Thesis - Group

by

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To the Medical Faculty of the University of Edinburgh,

Gentlemen,

It is perhaps unnecessary for me to premise, that the contents of the following paper or group, will be found to consist, more in a compilation from the writings and experience of many authors, than in any attempt at original research. I have been induced, after a prolonged and careful study of the various writings on the disease, to draw inferences and make observations, unaccompanied, however, by any personal experience of the disease, in the hope of being able to fulfil the requirements of writing a thesis, without making exactly a piece of wholesale transcription.

The inferences and observations I feel are trite, but may be worthless; but I crave the leniency due to one, who, while a tyro and inexperienced, is required to produce a thesis before being allowed to graduate.

In order to avoid expanding my writing inordinately, I may perhaps be allowed to state here, in general, in place giving lists of names and references at each particular part quoted, that I have gathered largely without reserve, from the writings and experience of numerous authors on the subject. A few of the principal shall mention here.
The works referred to are those of
Dr. Pittit & Parthey, Bretonneau, Lebert,
Grousseau, Guerent, Dalleix, Bonde, & Haine.
Dr. Cullen, Watson, Wood, Home, Roger, Cheyne,
Chapman, Merriman, Maunell & Keaton,
Lemee, Stokes, Neer, Churchill, Meigs, Green,
Millar, Simpson, Rankings & Bude abstract.

Medical Journals: T. T. T.
* See definition page 41.
In the following thesis it shall be my endeavour.

I

To take a short glance at the history of Measles, whether *Primary or Secondary,* as well as a brief notice of its geographical distribution, the changes which it has undergone at different periods, when occurring epidemically or sporadically, & also to notice the change in type which it appears to have undergone, when viewed as a disease of the present day.

II

I treat of the real nature of the disease:

under this head,

A. to raise a question as to the local or constitutional nature of Measles, objecting to the use of terms such as "Lunatic Laryngeal," "Lunanche Febrile," r. r. to express a whole disease, while in reality they are employed from their derivation understand to designate only a part of that disease;

B. to notice on what the fatality of Measles depends:

C. the probable reasons for young children being more liable to its attacks than adults, why when attacked it is in them more fatal, as also a view of the comparative effects on country & town children caused by it.
III

To follow the general symptomatology of the disease, considering:
A. its signs, course, duration, termination, and prognosis.
B. its division into Primary, Secondary, Group, with their respective characteristics.
C. the subdivision of Primary Group into:
   1. Inflammatory Group,
   2. Haemodip Group, according as the circulatory or nervous system is more involved.
D. the complications of Group, and
E. its diagnosis.

IV

To enquire into the pathology of Group, the process by which the false membrane is formed, its nature and constitution when formed, viewed both microscopically and under chemical reagents. At this place, to enquire into the etiology of Group.

V

To consider the Therapeutics, general and local for Group, under General Therapeutics to consider:
A. The effects of general bloodletting in Group, advisable or not advisable, if advisable when, or in what cases.
B. The use of emetics, the peculiar merit of one class of emetics ever another; which of these preferable?

C. The use of the warm bath; vapour of water in chamber of patient; necessity of keeping up equal temperature.

D. The use of calomel, expectorants, also of stimulants, at what stage their use is indicated.

E. Advocates the use of chloroform in certain cases of cases, at certain stages in the disease; noticing its therapeutic, physiological, & therapeutic actions. Refers relates to stage.

Under Local Therapeutics to Consider:

A. Inhalation of steam simple or medicated, in certain forms of the disease: nebulisation with album powder, nitrate of silver powder.

B. Application of cold or ice to throat, warm, leeches, blisters to other parts, ointments.

C. The operation of 'swabbing the larynx,' its history, progress & success, with cases in proof of these.

D. The operation of tracheotomy, advantages expected to result from its judicious performance; when in what case it is to be performed, arguments for & against, with statistics which have been collected on the subject.
II

History  

We have no precise or satisfactory account of Primary Gout till the year 1765, when D'Home brought it forward in his valuable work. From different passages however in the treatises of older writers, we are led to believe that it has occurred from the earliest ages. Hippocrates refers to it in his work on dentition, but there, from the very slight sketch which is given, it would appear that his knowledge & experience of a disease which in succeeding age was so generally prevalent & so well distinguished, was at the best but scanty. We find a true description of Gout as a secondary disease, in the works of Aetius, where in noticing an affection known as the Egyptian or Syrian ulcer, after describing all the prominent symptoms he gives or locality. That the inflammation extended to seized the throat & in a few days was fatal, if invading the air passages by strum-gulation. The symptoms of this he describes as, difficult inspiration, cough, change of voice, nature of inspiration, respiration, affection of tonsils, vividness of balhous face, vain attempts made by patient in endeavoring to breathe, startling in sleep, restlessness, suffocating paroxysmes, inability to remain in upright posture &c. &c. Next he gives all these symptoms as aggravated followed by collapse & death. He further remarks that it seizes its victim generally before the years of puberty.
After this notice of the disease it appears to have been omitted for some years in medical literature. Julius Modestus takes notice of it, remarks that the Roman people were wont to offer sacrifices to the goddess Veneria, in the hope that she would free them from the fatal disease. In 1570 M. Baillon was the next to notice it in writing, but even then it was often confounded with other larger gland affections. F. Blair, of Upsan, Angus, described the disease in his setting of medical papers in 1718. Grieve noticed it as it occurred in Italy in 1747 under the nomenclature of Angina Sereitosa. Nitsche, in Sweden, in 1764. Then came Home's full exposition of the disease, as also those of Helen and Mahlom of Sweden. Next came Miller's papers on acute asthma of children in 1761, in which work the spasmotic variety of cough is classified under the above title. This gave rise to much controversy in Britain and on the Continent, brought the affection more before the eyes of the medical public.

Many of the accounts here mentioned refer to the secondary variety of cough or that following gangrene, sterility, scarlatina maligna and other diseases. The affection seems to have differed in type in different countries; or rather, while in one country it appeared in its primary form, in another it was as a secondary...
the secondary variety seems to have predominated, in general as an appalling and very fatal epidemic, varying in its intensity at different seasons and under different circumstances. In Britain & America on the other hand, the primary variety, either in the inflammatory or the form, prevailed, but neither so extensively epidemic as to be nearly fatal as that on the European continent. Epidemics made fearful ravages in Spain, France, Germany & Italy—so that in Naples in 2 years five thousand of those who were attacked by it died. About the middle of last century, epidemics of both primary and secondary overran England, France, Sweden & America, visiting in special violence New York & Philadelphia. From that time down to this, a gradual but satisfactory diminution both epidemic & sporadic visitsation has occurred, until at the present day the disease is seldom met with, or when encountered is looked upon as only a minor disease. In all the epidemics of longs occlusion of the air passage was noted, as the principal danger, many significant were the terms by which it was known. In Spain it was termed "garotilla," in Naples "malà in canà," in Rome "foeis anginœa," "affectus suffocatorius," &c.
Morbus strangulatarius, "pozaecranus pueros," etc., etc.,
all more less expressive of the dreaded evil, perhaps
more truly descriptive & not less scientific than our own
questionable terms. From the times already referred to
down to the present, group has been the subject matter of
many talented authors, striving zealously to unravel its
mysteries but never imperfectly comprehends nature, in
the hope of successfully combating its attacks & lessening
if not preventing its fatal results. As yet success has been
but partial, a more thorough investigation being necessary
before the disease can be fully overcome.

Due to its mortality, Manley says 1/3 of those attacked died.
Michaelis Bard say 2/3 of 3, Turine 1 in 20.

For ten years in Philadelphia between 1835 & 45,
157 died per annum. In Paris in 1838, 137 died of it;
in 1839, 286. In 1840: 326. In London in
1840, 391 died of it; while in all England 4,336.
In 1841, in England 4,177 died, in 1447 in 1842.

We may have perhaps best notice the change in type
which Croup like almost all other diseases seems to
have undergone, so that at the present day it is a
rare thing to meet with cases of genuine acute inflam-
many Croups, the change of heat & resulting from this is
more palpable - but this we leave for a later part of
the dissertation. To this less ethereal type we may I
think
in part, attribute the less fatal nature of Coxs in the case of many of those now attacked, the system seems less disposed or less able to react with energy, so great the latent excited formerly or perhaps we may infer that the exciting causes are less active or prevalent now than then. The improved cultivation of towns and country, the more rigid & sanitary sanitary measures carried out in each, have no doubt their weight in staying or preventing epidemics among the crowded tenantry of our manufacturing & populous towns, whilst the reclaiming of much waste, marshy land with the suitable accompaniment of drainage & tillage, have done much for country districts, in uprooting many nurseries & laboratories for the propagation & concentration of micro scopic & malariae poisons, which appear, as I shall afterwards try to prove, to predispose to, as well as to excite affection of the air passages, such as that before us.

III

Nature of Coxs.

Coxs, as generally received, is said "to consist essentially in inflammation generally of a highly acute character of the larynx & trachea, or of both, which terminates in
The majority of cases in the exudation of false membranes more or less abundantly upon the affected surface, is accompanied by a spasmodic element in every case. It is to be known by a peculiar ringing sound of the voice in the person affected, a characteristic cough, difficult respiration, sense of straitening about the lungs, & by apoplexy attending it. It is one of the most formidable fatal diseases of childhood, except when occurring in its slightest forms treated early. It is essentially a disease of early life but occasionally is met with in more advanced years. It is peculiarly liable to attack children from the time they have been weaned, not before that, till after the ages of 10 or 12. The first few years of infant life are peculiarly subject to its attacks & it is at this time that its fatality is greatest. Mr. Richet & Bro. say it is most common in France among children between the ages of 2 & 7. M. Gourreau found that out of 32 cases of the disease, 15 were from 11 months to 3 years' age.

11 were from 3 years to 5 years
6 were from 5 years to 26 yrs

Out of 332 cases reported by Andrél.

61 cases happened between the ages of 1 to 2 years.
43. ------- 2 to 3 years.
54. ------- 3 to 4 years.
42 between 4 to 5 years, & 29 between 5 to 6 years between 6 yrs
From the American reports, the most deaths take place from whooping cough between the years of 2 and 5, perhaps after 10 years. Most human cases are attacked before the age of 5 years. The disease may occur epidemically or sporadically, and while the primary attack is not contagious, the secondary is prominently so as proved by many well-conducted cases quoted by French and other authors. In general, it assumes a typhoid anything but mild, with differences apparently in different countries and under different circumstances, in its general course as well as its terminations, at all times and in all places, justly dreaded as a formidable, not a frequent, very fatal disorder. Modified at different periods by peculiar conditions of the atmosphere, it occurs as well inland as on the sea coast, and seems partial to damp atmosphere such as is met with in localities bordering the mouths of rivers, or lying near the banks of lakes, over which place amine or less constant miasmatic atmosphere may be seen rising to float. Many opinions have been, and still are, expressed as to the nature and exact character of the inflammation, & the extent to which it seems of the upper part of the air passages may contribute to its production. The inflammatory signs, sometimes found on the parts covered by false membrane, may be very slight, or they may be absent, but...
Moreover phlegotic symptoms may be entirely wanting, all of which go to favour the idea entertained in this paper, that gout is not a merely local affection as some would make it out to be, but is a disease of a peculiar constitutional nature more or less connected with the state of the system, & at the principally manifested by the laryngeal & tracheal affection, still not merely consisting in an inflammation of that part of the air-passage, but in an unequivocally inflammatory form in strong, plethoric children, gout does not most frequently affect these unless they be of the languid, irritable temperament. It is thus seen presenting every possible shade from the acutely inflammatory to the least phlegotic & most manifestly spasmodic form. Itsmost inflammatory state may assume a spasmodic or nervous character after improper or very heroic treatment, such as after large depletions, for these while they diminish the phlegmatic state of system, increase the nervous & spasmodic. This among others is a reason to be held, strongly in view in considering the propriety or non-propriety of bleeding. I may here also notice as of importance to remember, that the quantity of fbrine & coagulum, in the blood drawn from the patient, & that of the albumen in the urine is great in proportion to the inflammatory type of the disease & the disposition to form false membranes; whilst
whilst, in the spasmodic varieties, where false membrane seldom exists, the blood, smaller quantity of it, a less firm exsanguination, & the urine is limpid, copious & little if at all albuminous. These show that in different forms of gout, not only does the blood differ in its quality & condition, but also the state of the organic nerves or vital powers. Hence we may argue, as in another part of this paper, I hope more fully to show, that the combined & mutual action of the nervous influence & the state of the circulating fluid, will give rise according to the state of the frame, & the nature & combination of the exciting causes, to constitutional as well as local phenomena, to a state of febrile action which shall be inflammatory in the majority of cases, nervous in others. The real nature of gout has long been the subject of medical investigation & as yet in its severer forms baffles all attempts to solve the mystery. Checked very often for a time by potent remedies, it too frequently continues to lurk about the system from which it was supposed to have been driven, while the hopes of the physician are rising with the amendment in his patient, it suddenly again steps in, with a fatal stroke, large, low its victim, & suddenly buries him from the scene of suffering. When feited in a second or third attack, it not infrequently returns it may.
it may be at distant intervals, when, defied by a wiry constitution strengthened by increasing age, it ceases its attacks or in a less happily constituted patient it triumphs in a late but perfect victory. Baglivi has said with him we must agree.

Equantum difficultiae! carum hoc motum!
Equantum difficilissimae codicem certum dare precequum.

Before entering more fully on the description of Croup, it seems to me the proper place to make what objections I have to make, concerning the nomenclature adopted as descriptive of Croup, which is in general use.

Under indulgence then I would first object to the use of the names employed to denote the disease, not only as not conveying a proper idea of the disease which they are intended by most authors to represent, but further as not conveying to the mind a correct explanation of the real disease. The terms Tracheitis, Laryngea, Laryngeal Tracheitis &c. are really misnomers for in the first place they each describe a real and special disease, while in the second place they are used in attempts to designate one single disease which is in many respects different from either of the originals. They are worse even than the old term Croup, which while it merely refers to one of the prominent symptoms of the disease, namely,
Cough & respiration, pretends to nothing scientific & involves its adopters in no theory. On the other hand the more classical terms not only are incorrectly applied, but each involves hypothesis, which, supposing it to be true, is but a portion of the whole, not only this but they do not include some of the more constant & important symptoms such as spasm of the glottis, which is not only essential to constitute the case one ofroup, but is very frequently one of the causes of its great mortality. Still further I object to them as leading the mind off from taking notice of the constitutional symptoms, while it concentrates its attention upon a local manifestation, & in this way leading one to pass over or neglect the primary disease.

As to the real nature of the disease known by the term "roup", I disagree with Mr. Churchill & others who in defining "roup" say that it is a disease consisting in inflammation generally or a highly acute character of larynx & trachea or of both, which terminates in the majority of cases in the exudation of false membrane more or less abundantly upon the affected surface. None will deny that such symptoms are seen in "roup" in the majority of cases, but in place of looking upon these as the disease, I should consider them merely as local manifestations or symptoms of a primary more general disorder, however obscure as yet the nature of that disorder.
disorder may be. If it can be shown that these symptoms do not always exist in (group) as called, that when existing they only do so as parts of the disease, & accompanied by other manifestations more constant than they are in their appearance (presence) through out; if on the other hand these same symptoms can be proved to exist prominently in other affections, not comprehended under the definition of (group), not as all allied to it, I think I shall have proved that the term is incorrectly applied to denote apart in place of the whole complaint, or that it is applied to two or more forms of disease at one and the same time, which are in themselves different. I need nothing adduce cases to show that such have occurred with all the well marked symptoms accepted as those of (group), viz. the peculiar character of the voice, the characteristic cough, difficult respiration, urgent pharyngeal dysp-pnea & fatal asphyxia in which no inflammatory lesion has been found in either larynx or trachea, either as denoted by auscultation during life, or post-mortem examination. See for instance the cases quoted so fully in the works of Millar & Simpson 1761 & 1769 for under the head of acute asthma of children, where there was such freedom from inflammatory symptoms, so much of the nervous as to lead those writers so to classify them. Every writer upon (group) has met with cited such case.
Cases, I must have called such cases coughs, while in the
same page they describe other cases of a totally different-
character and inflammatory type under the same name.
The only thing they look to in the cause of death in both, with
the pathognomonic symptom preceding each death in both
cases, namely the spasmodic cough and paroxysm. But this
cannot surely be the true investigation of a disease which,
differing in its symptoms till the approach of death
has but the mode of death in common. Here we break
short in our research at this point since each case
forms, without looking to the state of other parts of the
system, which precede or accompany these, we would
need to extend our terms to many very different
diseases and accidents; in fact, include almost all the
diseases of the lungs whose tendency is to death from
obstruction to the air passages. Thus the spasmodic
variety is known to cause asphyxia by permanent
spasm of the glottis, while the inflammatory variety also
causes asphyxia by this same result. But, in a majority
place by preventing a mechanical obstruction to the
egress of inspired air, and therefore to the ingress of fresh
air, when that obstruction is of a valvular nature; or
by totally preventing the ingress pain by closing up
the caliber of the air passages, and thus causing asphyxia.
But the presence of a false body in the larynx may
May simulate the first variety, or its longer retention simulate the second, exciting inflammation as well as spread to even cause death from asphyxia, & it will be seen at once, or I am not for a moment think of calling such a death death from Croup. It seems therefore, to me clear that if we content ourselves with the mere manifestation of local symptoms or lesions in Croup, & do not go beyond these to investigate the constitutional state of the system, we at once err on the threshold of the enquiry, & divert attention from its proper channel.

It seems almost as preposterous to receive under the term Croup, all diseases whose end is asphyxia with spread of the disease or croupy cough, as it is preposterous on the other hand, to class under the same head two diseases to the exclusion of others in which the only thing common are the symptoms produced during life, the manner of death. If diseases are to be classified according to their pathological conditions, as the terms applied to Croup would lead us to suppose is intended, as regards that disease, the terms so applied must be wrong. If on the other hand, symptoms alone, are to be considered along with the ultimate cause of death, e.g., in this case, want of breath or asphyxia, the term Croup must be enlarged or allowed to include diseases & accidents at once contradictory & irrelevant.
But again we have only to go a little further into the subject & we find that there are other diseases in which the local manifestations are exactly similar, both as to Pathology & ultimate Consequences—only the site of their manifestation is in the first instance different. I allude to the extension of the so-called Diphtheritic affection from the tonsils & mouth in Gangrene, Scrobuti, to the same extension in Angina Maligna; to a similar state following "measles", "chirnch", "follicular stomatitis" &c. — You will deny I think that the symptoms results of these when extended to the Larynx or still further, are not necessary, to the Trachea are exactly identical to those of the so-called Goups. Why not here extend the term Goups to such affections, or why use these terms differently? It is not to denote the local affection of the gum or mouth organs that we use the terms Scrobuti, Angina Maligna, Chirnch, Follicular Stomatitis &c. That would be to name an effect in place of its cause. I think it may apply to Goups, & as surely as we have other well marked phenomena in Scrobuti & Scrobuti, caused by the poisoned or disorder'd state of the blood, so surely may we think, expect, though our present knowledge won't admit you affirming it, that a similar cause may exist & lie at the root of Goups.
If the blood then I think it is that most of the phenomena primarily point to it, its effect upon the nervous system may perhaps be due, most, if not all, of those dangerous manipulations which are seen in group, whether primary or secondary. In this conclusion I am led by analogy on the one hand, and inference on the other. I conclude (it may be prematurely) that the blood is at fault in most cases, first because other diseases in which it is proved to be initiated, or as fault, as the direct consequent on bad diet, continued dietetic error on the one hand, blood poison on the other, have a similar pathological result, more or less dangerous according to the site of the deposit. But that in group it is more the locality fixed upon, the vital importance of the healthy state of that locality, to the maintenance of life, that renders the affection a most dangerous, fatal disease in the case of group which in other localities and forms of disease is comparatively safe. For in the latter class of diseases, take for instance that of gangrene septici, full scope is given for the exhibition of medicinal agents and time for their action, while in group, such an opportunity of exercising the healing art is either if the nature of the case peremptorily denied, or if for a time granted, is speedily suspended, not by the morbid action going on but by a violent as it were extraneous cause, which with ruthless and sudden severity by choking our patient
Oecum African

Composition: 67-68
*Second because it is not until the mucus membrane is allowed to act upon the secretion, that we can hope for the detachment of the pseudo membranes, & it is this we aim at by our expectorants & partly by nauseants.
for this, as will be shown in the Pathology of the disease is not determined by any power over it by the blood, inasmuch as every clot when of sufficient consistence & placed in the requisite relations, namely near & moistened to any tissue as the muus, has the power of forming from its blastema, cells, fibres & vascular tissue which in their turn in favorable circumstances are converted into true tissue such as false membrane, &c. &c. If the disorganization or deformed condition of the blood too perhaps we may be able to attribute the sudden vital depression so often met with in Camp, which sometimes is the real cause of death. Thus with a blood, say originally vitiated, we have cause at work increasing & furthering that vitiation by deficient secretion, what wonder then that the nervous system, that most delicate of organs, should be thrown out of gear, should be at first excited, easily irritated as on the slightest irritation to the now over-sensitive glottis, should next become blunted, intoxicated by the vitiated food it is receiving, & refusing to or unable to impart the requisite stimulus to the Great Centre of Circulation, the Heart, Cause a sudden & decided death? May not each be the cause of the occasionally mysterious issues in Camp, which has not infrequently appalled the physicians & by no pathological symptom designed to satisfy this mystery?
Here I from what has been already stated to draw a definition of <[illegible]>. <[illegible]> a disease (of a yet mysterious nature) probably of the blood, the most dangerous result of which is its tendency to manifest its effects locally in the respiratory passages, more especially in the larynx; probably excited to this by some atmospheric taint, causing thus, either violent inflammation & exudation (convertible into false membrane) in the air passages, leading to closure of these & death thereby from asphyxia; or secondly from its effects on the nervous system (the effects of vitiated blood) excited by the impressions carried from the larynx from irritation thence, causing permanent spasm of the glottis & death thereby; or lastly arriving at a still more sudden issue by some mysterious devitalizing agency whereby the vital powers are at once fatally prostrated.

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B. On what the fatality of [illegible] depends.---

As to the particular cause of the fatality in the general sum of cases of [illegible], I think it may be safely stated to depend primarily not so much on the kind of inflammation as the vital importance of the organs attacked, secondarily on the speed of that attack, whether that be the violent spasm of the laryngeal muscles, or on the equally fatal obstruction to
to respiration by the presence of false membrane occluding the air passages. The deficient aeration of the blood caused by the gradual exclusion of a proper supply of air, from the increasing exudation, or the presence, as is often found, of mucus or muco-purulent matter in the air vesicles, are also causes in an earlier stage. Not indirectly of damps. These cases in which sheer peroration of the vital powers is the immediate cause of death, may also be included here, as these symptoms are secondary in supervene on others just mentioned, although in some cases referred to in a later part of this paper, probably due to cardiac lesion or destruction. The first of these suppositions is supported by the fact that similar inflammatory affections attacking the mouth, pharynx, oesophagus with exudation of a similar false membrane, reaching even to the cardiac extremity of the stomach, are neither often, generally fatal until the larynx become affected either by sympathy or the extension of the disease. Moreover equally violent spasmodic attacks when not affecting parts of such vital importance are not necessarily or even generally fatal. But in a case the disease fixes up on an organ, the stoppage of whose function involves immediate death; an organ whose high sensibility only renders it the more serious when affected. Pneumonia, although a cause of death in (group) is not nearly so fatal
as D. Cheyne would have us believe when he says that 19 out of 20 of those attacked by gross pneumonia die of pneumonia. Too often the victim is carried off when merely the gateway to that complicated organ the lung is affected, before the disease has had time to cross its threshold, far less penetrate to its innermost recesses.

A secondary crop however an additional cause is at work to favor its fatality. The blood has already been seriously deprived, the vital resources of the patient have already been brought low. He has nothing to fall back upon as it were, he cannot rally. Though he wished, though he wished, the effect is that he speedily succumbs to the effects of a violent laryngeal affliction, invitation from want of vital force to aid him in the struggle for recovery.

D. L. The probable reasons for young children being more frequently attacked than adults.

These reasons can only be conjectural. It seems however, physiologically reasonable to suppose that in children, where the sensibility and irritability of their parts is so much greater than in adults, who from habit and occupation are much more subjected. Exposure to exposure of all sorts, especially atmospheric thermostatic, that the same cause when at work in both, will affect the former much more than the latter.
What of Dostoevsky and Dostoevskian action?
The effects of the attack will be commensurately severe. But there are many reasons why when attacking children, it should be more fatal than when attacking adults. In the first place, we find the disease very fatal; perhaps most so in very young children, those lately weaned, their delicate frames already affected by the indisposition arising from a change of food, are soon overpowered by the addition of a disease in itself so violent. When in children still younger so violent a disease occurs, we need hardly wonder at the great fatality then occurring. They have hardly as it were become accustomed to their new mode of life; while a general reformation has been established in their internal organism, whereby they are to learn to live and breathe on their own account, not through the medium of another, is it to be wondered at if they speedily succumb to a malady so urgent, attacking as it were the very essence of their new existence?

But again, as to the seat of the local affection, the larynx. In children not only is the larynx more sensitive, more easily irritated by slight causes, but its calibre is much less; therefore more readily obliterated, while after the period of puberty occurs the larynx and trachea undergo an increase of vigour, which gives the adult a greater immunity than the child from paralysis effect.
But as to the peculiar product of the inflammatory process which is so often the cause of death.

In the infant and child the textures are all more vascular; the mucous membrane highly so; the capillaries especially the capillary arteries (obstruction of which causes congestion & exudation of Liquor Sanguinis) are much more numerous than the adult. The organs of circulation also are much more irritable & excitable than in the adult, while the nervous system is more impressionable. But more than this the product of the inflammation in the child must be expected to be more highly organized than in the adult, for the blood of children is highly charged with all the materials not only for the nourishment of textures already formed, but with materials for the rapid growth increase of these textures. It is for this purpose more highly saline & richer in albumen & consequently the effusion when it does occur is more often dreaded than in the adult: first because it is more plastic & more capacious, & second because it has a smaller space to cover before causing the fatal act of suffocation. The inflammation or congestion too of the mucous membrane is more easily caused in young children from the greater size of the blood corpuscles in proportion to the minute blood vessels or capillaries which are therefore more readily choked & congested. Then again children have a much more impressionable nervous system.
than adults. epilepsy is just one of those affections which makes greatest impression on nervous systems of child, producing in many instances an amount of frustration ending only in death.

As for the reasons why male children are more often attacked than females, little can be said. It is sufficient to note the fact as interesting chiefly because at this early age both sexes are in general equally attacked by other children's diseases. Out of 36 cases of group on which Mr. Lousseau performed he operated 22 were males and 9 females. As similar prevalence is noticed by other writers on the subject.

The reasons why children in the country are more frequently attacked than those in towns seems doubtful, unless it be that the country child is more apt to be exposed to the supposed exciting causes such as damp atmosphere, and gasometric emanations from damp, marshy lands, while those in towns are more subject to the effects of effluent emanations from decaying animal and vegetable refuse which are quite different in their nature from those caused by the effects of the cold upon moisture, forming marls with sedimentary debris found in places recently submerged when they have again been deprived of their water. The cause for country children dying in greater proportion when attacked from those in towns, is probably
Majorette Department and the Norden Affair.

Not applicable to Geographical Group.
owing a good deal to the athermic + inflammatory tendency in them running higher than in the asthenic inmates of many of our city + town houses, + therefore the more readily suffocation of the mucus by an extensive congestion, from of the other by a less rapid + less plastic effusion. In London there has been remarked in the cases of croup, a condition of unhealthy ulceration about the larynx, as also ulceration + deposit of a cally grey paliform membrane about the tonsils, soft palate, uvula, seldom noticed in children enjoying conditions more favorable to health.________

III

General Symptomatology of Croup.
A. Its signs, course, duration, termination, prognosis.
Some authors hold that croup is to the child what laryngitis is to the adult. Cullen has said that it is to be known by a peculiar ringing sound of the voice in the person affected, a characteristic cough, difficult respiration, sense of straitening about the larynx, + by apoplectic attending it. In general it begins with none or less premonitory symptoms + runs its course in a few days; but it may begin suddenly + abruptly, the child being up to the moment of the attack well + cheerful, engaged with his usual amusements. It may also in very bad
bad course in a few hours. The general duration is from a few hours to a week.

It is customary to divide it into three stages, in order to facilitate the treatment to be pursued at various times throughout the disorder. Thus we have first the precursory period of invasion, second that of development, third that of threatened suffocation or collapse.

1st. The precursory symptoms may or may not be well marked or attract but little attention. They are usually those of a catarrhal attack. The child is more or less feverish, cross and drowsy, eyes suffused, nostrils discharging, he has sneezing cough which in this stage is in no wise peculiar—he has also it may be lacrymation. The respiration is not perceptibly disturbed, there may be slight sore throat and uneasiness about larynx with a slight change in voice, which sounds huskier. The skin is hot. Pulse quick. Thirst is urgent. The chest at this period is resonant on percussion. Some slight bronchial râles may be heard, or these may be awaiting the disease appear fully formed. This stage may last a few hours, rarely more than thirty-six, when the second stage commences.

In this stage we have the symptoms increasing towards evening as in the sudden seizure which then occurs, we have I think a forcible reason for the idea that in group
the nervous system is more or less implicated. Like most
other nervous diseases, the attack comes on at night
when the nervous system is more exposed to the effects
of any attack, more predisposed to receive them as it
were. The child wakes out of sleep with a sense of
suffocation & a hoarse, ringing cough. The respira-
tion much changed is hurried, whistling. Inspiration is
prolonged, & attended with characteristic stridor. The
voice is rough, hoarse, great alarm prevails, agitation
& distress are manifested by the little patient.
A few hours the fever is increased, while the anxiety &
distress of patient point to some mechanical ob-
struction in the breathing. At this stage it is very pro-
bable that from the suddenness & nature of the attack
symptoms, the cause is to be found in inflammatory
swelling of the larynx & not in any mere effusion of lymph.
The sudden & rapid dyspnea, cough, & other effects this.
This is one of the reasons for which I shall in a later part
advocate the use of chloroform as a powerful remedy in
certain stages & cases of whooping, believing not only that
the larynx is more irritable & more impressionable by any
slight cause, but that the irritation so produced, acting
upon a nervous system highly susceptible as that in
children at this period is, produces inflammation in
this highly vascular organ. The larynx, or when inflam-
mation does
does exist augments the evil greatly. So that if we can by Chloroform blunt the sensibility of the whole nervous system, we not only render the exciting causes of irritation ineffective, but prevent inflammation, therefore excitation in some cases, while we ameliorate it in others, or check the inflammation already existing. We may in this way check the irritation of the trachea, by that the edema, engorgement of the vessels, by that the consequent excitation & formation of false membranes as well as suffocative spasm of the muscles of the glottis & thus direct the disease to its most dreaded results. We also save the system from the shock it must otherwise suffer. At the same time we induce moisture of the throat & face by stimulating the mucous follicles & stands to pour out their secretion more abundantly.

At this stage the symptoms formerly described are all increased. The skin is hotter, drier, the pulse has become fuller & faster, face more suffused & flushed, the breathing more hurried, cough more frequent, the child is dull, fretful & passionate, has tremulous, urgent thirst but no inclination for food. These symptoms may increase for a little & the child become quiet & inclined to sleep, but again the dyspnea returns with increased intensity.

The whole
The whole chest heaves with the inspiratory effort which is more prolonged and accompanied by increased stridor. Perspiration breaks forth from every pore, the veins of the head and neck are gorged and distended. Short, forcible expiration follows, and after this the child goes to sleep exhausted, cheerless and drowsy. Sleep now no longer seems to be the genorous effort of a kind nature to strengthen and refresh the little sufferer; it is more the lethargy consequent upon a congested brain, congested with a vitiated blood, it is some what like the first sleep of the inebriated. This uneasy, interrupted by tremors and startlings, at times heavy almost epileptics, the child seems haunted in his dream by the horrible phantoms of his last paroxysm. Presently the paroxysm recurs, the patient again wakes startled as before, but in greater alarm, he has tasted the horror—the dread the repetition of the agony. He tries during the intervals by a change of position to better himself, but the sought-for relief is not obtained, the sufferer sinks back once more in his fellow despairing of relief.

At this period the second stage we have the "fruit serratique," the hoarse cracked whispering nature or the suppressed voice. The breathing also is changed, patient breathes asthno a narrow orifice...
The cough has a ringing metallic sound, like the succussions of air in a brassen trumpet; it is not however at this stage increased in severity in proportion as the disease advances, is unattended by expectoration or any it is only of mucus gives no relief. The paroxysms increase in frequency and more spasmodic, during which inspiration is almost suspended, the heart's action accelerated, while the dyspnea though not dependent on cough is pro vexed and increased by it. The cough may now cease altogether, the breathing become more sibilant than sti lulous. The difficulty of respiration & consequent efforts in the part of the child are very great. The countenance becomes almost livid & covered with perspiration. The hands are clenched, the arms tossed about, all covering & everything likely to impede respiration in the way of clothing is rejected hastily. The child sometimes tries to rise, or assume the erect or recumbent posture but with no relief. The head is now often bent rigidly backwards to allow the larynx stratch'd their fullest play, but still to no avail. The eye projects, suffused & injected. The carotids beat violently, pulse at wrist is quick & hard. skin hot, perspiring, burning heat, intense thirst still attends. Some febrile may exist but rarely, about...
larynx, the hands of child in vain are carried to this
throat although to seize & tear away some obstruction
to his breathing. The fauces are red & the larynx tender.
The tongue is red at tip & edges, coated in centre & at
back with white fur. The bowels are constipated &
appetite is gone.

Stethoscope reveals two important points at this
stage, viz. the amount of obstruction to the entrance
of air into the lungs & second the extent of disease
as regards the air tubes & substance of lung.

Afford the only morbid sound is that of stridor in the
larynx, respiratory murmur hurried, feeble & vesicular.

Percussion sound over chest is clear & resonant. A
gronomy sound with tibidant breathing is heard
over the larynx.

Dr. Stokes describes the positive signs as first, diffuse
sonorous râles, vesicular murmurs not distinguishable;
th en the same râle greater in intensity, indicative of
disease in the minute tubes; third, a combination of
donorous & mucous râles causing loud sound of
shutting the feeling of vibration to the hands when in
palpation it is placed over the chest.

Fourth, the crepitating râle of Pneumonia with
dullness on percussion over lower part of chest on
each side in general. The intercostal spaces are
conceal in
expiration. Mr. Barthez has noticed, the presence of a false membrane, marked by a vibratory or flapping sound in the larynx, which, when confined to the larynx, is so far a favorable sign; in the consideration of the question of tracheotomy, is a very good aid as deciding in such cases in favor of that operation. Should this sound be prolonged into the trachea or bronchi the case is not favorable. The stethoscope should be used at each visit, for although it does not afford absolutely certain evidence of the existence of a false membrane except in cases such as those stated above, while it is not an index of their extent, still it may show us when the disease is making rapid advances or point us on our guard against evils likely to happen. As the paroxysms remit towards morning, but toward evening, after many intermissions, exacerbation again takes place. The countenance by this time is swollen, puffy, livid or pale. Eyes still suffused, dim and dull, the whole expression is one of helpless hopeless agony. The pulse is very quick, is hard, feeble and small; skin still hot and dry unless it be over the forehead, face, which may be bedewed during the paroxysms of cough, by profuse perspiration. The extremities are cold and often covered with clammy sweat.
The child becomes still more restless and uneasy, no change of position affords even momentary alleviation, the hands are constantly applied to the throat, respiration is still more difficult, hurried, unequal and irregular. Arrived at this stage the advance of the disease if not checked is rapid towards a fatal issue, each step meets complication. Remissions are not perceptible while exacerbations are frequent, suffocation is more imminent, the paroxysms are occasionally followed by vomiting and expulsion of a gaily mucus, sometimes but rarely mixed with flocculent or membranous物质, affording temporary relief. Deglutition is difficult causing fits of coughing and strangulation. Speaking if attempted brings on cough. The urine is some times characteristically pale and abundant, in other cases highly coloured thick and scanty, occasionally particularly towards the close of this stage, white turbid. This during this stage that false membranes are found, but at what period, then indicated, it is hard to determine. It may be days before they appear but this is rare. In urgent cases the membrane is formed much more speedily. St. Bland found false membrane lining the trachea in one case whose duration was only 20 hours. We must look at sputum always for indications of state of chest & it is well to examine
it in water, & of those to lymph are seen in it. It is an important symptom of a favorable one. From Dr. Parther's mention, this as occurring only at an advanced period in disease, though it may be caused earlier by the medicines employed. No definite symptom can be laid down to prove that excitation has occurred, nor have we any proof that it does occur at any regular period of the attack, although certainly in this second stage.

9th Stage.

We now reach the period of collapse which may set in from 3rd to 4th day after the invasion. It carries on relatively in proportion to the intensity of the inflammation, the constitution & early age of child. This period is characterized by the absence of any remission, by aggravation of all the symptoms especially that of the pulse, also of respiration which are greatly accelerated with diminished power. Pulse is now intermitting, very quick & weak. The cough less frequent & sonorous, is suppressed & suffocative. The voice is low, whispering or abolished. Respiration is extremely difficult & accompanied by low hissing noise. All the muscles of respiration are called into powerful action, the head is thrown back, the nostrils are dilated. The eyes are sunken & dull, complexion is of a leaden hue or very palid, while cold perspiration betrays the forehead. The whole
whole expression of the little patient's face, figure &
picture is one of indescribable & unmitigated distress,
denoting the agony of oppressed breathing with the hor-
ror of suffocation. He turns on every side but finds no
relief; restless & anxious he struggles vainly for breath
& despair at those efforts prove useless. From this
stage recovery is rare & after still further aggravation,
death rescues the unhappy sufferer in coma or con-
vulsions. Death may occur in the suffocative paroxysm
or be a transfer from a state of lethargy & stupor from
exhaustion of the vital powers or result of venous congestion
of the brain into a state of deep coma.

The third stage may be less terrible from the use of medicine
which may have alleviated & checked the disease, but even
here a marked improvement is often of but short duration,
all the symptoms shortly recurring & death following.

The case may be, in attacks of the present day & of
the latest epidemics, less terrible, but the simplest
case is dangerous, it must be anxiously watched, early &
judiciously treated. The disease may be checked in its two
first stages by active & timely treatment. The duration
of the disease depends partly on the severity of the in-
flammation, partly on the amount of spasmodic
seizure & their intensity— but also on the vital energies
of the Child. Where the last two are prominently affect-
ed.
the disease seldom lasts over 2 or 3 days. It may be fatal in 24 or 36 hours or go on for 9 or 10 days. The 3rd, 4th, and 15th days are those most generally fatal. In secondary Croup, that variety so common on the Continent, the affection too often runs a much more speedy course. A few hours may see the patient carried off whether man or child. The aetiological state of the patient at the time of attack must go far to favour this result. Relapse when occurring prove fatal in the course of a few hours.

Group, seldom assume the chronic form, though Pagis, Allers, and Hildenbrand suppose that it does assume a chronic form in which the effused lymph is either reabsorbed slowly, or after a long series of weeks or days, ends fatally by ulceration. The usual symptoms of tracheal consumption, in some constitutions, especially in weak irritable nervous frames, more than one relapse may take place. Returns are most frequent after the first or last months of the year.

As to the terminations of Croup, it may end in recovery or it may pass into other disease which again may end in recovery or prove fatal, or lastly it may end in death by suffocation or coma, or by sudden or gradual exhaustion of the vital energies.
The first indication, viz., return to health is likely to occur when the form of the disease is mild. That is when respiration is quiet, in the absence of cough, when the excitement and frequency of pulse is moderate, cough loose & state of voice more natural. When mucous surfaces of the air passages are moist, attend to the expectoration of viscid mucous or membranous shreds. When respiration is general & copious, not clammy, on the 3rd day. Epistaxis on the 2nd, 3rd or 4th days. Absence or subsidence of attacks of spasm of the glottis & suffocation, absence of complications, exhaustion, irregularities of the circulation & respiration, & other signs of adynamia are favorable. Secondly, group may excite other disease or pass into it some other malady, which though serious is not necessarily fatal. Groups may pass into Bronchitis or Pneumonia by extension. These when occurring are indicated by the stethoscopic signs, namely, unremitting persistence of the symptoms, deep suffocative paroxysms of cough, greater frequency of pulse, lividity, oppression, cold clammy perspiration, somnolency & all the character of asthenic Bronchitis. Pneumonia is very often a cause of death in group. Pleurisy & pneumonia is often also found to exist in group.
Inflammation & ulceration of the mucous & subsynovial tissue of Larynx & Trachea may follow & laryngeal & tracheal Phthisis result. Relapses are more frequent when this is the case. Abscesses in the vicinity of the larynx & Trachea may be found, but not in general. Bronchial dilatation is frequently caused as also is Emphysema. Convulsions are more indirect consequences of the disease & follow Congestion of the brain. Effusion into the ventricle of Hydrocephalus is noted by Irvine & Trenchard, but is rare.

Prognosis.

Our prognosis in group must be guarded. No general unbearable. Probabilities are against recovery. Much depends on early treatment. If the case is mild, yet pretty far advanced before practitioner is called in, if fever is moderate & no complication exists, the child will likely recover. But if the attack is rapid & severe, the cough violent, respiration difficult, dyspnea intense & fever high, especially if the lungs are affected little hope can be entertained at any stage, none of 24 hours have elapsed before medical aid is sought. Danger is to be dreaded when the fever is very high early in the disease, when respiration is permanently audible, coughing laborious, when the case baffles treatment in the first two stages & goes on to third un-
Or when many complications occur, & the symptoms described in the third stage are violent, little hope can be reasonably entertained for the safety of patient.

IV. Division of Croup into Primary & Secondary.

It seems to me preferable to have two distinct classes of Primary & Secondary.

Under Primary I would rank cases originally upon the nervous or inflammatory theory. Under Secondary I would rank all those cases in which the peculiar local as well as constitutional symptoms of Croup are caused by extension of a different primary disease to the organs of the larynx or trachea. This arrangement corresponds to that of the true & false Croup of some authors, seems less objectionable as not involving any hypothesis as to what is true Croup & what is not, but merely following the symptoms given us in the diseases alluded to as Primary & Secondary Croup.

Primary Croup then which is the variety most met with in Britain & America is in many ways different from Secondary Croup in the first two steps, while it is allied to it in the last. Primary Croup is less generally fatal than Secondary Croup. It is more apt to confine itself to the young, especially to infants from 1 to 3 years old, while secondary is not
not uncommon among adolescents or adults, as especially after epidemics of these diseases in whose track it follows. The reason for very young children being more exempt from secondary group, is probably due to their general exemption, though by no means constant immunity, from the febrile exanthems until they have reached a certain age, while primary group attacks most frequently young children from 6 months old onwards to between 2 and 3 years of age, and next between the years of 2 and 7.

Primary group is not attended by the acute character generally presented by secondary group, and the treatment in the two is varied accordingly. In the Primary group antiphlogistic treatment is urgently demanded in most cases, while in secondary, most cases not only do not stand such treatment, but require us to guard against the tendency to a fatal termination from exhaustion of the vital energy. When secondary group is met with in Britain it is generally in the dense crowded cities where poverty and debauchery run riot among all the depressing tendencies of filthiness and vice. On the Continent, especially in France it assumes most formidable phases, little known in this country. It presents itself in its most aggravated forms in damp, ill-drained regions.
regions, assuming in general an epidemic form of extreme fatality. Like many other malarias affecting it has been noticed to spring up with marked malignity, in situations recently inundated, after the water has disappeared, or also in places such as the beds of lakes, rivers or marshes recently drained. At other times the epidemics have appeared without any assignable cause, when present they seem most prevalent and general, during certain atmospheric changes, more especially when the mercury is low, the temperature hygrometric condition of the atmosphere varying and variable, when the weather is such as to exert a depressing effect on the animal spirits. The primary variety is not contagious or at least this is not thoroughly determined, although it does give rise to the suspicion of contagion both from its epidemic attacks, and from its appearing suddenly after many years absence in any particular locality. The second variety is highly contagious as proved conclusively by many of the French writers. The influence of unfavorable hygienic conditions predisposes strongly to secondary crops as seen in its great decrease in Parician hospitals for children, where better ventilation and attendance is given them, along with limitation of their numbers. It is worthy of notice that...
the patients attacked by Croup in the Parisian Hospitals are those formerly inmates for other ailments. In Primary Croup, the affection of the air-tubes is a primary idiopathic disease, or rather the manifestation of a more general diseased state of system, while in Secondary Group the laryngeal affection is connected with a peculiar respect, inflammation of the tonsils, soft palate, uvula, & fauces with deposit of false membrane thereon. The affection of the air-passage in this case being evidently secondary occurrence. This is true that secondary group, as have styled it, is said to occasionally does occur idiopathically, but in such cases the original disease would seem to have probably existed beforehand in the form of small gangrenous sloughs on the fauces tonsils, &c., but so slight trivial a nature as not to attract attention, till having quitted their original locality, they have extended to parts where there presence can no longer exist modest. It is worthy of remark that such sloughs, most generally when slight, fall off entirely & leave no traces of their having existed before the laryngeal affection becomes urgent or calls attention to the throat. Consequently its inspection by the medical attendant. Dr. Bretonneau seems to me to have
clearly proved this in his admirable treatise in fifth edition. The cases quoted by that author were those of secondary group, when the child speedily died, but where in the post mortem, being made, no traces of false membrane or ulceration existed, seem to me to be classifiable under primary group. Out of 55 cases in which a post mortem was made, Dr. found only one in which false membrane existed in the trachea, alone, not in the pharynx or trachea. In one case which had taken on the most repulsive form, nothing could be discovered at the post mortem examination the least to resemble any gangrenous lesion, slightly diffused ecchymosis & as it were slight erosion were the sole pathological phenomena.

In secondary group, the general symptoms are general febrile disturbance, catarrhal symptoms, coryza, pains in the ears, not uncommon though often relieved by discharge of a serous matter; pain & difficulty in swallowing, not generally felt in primary group at least in the first stages, but attendant on secondary group from the period of its commencement & frequently the first symptom which attracts the parents or physician's attention. The predominance of this symptom in secondary is probably owing
the oedematous swollen condition of the pharynx, tonsils, and internal parts of the throat. At first, the child may experience very little annoyance from it, but it soon interferes with its usual cheerfulness, and becomes a very prominent feature in the complaint. On examination, the pharynx, soft palate, &c. are unusually red; the uvula, reflected, is dark red in colour, no great swelling may exist, grey spots are shortly seen on the tonsils, the base of which are red and swollen, similar patches may be seen about the pharynx. As in primary group, all the symptoms are increased at night, still pointing to a nervous connection. There is a hard, clanging cough, very perceptible stridor during inspiration, the voice too becomes croupy; the ultimate lost. Fever is the adynamic type, a fatal termination may be close at hand, without there being that same painful urgent dyspnoea or those violent efforts to obtain air, which forms so painful a feature in Primary Group. All the symptoms speedily increase, on further examination we find, after hours, often sufficient to have wrought great changes in the nature of the ulcerations. The greyish aspect of the pharynx is replaced by blackish or yellowish colored sloughs spreading over the tonsils & palate, in some very aggravated cases reaching the nares.
The Breath is extremely fetid, so much so as to be recognized before approaching close to patient. This is another point wherein Secondary & Primary Group differ. Then again in Secondary we have always from the first copious expectoration, while in Primary it is absent at first & till near the acute resolution of the disease. There is more drowsiness, heaviness of the head in Secondary Group, the pulse becomes small & frequent, often irregular. Dyspnea is urgent, countenance livid or pallid, puffy or edematous with suffusion of the face from Richard's cough, vomiting may occur & when it does is far from being an unfavorable sign. All the fearful symptoms attendant on obstructed circulation as well as the devitalizing effects of ill digested blood occur in Secondary Group, similar to those already described in the latter stages of Primary. The agony however is often lessened by the state of stupor or lethargy into which the debilitated patient so often sinks until aroused by the agony of the paroxysm. The cases of Secondary Group when fatal are generally more suddenly rapid than those of Primary, this we find exemplified by Mrs. Rilliet, & others. Britton, de Grussent. The sudden nature of the death, & their subsequent misdiagnosis, revelations at the post-mortem examinations, even in
Cases to have greatly astonished skilful physicians such as these, to have been quite mysterious inexplicable from anything that the autopsies revealed, while during life all the symptoms of Eczema existed.

A peculiar symptom noticed by Dr. Bretonneau in his work, which has never been seen preparatory to a-accompanying primary Eczema, is the remarkable membraniform, cheesy like concretion which on various occasions has been noticed to attend Eczema, or immediately precede it in its very malignant forms. It has sometimes been found below the external auditory canal, at the Concha, sometimes appeared in the eyelids, at other times behind the back of the ears. A similar condition has been noticed in Primary Eczema to affect the raw surface after the application of a blister.

Starr in France, and Dr. Samuel Bard of New York have also noticed this peculiar affection titled by Bretonneau, "Affection convenenue de la peau."

Bretonneau mentions the case of a woman affected with Angina Maligna, at 30, who had this Convenence affection living the external auditory meatus. Party Concha, she found its lobe of the same nature as that in the pharynx, while it yielded equally readily to the agents employed for its removal. The daughter of this same woman, at 5 years, had a slight excoriations at the back.
Case of Unwinding

[Signature]
back of her ears, covered by a "hard-like" concretion; the symptoms of "croup" speedily followed, and in 4 hours the child died. The day following, the younger brother of the child was attacked by similar symptoms; it seemed about to perish from suffocation, but by agency of chemical fumigations, a false membrane was expelled; on the following day fragments were ejected by cough, provided by the fumigations; thus, boy recovered. In another case, a concretion of similar nature was observed behind the ears of an infant of a few months old; it disappeared under the action of hydrochloric acid; after a time, the child seemed to have recovered, but in a short time it died; the nature of the malady was suspected; on examination, a false membrane was found in the larynx and trachea.

These cases, so far as an analogous nature, go far to support my former theory, that the site of all allowance in "croup" be it primary or secondary for the local manifestations, symptoms arising therefrom, are also for the affections that have preceded or caused the attack; there is some important lesion, as yet not understood, which is at the root, and seems to me, of the whole disease.

Secondary croup, when not idiopathic or metastasis, the dangers sequel to complication of other diseases, more especially...
of gangrenous scorbutis, some varieties of thick, several of the searthenes. It may run a rapidly fatal course, or steal on to death by insidious steps. It is very generally fatal, therefore, justly dreaded.
The esophagus is sometimes the seat of a similar affection, which generally precedes that of the larynx, but occasionally seems to follow it. But it is doubtful if the larynx has the same power of communicating the affection to the esophagus as that which has to the larynx.

2. The subdivision of Primary group into:
   1. Inflammatory. 2. Spasmodic.

I purpose now shortly to divide Primary group into Inflammatory & Spasmodic, not that I think that inflammation or spasms exist in either singly to the exclusion of the other, but that it seems to me, from a careful examination of many reported cases, that such a division may be made with advantage, so far as regards the treatment to be adopted.

1. Inflammatory group, then, I look upon as that class of cases in which the inflammatory element predominates over the spasmodic, or the lesion of the circulating fluid over that of the nervous system. In this case I rank all cases
Cases where the effects of inflammation, viz. exudation and pseudomembranous concretion, are formed, primarily in the larynx & trachea, or in either, where irritation of the vascular system is great. Under the spasmodic I would class such cases as from the beginning show the symptoms of spasm, it may be before the inflammatory symptoms, it may be after them. Where spasm is the great cause of danger & the predominant symptom, whether favored by constitutional tendencies or not. I have read among others D. Miller's treatise on the acute asthma of children & while agreeing with those who think that he has therein included many cases of genuine spasmodic grippe, I think the fact of their being there is a proof of the decided difference between such cases & those of pseudo-membranous or inflammatory grippe, a difference so marked as to lead a mind of D. Miller's skill to classify them under quite different names, though attacking in common the same organ. In the spasmodic variety we will find the larynx most affected & not the trachea, or if affected only so than the larynx.

Corresponding to the inflammatory grippe in my nomenclature, are the terms used by authors such as "tracheitis," "arthritis trachealis," "arthritis laryngica," "laryngeal tracheal grippe," "acute laryngeal grippe," or...
Cynanche trachealis. Humida y Ruch 1845.

Corresponding to spasmodic Croup in this nomenclature are Laryngitis stridula, some authors, Laryngismus stridulus, y Good. "Acute asthma" in children according to Simpson & Millar Jr. Jr.

In inflammatory variety we find the disease acute & severe, attacking the laryngium's temperament as seen in robust children - prevalent during cold & dry state of atmosphere, attacking many children soon after weaning. In young children chills & rigors precede the attack; in older children rigors follow. The pulse is strong, heavy, skin great, no remission in the severity of the symptoms, respiration is carried on with difficulty & force, the lips & cheeks are suffused & much injected. Blood when drawn has very blood color. The spasmodic symptoms appear chiefly in the two last stages, the strangulation, cough & all the symptoms connected with respiration, voice & speech much altered or suppressed. Swelling & pain exist often about larynx & trachea. Convulsions may occur in young children towards the close, in older children delirium. In this form, the course is brief but acute, from 3 to 12 hours up to 5 or 6 days & may extend - but generally ends about 3rd or 4th day. When the trachea rips, the larynx is the seat of the inflammation & we have the hoarse voice, cough, the voice but not absent voice.
[Handwritten text]

Comparison of costs by clinicians

Compare Dr. Hughes
pain and it may be swelling in the course of the trachea, less spasmodic suffocative paroxysms, but yet a more frequent, severe cough. Respiration is very difficult and a bronchitic rattle is heard. Fits of coughing may occur often followed by vomiting of a slaty mucus with threads of lymph, this affording great relief. This form of cough is not so rapid or suddenly fatal as when a plug of false membrane obstruct the passages. It may last from 9 to 12 days, it may even become chronic. It may end in extension to the Bronchi, substance of the lung, or even passing over as it were the proper substance of the lung itself, the inflammation may end in the Pleura, thus inflammatory lump may end in Bronchitis, Pneumonia or Pleuro-Pneumonia all of which it need scarcely be added tend greatly to complicate the disease.

2. As to Spasmodic coughs, I think there is some reason to suppose that in this variety the spasmod cough caused by the external irritation of foreign particles, be they fungi or not, are at least in some cases the direct cause of the congestion of inflammation and give rise to it. That the product of the inflammation is peculiar and modified by the condition of the blood in the system. I think is also shown. It seems to me only reasonable to infer that in proportion to the amount...
Irritation existing, will be the amount of nervous excitement produced in the part irritated, & the greater the nervous excitement in the part the greater will be the flow of blood to that part, consequently, a greater or less degree of congestion of the vessels will follow a proportionate excitation result. As to the peculiar nature of the resulting excitation which at length assumes the membraniform structure I will not here enter into details, but merely state that every condition is present which is calculated to favor the transformation of excitation into an organized structure. Thus we have first a highly charged plasma fluid, the blood of a young human being, a vehicle rich in all the elements necessary for building up & increasing as well as supporting a complicated organism, with superabundance of the materials for the formation of lymph; secondly, we have those increased by the disease in question; thirdly, we have a very full supply of this highly organized blood sent to the affected part, fourthly we have all the conditions when excited for the blood plasma when excited to become organized; it is lying in close contact with a highly organized texture, therefore influenced by it according to the laws of a correct pathology, while heat, space & moisture are all in
favour-gits higher organisation. In saying that there is more material in the blood of Croupous patients for the formation of Phlegm I do not mean that that film exists in increased proportion in the blood, but certain elements necessary for its formation must be there else the effect could not follow as it does. Again it is a well established fact in Pathology that the general effect of inflammation on any secretion is that the ordinary secretion is altered in its constitution while the specific part of the secretion is modified. Reduced more closely to, or approximates the state of normal Liquor-sanguinis. This is well seen in the disease known as Brights disease of the kidney in many others in which the approximatic of the specific secretion to normal Liquor-Sanguinis as an effect of inflammation is the production of Albumen. The effect of inflammation of the mucus membrane in Spasmotic Soup as in other diseases is first, a decrease of secretion, hence the dry state of the throat or notwithstanding the excess of blood sent to the part, there ultimately excess of secretion with alteration gits quality. With this digression go on to remark that Spasmotic Soup is most apt to attack children of the nervous temperament, who are weak irritable
The subject of worms are also those who are teething at the time of the attack. It comes on like many other nervous affections at night, or if already present undergoes exacerbations at this season, when the nervous system is in a state to be more easily affected. It may have no premonitory symptoms except general languor, listlessness, fretfulness and short tickling cough. The child suddenly wakes with great difficulty in its breathing, cough and general alarm, continues in this way for some time getting gradually easier towards morning, or may be more quickly relieved by the cough ending in vomiting. During the day remissions are complete, but as soon as evening comes the symptoms return intensified. The remissions become shorter, these complete exacerbations are more frequent and prolonged. Cough is frequent, respiration labored, general agitation is more severe, even convulsive movements may occur. Fever is seldom much at first, nor is the heat yielding great, there is no actual pain in the larynx or trachea, but that uneasy almost-characteristic sensation of constriction. The countenance pale in the remissions is livid and swollen during the paroxysms. The paroxysms of dyspnea soon attain great intensity. Respiration is labored, convulsive, croaking, the feet and hands are cold, cough is dry easily provoked till the favorable crisis is reached.
when a glairy sputum is expectorated. The pulse is very variable, small, frequent, occasionally slow, generally at least unequal and intermittent. Urine scale portions with a nebulous sediment. The gums which should always be examined will generally be found affected by the teeth about to appear through them. If convulsions occur in the advanced stages the disease will almost always end fatally. Cerebral congestion is very common as also congestion of the Medulla Oblongata, Heart & Lungs. It trace of pale membrane need exist, although more or less congestion or inflammation about the glottis will, it may be, but a thin layer of lymph are generally found.

D. As to the complications of group, I shall content myself with a bare enumeration of them. They are the following. Sypneche Halitza, Sypneche Pharyngea & Tonnillaris. Thrush or a peculiar form of follicular stomatitis. Exanthemata from fevers, as Measles during the eruptive stage; Small Pox during the supplicative stage; Scablate Anginose already noticed, Gangrenous Carbunculi & Fray Sipelas. As to the latter some have attributed from from first to last to Fryeipelas; these seem no good ground for this, although doubtless it may occur as an extension.
from the Head & Neck, yet it seems unjustifiable to
class the two as in any way necessarily connected as some
writers hold them to be. In some cases of cough in
the adult, the sudden asphyxia has been occasion-
ally produced by edematos, exudations inflam-
mation, extending to the submucous tissue, which
so readily becomes distended & swollen. See Budd,
Cheyne & Royland.
Croup may further be complicated by oesophagitis
Acute bronchitis, pneumonia - Pleurisy pneumonia,
collapse or Carcinoma of the lung common in
infants, or last by pertussis or Convulsions.

Diagnosis.
The pathognomonic signs of croup are:
The hoarse voice, loud sublant breathing, rough,
metallic, ringing cough, forcible, difficult inspira-
tion, which in the 3rd stage become the whispering
voice, wheezing hissing respiration, husky, choking
cough & dyspneal paroxysms. Accompanying
these are the flushed, suffused face, the injected
watery eyes, frequent hard pulse, burning thirst
& inflammatory fever. When uncomplicated nothing
save a slight-redness is ever observed in the throat,
& unless the larynx is much affected, deglutition is
little interfered with.
The diagnosis between Primary and Secondary form is not difficult as the foregoing description may show. In Primary form, the beginning of the tonsillar inflammation is scarcely marked by feverish movement or at least after an accession of ephemeral fever, the pulse does not lose its frequency. In Secondary form, especially that following the febrilemum, the circulation is extremely affected, febrile symptoms are severe; the rhythm of respiration is much altered. In Primary, the vital organic functions are at first so little troubled as to allow of the child, who has already been dangerously affected, resuming his toys and appetite during the intervals. In Secondary both these are from the first prostrated, while digestion is pervaded, violent retching often occurring and continued diarrhoea, not-unfrequent, while at the same time disorders of the nervous system which show themselves more prone for tell the danger, predict a fatal termination. The Primary tonsillar inflammation is peculiarly local; it only propagates itself at one place; while in secondary, the inflammation extends itself almost simultaneously to all parts within reach, or it may invade all almost at one and the same time. The Primary has extreme tendency to propagate itself in the air passages, in them alone, while the Secondary has not that tendency.
The patient under primary cramp, as a general rule, succumbs less readily than he who suffers under secondary whose death is often mysterious as sudden, leaving no pathological traces to enlighten the bewildered practitioner. In primary cramp, if topical treatment modifies the central inflammation, the return to health is obtained as soon as the local evil is remedied. In secondary cramp, the topical treatment, while it satisifies itself the local affection, does not abridge the malady or diminish the danger. In primary the sequelae are not serious, but in secondary from the grave alteration of the liquids in the body, the discoloration of the blood, the general devitalizing tendency of the disease, expose the patient to ulceration, breaking of the skin, secondary abscesses, anasarca, edema of the lungs, epileptic convulsions, almost always accompanied by a remarkable change in the urine, which becomes a very deep yellow colour, owing probably to the admixture of red corpuscles of the blood, altered in shape and colour. In primary, all patients perish who are left to the uncontrollable disease. In secondary only one third or one fifth of those attacked and uncared for, die.

1. We can distinguish cramp from mere spasms or Achillas by the catamantal stage informer, hoarse voice, rapid respiration ringing cough, while in mere spasm of the stomach or catamantal symptoms
exist, inspiration only is difficult, crowing sound is quite different from Crohn's stridor or expiratory sound in Crohn. There is no cough or alteration of voice. Stethoscope reveals no permanent lesion.

2. From Simple laryngitis it is not always so easy to distinguish from croup. The cough has not ringing or metallic sound of Crohn's cough. Nor is the voice the same although here it is rough. The respiration may be difficult but is rarely asibilant. True laryngitis occurs in adults, seldom as such uncomplicated in children. It is purely inflammatory, attended by a fixed burning pain in the throat, increased on pressure and examination. The feeling imparted to the finger introduced over the back of the tongue in examining the epiglottis and arytenoid cartilages is similar in both. False membranes are not formed in the laryngitis of the adult, unless during epidemic croup. It more frequently ends in ulceration and suppuration than croup, and is more acutely, constantly inflammatory. It more benefited by a purely antiphlogistic treatment than croup is. It is also more apt to assume the chronic form.

3. From Chronic laryngitis by the slower progress and less acute symptoms, the absence of nocturnal exacerbations or paroxysms. Moreover it is seldom met with in childhood.
4. From Pertussis it may be easily diagnosed. In Pertussis the inversion progress and characters of the disease are very different from those of Whooping Cough. The presence of a whooping cough, uncooled voice, the occurrence of the cough in convulsive paroxysms after a meal, ending in vomiting, the expectoration of clear-glaucous fluid, the complete intermissions, voice and speech unaffected, no difficulty or sobbation in the hurried respiration, all tend to make the diagnosis clear and distinct.

5. From the effects of foreign bodies in the larynx, of irritant gases, acid fluids, boiling water having been swallowed. But the history is generally all sufficient, while the sudden occurrence of pain and suffocation, the frequent change it may be in the seat of the disease, the symptoms of the presence of a foreign body in the larynx or trachea, the marks of acids or alkalis on the mouth, face, hands, or clothing, the dyspnoea and cough immediately following the accident, the completeness of strangulation, etc. etc. all lead us readily to the correct conclusion.

6. Hysteria may simulate Croup, in these again the age of the patient, the sex, the previous history, the very appearance of patient, with the general and local symptoms, generally indicate the original affection.
Pathology of Group.  

Under this head there come for consideration the state of the blood, (already partially considered); the state of the nervous system, with the effects produced therein by the blood; added to which, we have that produced by the effect of the local lesion on the circulation of the blood. Then the local lesion itself; the effects of that locally; the exudation; the process of its formation; the microscopic, chemical, and physical characters of the membrane resulting therefrom; lastly the most frequent pathological states of the lung found accompanying from (enumerated merely).  

As to the blood in the first place, for reasons I have given in a former part of this paper, I think it may be looked to as the seat of some formidable evil, if not in the early stages, at least in the advanced, of primary group, certainly throughout all the stages of the secondary affection. The researches of M. Andral have not as yet included that of the blood in group, but among other pathologists, neither its chemical nor microscopic characters have as yet been made the subjects of investigation. The peculiar nature of the exudation leaves, I think, with some reason, to infer that since it is not the mucous membrane which modifies the local secretion, or rather excretion, as we have instances of,
The same sort occurring in cases of grippe, from the skin, that it must be from some peculiarity in the blood itself, that the nature of the exudation once its constitution. This is supported in my mind by the fact, that the serum of frog's blood when allowed to coagulate on the body, has spontaneously formed itself into a similar membrane floating in liquid. And again, we have a similar exudation from membrane thrown out in other diseases over the mucous surfaces (while these themselves remain entirely free from the disease), in which the blood is undoubtedly vitiated and deprived, being poisoned in many instances by a specific materia morbi, as in the typhoid condition of malignant scarlet fever, in scarlatina maligna, Measles, &c. And things in whom this peculiar false membrane is most extensively formed, are those whose systems are in general deteriorated in no small degree. Offspring of parents it may be of diseased and dissipated parents, brought up from earliest life in misery and poverty—ever before entering upon their span of life independent from their parents, they have feeding their fatal life a fluid, often saturated with disease, calculated to do anything but nourish and develop, in a healthy manner, the delicate vitality of a living being. This among such, as shown by the French authors, those whose practice has permitted and compelled attendance.
on the ill fed denizens of our crowded cities, that the
fatality of Camp in former days was found to rise to
its acme. But again, the tendency of the disease itself
is to deteriorate the quality of the blood, to increase its
impurities, by preventing their thorough expulsion, or
purification by the lungs, thus causing them to be
again taken into action already degraded in its
essential principle. The effect on the blood in the
nervous system follows as a natural consequence,
from this again we have many cases of sudden
extreme debility, imperfect performance of func-
tion in various parts of the organism. This again
in its return reacts upon the vital energy of the
system, too often as a consequence, probably of this,
the heart refuses to obey the inefficient or altered
stimulus received from a nervous centre, and is
here intoxicated or at least congested, as a conse-
quence sudden it may be strangling death
often results. It may be here right to notice
that P.D. Richardson attributes death when sudden
in certain cases of fever, to a fibrinous deposit found
by him seated in the right cavities of the heart, which
he supposes to cause syncope or death from obstruc-
tion. Dr. Hawshley related to the Medical Society of London
casee where this local mischief was caused to have produced.
death, while yet the fibrinous concretion in the larynx was becoming developed, before it had materially impeded respiration. The symptoms of these cases were such as were supposed to point distinctly to the Cardiac lesion as the cause, I will be detailed shortly at the end of this part of the subject.

To revert again to the constitution of the blood in true inflammatory Croup, we may perhaps find a reason for the large & exudation in the large amount of the coloring corpuscles contained in the blood: if some pathologists would have us believe these corpuscles are the source of fibrine, by their breaking down & dissolving free the fibrine which these writers hold it is their functional duty to elaborate, we would have an easier reason for the rapid & fatal exudation which so suddenly takes place in the robust children of our Country districts, when attacked by Croup. Compared to the spreading extensive of the thin tenacious exudation & membrane, found in the case where the equal blood of six or eight city child is the victim of the disease.

We now go on to investigate the process in the larynx, termed by which the exudation once escaped, forms into the tough, tenacious membrane, which is found in so many cases of Croup. And here we have differences...
of opinion as elsewhere. Some suppose that the fibrin of the blood plasma while coagulating, forms circular tissue, that this goes on to more highly organized structure. Others think that granules or granular corpuscles go to form fibres, these become so into wound mixed act to form the membrane (Ebert).

Boel says they break down and form granules, from granules collected in masses form granular corpuscles larger than fine corpuscle, that these go on developing. The rules governing the formation of the exudation into membrane are the following, first the influence of the blastema itself tends to the formation of the membrane; second the surrounding tissues influence its development. The fibrine in diseased parts, the fibrine which in healthy parts assumes a simple form, becomes more complicated when lying in connection with living tissue; the more the influence of the old tissue predominates the more is the blastema made to resemble the it. It must here be remembered that the more rapid abundant the exudation the less do the surrounding elements influence its development; thus the more the exudation extends into the bronchi or trachea, we find it less less organized and more approaching the constitution of pus or mucopurulent matter.
we now look more particularly to the local lesion and notice particularly the progressive development and constitution of the false membrane itself.

The principal lesions met with in fatal cases of whooping cough in all to a greater or less extent may be referred to two heads. First Inflammation, with time, causes redness, injection, of the minute vessels of the part, and slight softening of the mucous membrane of the air passages; second, an albuminous exudation in the form of a false membrane, or attend glutinous strings, mucous, or both. And here it is to be remarked that the laryngeal and not the tracheal symptoms are the most frequent, if best marked; they are constant and severe, more so than the tracheal which in general is secondarily affected, rarely if ever primarily, whereas so not too dangerous or sudden by fatal as the laryngeal. The first set of lesions exist in most cases varying in intensity, in severe and mild attacks, they may be confined to the larynx; or involve both it and the trachea, seldom the trachea alone; they may reach the Bronchi or even the substance of the lung.

Mr. Guerson gives out of 120 cases of whooping cough to the Bronchi in 120. M. Hussron in an analysis of 171 cases found no false membrane in 21 cases. In 78 it was not below the trachea, in 12 it had invaded the.
Bronchi, & in 30 it was confined to darym trachea.
In the second stage, in which we noticed the great
change in the characters of the voice cough respira-
tion, we find the surface becoming streaked, or partial-
y covered by an albuminous or sanguinolent exuda-
tion; in the last stage, when all the symptoms are
at their height & most aggravated, we find the exu-
dation has concreted into amore or less complete mem-
brane. The inflamed state of the surfaces beneath,
still remains but in a less distinct manner, or
even entirely disappearing leaving no traces of the
inflammation whatever, besides the presence of the
false membrane. The amount of the exudation does
not always bear a strict proportion to the amount of
congestion, for while in some congestion + transeptation
are great, exudation is scanty + thin, or consists al-
most entirely of a thick tenacious mucus; in others
the congestion + transeptation are slight, & exudation
exists to a considerable extent. The state of the pa-
tient's vascular system as regards tenacity of the
vessels + general laxity of the tissues, with a more
or less watery condition of the blood, may account in
some degree for these seeming anomalies, yet do
not satisfactorily explain them.
As to the extent of surface occupied by the false
Membrane.
it varies much in different cases. In this Country unless in very bad secondary crops it seldom stretches without breach of continuity to the smallest ramifications of the bronchi, altho' in France, where the diphtheritic inflammation is prevalent, it has been often found entire. In the larynx & bronchi interruptions generally occur, but the special site of the false membrane is in the larynx & upper part of the trachea, while no other part may be affected; this is important to be kept in mind in considering the question of tracheotomy. The false membrane varies in thickness as in other conditions. As to color it is either whitish, greyish white, or passing into a greyish yellow. Its thickness is seldom more than a line and a half to two lines, often much thinner. It may be laminated, when so has the addition made exogenously as regards the primary membrane. This thickest in the posterior superior front of the trachea, thinner about the larynx & epiglottis. Its consistency & tenacity vary at different parts, it is soft as it approaches the bronchi, finally seems to become into a purulent matter or thick glutinous mucus. The more consistent it is the more perfect would it form upon the surface on which it is secreted, when of slight consistence it merely forms membranes or shreds of
of soft polypoid-like concretions. The interior surface of the false membrane is generally lined by a whitish tenacious mucus, the surface next the mucus surface is often dotted with minute specks of blood or eechymosis. The concretions may be adherent to the mucus surfaces or separated by a puriform matter. When adherent it will generally be found that they are to especially below the lamina, more by the process as found in the lining membrane) and lining the mucous follicles, than by direct adhesion to the mucous surface. Between the false membrane & the mucous surface, a vascular connection has been on rare occasions been found. This as shown by Brétonneau is probably a process set up for the disintegration & absorption of the false membrane. The mode of separation by puriform matter seems to be owing to a more natural return to approach to healthy secretion on the part of the mucous membrane, or perhaps more correctly to increased excretion of the secretion. This as shall be seen is one of the indications which we try to induce in the treatment by emetics & expectorants. Some seem inclined to think that this is a kind of fatty degeneration undergone by the falsely formed membrane prior to absorption. The presence of fat globules seen by the microscope in such cases,

is held to favour the supposition. In place of the true false membrane, French authors as Valentin Lebert, Brichetean, Brelotman, Picconeau & Shone note a viscus mucopuriform secretion in the trachea only, or in that & larynx, this more especially in cases where sudden death had resulted. This substance is whitish, grayish or yellowish, occasionally flocculent. In fatal cases it is formed in large quantities, may occasion suffocation before it undergoes the condensing or organizing process. M. Roger-Collard, W. McLeodland mention such cases. No remarkable lesion of the tissues below the mucous surface have been found in group, unless in cases ending in consumption of the larynx or trachea. There may be effusion into the submucous cirrular texture from the vessels ramifying & subdividing these, & thus, when extensive, cause edema of the parts highly hazardous to life. The other nodular appearance in group are chiefly caused by interruption of respiration & circulation. Bronchitis is a common attend. Edema is common where any great amount of dyspnoea & prolonged farrogymn of cough exist, but especially in cases where part of the false membrane having separated from the mucous surfaces, hangs flapping backwards & forwards in the air passages, with inspiration & expiration, acting as a
a value to prevent the expiratory movement from being completed in that part of the lung where the valve exists. Owing to this obstruction, air gets in at each inspiration & none gets out from the affected lobe, & as a consequence we have first over-expansion & second air, rupture of several air-cells into each other, or when cough is very violent, a rupture strong enough, rupture of the tube of the lung may result & even pneumothorax follow. 

But strangely enough, we have an exactly opposite condition also occurring under nearly similar circumstances, but with a different result. Thus a shred of false membrane, or a small plug of inspissated mucus or fibrin, finds its way into the bronchi, & for a time makes its way without interruption till coming to some of the finer or bronchial branches its progress is arrested, & it is forced in conical shaped, into the passage thus by an inspiration. Each inspiration following tends to push it further in while no air gets into the affected lobe. Owing to the shape of the plug & the narrowing of the tube we have here formed a ball valve as it were, which while it prevents inspiration, does not prevent expiration & thus as Dr. Girdner has shown, each expiration forces out air, the return is made for this by inspiration, & consequently
the lobule or lobules become emptied of their air, and collapse follows, as it were, to the foetal condition of the lung is made. The part thus affected in the child are found to be most towards the parietes of the lung, & the diaphragmatic, surface, while in the adult it is more frequently at the root of the lung. The difference in it is owing to the state of the thoracic wall in each, in the child they are so yielding as to give in as it were to the atmospheric weight & may offer more give way laterally & collapse occurs externally i.e. on the outer surface of the lung. The lung when in this state has a tough, flaccid, fleshy feeling & appearance, quite different from the state existing in Pneumonia. Its surface too is smooth & pleuritis does not accompany this state as it does so often accompany Pneumonia. This condition of the affected part (collapse) is not necessarily irreducible, the action expectorant or emetics by stimulating the bronchial muscle to action will often expel the plug & the part returns to its normal condition unless such time has elapsed as to permit organic changes having taken place, where atrophy of the lung may ensue. This atrophy of the parts of the lung leads to another pathological condition merely Empysema, a condition caused in this case, by a very different circumstance from that described.
described already in this paper. This form of Emphysema, unlike the other, does not occur unless the lung complica-
tion, or bronchial, is added to the laryngeal m
function cannot be produced by violence of cough or
inhalation effort alone. His Dr. Fairclough has sati-
sfactorily proved. The emphysema in this case bears
in general, a strict relation to the atrophy of collapse
already considered, is caused by the violent inspira-
tory efforts made by the otherwise healthy parts of
the lung to overcome the existing obstruction, the con-
sequence is, that the whole amount of respiratory
power which before was thrown equally upon the
whole lung, is now thrown upon the healthy parts
which remain, the result is that this distends the
healthy parts, and causes it to occupy the space
made vacant by the atrophy of lung tissue.
Thus we may have resulting indirectly from
the lesion of the larynx : 1st Bronchitis, 2nd Pleurisy,
3rd Pleuro-Pneumonia, 4th Collapse which
if not remedied, or long passes into atrophy and
as a result of this, or it may be an effect from the
condition of the false membrane already noticed,
Emphysema. Have wandered a little from my
symptoms by bringing in these conditions here, I must
now return to the exudation in the parts affected.
For a more particular description of the special exudation, its progress, formation, I shall quote M. Lebert, hoping that my translation may do justice to the views stated by that writer in his work on Pathology. M. Lebert says that inflammation of the mucus surface of the larynx may be followed by a purulent secretion, or, as in the more dangerous cases, by a fibrinous exudation of pseudo-membrane nature. Before the exudation takes place, the mucus membrane becomes red, it loses its normal colour of yellowish rose color, to that of a vivid red, (scarlet) sometimes deeper in taint. The vascular branches increase in number more and more, causing dense general injection of the part. Serum fluid is thrown out into the tissues in which the blood vessels ramify. Some of the capillary vessels of the mucus membrane seem too full of blood, burst and form ecchymoses, others throw out a greyish semi-transparent liquid, the colour of which soon takes the place of the deep red. In laryngeal inflammation, especially when it is secondary, the mucus membrane may alter itself. This inflammation may pass on to resolution, the laryngeal injection having only produced a very slight exudation, but in general such is not the case, the mucus membrane becomes a little red, its tissue thickens, post-

end, and all
all the vessels of the surface permit a part of the serum of the blood, by exosmosis, to leave their attenuated capillaries carrying with it more or less fibrine. This liquid speedily coagulates within the paste itself over the surface to which it is applied. These coagulations may be of two kinds, muco-fibrinous or fibrinous and purulent. In the first case the coagulum is less dense and less elastic, much moreropy, gluelike, almost like paste. The color is that of a dirty yellow grayish, sometimes however giving a false appearance of gangrene from the blackish red color of the extravasated blood from the ruptured vessels. Under the microscope one recognizes a gelatinous semitransparent granular substance enclosing granular globules, globules of pus and above all epithelium, cylindrical and ciliated (never ciliated), according to the parts which have secreted it. These false membranes more plainly fibrinous are of a yellowish white color, soft and pulpy at first, but very soon become elastic and resistant; smooth on the surface turned towards the mucous membrane, but irregularly reticulated on their free surface. When little spread they are strongly adherent to the subjacent tissues, and would themselves to the parts secreting them, by union of
the different bands become tubular. He often may notice spots of colouring matter of the blood, which sometimes present forms ot striate + arterial branches, one is apt to be led into error in taking these for vessels of the new formation. It is the opinion of Dr. Lebert, Guersent, Pilliet, & Barthez, Blache, T. that vessels may be & are found occasionally in these false membranes. In the pathological collection of Semmerring, an example of this connexion by vessels between a croupal false membrane & the subjacent mucous membrane is seen. But these vessels never form in the interior of the false membrane in a manner independent of the general circulation, they always are arranged in a centripetal manner as moreover applied to all false membranes. Often however the vascularity seems destined for the disorganization & reabsorption of the false membrane.

Microscopically the elements of these false membranes are fibrous. First, a substance stratified fibrinous & granular presenting in some places veritable fibres. Second, fibrinous globules & fusiform bodies with or without nuclei. Third, globules of pus sometimes forming the greater part of globular element, another times entirely wanting & being then in general replaced by
Fourth, pyroid globules as large as the pus globules, but having no nuclei & filled with granules in their substance. Fifth, large granular globules. Sixth, different kinds of epithelium, generally cylindrical, rarely pavement, & still more rarely if ever fibrotic. Seventh, occasional granules & globules with black pigment. Eighth, frequently oil globules, which may perhaps account for the fatty degeneration supposed to occur in the advanced stages, as they are not noticed earlier. M. Lebert goes on to state that the more rapid & intense, the inflammation has been, the less proportion is there of mucous epithelium.

These remarks show that the false membrane in group, far from being amorphous, is fibrous & contains many different elements & offers a sufficiently great variety in the combination & coexistence of three different elements. When the exudation extends to a previously exists in the bronchi, the minute ramifications are filled with a gelatinous puriform substance, which becomes more puriform as it descends to the lowest ramifications & to the air vesicles.

This is in many ways to be regarded as a provident provision for were the secretions in the air cells & smaller bronchii as liable to be organised as those in the larger tubes in inflammation of these parts,
the organ would in a very short time be rendered totally unfit for the performance of its functions, either as a receiver of air or depurator of the blood. Here also we are led to notice the tendency of inflammation to form the cellular tissue of the Lung and other parts to become organised, while in general that thrown out on the mucous surface was not, except in Crohn's allied affection, that tendency.

As regards chemical reagents on the false membrane, Lobert and Bretonneau have observed that acetic acid renders the fine globules more distinct and diffusent, and breaks up the homogeneous membrane; probably from its known property of dissolving gelatin. Nitric and sulphuric acids as well as hydrochloric, have a somewhat similar effect, but condense the granules, bring them together—liquid ammonia renders the tissue diffusent, and causes the globules to separate from one another. Solution of Carbonate of Potash has an apparent effect, while Nitrate of Potash dissolves and renders the membrane soft, but prevents it from putrid decomposition.

Before leaving this part of the subject I may here notice some of Bretonneau's views on the pathology. He thinks that in Crohn's disease the membrane is not necessarily the seat of the disorder, nor does it participate in it, but according to his observations the cellular tissue below seems to do so.
The swelling is supposed by him in secondary form to propagate itself from the glands, as their engorge-ment is always noticed in the beginning, out of all propor-tion to the inflammatory lesion. Hence moreover, that the small red spots in the primary stages are under the microscope seen to be due to very fine vascular injection, while the more vivid red spots are only so many small ecchymoses, that the white spots are the prominent orifices of mucous glands. He considers that in secondary form the inflammation propagates itself in away peculiar to itself on the mucous surfaces. Either spreading itself like a liquid over the whole surface, or overflowing at one point and stealing down that point. He describes long streaks running of deep red colour, as seen descending into the trachea, singly or accompanied by similar streaks. A little band of con-crete matter forms in the centre of each streak. In the substance of this concretion at this stage certain semi-transparent vesicles are seen like round pores. The edges of the newly formed pellicle are irregular, indented, swollen, and incorporate themselves with the surrounding mucous, which without being changed in its aspect is already changed in its properties. It is no longer viscid, it is coagulated, ready to con-crete. The bands soon increase and become thicker,
homogeneous, forming by the union complete tubes of a single lamina, united to the mucous membrane by small prolongations into the mucous follicles. Should this corneum detach itself, the redness, he says, argument in the denuded parts, the false membrane is reproduced, as far as the superimposed layer adds to its thickening, the false membrane becoming more and more adherent to the organic surface. Bretornos thinks the exudation out of which the false membrane is formed consists of albumen, while Lebert holds that it is mucus enriched with fibrine, in consequence of the inflamed state of the parts.

As regards the nervous system in Croup, little notice seems to me to have been taken of its patho-
y. Congestion of the brain is all that has been re-
ferred to. During the attack it seems to me likely
that the condition described by Dr. Todd as parallel
polarity of the nervous system exists. The reflex func-
tion seems excited, and as a consequence slight irritations in the
mouth causes spasm of the muscles of the larynx. This state
of the nervous system may in part be due to the de-
terioration of circene of the blood, which occurs in all
cases where spasm of the glottis is the prevalent condition.

Another pathological condition seen not infrequently
in Croup, which is probably a more common cause of
death:...
pathologists would lead us to believe, is the presence of secondary abscesses in the lungs. This condition however only results in cases where tracheotomy having been performed, the veins in front of the trachea have been miskindly dealt with and injured, pyemia has resulted, and hence the deposit of secondary abscess. This it seems necessary to bear in mind while considering the fatality of the operation as it doubtless has added not a little to its mortality, while avoidable by care & skill, has done much to bring the operation into disrepute.

And lastly as to the symptoms marking out the cardiac affection already alluded to. Mr. Hawley thinks that the symptoms marking Casey's work abort to end in syncope the result of cardiac obstruction to distinguish from those arising from obstruction in the air passages. In the former the dyspnoea is not caused by asynergy by obstruction in the lungs, but by peculiar anxiety & gasping desire to breathe, incident to the want of blood in the venous circulation. In these cases asynergy of the chest can be carried from upper part of wind pipe down over the chest, the respiritory effort is audible & clean through out. Schroede that the most common physiological sign in these cases is emphysema, that when this is present it is wholly diagnostic of fibrinous deposit, altogether subversive of...
of the idea, that the cause of these symptoms is obstruction in the windpipe. Begins in addition definite signs of cardiac obstruction noticed in such cases, thus:

Coldness of the body extremities, pallor, or livid lips & cheeks, distension of the jugular veins, irregular pulse, painful restlessness, pulse beat of heart, quick & irregular. Sounds of heart muffled, with bruit in some cases. No real convulsions, but intense anxiety & constant movement. These are however most symptoms which, to me, seem accountable for by a heart overloaded & oppressed, turgid with blood, & the consequent debility of its action.

As to the etiology of cough:

While the cause predisposing to cough may be those of most other diseases be stated with considerable accuracy & satisfaction, the exciting or primary cause or causes are yet mysterious & apparently unknown. Many hypotheses, & those feasible enough, have been promulgated by authors of the highest standing but are as yet seldom borne out by practical investigation. A yet no specific or satisfactory cause has been given supported by experience, therefore on this subject I must be brief, but shall take notice of some of the opinions which, from close examination, seem to be approaches in the right direction.

To the
the ultimate attainment of the truth.

Among the many predisposing causes, there can be little doubt that cold, moisture, vicissitudes of climate, sudden and variable changes of temperature and weather, along with certain telluric and barometric phenomena, all have considerable influence. Insufficient clothing in cold weather, partial exposure of children as often dictated by the caprice of fashion and maternal pride, seem to exercise a stronger influence in predisposing such affections than most people are aware of or are ready to admit. That change of temperature and weather are predisposing causes may, I think, be seen from the general prevalence of such in the valley of Lavao, Switzerland—the eastern shores of Britain, Northeast of Europe, and North America, as well as in other parts. But still it occurs in parts differently situated in every way; it occurs in the South of Europe, though not so prevalent, and also in many of the Midland districts. The periods of infancy and childhood predispose to this complaint as already shown. Again, peculiar temperaments are more liable to its attacks than others or at least are more frequently its victims, thus the sanguine and nervous temperaments. Certain localities also are more liable than others to be visited by such.
Further the air breathed by those already affected, if not freely diluted, is said by some to predispose to its attack. The breathing of noxious gases, such as irritate the air passages, the suppression of cutaneous eruptions, certain states of the nerves and vascular system, hereditary tendency, the fact of having been once attacked by the affection, all depressing agents, are more or less active as predisposing causes. But although they may be considered as predisposing, they are in some instances also the only tangible exciting causes. Among these more distinctly so, we have certain excited states of the atmosphere, some think that the telluric barometric & thermometric changes are to be classed in the same list, but it seems to me more reasonable to side with those, who look to some contamination of the atmosphere by certain foreign materials, mineral or vegetable, as most likely to be the efficient exciting cause. This the entrance to the air passages, which appears in most cases to be affected, the medium through which this is most likely to be reached is the air. That foreign substances, such as those mentioned, do occasionally at certain times exist in the atmosphere both in the form of organic & inorganic, Chemistry & the microscope have sufficiently proved.
Then again the prevalence of Croup in districts where such are most likely to exist, accompanied by a damp state of the atmosphere, strengthens this opinion. Above all, the presence of the aphthous patches on the tonsils, analogous to those seen in the mouth in different varieties of Thrush, & causing stomatitis to this inflammatory diseases not-confined to the parts attacked, are likely, when present. Their exciting cause is found in the air, to be a cause of Croup, when giving rise to the same inflammation near about the larynx; besides, we find Croup following the extensionogenous to the larynx. It has already shown that in most of the cases of secondary Croup each lichenoid patches, as Bretonneau describes them to be, may be seen if early enough looked for, but from their short-lived existence, often disapper before extending lower down the naso passages; & then, by their intrusion & consequent symptoms calling the attention of the parents or medical men. What further supports the idea of this atmospheric imprint, be it fungoid or not, being the real one, is that they seldom get admittance to the esophagus, & clearly for this reason that such is not the passage by which the air has access.
of Thrush, been shown by Dr. Berg of Stockholm to be caused by the presence of a parasitic growth which they contain, which is the essential part of the disease, the result of the deposit of spores formerly floating in the atmosphere, which are found to exist most during certain electrochemical conditions of the air, also favorable to growth. The fact of the attacks of Thrush occurring not sporadically, but epidemically also leads us to seek for some generally prevailing cause rather than for any isolated excitant. The particular parasite in Thrush is the fungus "Oidium albicans." The conditions requisite for its maintenance, when once deposited, are an acid state of the secretion of the mucous membrane and an abundant supply of albuminoid matter epithelium, both of which are to be met with in Thrush.

As the opinion that the poison erysipelas is capable of producing Thrush, Dr. Budd is of opinion that Synanche laryngea is erysipelas of the larynx; says it is not recognised as such because so frequently fatal before having time to spread. Dr. Cheyne also notices the connection between Laryngitis and Erysipelas, it also for Pyle and of Birmingham. The idea of the poison
of erysipelas being a cause of diphtheria may hold in a few isolated cases; more especially when erysipelas is epidemic at the same time. As we know that all inflammations occurring as such a time have the tendency to take on the erysipelas type, cases also occur where the inflammation spreads to the larynx, in the same way as that in the skin of the foot extends to that of another part, preserving the deep redness, swelling, and infiltration, accompanied by a serous exudate. It is more fatal than ordinary laryngitis. It occurs more frequently among patients in large hospitals in which, erysipelas prevails, among convalescents from continued fever, empyema fever, diphtheria; in such cases are not to be ranked as cases of diphtheria. During epidemics of influenza or scarlatina, diphtheria is frequently seen. It is probably dependent on some similar cause.

V. Last.

The Therapeutics—general and local.

1. General Therapeutics.

A. Bloodletting.

Before entering into the consideration of the more particular treatment of diphtheria, it may here be remarked that...
children's diseases, it is the one requiring active and judicious treatment. The old adage of a stitch in time can seldom be better applied than here. Yet the case in its first and early stage, nine cases out of ten may be stopped and prevented going one step further by a good emetic or by a warm bath; lose this opportunity, and ten to one if you succeed in treating your case successfully, or if you do, it is only by the application of vigorous heroic measures, which certainly may check the disease in some cases, but even then only at the expense of the system. It is astonishing on the one hand how early we may as it were knock down the disease, if we see the patient early; it is provoking on the other hand to find how very obstinate it may prove, if allowed to pass this stage, or if not seen till later. The indications for treatment vary to the with the different forms of the disease; I shall first consider those presenting themselves in the primary form, then those in the secondary variety at their different stages. And first, of the truly inflammatory cases described under primary form. When seen in the first stage, the symptoms against which we direct our remedies are first, the inflammatory or febrile action; we combat these by bloodletting it may be, emetics or nauseating with topical applications to the local lesion, such as
as cold, warmth and moisture, local bleeding, or it may be
derivatives such as fomenting, cupping apparatus of the
boot, or others. By these means in the first stage we
also hope to prevent the formation of pus and a false
membrane. If, however, as too often happens, the case
is only brought under our notice in the second stage when
these inflammatory, febrile symptoms have increased,
excavation has taken place, we try by various means
to arrest their progress, if not to stop their discharge.
If this stage has passed, or despite our exertions goes
on to the third stage, we have to combat in addition
the spasmodic symptoms which then appear, there
as well as in the fourth stage, guard against depres-
sion of the vital powers by judicious support in
the latter stages, and attempt to prevent recurrence and
increase of spasm and enable the system to throw off
the matters already collected in the trachea, by stimu-
lant expectorants added to other means.

In that class of cases coming under our division
Spasmodic Croup, we have to combat more the ner-
vous symptoms than the inflammatory, at least in the
first instance. By cutting short the one we may be en-
abled to prevent the occurrence of the other, or at least
prevent any increase and by provocation. Our treatment
here must therefore be very different from that employed
in
the former case, the systems of the patients are probably very different, our treatment must be more of the soothing, supporting, our heroic measures not only will not be borne well, but will do positive harm, increase the original danger. We must endeavour to prop up a frail, tottering system, try to enable it to throw off the threatened danger.

As to secondary groups we must often, in the very first, not only not depress but stimulate, as well as support, and endeavour to make an already vitiated constitution outline a disease, at once formidable to a fatal tendency, at the same time meeting and treating the local manifestations.

Having given this general outline, the first question that meets us is the treatment as in that of most other diseases a critical inflammatory tendency is "to bleed or not to bleed?"

Much diversity of opinion still exists on this point, and many considerations of weight are arraigned on either side of the question. Considering however the fact which our statistics and records show, that like other diseases of an inflammatory nature the type of group has altered materially from the sthenic to acutely inflammatory to the asthenic and nervous, we must, I think upon the whole, agree with those who think that general bleeding is the exception, not the rule. There is a more potent argument
still why it should not be generally adopted, that is, that, as experience has fully proved, the efficacy of bleeding (general) in cases of acute inflammation or serious hemorrhage, bleeding was resorted to by ancient practitioners to induce a state of nausea and emesis, in which state the blood was supposed to be in a state of liberation for giving out inflammatory products or indeed of flowing at all freely. Now if this treatment at all, as it did the outpouring of blood itself, from ruptured or cut surfaces, it will rarely suffice to prevent it flowing out, even if the elements are enriched with fibrine and serum. But this very same effect is produced by inducing nausea or retching by means of emetics, while at the same time we retain the blood itself in the system to aid us when necessary in sustaining the vital energies, and besides, we save the system from that severe shock, which under the former treatment it was subjected to, which could not be avoided.
Moreover in this way so far from increasing the tendency to nervous irritability, we diminish it; in every way bring the system into better control, and ready to be acted upon if necessary by other agents. If then we can, as practice shows we can, restrain a violent flow of blood from the lungs in Hæmoptysis by induction of nausea or retching, it is only natural to infer, that we may also stop it from pouring out into the same part or that adjoining (namely, the lungs or thymus which are under the same nervous regulation) when inflammation, its rich constituents of lymph, liquor sanguinis, &c. I think the bloodletting may with much advantage be replaced by nauseants, expectorants or emetics. But I would not exclude the use of bloodletting altogether in (COMP, for doubtless there are cases of plethoric, highly sanguineous children from whom, on a case of inflammatory flux, it would be highly advisable to abstract a certain quantity of blood; in such cases it seems unjustifiable to withhold the hand because the practice is not applicable in other cases. But even in such cases local bleeding may have the desired effect, when it is of the general in most cases. When general bleeding is to be employed it seems best to aim the side of too little rather than too much. It becomes a safe general rule in such cases to follow that recommended by
by Dr. Geyne, to remove ¼ of blood from a child between one and two years of age—¼ from a child between eight and ten years. This will generally make sufficient impression on the disease especially if taken advantage of to ply our remedies. There is little doubt that even in robust and fertile county children who have been largely and freely depleted at the onset of the attack, that the nervous type of the disease has been super-added in a very irresistible and formidable way. But, in addition to other precautions, we must remember that the tendency of the attack is to death by prostration, when not by opium or physica, and thus we must keep the system as much as possible in a proper state to cope with the depressing causes till possible tide itself over the attack.

In cases of spasmodic and secondary Croup, bloodletting will not be thought of; as already remarked. The benefits of local bloodletting will be considered elsewhere.

5. The use of Emetics:

It may be well here to inquire first, what is the physiological action of emetics as regards Croup; and also what their advantages and disadvantages may be, which of the many different classes of emetics is best for use here?

As to the way in which an emetic acts in Croup, we have every
reason to believe, that as shown by Dr. Freidner, the action on the stomach is not the most important part of it, but rather the similar action which is caused by the effect of the emetic on the higher branches of the pneumogastric supplying the bronchial tubes, by thereby stimulating the bronchial muscles to act, after having first caused increased secretion with deglution into these tubes, favoring the expulsion of the superabundant matters, by increasing also the peristaltic action of the muscular fibres. In this way also expectorants act merely by this similar tendency, as all which are given in large dose when given in large doses an emetic action. But in the use of the same, we must also bear in mind the remarks already made about the tendency of the disease. In prostration, its effects, as some of the emetics need one of a very depressing nature. That which for many years was used most commonly, in British practice, and is considerably co. is the cinchon anemonalis, or other preparations of cinchona. A general rule in cases of the present day when it is necessary in young children to keep up nausea, as in vomit, this does not seem the most suitable agent. It is the action of free vomiting which we wish to induce first, following on this to keep up the necessary degree of nausea, not only to increase the secretion from the affected part, but to render the blood less apt to give out its secretion.
How depressing agents are contra indicated & to be avoided, we can fulfil the indications served by antimony, quinine, as fully, or with less danger, than any other emetics. Indeed, the use of tartar emetic may, with advantage, supersede general blood letting, or may in place of opium, or other emetics, supersede antimony. Tartar emetic must be used boldly in order to produce the desired effect, this is one objection to its use, second, it requires more time than we have to spare in front to get its effects up, and thirdly, as shown by Dr. Griesel in his treatise on Pneumonia, it may cause disease in inflammation about the glottis which would only add to the danger. Specacuan is more suitable, its action is freer, less depressing & more continuous. As regards the nausea following emetics this besides being valuable as expectorant & diaphoretic, from its very free action in producing copious secretion of the mucous membrane not only of the lung & larynx, but of the oesophagus & stomach. If Specacuan be not found sufficient we have still other good emetics to fall back upon, without resorting to Antimony. Of these one of the best seems Alum, as used largely on the continent by some of the French physicians & strongly advocated by Dr. Meece in more effective cases than Specacuan, as proved by extensive trials & both in his own & his father's practice. It is an emetic
whose action may be relied on, it is easily administered in solution in syrup. It does not distress the little patient, & thus enables us to administer it without forcing, & irritating the cough & dyspepsia by the child's resistance. Its effect upon the system is not like that of other emetics frustrating, except in so far as the mere emesis is concerned. It does not certainly possess the property as Antimony does of rendering the blood a more jelly like or more plastic consistence, but it acts upon the vessels, & indeed has the property of toning & astringing these thus instead of relaxing & allowing the more ready escape of their serous contents it binds the fibres of their coats more firmly together, & forbids the blood or its serous contents an easy exit through the coats. It is not a false membrane that is always the cause of danger in Croup when exudation does exist, a large amount of albuminoids or liquid material is thrown out of the vessels into the lung & its minute bronchial passages, this is often equally dangerous. How while Antimony favours this condition by its action on the mucous membrane Alum prevents it, & at the same time produces the necessary emesis & nausea which we require. The dose is a drachm of the powder, dissolved in Honey or syrup, & at a proper time given at one time; the second dose...
Causes free vomiting in repeated ten or fifteen minutes after the first, but very often the first is found to act well. Dr. Hubbard of Maine expresses great faith in the Sulfurullet Mineral as an emetic for children. He says it is prompt, certain, never produces catarrh, its emetic properties continue more or less over a period of an hour and a half, not followed by the nausea and proximation of antimony. He gives prison—grains to a child two years old, to be repeated in quart of an hour. Another emetic highly recommended by some is the Sulphate of Copper much that has been said in regard to alum applies to it also. It is in high repute among the Germans, one disadvantage in its tendency to produce diarrhoea of a serins kind. Some have gone so far as to consider it a specific in typhus. It may be given to the youngest children attacked by typhus, without the risk of depressing the vital powers. Dr. Jeroni used it with much benefit, he gave grain every quarter year, grain in children under one year, grains in older children. To begin with, in order to produce vomiting, it followed this up by grins every half hour, till the disease assumed a favorable form. This treatment was first recommended by Serbo, afterwards used by Schwabe in more than fifty cases. In these cases
doses of grif [griff] iv of the sulphate, were given mixed with a little sugar, every half hour or hour according to the urgency of the symptoms. Each dose is followed by vomiting which scanty after the first dose, is always copious after the second. This is continued as long as a thick mucous, or membranous conditions are apparent in the matter ejected. Then grif is given every half hour till several dark green colored motions have been discharged, to effect which from eight to twelve doses suffice. (Copper's Wochenchrift. No XIX. 143.) This substance seems to act more by irritating the stomach than by any other means.

As to the remedies arranged in the Synopsis below, D. & E. among the local A. & B. shall introduce them while taking a more systematic plan I shall for this end commence and carry on the regular treatment of a case of inflammatory Gripe.

If called to the case at the first stage, we find the characteristics of Gripe present, an active emetic by means of alum or Sulphate of Copper is to be given, the child put to bed with or without the warm bath. The emetic will generally be followed by the ejection of a thick, glairy, it may be slightly con-
in considerable quantity, with marked, but it may be, but temporary relief. In mild cases, unrewarding treatment will have established the disease, but if the case be obstinate, our best-planned endeavours may at first fall short of cure. In such cases, having once induced nausea, we keep up the good already done, by inducing nausea: for this purpose some still use: although I from already stated opinion doubt the propriety: in most cases, of giving gr. 1/8 or 1/2 every half-hour or two hours according to the urgency of the case. If the sulphate of Copper or alum have been used at first, vermecia produced after the first or second dose, the nauseant action is here also to be kept up by smaller doses every hour or two hours. For active treatment may be called for after the action of the first emetic, if the patient is robust and plethoric, and the inflammation be acute, with a full throbbing pulse, severe local symptoms, then it may be necessary to resort to general depletion. If it is in town practice local will be found more suitable. Calomel has been recommended in the first stage, it used after an emetic may be useful, but the main treatment in fowls must be active. To be useful of Calomel is rather too slow to be relied on itself, but cannot produce mercurialism in two or three days without running
enormous risk to the system. In the second stage, built by irrigation and by the mouth, it is of great use to high recommended by many, and among these as might be expected are the French. In the first stage small doses of one to three grains every two hours is best. At the same time more general but less heroic adjuvants are necessary to aid our treatment. Derivatives are here useful some have gone the length of proposing Dr. Jones's cupping apparatus, but it seems to me that in the child the warm bath (aided if need be by mustard) or stimulating selecta are much more applicable equally efficacious. After full emesis, but seldom after free bloodletting, if Calomel is being used, after its first dose, the patient is to be put into a warm bath, allowed diluents freely. Syrup is to be guarded against in very young children, as also when active measures have been employed. The bath acts as a general sedative, sometimes as a kind of depurific, agreeable to the feelings of the little patient who seems soothed by its use. Where the warm bath is not readily obtained or the case not a suitable one for its use, a valuable substitute may be found in the use of warm water bottles inserted into stockings wrung out of boiling water and wrapped in blankets round the
the patient, who, wrapped in another blanket is allowed to steam there. The introduction of steam into the bed under a wicker work supporting the clothes, may be useful. Inhalation of steam is often very serviceable, not only as a real antipneumonic, but as an agent which, easily obtained and simple in its administration, allay irritability, soothes inflammation, and gives much relief to the patient.

Sometimes medication increases its activity. The introduction of steam into the atmosphere of the room, and the maintenance of a suitable warm temperature are of great service and not to be neglected. A thermometer in the room is found especially useful in guiding acts. The heat at night, when the change to cold with aggravation of the symptoms is liable to occur. These measures adopted at the outset will, in nine cases out of ten, cut short the attack, attention being paid to the state of the fornas and which are apt to become costive. However, as generally happens, the second stage is reached before assistance has been sought; the hope are materially modified, and still we must attempt the first indications of one of any reasonable hope can be entertained until its success. A warm bath and active emetic are to be given, and vomiting produced, upon the attainment of this bloodletting if not
practised, may be resorted to, if necessary generally or locally, still the quantity drawn must be carefully limited. Seldom at this stage either lessen the inflammation or stop its progress, it may however be necessary to stop or relieve local or dangerous congestion, but here again we are not to be misled by the temporary relief, or bulwark, which follows the application of cupping or leeches for it is often momentary. And the inclusion of more speedy death.

Calomel is here recommended by many authors, + by none more than the French, both internally + by immersion, but care must be taken for with all the tolerance shown by children of Mercury still the danger to the system as well as to the parts about the mouth + tongue (especially if there a tendency to glossitis acid or purpuree salivation, are to be dreaded. It is only necessary to touch the gums very slightly, + this may be best + most speedily obtained by small dose frequently repeated. Internally it may be rubbed in to the thighs or axilla by in the form of suposant. The bowels must be attended to, if loaded + inactive then evacuation must be attained by suitable remedies. The employment of medicated enemata is useful if fever exists in the tongue. The strictly local remedies are now also peculiarly called for.

In the first stage there are seldom needed unless congestion is great, when leeches to the top of the stem are to
to be used. In that stage Cold altho. apparently little
resorted to is capable of producing much good. It is
after all the true sedative, its actions are undoubted;
but care must be taken that their employment is
well timed. In the Gazette Médicale de Paris Dr. Bock
man of Landshut proposes the application of ice to the
Throat in place of leeches in the early stages of Conj. He
gives in illustration of its success three cases. He wrapped
the body limbs in warm flannel kept warm bottles
at the feet, while he wrapped alinen handkerchief dipped
in cold water round the neck, of applied bags of ice on each
side of the Throat, three he renewed every half hour. Immedi-
ately after the first application, the heat of the head
neck disappeared, agitation & distress were diminished,
Cough ceased, Patient slept. Three applications were
continued from 3 A.M till 8 p.m. when they were dis-
continued for the night but resumed to next day &
after this the patient seemed & continued quite well.
In all three cases the relief was immediate effectual.
In a case serious throat complication of scarlatina
Maligna with alarming swelling of the adjacent &
affected textures internal & external, which had come
in quite suddenly, & seemed to partake of the erysip.
alsus tendency, I lately saw the greatest benefit derived
from the repeated use of the cold water applications.
The relief was great and the results the best. The patient now lay calm and free from her former agitation, speedily fell into a tranquil and refreshing sleep. Should the cold applications not succeed, or the case be too far advanced for their employment, good results may often follow the use of a sponge wrung out by boiling water, placed on the throat, this continued till a sufficient action has been established. The proper time for administering relief is when Conght attacks are increased as they generally are in the evening.

In the stage however now under notice where we expect the exudation to have already taken place, our local application must be different. Leeching however may still be practised here, but with a different indication from the first stage, namely, to prevent if possible the formation of more exudation. Other means may suffice, thus, resuscitation of blood from the internal part may be effected by rubefacients over the chest. Ammonia in the only one contraindicates acid frequently brings in effusion from its irritating the glottis causing both great difficulty. Blisters are now necessary to induce absorption of the exuded matter; they are best applied over the maps of the neck or between the shoulders, or on the sides of the throat, but never in front of the throat, otherwise they...
do harm by injuring the surface which we may be called upon at any instant to use in the operation of bronchotomy. In some cases of larynx where edema of the epiglottis, uvula and other cavitations false vocal cords is great and sudden, or threatening evil, excision of the soft parts has been recommended and may be practised with advantage. The instrument used may be the ordinary gum lancet, or one with a similar plan of edge so as to protect the tongue and other parts. Mr. Spence has proposed cutting off the end of the uvula to allow of a more thorough drain, but this, although perhaps facilitating the end in view, may act deleteriously afterwards. I have a bad result in the act of deglutition permitting parts of the food entering the posterior pharynx.

If, despite our local & constitutional treatment, urgent symptoms & fever still continue, vomiting may again be induced for even if for the fourth or fifth time, & follow up the effects by expectorants. Should the disease still progress unfavorably, the breathing, voice, cough also becoming more affected, the formation of false membrane may be suspected & with this our treatment will do far vary. Bleeding & blistering will now be of little avail, our endeavour now while trying to sustain the strength of the patient, is to expedite the detachment of the membrane. This end may be accomplished in one or two
different ways, we may try to cause absorption of the membrane, or solution the same, or separation of it from the mucous surface, & then its expulsion from the air passages. For the first of these the action of Mercury, Soda of Potassium, or other decoctions has been championed, for the next the alcalis & their preparations have been employed, acetic acid, strong acids when these can be applied, such as hydrochloric acid, acetic acid, solution of alum & nitrate of silver; for the third expectorants to act upon the mucous membrane to stimulate it to active secretion, as well as secretion, have been used; & for the last stomachataries, emetics & surgical operation are the means most to be relied upon. Of Mercury we have already said enough, & Soda of Potassium the cases are too few to allow of its employment. The alcalis are said by some to have been prompt & effectual, but more examples of their efficacy must be obtained, for they will come into general use for this purpose. Of the acids when applicable there is little doubt. They produce the best effects as soon as secondary cases, the same may be said of Alum which by insufflation or application in solution is vaunted by Bordeau & older writers of Nitrite of Silver. I shall write hereafter. Acto
The expectorants, the preparations of Squill, Ammoniacum, the subcarbonates & sulphurates of the alkalies, Camphor, Nux sacram, &c. are good. But perhaps better than any is Senega. D. Pretonneau recommends it highly, & declares it to exercise a specific action upon the inflamed mucous membrane of the air passages. Its medicinal effects are prompt, energetic, while carried farther it may be made both emetic & purgative. D. Bin in a large number of cases where he used it found its use in small doses instantly followed by a more abundant expectoration of a mucus-puriform nature, the passages passed from the dry & acid state into that of moisture & relaxation, with improvement in the voice. On stopping the remedy, he found the good effects cease, but return on its re-employment. Other authors also speak highly of its virtues, it seems perhaps unjustly, overlooked and omitted from many of our expectorant recipes. ... when we use emetics at this stage for the expulsion of the false membranes, what ever may have been thought desirable before in the use of Autumnia, will now be quite unnecessary; its use now, at least, is contraindicated. Alum, Sulphate of Copper or Senega must be substituted. Ticking the fauces with spirit may be tried in order to procure a speedy e-...
fatty degeneration of the membrane. They are however
more applicable to second or third stage where the topical appli-
cation is secured; they are supposed to render the mem-
brane more fit for expectoration. Should spasmodic sym-
ptons show themselves at this stage, enemata contain-
ing antispasmodics as assafotida, muck, lobelia &c
may be given & medicated fermentations applied to
the epigastrium & abdomen. Narcotic class of anti-
spasmodics are to be avoided, or if they are used in
emergencies, must be carefully guarded by speeaean
antimony; camphor combined with James pow-
der, or Hesperamus with the same is good.

In the third stage, we have far less hope of good result-
ing from any medicinal remedies than before, for indeed
if these have not produced the desired effect the case
is almost hopeless, so far as they are concerned. In this
stage we have alarming depression of the vital energies
to contend with, as well as the support of an enfeebled
frustrated nervous system. If expectorants are still
continued, they must be of the stimulating variety,
as muck, ammoniacal preparations, ethers, assafotida,
baldrian, the oxides of zinc & bismuth &c. If not
admissible by mouth, must begin by enema.

Inhalation of the fumes of warm vinegar alone or with
camphor or ethers, may be useful. Opium as well as
chloroform are
contraindicated at this time. Lentinus Thilenius recommend stimulataries blown up the nostrils, their use is followed in many cases by the ejection of shreds of false membrane from the larynx and trachea. Digitalis, chloride of potash, and other empirical remedies have been recommended by their respective upholders, but with little success. If baths are resorted to in this stage mustard and resort Ascot Whisky should be added in proper proportion as stimulants, to guard against fainting. Sloughing must be guarded against if blisters are used. Warm fomentations may be required, the bowels kept open if not already in a loose state. Mental congestion or other cerebral symptoms show themselves cold affection may be used, with liniments to the extremities. The operation of tracheotomy will be considered next.

The treatment of the Haemorrhagic variety comes now to be considered. In this the treatment towards the latter stages when inflammatory symptoms have supervened stand parallel with or predominant to the former, is much the same as that already stated.

In the early stage of the Paroxysmal Haemorrhagic variety, when the paroxysms of cough, refusal of the gullets, are predominant features in the complaint, I would advocate the use of chloroform. Its use as an antiparoxysmal in such cases of cough seems unnoticed by most writers, and yet...
it has been applied with benefit to my knowledge in several cases of Croup. One could not as it seems to me, indeed well have any disease in which the many virtues of Chloroform are so well elicited as in that of Spasmodic Croup, more especially in its early stages. I would not of course advocate its use in all cases, or even in all stages of the most favorable cases for its application, or in cases where the lungs or air passages are loaded with fluid or obstructed by mucus or membrane, this is in the first or second stages of Spasmodic Croup where it is most useful, when used before the first stage is over will seldom fail to arrest the spasms and cure the disease. It appears to me to comprise in its actions all the good effects of the remedies most prized in Croup, it has advantages which other remedies do not possess or where they cannot be applied. Thus, it arrests the violent spasms of cough, reduces acid in the bowels, gaseous flatulence, the over-saturation of the nervous system which, according to Dr. Todd, exists in Croup in most cases of Spasm. It blunts the sensations and thus prevents irritations applied to the peripheral nerves, as in the larynx, from exciting violent reflex action and consequent spasm. Then by checking or controlling these it prevents congestion inflammation, therefore excitation from the blood vessels into the air passages. It may for the moment excite the pulse, but
but speedily it soothes it, acting as a sedative both to the circulatory & nervous system, & probably the latter upon the former. Here it may be remarked that for its successful application the patient must be kept under its influence for some little time, until the pulse has got below the natural level, it will then be found to remain low after the withdrawal of the chloform. Then further the secretion from the mucous surfaces is increased, the dry and state of the throat & air passages, so frequent & painful in the first stages of pharyngeal inflammation, cough is prevented, or if existing is corrected. It further relaxes the tissues generally, allowing a more universal diffusion of the blood, & thus tends to prevent local congestion. Its after effects are good in so much that it maintains for a certain time the necessary degree of nausea & languor, & lastly it sustains the vital & nervous energies, & thus protects the system from the shock which at so early an age is always caused by an attack of severe group, falls of the easy application of counterirritants when these are needed, without exciting the symptoms exciting the little patient. It may thus stay the disease if taken early & used properly, or if the disease has begun, it will ameliorate the nervous symptoms & possibly prevent congestion, inflammation, pseudemembrane.
Chloroform may thus be said to fulfill the endosed in the early stages of grief by bloodletting, emetics, nauseants & anti-pasmonics to be preyed upon by their disadvantages. I do not champion its use in every Case of cough, more nor in every case of spasmodic cough, but in the early stages of the latter in general, & even in the early stage of inflammatory cough, if dyspnea does not then exist, no signs of exudation into the bronchi or trachea, while spasmodic symptoms are urgent, I would advocate its cautious use. Indeed, on the other hand, any exudation exist that might threaten suffocation if not expectorated, shows the cyanotic symptoms prevail in cerebral congestion or cardiac affection he suspects, its use is contraindicated. One of its disadvantages is the suffocative spasm which at its first inhalation it is apt to induce, but this is soon got over, & will not return if properly administered, a more serious objection, if true, is its tendency to prevent proper oxygenation & causing darkening of the blood. Should this fail, the further treatment necessary for this case consists in stimulant anti-pasmonics, warm bath, inhalation of steam, emetics followed by warm cathartics, venem as if necessary, blister or rubefacients, friction & embrocations applied to the spine & epigastrium, & cold application to the head.
Cerebral symptoms are rarely enquired after & when present actively treated. Among the stimulants the carbonated ammonia is highly recommended, it may be used internally & taken as an antiment to the throat externally. In the latter stages of spasm & in cough it is useful as a readily diffusible though evanescent stimulant-anti spasmotic & may advantageously be combined with laurpho or galminic casesy, second any cough. Brandy & ammonia may be necessary in the latter stages & tracheotomy may be necessary to relieve the suffocative spasm.

In secondary group of our nomenclature bleeding is contraindicated. Many think it may propagate the disease & tends to accelerate its fatal issue. The quality not the quantity of blood is at fault. D. Bretonneau holds that the false membrane is not the only result of the inflammation, the serum which gave birth to this membrane is also at fault. The sero, continues to do evil in spite of bloodletting, having according to P. B. the sad quality of aggravating the inflammatory lesion by its irritant action on the healthy surfaces. Artaeus seems much of the same opinion when he said in regard to it, "Non secum am incerta quiescunt, venenum habet canis ad intera intestinum, celeriter frantes etiam inter se, cruenta ulcerantur."
Is this Lecountey Crump?
Mr. de Humboldt shows that the serum of simple accutatory, under the stimulation of electro-galvanic action, acquires similar properties, inflating and elevating the surfaces to which it is applied. Biretman further states that bleeding deteriorates the already impoverished blood, rubbing it of its red corpuscles, liquefying it & so favors the evolution of its serum fluids. He has also noticed the disease steal more rapidly & clam actinelly on in those, whose blood has been decolorized by depletion of former ailments.

Like most other physicians of the French school, Dr. B. upholds the use of Mercury here as most beneficial in all but weak & sickly constitutions. If we credit his reports of his successes by Mercury it must indeed be a powerful remedy. Bega so far as saying, that even in cases where the patients were actually moribund, Mercury proved almost miraculously efficacious in preventing the suffocating effects of Coma. It that where after its administration no hopes had been entertained, the practitioner went back in despair only to see the patient dying, to his greater surprise he found him relieved, as if acted on by a sudden spell able to expelate threads of membrane, afterwards more persistant matter. Acts the local application here to be used when the false membrane extends from the
and tonsils to the larynx, hydrochloric acid in the proportion of one part to three of honey seems best, or alum similarly mixed. The older practitioners recommended boiling burnt alum into a reed on the grists in the throat & application of alum, honey & galls. Lancing by redhot irons or wires was ever used with reported good effect. Insufflation of calomel is recommended by Bretomare.

More stimulants with nutritious diet will be found a necessary part of the treatment with the necessary operations & agents favoring the discharge of the false membranes.

... shall now refer to the operation of Swabbing the Larynx. Before doing this it may be necessary to remark that to swab the larynx is one thing, to fancy that we have done it is another. Yet the two don't seem always to be distinguishable. We find many skilful & distinguished surgeons & practitioners declaring that they have seldom (some say never) succeeded in satisfying themselves that they have really accomplished this, while we also find more especially among those who have little practice in this operation, some declaring that the thing is easy of performance, that they feel satisfied that they can pass the phinbag sponge-armed, into the glosus with armed ease as the catheter into the bladder.
How would the water perform it successfully?
But some are not contented with having achieved the introduction of the probang into the larynx, but must needs pass it into right or left bronchus at will, & so we find Dr. H. Green telling us that he has frequently and as a common thing swabbed both bronchi first one then the other. The fallacies apt to be committed are strongly against the supposition the passage of a sponge armed probang charged with solution of nitrate of silver, may, when passed into a swollen oesophagus, cause a firm grasping of the membrane as when within the vocal glottides, while the spasm following upon this, & the escape of a few drops of the nitrate into the larynx, will produce spasm & suffocative paroxysms almost as severe, if not as severe, as the introduction of the whole into the larynx would. That some men do manage to get the probang into the box of the larynx, I am not doubt, but incline to the opinion that these are the minority; & that the operation is by no means so simple as those wrouds have us believe.

The plan here proposed is to cauterize the larynx by expression of fluid from the sponge by the closure of the laryngeal muscles on it to cause some drops to reach the trachea thus extend the desired action. The ends aimed at by the operation are first, the prevention in the early stages of evacuation of fibrine & consequent formation of false Membranes, second, to prevent further evacuation from what may already exist.
third, to cause loosening of the false membrane already formed, thus favoring its expulsion; fourth, to attempt expulsion by the irritation excited; fifth, to render acute tonsillitis less likely to occur; sixth, to make the surface of the tonsils more tolerant of external irritation. The advantages are various and the number of cases reported as successful when this operation has been carried out are encouraging. Students early application in the first stages of the disease, this itself when the case is established, is a great advantage; in those it may then be ectoderm. It admits of repetition with advantage, when the first application is insufficient; each repetition is less disagreeable to the patient than the former. The operation known under this name, which name, manly enough, was given it by Dr. Lance, a naval surgeon, has under the original title been largely practised since its introduction by Dr. Charles Bell, with marked success. What nothing formidable in its performance or effects to oppose its use, while the many good results following its application, as also the distinguished names of many who advocate its employment, are sufficient of themselves to recommend it to a still more general application. Dr. Green was the first who by his writings brought it prominently forward. Many cases since recorded chronicle its success. The process consists in applying solution of nitrate of silver by means of a sponge pointed probang, to the larynx, by inserting it into the
glottis cause the sponge to be pressed. The contents to escape and apply themselves to the affected surfaces. Its first application is generally followed by a violent expiration causing the ejection of a quantity of tenacious mucous matter generally free vomiting of the same shortly afterwards. It is usual to repeat it several times, the second application being made in ten or fifteen minutes and followed by a free discharge from the air passages. In half an hour or longer a third application may be made according to the effect produced. It may be used in all the different stages of the disease, and is perhaps best at the commencement of the laryngeal symptoms, more especially when false membrane is threatened, but it may also be applied in the most advanced stages with the happiest results. It has the benefit too of exciting increased secretion of the mucous membrane in favor of the expulsion of the false membrane. Prof. Watson thinks its application is injurious during the violence of true exudative oozing, but good when the disease begins to yield to antiphlogistic and other treatment. After the use of an emetic it generally on the second or third day if symptoms are not urgent he thinks its use is good. But in true exudative cases its use is applicable from the first, as it renders the surface less liable to the irritated states and any inflammatory tendency. Dr. Green says that he has placed the probang within the rima glottidis upwards of five hundred times and with ease. Dr. Watson applied it in the case of a child eight months old after the
the use of Anthomyx, calomel & counterirritants, it gave great relief & was followed after several applications by recovery. D. Chapman, New York, relates 10 cases in illustration of this remedy's success. In two cases perfectly organised false membrane existed, the application was made & cure followed. In four cases membrane was supposed to exist from the dry state of the parts, want of secretion & other signs, the nitrate was used, & signs of secretion followed, with expectoration of false membrane, three recovered, one died. Of the two cases which were cathartically treated, patients were almost moribund before the caustic was applied. Both died. One chronic case from congestion of mucous membrane was cured by the application. One case of the membranes,variety affecting the larynx, was also cured, recovered from hoarseness died in two weeks after recovery, from diarrhoea. In all three cases except one, though faithful medication was employed before resorting to the caustic, yet without avail. Not one of the nine acute cases could, in his estimation, have recovered from the desperate strait to which they were reduced unless possibly by tracheotomy. The remedial powers of the caustic require an interval of 24 to 36 hours before its peculiar powers are displayed in subduing inflammation & disorganizing the pseudomembrane that may have been secreted. As a remedy much more universal in its application than tracheotomy can ever be, it may be used earlier & with greater chances of success. Some have recommended its inunction in form of powder, gr. of the nitrate to gr. of sugar of milk.
when repeated at intervals. Professor Burrow has an apparatus for administering it in children, although at a certain age they may be made to practice it themselves. Dr. Meigs in a recent paper recommends the solution of the nitrate as one of the most powerful remedies in whooping cough. Dr. Parish treats membranous croup with small doses of calomel and camphor. Greenan powder, and in addition, cauterization with solution of the nitrate, 1/2 to 3/4 g water, every 2 or 3 hours. Next use it as an important adjuvant after calomel croupics. In the secondary variety, following scarlatina maligna, Dr. Greenan recommends hydrochloric acid, one part in three of honey or in preference to the nitrate. Dr. Meigs tried the acid but was disappointed in its results. He uses more to the nitrate (2/3 to 1/3) for Bryan also advocates the use of the nitrate (3/4 to the same) for a child 14 mos old Dr. B applied the solution of the above strength. The local application was followed by temporary spasm of the glottis, free discharge of mucous membrane, fluid fluid. This was succeeded by improved respiration, pulse 130, thready. Injuring followed croup along with it a free discharge of mucus. The second application was followed by copious discharge of a fluffy mucus, white as milk, bleeding took place from the nose. The third application was stronger solution was attended with very little irritation barely free expectoration, 2 g of calomel were administered every 2 hours for 24 hours. A fourth
What is the physics of the jury?
application was succeeded by a large quantity of thick membranous tenacions + strings. fucus stained yellowish. Complete relief continued + child got well in a few days without symptom appearing. In solution when to be used early in the inflammatory stage of the disease should be weaker than afterwards. If the nitrate of silver 3j is sufficient, may be gradually increased to 3j or 3j to the z. In secondary cases we must see the outlook from the very first for the white alums on the tonsils, as apply solid nitrate of silver at once to check if possible further advance. In applying the fluid to the larynx a few precautions are necessary. The practitioner places himself before the patient but rather to the one side, to avoid the blinding effects of expectoration suddenly provoked. The patient seated facing a good light, has his head held by an attendant in a straight direction + backwards, the probang properly prepared with the sponge firmly fixed, is passed in the middle line, avoiding any of the surrounding tissues for fear exciting retching. When carried to the back of the tongue, the patient is told to take a long breath, when suddenly + with dexterity the hand of the practitioner is to be elevated + the sponged end of the probang thus depressed + carried forward enters the larynx, a violent expiration + cough succeed to the escape of the glottis, probably the ejection of shafts of tenacions. Tenacions + membranes will assure the practitioner that his operation is successful. The application is to be repeated 3 or 4 times if necessary
D. Tracheotomy in Croup

We shall first consider here the propriety or impropriety of performing tracheotomy in Croup; secondly, the cases in which it should be performed. We start with the general assertion that all cases of Croup are not suitable for the performance of tracheotomy. That all stages of Croup are not suitable. There may however be cases of Croup Caused under
each of the divisions which have adopted, in which this operation is useful & necessary. Before considering these it may be the best place here to answer the question is tracheotomy a lawful or expedient operation at all in cases? You will now reply to this, as for long after its first introduction it was done by saying, that it is not. Its lawfulness would be proved were it found even in a small proportion of cases to save life, which, but for it, would have been lost, much more is it established when a tolerable proportion of cases is found to be so saved. Its expediency would be established had we reason to know that in the judgment of the experienced & skilful of the profession, it was likely to be capable of averting or rescuing from death; much more so if even in one instance to its aid could be attributed the saving of one human life. These good effects it has been shown to possess, when judiciously performed in suitable cases; therefore we hold it to be both lawful & expedient. But think higher ground may be chosen, i.e. not only its lawfulness & expediency asserted, but its performance demanded, that too peremptorily in cases where to all human knowledge death must necessarily speedily take place, but for its supervision. In such cases, the medical man not only does not fulfil a duty, when he refrains from the operation, but he indirectly culpably adds to the mortality. Become a poor excuse in such a case today, he refrained against his own convictions, only to deference to general opinion, or perhaps
fearing it to bring discredit on the operation — it is a pro-
substitute that forever having done our best in the ser-
vice of a properly trained judgment, to save a fellow being
from the finger of death. It is true, if in doubt, that serious
consequences tend upon the decision; but when thoroughly
convinced in one's own mind that the operation & nothing
short of it will give the patient a chance of life, no unpleasant
reminiscences of superstitious ignorance, conduct
must be allowed to haunt the memory & deter one from
duty. Some have described the horror experienced in after-
life by the approaches cast upon them in public & private at
every presentable opportunity by ignorant parents, who
believing the D. to have killed their child when by
the performance of the operation giving it the last faint
straw to grasp, have been dogged & reproached him
for days & months as the murder of their child.
Such cases however unpleasant, are the offspring of such
superstition & ignorance, and will seldom occur at the
present day unless among the lowest grades of the un-
enlightened people.
Dr. Fonseca's thinks tracheotony as incumbent on the
practitioners in suitable cases of cough as ligature of the carotid
after wound of that vessel, even if death should follow the
operation as often as cure, Many others high on the list of
French practitioners adopt Dr. Fonseca's views, While in
France the
the majority are in favor of the operation, in England 
America if the majority are not against its general use, 
they are tolerably equally divided on either side. It must 
here be borne in mind that in France the variety of Croup 
differs materially in most cases from that in Britain 
America. In the former, Secondary Croup is the more prevalent, 
to ensure the success of the operation in it, the early perfor 
ance is expedient; probably for this reason that the 
blood & consequently the system being so seriously implica 
cated, it would be improper to allow the disease to go on fur 
ther after once having really invaded the Larynx, otherwise 
the chances of success would be materially altered. Then 
again the deposit is secondary, its extension more gradual, 
to the Larynx, its presence there more ascertainable by the 
symptoms of implicated Larynx being added to those of 
an already existing affection; if taken at this stage the 
progress may be stopped, or the patient placed in a state 
more capable of contending with the disease. Then in that 
form of the Complaint the false membrane is found most 
tenacious, form it most constantly attached to the Larynx, 
& as it gets down to the Trachea becomes less adherent, less 
tenacious & more triangible, & as a consequence even when 
extending into the Trachea, when an opening is made 
there, it is either forcibly expelled, or its exit aided by suction 
or the forceps. Again it not infrequently happens that
in secondary cases the exudation was confined to the
larynx alone, to a space immediately below the vocal
cords. Then again the greater frequency of the operation
being performed in France is owing to the arrangements
made for the care of infantile diseases in the Hospitals
used for that purpose, where everything suitable for the
care of the patient after the operation is provided for.
This no doubt also takes materially away from the fatal
results so often following an otherwise perfectly success-
ful operation; as many children are known to have
died by suffocation from the tube or windpipe having
been permitted to get closed by the matter from the air
passages. In Britain few such hospitals exist; children
are seen too often, only in the advanced stages of the com-
plaint, if indeed not already aphexigatous. In this
Country the cases are chiefly those of primary croup, the exa-
dation is great, sudden, often beyond the reach of treatmen-
t, for frequently the Bronchi are overloaded before we are
summoned to the case; parents only taking alarm in many
cases, when the larynx becomes involved or even after
the first spasmodic attack is over, procrastinating in the
hope that the bad turn is over and will not return.
Statistics in Croup, as in most other diseases, are fallacious
grounds for basing any argument—they are open to
many fallacies. Thus while giving them all due considera-

I think it may be shown
that their revelations must go but a small way in favor of the operation. In France for instance they are much influenced enlarged by the number of cases in which the operation is performed in the early stages, before it is ascertained whether the case may not probably get well without its use. In England on the other hand, it is too often only performed as the dernier resort, when every other means has failed, and indeed often only when the child is supposed to have breathed all but his last, *tis indeed in articulo mortis. Then again as to the number of cases quoted of the success of the operation, a just estimate cannot be formed for this reason, that the number of unsuccessful cases is omitted. But even were the latter supplied we should further need to know the particular history of each case operation, in order that we might know whether the operation was justifiable, when not, as this would materially affect the reputation of the operation. All must allow that the operation is not one that may be performed at random, with the idea of doing no harm if it is not productive of good, yet we know that it has been performed even where the child appears to human sight dead, just because in a few instances of a nearly similar nature, it had proved successful; indeed there can be little doubt that the operation has been performed on children really dead, in the vain hope that possibly...
as it were by something short of a miracle, breath might not be quite gone! We must be judicious in our selection of cases for the operation, in drawing inferences from a comparative view of the results of the operation should be careful to know something of the history of the cases operated upon. But then again it seems unreasonable in a disease such as Gomp to consider the operation of larnaxomy as totally unavailing as some authors choose to style it, simply because all other remedies have failed, or because the operation is a serious one, or because when injudiciously used or rather abused it has failed of success, or still further because statistics show a larger figure in the mortality bills against the operation than the bills of health do in its favor. So far from being against the operation, they seem to me just the very reasons, many of them, for its performance. What here we are led to ask is the cause of death? It is 'spasm, obstruction of the larynx, or that & the texture with all their sequela of blood poisoning, exhaustion of fat, prostration.' Are we then to refrain from the life lengthening & preserving operation, serious though it be, because all our medicinal agents & contrivances are too feeble to counteract these morbid symptoms or because they have failed to do so? Is not this the very reason why we are to try more efficient remedies if we can supply the
necessary an independent existing spasm or obstruction, by operating or removing that obstruction, are we not at least bound to attempt it? We know that in such cases it has been attempted and followed by success. Felis, Roger Rolland, Porter-Grayne, Copland, Pratton. Yet I agree in saying that the operation seldom or never be attempted in this disease; yet they admit that cases may occur, have occurred, in which the operation may be admissible, yet because the chance, as they say, are infinitely greater against than in favor of its success, it because benefit has not accrued from the exhibition of a whole host of suitable remedies to this agent, no benefit will accrue from tracheotomy. Therefore tracheotomy is not only a doubtful plan but one to be deprecated. The chain of reasoning here seems to be loose and inconclusive. Were it adopted and applied to the treatment of other diseases, where more formidable measures are often applied to less hopeful cases, improvement and advance in Surgery and Medicine would die. All more unworthy claimants for existence from the want of something to live upon. If, for example, amputation at the hip joint, Caesarean section, and many of the more formidable surgical operations were to be prohibited or disallowed because more died than recovered in cases where they are performed, lives would be lost.
which otherwise are spared, if such be true of these why not extend the same to others? Is it not a case of sacrificing the many for the few, and sparing the few in place of none at all? Surely none will deny the humanity, not to say the legality, expediency, of adopting the means calculated to bring about this end. In camp in our country, tracheotomy is often performed as the last chance, a rally made by the surgeon or physician, it may be in despair, before he will submit yet death seize his victim; nor have endeavoured to point out, is it always unvailing, more than a few, we cannot say the many, have been saved from their life, humanly speaking, to its performance. But again it has been urged against tracheotomy that the parents' feelings as well as those of your patient must be consulted, that the former generally as the operation. This certainly may have held good in days gone by, but in the present, when broad the lowest classes understand the occasional necessity of a desperate measure in a desperate case, the false and false sentiment that would permit certain death to be suffered, rather than allow of considerable pain being suffered, (then it is questionable from the congested state of the brain and prevailing stupor that pain is felt) is being forgotten, while the anxiously devoted parent will entreat you to use every reasonable means in your power, if only the
shade of a shadow of hope may be indulged. The phlegmatic argument goes on that the chance of restoring or keeping in life for a few hours longer is all that in most cases can be done is unreasonable, for, if we can for that short time avert death, there is only the greater reason to hope for a still longer emancipation. An argument perhaps not quite in place here, but which to me seems not without its weight in disposing of the question of tracheotomy, is, how would we be dealt with ourselves, if, with the full knowledge of the chances fine and foul, we were placed in the state gone suffering from the asphyxiation of cough and doubtless most would rush the operation for the chance to live. Now in Coup we have often to think as well as to act, for the patient who, not of an age to in a state, to understand the chances afforded by the operation, can have no say in the matter.

Another argument in favor of the operation is the fact that in a large number cases death is supposed to arise from mere spasm of the glottis. Dr. Hayne has proved that even where obstruction of the tube does exist three eighths of the canal is open and free. Now by tracheotomizing we go beyond the seamy spasm, independently give existence allowing the necessary entrance of air. Joints now set in opposition to the authors already mentioned to others not here mentioned who are against the operation, those
who are its advocates in judiciously chosen cases, as also in doubtful cases as a last resort.

Dr. Trousseau, Laléite, Guérinet, Bretonneau, Haine Bondet, Archambault, Fourquet, Belpart, Petit, Billiet, Barthez, Dr. Meigs (senior and junior) Pancosel, H. Weber, Home, Beverley, Roech, Järe, Tonscheid, Michaelis, Graun and Franck. It is not to mention the numerous practitioners of less celebrity, whose experience is equally instructive, and whose success in the operation is equally multiplied, where the ordinary agents have failed. Mr. Porter, in his work on the Larynx, states that the operation is more often practiced by the younger practitioners than by the old and more experienced, with the view of gaining "a certain degree of reputation attached to the name of a successful operator which he wishes to attain." He goes on to say that as the young practitioner gets older he gives up more and more the practice of the operation for the cure of Hoarse Voice.

The former part of the statement seems more fanciful than real, while the end aimed at is proper and praiseworthy, few would think rich the attempt to obtain it under circumstances which bear in their front the destruction of what is esteemed for: want of prudence would never be made up for by dexterity or the hope of success in the operation. Few, even young practitioners, would risk their good name by venturing to the operation unless in cases calling for its performance.
The latter part of this statement may be borne out by some few of the older practitioners who were Mr. Potters most intimate men, but is not in the practice of most of the present day. Indeed, the look to the French school we find it quite the reverse; for there, experience in the results of the operation when properly conducted in suitable cases, seems only to impress the necessity of the operation being more frequently resorted to than it has been. Some again have put forward the difficulty, others the danger of the operation itself as arguments against its performance. The first of these need hardly weigh little in the mind of the Professor, practised, even by those little accustomed and seldom called upon to use the scalpel, it is not found to be the difficult operation which it is represented as being. The danger of the operation all must admit that this is a more real serious source of dread. The chief things to dread in it are the superintervention of bronchitis and pneumonia, the risks arising from wound of the pleural veins heated over the parts, and what is less seldom taken into consideration the formation of secondary abscesses in the lung from the matters absorbed into those veins. Another argument used by some, it founded on Strang's observation that even where false membrane had existed, 3/8 of the cases are generally left free for the transmission of air to the lung, but if I have succeeded in my attempts to show that this is impossible...
is the cause of death in a vast majority of cases, it stands to reason that if by the operation we can introduce air below the seat of spasm, we rectify at least so far the impediment. The uncertainty of the result of the operation is hot by some as another argument against its performance, but really this is not so very markedly different from that in other operations to call for further comment. Then the opprobrium cast up on the profession as operation where it is unsuccessfully performed is held up by those who contend much for appearances as of operations in the profession, is cast up on the profession as operation if the operation is performed with the view to save life, even in cases where the chances do exist in one much in the minority to those of failure. Next we have the supposition held by some that simple event-gain is not the scene at stake, but the change that has taken place in the blood itself from the want of proper arterialization; this were a more cogent argument were we about to increase this state by the operation, but as we hope by the operation to remedy even that condition we cannot allow it weight. Further the difficulty, as to what is the precise nature of the case in which tracheotomy is applicable, the proper time for its performance, along with the symptoms that are to regulate the surgeon in his practice, is an argument worth consideration but not one prohibiting the operation, but showing the difficulty of decision in some cases. Again the
of finding out when the disease has commenced in the tracheal cells or when in the larynx; the difficulty of distinguishing between chronic laryngitis with marked thickening of the laryngeal membrane, in the absence of trichin in the case, while they may complicate our diagnosis, need not to blind it, as to prevent our decision for or against the operation. The practitioner doubtless when called to the bedside of a patient in a state of asphyxia from the Conspicuous paucity, more especially if not having before seen the case, has a whole host of conflicting thoughts rushing upon his mind. The circumstance is in no enviable condition. The case is not one where a moment's unnecessary delay can be allowed; the patient lies in imminent danger, alarmed and agitated parents and friends surround the bed, whose mental anxiety and confusion may make the idea of examination only the question, the practitioner with the anxious desire grasping his patient, a full feeling of the responsibility devolving upon him, has nothing left for his guidance, but a sound judgment. This stethoscope, the latter even may be useless for breathing may cease to be suspended, nothing remains but the performance of the operation to better the condition of his patient, or leave him not worse certainly than he found him. This leads us to a consideration of the cases in which the operation is necessary & proper & those in which it is not.

And first we state that the more sudden the supervening asphyxia, the
greater in general is the hope of success from tracheotomy. The younger the patient the less hopeful in general is the case. If from stethoscopic examination or previous knowledge of the case bronchitis or pneumonia be found to exist, the operation is contra-indicated. If the laryngeal symptoms have refused to yield to the judicious energetic remedies used in Croup, if Cauterization has failed tracheotomy is not only justifiable but demanded, provided chest affection do not contra-indicate its use; if not at an earlier stage when hope of success are greater, still when not seen till later is justifiable when any reasonable hope can be entertained of rescuing the patient or even lessening his agony and allowing of a more tranquil death. It is held by all to be the duty of Surgeon as of Medicine to palliate where it cannot cure. If the symptoms which during the progress of the disease have shown a slow but steady advance on the part of the exudation & false membrane, thereby leading to the supposition that the membrane is extensive & of considerable thickness & consistence, the operation is contra-indicated. If patient is very young & unhealthily anemic constitution, with signs of debility, we do not operate; so of case where symptoms of syncope or cardiac obstruction exist. If no expectoration has been excited, despite the use of any expectorants or the application of the nitrate of silver, the case is very
hopeless, & not likely; if symptoms of false membrane are present, not likely to profit by the operation. When disease seems local, confined to the larynx, or to the larynx & trachea, delay lessens the prospect of success. This reminds me that I have omitted in the arguments already quoted for the operation the fact that from an analysis of cases of diphtheria made after death by Drusenot, only 171 cases, where false membrane existed in all but 21, it was confined to the trachea in 78 cases, in the larynx & trachea in 30 cases, & invaded the bronchi in 42 cases. True, out of the 171 cases only 42 of them present a physical obstruction to the success of the operation. The proportion of cases wherein the case has been successful, compared with those when static, wherein it has not been successful, bears the relation of one to four. Thus from statistics such as they are collected from different works we find that

M. Laleeuen performs tracheotomy 150 times, 39 recovered.
M. Jelphau ———— 10 times, 2 recovered.
M. Bretonneau ———— 20 ——— 36
M. Alaine ———— 60 ——— 418
M. Guertent ———— 36 ——— 4
M. Yourquet ———— 17 ——— 5
M. Petih ———— 6 ——— 3
M. Ledue de Tours ———— 2 ——— 2
During the last 4 years in the Hôtel Dieu
only 24 operations, 14 were saved.
At the Hôtel des Enfants
in 1830, out of 20 operations, 6 saved, or about ½.
in 1831. . . 31. . . . . . . . . . . . . 12 . . . . more than ½.
in 1832. . . 57. . . . . . . . . . . . . 11 . . . . less than ½.
in 1833 . . . 61. . . . . . . . . . . . . 7 . . . . less than ½.
in 1834 . . . 42. . . . . . . . . . . . . 11 . . . . only ½.

M. Souletten, Professor at Military Hospital, Strasbourg,
performed the operation on an infant 6 weeks old, & recovered.
M. Bondet collected 63 cases of the operation, with 61 successful.
M. Guérin . . . . . 100. . . . . . . 20.
M. Girard . . . . . 28. . . . . . . . . . . . 25. . (2)
M. Vallet . . . . . 17.5. . . . . . . . . . . . 57. .

These statistics, if to be relied on, when taken in conjunc-
tion with the numerous instances of success in solitary
cases, show that the operation is not so unsuccessful as
many would have us believe. I encourage the perform-
tance of the operation in cases adapted to its use.

As to the time for performing the operation, like every
thing else in the treatment of infantile convulsions, it must in general
be early. If success is to be hoped for with any confidence,
at the same time even when the patient seems mori-
bund, if the asphyxia has been sudden, unexpected &
short duration, life has been & may be saved by trachestomy.
M. Trouseau has said that if the child is menaced with asphyxia when treatment has failed, a fatal end is certain, if not averted by surgical means. We are not in such cases to stop to consider the extent of the false membrane, the child will die, must die in 2 or 6 hours or sooner if not relieved; tracheotomy is however doubtful. The result is strictly indicated. So soon as we are convinced in a severe case of suffocation that the larynx is affected and the leery inflammatory exudation we are to operate says M. Haime to prevent extension to the trachea and the subsequent failure of the operation, short of tracheotomy the only method to be had recourse to. M. Trouseau Guerzontt A recommend early operation, not waiting till the blood is vitiated as shown by the lossy hue of countenance, purple colour of skin, but at the same time if calls even at the last stage only, not to refrain from operation if any hope can be entertained. M. G. says that out of 101 cases where tracheotomy was performed as a dernier resort 36 were saved, although asphyxia was considered imminent. M. I. further states that if local lesion constitute the principal danger, no matter what the degree of asphyxia arrived at, even if the child has but a few moments to live, tracheotomy will succeed almost invariably as well as it would three or four hours previously. From all that has been here stated, with an impartial
view of the subject, I am inclined to think that in
suitable or even doubtful cases, the arguments are more
efavour of them against the operation.
I shall not here enter into the particulars of the operation
as I have already prolonged my thesis far beyond my
original intentions. I may merely be allowed to state a
few of the minute points which affect the operation. It has
been performed so far to favor its success.
The thorough cleaning out, as far as possible, expedient,
of the air passages, by a few drops of a solution of
potassium iodine, has been much dwelt upon by Dr. Frommern
as a cause of his so frequent success. He drops in 15 to 20
drops of the solution of the Potassium Iodide (strength 1 g to
10 g) from a sponge. Mr. Guernon deprecates this plan, but nevertheless
its effects seem good, it assists much in the removal of
shreds of membrane which are thus expelled through the
opening the trachea. The introduction of the forceps may
be necessary to remove shreds of membrane, previous excision
may be the only means left at our disposal.

Then comes the after treatment for the avoidance of
bronchitis, pneumonia, as also of suffocation from
matter to be expectorated; exhaustion from want of
support. The first duty is nourishment, milk, eggs,
custard, chocolate, soup etc. May be given. If intimidation
may be necessary to make the child eat. Hence to this, not
to speak of the
great vigilance necessary on the part of the nurse to keep the tube clear, for which a double canula is best; we look to the dressing of the wound. Prevent irritating liquids from coming in contact with the wound. Envelope the neck of child in a knitted woolen gravat or scarf, to allow of breath being warmed and impregnated with moisture. Accidents through the tissue; preventing drying of the inside of the canula. Formation of a case, which, if formed, may when detached cause fearful fits to suffocation even death by occlusion. The canula is to be removed as soon as it can be done with safety, seldom before the 6th day. The peculiar difficulty noticed is some, when fluids are swallowed, from their appearance through the outlet in the tractus as shown by Dr. Archambault, is probably owing to the epiglottis having lost its usual sensibility, and therefore causing a want of harmonious action of the muscles in deglutition. Soon ceases when present.

Before concluding I have to notice the prophylactic treatment of rink. Everything like indifferent clothing, unwholesome food, or too great quantity, or too rich quality are equally to be avoided, since they are supposed to act as exciting causes as seen in the ill-conditioned neglect of children of poverty, or in the pampered offspring of wealthy but foolish parents. All injudicious exposure or change...
is to be avoided. If any cutaneous eruption exists its progress is to be favoured not aborted. The use of shower bath and cold baths every morning with friction by means of coarse hand towels is to be adopted for brushing the system if atonic, more especially if patient has had an attack of croup before. Flannel is to be worn next the skin, a suitable covering also for the neck in winter and spring. Light nourishing diet is to be given, strict attention paid to the bowels, skin, free and frequent exercise in the open air, careful avoidance of exposure to variations of temperature and weather. Immediate recourse to suitable medicines on the appearance of catarrhal or croupal symptoms. Change of locality if croup is prevalent, with avoidance of exposure to Northeast winds especially when accompanied by rain. The diet regimen in the more acute and inflammatory cases should be strictly antiphlogistic. All food should be withheld until the stage of exhaustion threatens to supervene, then light nourishment is to be given. Diluents such as Marshmallow tea, acidulated carbonate waters, mucilaginous decoctions if not disagreeing with the stomach, may be freely allowed from the first. The temperature of the room is to be kept equable, ventilation good and air kept moist. During convalescence change of air will prove very beneficial, as soon as patient is fit for removal. Strict attention to
Injunctions such as those already detailed will be found necessary for some time after the attack is over, in order to ward off relapse or dangerous sequelae. This especially needed during the first winter and spring after the attack, is not to be overlooked in seasons following.

Edward Holyoake Bell.
March 21st, 1857.