mischief in the lungs, but in inspection as the cough increases in distinctness, the fits of dyspnoea diminish. In some cases this first catarhal stage gives no evidence of its existence, the child being at once seized with the characteristic cough. St. Hillen and other writers narrate cases where the disease did not pass beyond the first, or catarhal stage.
Stage. These catarrhal symptoms continue for 12 or 14 days. Then gradually outside, the fever and copious diminish, the pulse quieter, and the appetite returns. This process is not an invariable rule, for the catarrhal stage may terminate so that a time as 2 days, or be prolonged to 35 days. This unusual duration has been usually met with, either at the commencement, or at the close of an epidemic of this disease. As these symptoms subside, the cough becomes aggravated, and exhibits a change in its character; from a simple cough with but few succussions, it becomes prolonged by a succession of expectoration efforts, and at its termination we generally hear a forcible inspiration accompanied by a loud pinching sound. The succession of expectoration efforts causes the “runt” and the forcible inspiration the “hoop.” The occurrence of these sounds are the indications of the commencement of the second
Stage, in which the cough takes precedence of all other symptoms. The cough is peculiar and when fully established is found a number of inspirations made with such violence, and repeated with such quick succession, that the patient seems to be almost in danger of suffocation. The face and neck are swollen and livid, the eye protruded and full of tears; at length one or two inspirations are made with similar violence, and then the peculiar whooping sound is produced; a little rest follows and is succeeded by another fit of coughing, and another whoop; until after a succession of these actions, the paroxysm is terminated by vomiting, or a discharge of mucus from the lungs, or perhaps by death. (Dr. C. Johnston). If the paroxysm be very violent, besides the vomiting, and discharge of mucus, some small Rebel may be captured and blood escape from the nose or mouth, or it may be expelled beneath the conjunctiva, or mixed with the expectoration. The rapid succe...
of the paroxysm may last from one to fifteen minutes, and in proportion to the violence and length will be the fright and endeavours to inspire of the child. The child is conscious of the approach of the cough, a sensation of burning in the larynx and rattling in the chest it strives to suppress, until resistance is overpowered by the irruption. Nothing can more clearly demonstrate the violence of the cough, then the alacrit of the child, when sensible of its approach, to seize hold of its mother's dress, or some fixed point of furniture, or otherwise, which it constitutes a point d'appui, to overcome the violence of the cough, and perhaps, to assist it in calling into play the extraordinary muscles of inspiration, by which it seeks to compensate for the almost totally employing of the lungs by the severe expiratory efforts. After the fit of coughing is over the child appears exhausted and some little wine is necessary before it regains its usual composure. It enjoys during the intervals of the paroxysms in which intervals it is generally tolerably
Easy and cheerful, enjoying food and indulging in its usual play. The length of these intervals is dependent upon the severity of the disease. The return of the paroxysm of cough seems to depend upon the accumulation of mucous; frequent efforts will be made to get rid of it, if easily expelled, the fit of coughing is slight, of very beauty and transient in quality. The fit is then acute, the efforts great. In a child labouring under the disease, any exciting cause produces a violent fit. Mental emotion will bring it on, even sympathising one with another, will cause the paroxysms of cough in the children, to be influenced by each other's attacks. There is, when the disease is present in its severity, considerable exacerbation at night, sometimes so marked that the fits of coughing are not only more severe by night than by day, but actually more numerous; in very mild cases of the disorder, this nocturnal exacerbation is not noticed; in other instances, while the child rests quietly through the greater part of the night, there is yet marked aggravation of the cough upon first lying down at night.
And on waking in the morning, the nightly increase being doubtless due to the child being removed into a bedroom of lower temperature than the apartment in which it spends the day; the waking one resulting from the accumulation of mucus in the bronchia during sleep. In some instances towards the decline of the disease the cough is seen to assume a periodic character, returning only at well marked intervals. Dr. Churchill, speaks of this occurrence as only very rare, and quotes a case (and but one) as related by J. Hood "where the cough occurred in the patient, daily at a certain hour, continued obstinately for several months, and returned at the same season for several years." I cannot speak further of the periodic attacks, from my own observation, than as in their daily occurrence, but I must certainly can recall several cases that I have seen where during the recovery of the child, the cough returned in paroxysms regularly, and at an almost slaked time for some days, and then decreased by a well marked and regular prolongation of the intervals.
The expectation changes its character as the disease advances: from the frosty mucus of the first stage, it becomes of a very tenacious character. Varying in colour, it may be yellow, clear and transparent, or even foamy; but even so sticky and tenacious that it may be withdrawn by the nurse's fingers from the child's mouth.

Sessileoscopic signs. Nothing can be more remarkable in this disease, apparently involving to a very great extent the respiratory organs, than to find so little characteristic circulatory revelation. In the first catarhatic stage, we find the mucus a bilious, patacky, and the respiratory mucous somewhat decreased; the chest being clear and sonorous on percussion. When the cough is fully developed, Lacanée states that during an internal we find but the ordinary symptoms of catarhæ. During the paroxysm, the vibration of the trunks from the chest of the cough is so powerful, as to make any existing sound and in the short interval between the succussions, nothing
can be heard but a slight râle or the respirator-murmur. The hooping inspiration to characteristic, seems limited to the lower and voice. Dr. Williams says on applying the ear to the chest during a fit of hooping cough, he is surprised with such violent external motions, to hear so little sound of respiration within the chest; and during the danger to back draught, there is scarcely any sound of air entering the lungs. This is due to the continued contraction of the glosso and large bronchial tubes, preventing the air from entering the pulmonary cavity with sufficient force to produce the ordinary respirator-murmur. Most writers agree pretty generally with the above, but Dr. Churchill, while agreeing, still thinks that more can be heard during the intervals in a well marked case. Now Dr. Williams has noted, he says, "I have examined a great many children at intervals, from one paroxysm to another, and those in a great many cases found that, after the chest had been cleared..."
by the last cough and retching, the respiratory murmur was on inspiration louder, and more rough than usual. Nay, in some cases, that it had a rather loud, brazen sound, something resembling a loud resonant râle, as if the air was passing through tubes much narrower than usual. It is perceptible also on expiration, though more feeble. This sound may continue until the mucus begins again to accumulate and then it will be exchanged for the large mucus, bubbling sound, which increases until the next cough, and is almost universal. In milder cases the cough dry sound is more feeble, though generally audible, and I think this loud, rough murmur of inspiration and expiration, quite peculiar to pertussis.” Perhaps none of the phenomena demand such attention as the roop, from which the disease is named. Its occurrence indicates, spasm of the glottis, hence it seldom comes on in slight cases, while it hardly ever comes on, until the disease has lasted some time, and acquired a certain degree
of intensity. A loud conscious hoop, should quicken our apprehension, than otherwise, for it shows, that air does enter when the child endeavors to inspire; and that the space of the glottis does not amount to actual closure, and that for this time the child will not choke in the fit of coughing. The most satisfactory explanation I can find of the hoop, is that given by Floc in his treatise on hooping-cough. He writes, "any one who will make the experiment will perceive that if by the exercise of the voluntary muscles of respiration, he cannot continue coughing loudly for so long a time, or empty the lungs so completely of air, as a person does in paroxysms of hooping-cough; it must, therefore, be inferred that the involuntary muscles, namely, those pointed out by Reisserius, as connecting the extremities of the cartilaginous rings of the trachea and bronchiae, ponsapally assist in accomplishing both these objects. They seem, by acting spasmodically, to expel the air from the lungs, and to excite, by sympathy, the
Voluntary muscles of inspiration; the combined action of both sets of muscles appears to produce this peculiar cough. The hoop takes place in the larynx and trachea, and appears to be caused by a rush of air through a contracted passage, for no sudden or violent inspiration could produce this sound in the naturally healthy state of the air tubes. These tubes are in a completely emptied, by long-continued inspiration; that a most distressing sense of suffocation is produced, to relieve which, a full inspiration is instinctively made, and at the same moment, the glottis is contracted, and the air passing quickly through a very narrow opening excites the hoop. The near action during a paroxysm is exceedingly quick and strong, and some time must elapse before it subsides to the natural standard during an interval. The duration of the second stage is always considerable, but uncertain; sometimes 3 months, in other cases 6 months, the latter
is I think the most popularly recognized period.
If we allow a 3rd stage, that of decline, then
perhaps it may take away the third of
the period given to the second or spasmodic
stage; that is months of stage of decline
to one month of spasmodic stage be.

The effects of the disease on children is
dependent upon the nature with which
it has been experienced, and the general
health of the patient; they are seldom of
much importance if the hooping cough has
not been complicated. The appetite is
generally diminished, and the digestion
disturbed by frequent vomiting, as vomiting
cannot be effective under these circumstances.
The child loses flesh; the sleep is inter-
rupted, and the circulation deranged,
by the excitement of the cough; the skin
is moist, sometimes, there is profuse
perspiration; and the skin of the child
presents a darker appearance especially
beneath the eyes. The spirits of the child
are often depressed and changeable.
As the disease declines, the most notable
Circumstance is, the diminution in number of the paroxysms of cough, although when occurring, still severe. They diminish at night, and occur perhaps, only 3 or 4 times in the day, ultimately, at night only. And then special statements requisite to induce their occurrence; by the intensity increasing, progress towards recovery is marked. If the child has not been much exhausted and emaciated by the disease, it soon shows improvement. Peaceful sleep restores the nervous system. The absence of vomiting allows the food to be properly digested. The child recovering flesh. The circulatory system returns to its normal condition and the surface of the body assumes its natural aspect.

In simple whooping cough, making to resume, the first stage characterized by symptoms of Cataract, varying in intensity, sometimes greatly intensified, in other cases, absent. The second stage is marked by the
Characteristic Cough, with the evidence of the "hink" and hoop. In some very rare cases the hink is but slightly remarked, but it is too present. Modified it may be, in this, it is much more characteristic than the hoop, which is occasionally, entirely absent. The absence of both, would of course destroy our power of diagnosis, the presence of either, clearly points it out. That some children may die from simple hooping-cough is evident, for the hinks may be so intensified as to cause death by suffocation; others may die from simple exhaustion, being in fact, worn out by the disease. More commonly hooping-cough lays the foundation, that predisposes to other diseases. Dr. Watt, on the hooping-cough, observes, "The disease is not apt to prove fatal suddenly, but, if it be severe and protracted, it generally ends in some affection of the glandular system, laying the foundation for other maladies."
tickets, a pulmonary consumption."

The large fatality arising from this disease is influenced by the destructive complications that most frequently beset it, other organs evincing great liability to take on Morbid action.

The importance of these complications is greatly increased, by these being in period of the disease, in which we can look forward to as bringing with it, immunity from these complications: from the commencement of the cough, its disappearance, we are at any moment liable to meet with disease either of the lungs or the brain; converting, a somewhat trivial into a most formidable disease.

The most frequent complications are those affecting the respiratory system, as Mononucleo and Pneumonia. Next in frequency, those affecting the brain, as Congestion of the Brain, Convulsion and Hydrocephalus; occasionally, hemorrhage apoplexy, resultent fever, being also a sometimes frequent complication.

Undoubtedly, more deaths take place through
The lungs, and through the brain complications
than all others besides. Of 35 children who
chris of hooping cough under the care of Dr. 

17. died from Pneumonia atonie; 18 from

congestion of the brain, from convulsions coming

on during a fit of coughing, or from Hydro-

cephalus. Reckoning the commencement

of the disease, from the first cough, 23

well marked paroxysmal character of the

cough, it appears of 31 cases in which this

front was noted, Children

<table>
<thead>
<tr>
<th>Dying within</th>
<th>After The Lungs</th>
<th>Then the Brain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 day</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>14 days</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>21 days</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>28 days</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5 weeks</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6 weeks</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>7 weeks</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>8 weeks</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>10 weeks</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3 months 3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>


The circumstances influencing the compli-

cation of hooping cough with other affections

of the respiratory organs are numerous. Dr.

Coulonant thinks it due in a great measure
During the winter, to the variable climate of this country and the prevalence of coldly winds. Sometimes as before stated, hooping cough is ushered in by severe bronchitic symptoms accompanying the calarch; such cases often occurring at the commencement of epidemics of the disease, or in weak children who from previous attacks of bronchitis are peculiarly susceptible to this disease. These are not the most alarming cases for as the cough develops itself and assumes its spasmodic character, the bronchitic symptoms recede. These cases, however, in which bronchitis or pneumonia come on after the hooping cough has established itself, prove most dangerous. This may occur coincident with the development of the cough, and then the two diseases appear almost simultaneously developed. As a general rule, to quote Dr. West, "Most cases have appeared most dangerous in which bronchitic symptoms became developed of themselves out of hooping cough." In the milder forms of bronchitic
Seizure, the constitutional symptoms are generally out of all proportion to the amount of local mischief, and subside in a day or two. In those cases where the symptoms of bronchitis or pneumonia manifest themselves, after the cough has assumed the distinctive character of pertussis, we find, that for a day or two perhaps, after a hoarseness has been heard accompanying the cough, and when there are indications present, that the attack will be worse than usually occurs, that suddenly, all the symptoms become greatly aggravated. The sputum is not, expectoration and pulse rapid. The cough becomes more frequent, increases in severity, and instead of being accompanied by a literally free expectoration, the little mucous that is got up, is streaked with blood. The ear detects mucus rales throughout the whole of the lungs, on a deeper inspiration. The smaller sounds are heard, showing the smaller air tubes are affected, and that the affections in fact, is now, hooping Cough Com-
Complicated with Bronchitis (Catarrh). If the disease continues the cough will often lose its hoarseness, become less frequent, or may lose its paroxysmal character, though it still appears to cause the child much suffering. The respiration greatly increases in frequency, and the dyspnoea becomes most painful to witness. This is the most fatal disease complicating both whooping cough, and death may take place from it in a very short time. A case is quoted in which a child died on the 6th day, from the first appearance of any indication that the disease was urgent else. That a mild attack of whooping cough, any exposure to damp or cold whilst the child is labouring under the primary disease seems sufficient to induce one of these, late decided attacks of bronchitis. If whooping cough has lasted for any time without any bronchitic attack, they are often, fortunately, of occurring, of a milder form, and generally tractable, and amenable to treatment.
During the attack of bronchitis, on percussion there may occasionally be detected slight dullness over the chest, but generally there is a clear sound on percussion. The distinctive rales will be heard, one or both lungs, and it will be noticed that these rales are just as audible after a fit of coughing, and during the interval, as just before the cough comes on, there differing very widely from copious hooping cough. The respiratory murmur is rather than usual, and almost masked by bronchitic rales. When pneumonia is the complication, its occurrence is forewarned by the general symptoms, as prostration, stiffness, difficulty, uneasy sleep, quick pulse, hot skin, flushed cheeks, abdominal breathing, etc. - The stethoscope gives its unmistakable evidence, and on percussion we find dullness over the diseased portion of lung. If the child live the pneumonia undergoes the usual changes. The changes in the circulation take place, we have the normal count restored.
And along with the local amelioration, we have diminution of the deepened and raport breathing, a return of the natural cough, quicker pulse, calmer sleep, and improved appetite.

That complications involving serious disorder of the nervous system are very liable in whooping cough, must be apparent to any one, who watching a child during a paroxysm of cough, observes the intense congestion of the vessels of the head, neck, and face, especially when we bear in mind the delicate condition of an infant's brain. When such complications arise, as they are most apt to do, if the child labouring under whooping cough is undergoing alleviation, they generally prove fatal; and despite careful and prompt treatment, the fatal issue in such cases, as I have seen, is most appalling. These like the complication already noticed, may occur at any stage of the disease. Sometimes from the very first the nervous system suffers so severely, that death takes place almost.
before the disease was had time to assume its usual character; in other cases when
the disease seems to be taking its usual
Course, increasing in the manifestations of the
oesophagus, and suddenly the
cough may cease, and nervous disturbance
of its every character arise as to ter-
minate fatally in the course of a day or
two. Again, in those cases after the hooping
cough has continued for weeks and no
symptoms referable to the nervous system
been present to strike solicitude, the long
continuance of the cough alone, seems to
excite mischief in the brain, and death
takes place, just when we had begun to
hope that nothing but time was needed
to effect a cure. The forms which these
dangers assume are: Simple congestion
of the brain, with drowsiness, convulsions
following, and fatal coma ensuing. In
other instances, the spinal system of
nerves become excited to great reactions
the then case, the presence of carpopedal
spasm or contractions, with spasm of the

gloths, superadded to frequently occurring
convulsions. In other cases the long con-
mittance of the cough, may give rise to
the development of acute hydrocephalus.
The occurrence of these complications may
be looked for, when we find the cough
increase in severity, without the presence
of respiratory complication, the face
becoming livid, and remaining so
longer than usual. The existence of carpo-
pedal oedema, and hereditary predisposition
to nervous diseases. The earliest symptoms
are usually, unusual drowsiness after
a fit of coughing, peculiar look or stare
with the eyes, spasmodic twitching of the
face or extremities. The first warning
he may have is a fit of convulsions,
passing off, but leaving the patient tired
what prostrate, and recurring again,
when by coughing, the brain reaches a
certain point of congestion. In most
instances however in which convulsions
come on, there will have been unusual
desire of the cough, from the very
Commencement of the disease, the return of the paroxysms of cough, being much dreaded by the child, as the attacks generally terminated by distressing vomiting. Sometimes the increased irritability of the stomach, being unable to retain either food or drink, is one first indication of measles. Indeed, it most strongly impresses upon the importance of this symptom, in the following words: "Vomiting independent of the fits of coughing. If it persists for more than 24 hours, and is not referable to the remedies you are employing, nor connected with obvious gastric disorders, should always excite your solicitude and direct your attention most anxiously to the head." In some instances where there is this vomiting, or even independently of it, the child appears drowsy, averse to movement, if able to talk, complaining of headache, and appears more overcome by the disease than is accountable for from the paroxysms of cough, or their frequency; the dyspnoea increases before,
And after the fits of coughing, respiration is hurried, and if vomiting be present, streaks of blood are present on the mucus vomited. It generally happens that with these symptoms, the cough loses its hoars, and becomes more suffocative. Convulsions supervene on the efforts to cough, and the child may asphyxiate during the fit, but generally, having been in a comatose condition, which coma is only interrupted by the frequent return of convulsions, one of which at last proves fatal. In some instances death may take place suddenly; the child being asleep will be convulsed during a fit of coughing, which proves fatal, without having previously shown any symptom of cerebral nervous disorder; in such cases it seems most probable that death takes place from spasmodic closure of the lungs, and consequent congestion of the brain; death taking place, as in spasmodic convulsions after fruitless inspiratory efforts. In these cases which somewhat simulate spasmodic convulsions, it may be
observed. That after a fit of coughing, the
mouths of the child are drawn into the palm of the hand, and the big toe apart from the others, and a degree of dyspnoeic expiratory which cannot be explained: the patient makes most strenuous efforts to suppress the cough. To all appearance, but, these apparent endearments, as they depend on spasmodic closure of the lungs, are involuntary, which if complete and continued will assuredly end in a fit of convulsions. If our endeavours fail, the expiratory contraction become permanent. The eyes will be partially closed. The breathing grow unequal and irregular. The breath will no longer be heard, and the cough itself will be smothered. In consequence of the imperfect performance of aspiration, liberation of the blood is imperfectly fulfilled. And the surface of the child to comes united. The child enters into a state of clasper, in which it will lay with dilated pupils and constant twitchings of the face.
An effort to cough is made, which passes at once into a convulsive paroxysm; the fit at length occur independently of any attempt at coughing being made, and death usually takes place during a fit, manifesting themselves much in the same way as convulsions, are Meningitis and Hydrocephalus, but as they develop they themselves by their usual symptoms modified however by their occurrence as the complication of a disease like whooping cough, and growing more unmanageable, than in their ordinary form, in consequence of the repeated care.

Ear congestion caused by the cough. The presence of either of these diseases may change the character of the cough, administering it in frequency, or by adding force to the spasm produce death by suffocation, from the sudden closure of the larynx. Hydrocephalus except in its insidiously, that the diagnosis between convulsions and it occurring as secondary disease is not very easy. Nor would it
Appear important, for in those cases in which we have convulsions not proving fatal to themselves, it is probable that if continued they will terminate in hydrocephaulus. Dr. Johnson alludes in his last on the Manner of diagnosis between the two diseases. It is true that in hydrocephaulus, one side of the body is more affected than another; but in convulsions, which are independent of any organic disease of the Brain, that both sides are equally affected, the he agrees with, and further writes, "If the convulsions are confined to one side of the body, there is every reason to fear hydrocephaulus; but it does not follow that because the convulsions are general the Brain is unaffected. In the latter case we must wait till the convulsions subside, before we can determine their cause, and then we must form our opinion from the general state of the child and from the history of the case."
rather, than from any peculiarity of the convulsion itself. The tetanus
hydrocephalus is due to a very rare
complication of whooping cough, and
only apt to occur in children of a
vulgar constitution, and who labor
under whooping cough for an unusually
long period. Moreover, the possibility
of its occurring must can be borne in
mind.

Diarrhoea and irritability state of the stomach
are also liable complications. Sometimes
there is diarrhoea occurring with the first
stage, but which may subside as the
cough comes on; but in other instances
it continues throughout the entire
intervals, during the whole course of the
affection. One of the disadvantages attending
this diarrhoea is, that it prevents the
use of some of those remedies we might
wish to employ in the treatment of the
primary disease. If the diarrhoea comes
on when the hooping cough has developed
itself, it is then more important, as it
May betoken intestinal disease; or it may indicate the advance of serious mischief in the lungs. It must be looked upon as one of the constitutional disarrangements, also, that attend congestion of the brain. Vomiting, as before alluded to, is a sign of great importance to guide us in apprehending head symptoms, but in a milder form it is generally observable as the result of a severe fit of coughing. Thomas however, vomiting continued unchecked, with diarrhoea super- evering, we shall most probably see symptoms of infantile pestilence arise. Commencing perhaps at first with a rigor, but most frequently advancing so gradually that the date of its commencement cannot be fixed. The paroxysms of cough become more frequent, and the breathing is quick and oppressed; it is easy to distinguish with the stethoscope. One hurried breathing, from that of bronchitis or pneumonic, the stethoscope affording useful, though negative evidence. The daily reminiscences, the loaded tongue,
The nature of the alvine discharges, the aspect of the child, continually picking its nose and lips, all seem to determine the true nature of the disease. It may be identified from the fever which accompanies hydrocephalus by its altered performances; infantile remittent, not infrequently, however, may terminate in hydrocephalus. This complication of infantile remittent, is neither so frequent nor so formidable as those before described. Still, when occurring it may prove very intractable, sometimes fatal. There are, undoubtedly, other complications attending whooping cough, but as these I have attended to, are the most frequent. I shall now proceed to briefly describe the post mortem appearances, and the views held concerning the pathology of this disease. News, which from their manner and contradictory nature are somewhat perplexing. It would seem that frequently the post mortem appearances differens after death, and
detected by many writers, are in reality the results of some one of the numerous complications, plus hooping cough. It is only on rare occasions that death takes place from simple hooping cough, so that our opportunities of examining its first morbid appearances are few; generally obtained however, when death has taken place from some remote complication. On directing our attention to the respiratory system, where we naturally expect to find serious changes, we often find instead of disease in the larynx, trachea or lungs. In others there is only slight injection of the mucous membrane of the glottis and larynx, occasionally some mucous edema of these parts. The mucous membrane of the bronchi is generally injected and sometimes intensely red; an abundant secretion of mucus, fills up the air tubes, and their caliber is much increased, this dilatation arising as in bronchitis from inflammatory action, and not due to the violence of the inspiratory efforts. When the cough has been violent we often find
Some interlobular emphysema existing, most marked where an emphysema condition of the lung is generally found, namely the apices, and margins of the lungs. It has been supposed that the emphysema of the lungs, discovered after death in drooping cough, depended upon the violence of the inspiratory movements, but as we know that the greatest violence is the lungs upon the continued expiratory movements constituting the vent, and that the inspiratory movements are certainly mild in comparison, it seems reasonable to infer that is by these violent expiratory movements, the emphysema is caused. For auscultation immediately after a hoop, the long inspiratory seems that the air does not at once permeate the lung, but that some little time must elapse before this condition of relaxation of the bronchi allowing the air to fill the lungs, takes place. In such cases then the expiratory theory of emphysema applies, that during a violent jet of coughing, an expiratory effort, with closed glottis.
the have the air driven towards the upper part and circumference of the lungs, these being the least compressed part of the lungs, structure more readily breaks down, and the have emphysema. Another condition of the lung, properly heated, describes, as often found by him during the epidemic of 1845, as complication, or pulmonary collapse. He met with it so frequently occurring in con-
currence with emphysema, that he looks upon it as one, if not the most frequent cause of death in those cases which die with the other complications I have described absent. Enlargement of the bronchial glands has been met with so frequently, as to warrant the idea, that by excessive pressure upon the vasa and currens venae, irritation was produced, partially accounting for the spas-
monic nature of the cough. The conflicting opinions as to the nature of the disease advances, by many writers, have been summarized under the following heads. I adopt this summary, on the grounds that were it to quote every theory advanced, and
And the grounds, upon which they are based, I should too greatly, and perhaps uninteresting, prolong this paper. Having alluded to structural changes found in simple whooping cough, and quoted the various opinions of many writers, as to what the disease depended upon, Dr. Churchill says, 'The different views of the nature of the disease, may be thus summed up."

1. That it consists simply in inflammation of the mucous membrane lining the air passages, the glottis, larynx, trachea, bronchial tubes, and air cells.

2. That this inflammation is of a specific character.

3. That it is an affection either of the pneumogastric nerves, spinal nerves, medulla oblongata, the brain, or the nervous system generally; either of a nervous or inflammatory character, or a reflex irritation.

4. That it is a compound affection, in the beginning an inflammation of the air tubes, and subsequently a spasmodic or nervous affection.

5. That it is a nervous affection, having its seat in the bronchial mucous membrane, and in the pneumogastric or other nerves.
If we examine and analyze the history of the disease comparing many cases together, we must come to the conclusion that they are divisible into two great classes: the simple, and the complicated, and that these differ much both in degree and kind. Cases of simple whooping cough, are on the whole, uniform in character, with similar stages, symptoms, and course. The complex, on the other hand, possess additional symptoms of different kinds by which their history is altogether modified. To with the poet's notice appearances, those changes that the should expect to follow any of the complications, have been present, but instead of being observed as such, have been attributed to the specific changes dependent upon simple whooping cough. We find after Woehler's pronouncement, that there is vascularity of the lining membrane of the air passages, increased secretion, congestion and the palpitation of the lung. After convulsions we cease cough, particularly of the larynx. Hydrocephalus leaves its usual evidence, in extreme vascularity of the membranes, congestion of the vessels,
of the cerebrum and cerebellum, effusion of

The reason, tuberculosis deposit &c. &c. &c. for

Then that the presence of any of these post-

Modern appearances must be looked

upon as additions to the primary disease,

when we come to examine a case of simple

Hooping Cough after death, and note the

Pathological changes. Much anatomy

does not throw much light upon the matter

for frequently no change is observable in the air

Passages, although the disease during its Con-

Parmance had been well marked. In the severer

Cases such appearances as I have alluded to

have been found, viz. occasions usually

Increased of the Mucous Membrane of the

glotis and larynx, with Extraneous Adenoe

of these parts. The presence of Mucous or Muc.

prominent found in the larynx, in the enlargement

in the calibre of these tubes, subglottal an

mechanism, and according to purely medical

comprehension of the thing. But how must

The Apoplectic Nature of the Cough be accounted

for? If he looks to the history of the disease

he find it commencing by Catarhatic
Symptoms, as these outside. The principal
Hysterica cough is developed, consisting of
the violent inunctions during inspiration, with
inability, for a time of making a complete
inspiration, this impediment to a free inspira-
tion being due to spasmatic action of the
muscles of the lungs, gathered and hemicic. To
account for this spasmatic action attention has
been more particularly directed to the post mortem
appearances of the plexumagastic nerves.
Inflammation has been noticed in some cases
William says that in 15 cases he found that
these nerves were highly inflamed. In mending
of careful direction, Dr. M. Tadel, Quercy, Baco,
and Bévaux, declare that they could not
detect this appearance, and Dr. Albers of
Bonn, out of 47 cases, found the knee healthy
in 43. in one it was a little reddened on
the left side, and in three on the right side.
So that he most almost looked upon a state
of inflammation when occurring of this
same as occasional and accidental. Dr.
James Spence in the medical quarterly journal
of Medical Science of August 1847. States the
The essence of the disease to be here seems of the
mortal glands, coinciding with, or arising
from a peculiar fever, and the result of a
specific poison, and, by pressure upon
the pneumogastric, inducing muffled functions.
This view has also been advanced as a theory
to account for spasm of the glottis occurring
independently of any other disease, but has
lengthily and aptly been advocated by Dr.
Marshall Hall, who showed that the effects of
such pressure upon these nerves would be entirely
different from those attributed to Dr.
Sey and Duncan. - Hooping Cough is now
I think, most generally looked upon as res-
ally irritation of the nervous system, caused
by the presence of a peculiar fever poison,
manifesting its presence and action by the
continued irritation to the nervous system,
and also I think, attaining, a certain amount
though not well defined, of scarcity
in its accessions and remissions.
Causes and modes of propagation. The
disease is sometimes sporadic, generally ep-
emic, this being the most common
Cause and Mode of Propagation. As an epidemic it seems to bear some relation to other epidemics as it has often been noticed to appear immediately after an epidemic of measles or influenza, or during such an epidemic. Climate has much influence on the mortality arising from the disease, but little in its prevalence and distribution; it proves most fatal in Northern regions, less so in Southern and milder regions, the exception to this rule however, was the very fatal epidemic in Madeira of 1848. In Great Britain it appears most frequently in Spring and Winter. The agency of a cold and moist atmosphere has been much insisted upon by some writers. Rarely the occurrence of a single case of hooping cough may be met with in a district. Yet the disease almost invariably occurs as an epidemic spreading through a tract of country, or town as such, or by the influence of contagion. Most extensive epidemics of this disease have been noted from a very early period, some of them spreading through a greater part of Europe, but with the
 Recent invasions of the disease, as limited to a
part of country, city or village, we are most
admirable. This thing is very evident in looking
over the records of past epidemics, that is, the
varying amount of mortality. This probably
is relevant to the severity or mildness of the
attending complications. When whooping cough
is once excited, it seems reasonable to suppose
that the patient evokes a fever which is both
infectious and contagious and becomes
difficult to trace the contagiousness
of an epidemic disease, until the communication
of this disease by families, gives
ground for the belief that it is so many
accurate and trustworthy instances are recorded
where the disease was communicated in this
manner. The opinion of many authorities
from the time of Cullen to the present, is that
as such diseases as smallpox and measles
though prevailing epidemically, are allowed
to be contagious, so must whooping cough
be classed with them.

The diagnosis. It is impossible to determine
whether the fatality of the first stage will
terminate in whooping cough, or is merely the result of simple cataract; moreover when the spasmodic stage sets in, and the cough becomes characterised by short and deep, there can then be no mistake as to the disease. Sometimes though the whoop may be absent, or, as in children at the time of denudation, an ordinary cough may assume an occasional whoop. The whoop is scarcely then absent, and this must be looked upon as the great diagnostic mark for no disease (except in Asthma perhaps, which is not a disease of childhood). Here we have a series of syllables, the first the cough assuming a paroxysmal character, but the difference between the paroxysmal characters of a Whooping Cough and that of whooping cough are thus clearly pointed out by Bilich and Branchy. In particular we have the Catarhal Stage preceding theWhoop, in Bronchitic the Paroxysms of Cough are coincident with the commencement of the disease. In Pertussis we have the Catarhal Stage.
of pectoration, and almost always vomiting;
In Bronchitis, the Vomits are thicker and less
intense, no hoarseness of pectoration, no vomiting.
In Simple Pertussis there is little fever, no
Paroxysm of Respiration during the Intervals,
and the respiratory movements are in
Bronchitis during its continuance the more
intense, the respiration became and is
increasing in frequency, Vomits, Subcutant
and Mecons, afterwards Subcutant. In
Pertussis the Vomits continue for a time, then
decrease until the Cough becomes simple, and
the child Convalescent; In Bronchitis the
Smallness of the Pulse, the extreme deepness
paleness of face, persist or increase, and the
Disease almost always terminates fatally."

"Med. des Enfants vol. II p. 225."

Prognosis. Generally Children well Nurse
pass safely through an attack of Simple
Pertussis Cough, but the liability to Complication
and the very danger arising from them, should
ever render the Prognosis guarded.
The position in life of the patient seems to place
greatly the chances of recovery. Lombard
States that of 10 cases, 9 were fatal. One belonged to the poor. This is assuredly too extreme an average. But doubtless the surrounding care and precautions accessible to wealth are the physician's best assistants in the treatment of the disease. The age, constitution, previous health, actual state of the various organs must be ascertained before giving a prognosis. The symptoms justifying a favourable opinion are, the pharynx being constant, with complete rest during the intervals, quiet, normal respiration, absence of fever, the sleep not being otherwise disturbed at night. No local complications and the appetite good. The unfavourable symptoms are, the cough frequent and violent, respiration much hurried, the presence of dyspnoea, fever, loss of sleep and appetite, and any indication of local complication.

The treatment has been very varied and the number of medicines that have been used as medicinal agents, for the disease, is great. It is very probable that the actions of medicines are greatly influenced
argument in favor of abolition and freedom.
By the circumstances of each epidemic, for these remedies that have been quoted as most useful in some of the epidemics, in other hand prove almost useless. As hooping cough seems, despite our efforts to cut it short, to run a certain course, our treatment in the milder forms must be merely palliative, tending to keep the diseased simple, free from complications. During the first stage, a mild aperient Calico Medicine combined with an expectorant seems all that is necessary. An occasional emetic is sometimes of great service. Confinement to a warm equable temperature, light nourishing food, a warm bath at bed-time, and the application of some of the Bismuthes Stimulating the respiration to the chest and expanding the lungs to constitute the most generally adopted treatment. When the disease becomes more severe, our treatment must be more energetic. The aperient used freely, and remedies the spasmatic nature of the cough, antispasmodic and antisyphilitic.
Medicines must be administered. Opium, morphia, belladona, cinch, chloroform, and hypodermic acid, are amongst the remedies used for this purpose. Bloodletting has been urged upon at this stage but as the disease has now assumed more of a spasmodic than an inflammatory form, I cannot see what benefit would arise from antiphlogistic treatment unless to such an extent that I have seen. The notice of the paroxysms greatly relieved as are cut short by the inhalation of chloroform, followed by the continued administration of opium and hydrosulphuric acid in small doses. At this treatment seems directed entirely to the cough; would certainly look after maintaining the general health as most important, palliating the cough if possible as the most urgent and distressing symptom, but trusting more to the favorable elimination of the specific poison, as the great desideratum for cure. The action of the gastric medicines when given must be carefully watched, and as gases...
Generally have the effect of diminishing secretion, rendering the facility of the bowels greater, thus increasing the difficulty in colic. This effect must be counteracted by the exhibition of some expectorant or emetic, with these remedies to constipate the bowels must also be counteracted by the administration of an occasional purge.

The use of anodynes is most beneficial in the absence of fever. Should the disease last so long as greatly to reduce the strength of the patient, tonic remedies, as cinchona or quinine could if it be administered in a disagreeable or palatable form, prove of great value. Arsenic in the form of tincture of spirit of arsenum has been highly spoken of, but its administration in this disease has never come under my notice. Change of air, strict attention to dietetic and hygienic rules are also demanded.

When the complications arise, the must at once be met by the prompt and energetic treatment they each demand; but to specify which, comes scarcely within scope of this paper.

Henry A. Bellworth.