A. Stewart.
Thesis
on Diphtheria & Croup.

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Diphtheria and Croup.

I dont expect in this paper, to be able to add anything original, or additional, to what is already known regarding the origin, pathology, or treatment of diphtheria. Country practitioners, and especially those engaged in laborious colliery practice, have but little time to devote to original research, but they have ample opportunities for observing and testing the truth, of any theory, or method of treatment, that has been brought before the profession by others.

Ever since the year 1821, when Bretonneau published his first Memoir on diphtheria, the question of its identity with croup, or what distinguishes true croup from diphtheria, has been discussed by many

many distinguished men, yet at the present time opinions are very conflicting on the subject, — about as many affirming that they are one and the same disease, as those who maintain that they are distinct. The study of the subject is interesting to the pathologist, and is of importance, as regards the treatment and management of the malady. When there is such diversity of opinion among those who have had great experience of the disease it would be very presumptuous for one, whose experience has been very limited, to put forward any dogmatic assertion regarding either one view or the other. The practitioner however must exercise his own judgement and be inclined to hold one opinion, or the other, according as his own experience of the disease has taught him

him. The manner in which the word croup has been employed has given rise to much difficulty and uncertainty in discussing this subject. It has been employed by many to denote what was simple laryngitis: and even laryngismus stridulus regarding which there never could have been any mistaking for diphtheria. It is regarding the identity of that croup that is membranous laryngitis, with the common forms of the disease now known as diphtheria, that this discussion has arisen. The word croup was originally given to membranous laryngitis ~~and~~ by Dr Home in 1765, but writers often since appear to have applied the name to acute catarrhal laryngitis, and other laryngeal affections, and confounded diseases, that were very different. Diphtheria was employed by many

many to be a new disease to this country when it appeared in 1855 - when it was evidently imported from France where it had for some time been very prevalent. There it was better understood, as it had received great attention from many observers. In this country, it appears to have been long known in the epidemic form; even before Starr described an epidemic under the name of Morbus strangulatorius, which prevailed in Cornwall during the last century. But it has been much more prevalent in France and other continental countries than it has been in this. It was from observing an epidemic of it that raged in Paris in 1818 and following years which then went under the name of malignant or gangrenous Angina that Bretonneau succeeded in

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in giving a clinical description of the disease, and in demonstrating that the so called malignant angina was a constitutional disease, the local manifestation of which generally appeared in the throat in the form of white patches of a membranous like substance usually on the tonsils and pharynx, and sometimes on the nares, and which in many cases spread to the interior of the larynx and air passages in which case it proved fatal from suffocation and in those where larynx remained unaffected it sometimes caused death from asthenia. From the invariable presence of the false membrane on some part of the body, he called the disease diphtheria - a name which does not indicate any theory regarding the

the pathology of the affection. At that time, 1818, the two diseases, membranous laryngitis and malignant angina were regarded as different, the former was known from Dr Home's description of it, to result from the formation of a membrane in the Larynx which obstructed the air passages, but the latter was regarded as a gangrenous affection of the pharynx and the danger to arise from that alone. Bretonneau corrected this idea and showed that there was not true gangrene of the throat as is sometimes seen in cases of scarlet fever, but only a formation of a substance on the surface of the mucous membrane the decomposition of which, and substances that got entangled in it, simulated gangrene. It is questionable if he could have ascertained much more regarding its

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its pathology if he had not attained the privilege of examining the dead bodies of many that died, the want of which had been the great hindrance to the progress of pathology in previous times. From these examinations he soon discovered that in the majority the Larynx was covered with a membrane similar to that on the pharynx, and which must have proved the immediate cause of death, though it was not recognized but their death was accounted for in another way. Among the cases he examined were those that were regarded as of true croup, and he could discover no difference in the character, and properties of the membrane in the Larynx in these cases from the membrane present in the larynx of those who were supposed to die from malignant angina.

angina. These observations led him to doubt if there being any difference between the two diseases, as he believed that by their anatomical characters diseases were best distinguished and further observations extending over several years convinced him that the two were identical in their pathological relation and differed only in the locality and extent of the membrane which was the local manifestation of the disease.

He further proved by the publication of his researches into the writings of the old authors on the subject, that the two diseases have always presented themselves in combination in all the epidemics of malignant angina described, from very early times.

Bretonneau believed that the observers in the 17th century previous to the publication of Dr Home's pamphlet on croup

croup were beginning to recognise that the larynx was often affected in malignant angina and death to result from that cause, but by the publication of his treatise, Home diverted them from the right direction of enquiry ~~and~~ by describing a disease which he thought had escaped the notice of his predecessors whereas it was only the most common form of termination of malignant angina.

Bretonneau never succeeded in discovering a specific that could cure or cut short this terrible disease, but perhaps, considering its nature this will never be discovered, at any rate neither he nor any one since his time has been able to recommend any medicine or method of treatment, that could be called specific.

It is to Bretonneau that the honour is due

one of first successfully performing tracheotomy in this disease and the patience and perseverance he displayed ere he succeeded, deserve the highest praise, for it is now generally admitted that lives are saved and much suffering alleviated by its performance in otherwise hopeless cases.

All the French writers on this subject after Bretonneau, and more especially Trousseau, who has perhaps seen more of the disease than any other man, have supported his view, and at the present time the identity of the two diseases is not disputed in France, but in Germany, America, and in this country opinion has been more divided the majority perhaps inclining to the belief that they are distinct.

Since commencing practice in this District I have attended about twenty

twenty cases of unquestionable diphtheria, and six cases of croup in which I had pretty clear evidence of the presence of membrane in the larynx, and many cases of catarrhal laryngitis. My experience has thus been comparatively small yet from some of these, I am able to corroborate some statements that have been made regarding it.

It is maintained by those who hold that the two are distinct, that croup is a local affection, produced by a local inflammation, or merely the result of simple inflammation and identical with catarrhal laryngitis; but produced by a difference in degree of the inflammation; that it results from exposure to cold or damp, and is not contagious: while it is pretty generally admitted that diphtheria is a specific constitutional

constitutional disease, due to a poison or miasm finding entrance into the system, is contagious and spreads by infection at least in some cases. The question of the origin of the two is a very difficult one to settle even as regards an unequivocal case of diphtheria there is often much difficulty in knowing how it originated. I have little doubt but that diphtheria may originate independent of contagion — from influences arising from neglect of sanitary precautions — the odours of gases emanating from decomposing faecal or other organic matter, or from the use of water impregnated with such substances. I have not had a good opportunity for investigating this question, for though the disease has not been so prevalent as to constitute an epidemic in this locality, yet the

the cases have not been so scattered as to be classed as purely sporadic; besides it has never been absent for any length of time during these two years, and as there are other practitioners in the district cases of which I dont know of ~~so~~ it is just possible that cases which are regarded as originating spontaneously were due in fact to contagion combined with the favourable conditions for its development. That diphtheria is contagious there are well authenticated cases to prove and which could have originated in no other way it is known only so, in a limited degree and not in the same sense as Scarlet Fever or Small Pox. If Croup be the same it must be contagious likewise and those who maintain that is is different

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different, have good grounds for their belief if they can prove that croup is not contageous. From the difficulties I have experienced in investigating this subject I cannot answer the question from my own experience certainly of the 12 cases of true croup, which I have seen three of them were in different houses, and effected only one member; two were in the same house and the sixth occured in the same house with a case of diphtheria. Yet diphtheria does not spread in every family it attacks, for I have had cases where only one member suffered, though there were other children in the same house: in the majority of cases two and even three children of the same family suffered which points to it being communicated by contageon

contagious it may be that further experience of croup may confirm me in the belief that it & likewise is contagious. Many instances of simple laryngitis I have no doubt have been held forth by mistake, to prove the non contagious character of croup.
That exposure to cold is the sole cause of the origin of croup, and that it has nothing to do with diphtheria, is often put forth as an argument against their identity, in my experience I have not found this to be quite correct, for I have remarked that people refer diphtheria, croup, and simple laryngitis to the same cause, viz, exposure to cold. This is not strange for it is quite probable that exposure to cold will determine diphtheritic croup in one whose constitution at the time so

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so predisposes him to that affection, and in another only gives rise to simple inflammation of the larynx, for it a matter of daily observation that the same cause produces different effects according to the peculiar state of the individual on whom it acts thus if different persons lying out all night exposed to cold one may suffer afterwards from pneumonia another from nephritis, and a third from rheumatism. Though membranous laryngitis is apparently determined by the same cause as simple laryngitis, and they often exist in the same circumstances, yet the identity of the cause is not sufficient to make us believe in the similarity of their morbid alterations and symptoms. By this I mean that when

when diphtheria is in a district, children who have their vital powers weakened by exposure to cold, are more likely, than those who have not been so exposed to be affected by it. The perfectly healthy are often able to resist the influence of the poison and do not suffer from its effects this can explain how croup and diphtheria are so often referred to cold as their origin.
Again children may have already contracted the disease and the effects of cold only hasten its manifestation.
To me knowledge a case of croup and one of diphtheria occurred here not very long ago, in the same house, the patients being two girls, sisters, living in a cottage situated by itself in a healthy situation near Carluke; the sanitary arrangements of the house were very good, but there

there was a case of diphtheria in a house not very far distant.
Jessie L. four and a half years had been noticed to be out of her usual health for some days previous to my seeing her on the 15th of November /94.
She was a healthy and robust child and when I first saw her, the pulse was one hundred, her skin was hot, and she was very restless: her voice and cough were very hoarse. On examining her throat I could see no trace of any patches. On the supposition that it was a case of catarrhal laryngitis (though I did not observe any other signs of catarrh about her which generally are present in such cases), I ordered a fomentation applied to leeches to the top of the sternum, gave some diaphoretic medicine, and directed that

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that warm fomentations be applied continually to the throat. This treatment was carried out till next day, when I saw her, it was evident she was much worse, her voice was more feeble her cough had a brassy ring about it, and her breathing so laboured as to convince me that I had to deal with membranous laryngitis, and which would likely prove fatal. The fomentations were continued to the throat and the atmosphere surrounding her connected with the steam in the kettle that again, which evidently complicated the case might be obviated and separation of the membrane induced. This treatment did evidently much relieve her as the paroxysms of dyspnoea were not so severe. On the 17th she got worse again and her distress so severe that I administered an emetic of ipecacuanha which had

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had a great effect in relieving her and during some of the fits of coughing she expectorated a piece of membrane. She got worse again at night when I proposed tracheotomy, but the parents would not hear of it. She died next day from suffocation. Convulsions to the very last. In this case no membrane was evident on the pharynx or tonsils as I repeatedly looked for it. Three days after Jessie's death I saw her sister Marion aged 2 1/2 years, she complained of sore throat which on examining I noticed was congested, no membrane however was yet apparent but on the following day, I noticed patches on the tonsils which could not be easily removed she was fretful complaining of her throat and pain in swallowing. her breathing was quite easy her voice

22 clear and no signs of laryngeal

Laryngeal affection was rash on her when was there any scarlet fever in the district.
In another day the membrane had spread to the fauces and pharynx, her weakness had increased, her pulse was more frequent, and feeble: She got half tea spoonful wine, milk, and other easily assimilated food, Tincture of Steel and Chlorate of potash internally, and for some time used what I have found very satisfactory result from, viz the steam from Carbolic acid in water, breathed by the patient at regular intervals. No bad symptoms attended this case further than the general depression which is the danger chiefly to be prepared for in those cases where the Larynx remains unaffected the membrane disappeared about the ninth day and her temperature and pulse were normal, on the 14th day

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day, after which she rapidly regained her strength. I could detect albumen in the urine in neither of these cases. Perhaps no conclusion should be drawn from this instance of the diseases occurring in the same house, but if it was often repeated it would furnish evidence to establish their identity or at least from that the one disease may give rise to the other, or both originate from the same cause. I mentioned this case to a neighboring practitioner who held that the two were distinct and he granted that the first case might be true diphtheria, but I replied if he admitted that; he must admit that all my cases of croup where diphtheritic membranes were in no way differed from the one described.

26 As an argument in favor of their distinctness

distinctness it is alleged and I have in most cases found it so, that those attacked with diphtheria complain of ill health for several days previous to the appearance of the membrane on the throat and that in cases of true croup the larynx is attacked at once without any previous ill health. This does not hold good in every case for in the case of a boy seven years old whom I attended he had been complaining for several days and in the case of Jessie S. already described she also had been noticed to be ill for several days. On the other hand I have known a case of diphtheria in which the membrane was seen on the very first day of the illness.

It cannot now be held as it was formerly, that the presence of albumen in the urine of those affected with

with diphtheria makes it as a constitutional affection in contradistinction to croup for in cases of true croup albumen has been detected in the urine, besides it is by no means a general rule to find it in diphtheria. I examined the urine in ten cases of diphtheria and only detected it in four and in these the larynx was not affected and only found it after the first week of the disease. Have not seen it in diphtheria where the larynx is affected and the disease terminated fatally in the first week, nor in any of my cases of croup. This may be accounted for by the sudden termination of these cases and I think that albumen must have been present if the disease had lasted longer.

The fact that diphtheria not unfrequently affects adults and that in them it rarely

rarely see true croup appear at first sight to signify a specific difference; yet we find diphtheritic croup in them but rarely. In nearly one half of instances of diphtheria in children the larynx has the seat of membranous inflammation yet I have not had a single case of diphtheria in which the larynx was implicated; but this goes only to prove that the larynx of an adult is less susceptible than the larynx of a child to suffer from membranous inflammation and it is owing to this fact and also because there is not the same difficulties in applying our remedies that in them the mortality is not nearly so great. The various symptoms of disordered innervation that sometimes follow diphtheria have not been observed after cases of croup but these cases of diphtheria

are very rare that are followed by such symptoms and they often appear long after the disease, so that they may have not been noticed when they did appear after croup, or when they did, they were not suspected to be in any way connected with croup as they were not expected. In some epidemics there are no such consequents at all and I have never myself seen a case in this district.

The clinical characters then of the two diseases are not sufficient to convince unprejudiced minds that they are different nor do I think taken alone establish their identity but when we turn to the anatomical histological and chemical characters of the membrane produced in both cases and fail to distinguish them by any means at our command I think the balance

balfana of evidence points in favour of the latter idea. Bartomeau pointed out fifty years ago that they were identical and pathologists ever since with all their improved means of research have failed in discovering any difference that can be taken as a constant difference or certain guonal for distinguishing them. This question of their identity is of importance as regards the treatment of such cases and I think evidence can be adduced bearing on the question from results of treatment. I lately met a practitioner in consultation over one of my own cases, we both recognised it as membranous laryngitis and he believing that it was caused by a local inflammation thought that leeching, blistering and a course of calomel would be beneficial, at the same time he said, he would not adopt such remedies

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± in diphtheria

remedies: Now if membraneous croup
was due to simple inflammation like
simple laryngitis, we should expect
that remedies that relieve the latter, would
in some cases, at least, benefit the
other; but this is not so as far as I have
seen, for I have never seen a case of
membraneous croup in the least relieved by
the administration of calomel, bleeding
and blistering, or any of the other so
called antiphlogistics; on the other hand
in simple laryngitis I have observed
marked benefit from leeching, antimony
and purgation

Robert Sterne
M.D. of 1843

Carlisle
March 1st/75

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