An inaugural dissertation on the suffocatio stridula, or croup : which, under the direction of the Reverend John Ewing, D.D. provost of the University of Pennsylvania ; by the authority of the Honourable Board of Trustees, and with the approbation of the respectable Faculty ; is submitted to their superior judgments, and to the candid examination of the learned, for a degree of Doctor of Medicine / by Robert G.W. Davidson, A.M. of Philadelphia, honorary member of the Philadelphia Medical Society ; 19th May, 1794.

AN

INAUGURAL DISSERTATION

ON THE

Suffocatio Stridula, *or* Croup,

WHICH, UNDER THE DIRECTION OF THE

REVEREND JOHN EWING, D. D.

PROVOST OF THE UNIVERSITY OF PENNSYLVANIA;

BY THE AUTHORITY OF THE

HONOURABLE BOARD OF TRUSTEES,

AND WITH THE APPROBATION OF THE

RESPECTABLE FACULTY;

IS SUBMITTED TO THEIR SUPERIOR JUDGMENTS, AND TO THE CANDID EXAMINATION OF THE *LEARNED*,

FOR A

DEGREE OF DOCTOR OF MEDICINE.

By ROBERT G. W. DAVIDSON, *A. M. of* PHILADELPHIA,

HONORARY MEMBER OF THE PHILADELPHIA MEDICAL SOCIETY.

19th MAY, 1794.

Nec Via Mortis simplex——
Nec proli medicas adhibere manus abneget parens,
Aut sedeat poscens meliora deos. VIRGIL.

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M,DCC,XCIV.

TO

ADAM KUHN, M. D.

PROFESSOR OF THE PRACTICE OF PHYSIC

IN THE

UNIVERSITY OF PENNSYLVANIA,

THIS DISSERTATION

IS INSCRIBED,

AS A SMALL MARK OF

RESPECT AND AFFECTION

FOR THE

MANY BENEFITS RECEIVED FROM HIS INSTRUCTIONS,

DURING THE STUDIES

OF HIS

FRIEND AND PUPIL,

THE AUTHOR.

19th MAY, 1794.

C

Philip Syng Physick with the
compliments of his friend
The Author

A

DISSERTATION, &c.

AMONGST the diſorders to which the human race are liable, there are few that require the attention of the medical world more than the ſubject of this diſſertation. And, although it be a diſeaſe which is not ſo commonly under the notice of the Practitioner, yet it frequently occurs, and is then ſo deceitful in its approach, ſo quick and terrifying in its progreſs, and ſo very fatal in its termination, that it generally proves fatal before there is any ſuſpicion of its nature or danger; and is uſually ſo far advanced when diſcovered, as to be beyond the reach of medical aſſiſtance.

Of late years, Phyſicians have paid particular attention to this ſubject, but they differ widely with reſpect to its nature and treatment. I have, with diffidence, undertaken this ſubject, not with an expectation of offering any thing new, or making proſelytes to the opinions that have been advanced reſpecting it; but rather with a deſire of being uſeful, which I hope will fully compenſate for the want of novelty.

Impreſſed with theſe ſentiments, I have choſen a diſeaſe, upon which there are few accurate obſervations to be read, and concerning the nature of which, and its treatment, Phyſicians every where materially differ. I alſo hope, that by giving the generally received opinion of the Phyſicians in this place, and alſo the method of cure which is at preſent adopted by them, it will not be unworthy the peruſal of the American reader: And, as it is abſolutely neceſſary that a Theſis, on ſome medical ſubject, ſhould be written by the Candidate for a degree in medicine in this Univerſity; theſe conſiderations taken together, but eſpecially the laſt, will, I hope, ſufficiently excuſe my coming forward thus publicly, as an author, and, I preſume, diſpoſe the candid reader to overlook the many imperfections of this juvenile performance.

DIFINITION OF THE DISEASE.

THE SUFFOCATIO STRIDULA, the diſeaſe which is the ſubject of the preſent Theſis, may be defined, to conſiſt in a difficult reſpiration, and peculiar ſhrill noiſe in inſpiration, without any appearance of inflammation or ſwelling in the fauces, and with a perfectly natural and eaſy deglutition.

Many, and very different have been the names aſſigned to this diſeaſe, by the different writers who have treated of it, and by the people in general in different parts of the world. Moſt of the writers have given it that name which they thought moſt expreſſive of their ideas, or that would compriſe in it the moſt characteriſtic ſigns of the diſeaſe. Doctor Cullen, who conſiders it as an inflammatory affection of the trachea, calls it the CYNANCHE TRACHEALIS; by others it is called the ANGINA SUFFOCATORIA and CYNANCHE STRIDULA, including in theſe names, not only the idea they held of the nature of the diſeaſe, but likewiſe ſome ſymptoms, which they ſuppoſed highly characteriſtic of its effects. Doctor Michaelis, from the idea which he entertains of the diſeaſe being a true polypous concretion in the trachea, has given it the name of ANGINA POLYPOSA. Other writers on this ſubject have deſcribed it under other names. We have adopted the name given to it by Dr. Home, as being more expreſſive of its characteriſtic ſymptoms, and not immediately ſupporting any theory. Perhaps it would be more proper to call it the SUFFOCATIO TRACHEALIS—by this name we diſtinguiſh its ſeat particularly, and we omit the expreſſion STRIDULA, which is not conſtant through the diſeaſe, for as we ſhall ſay hereafter the voice is ſometimes entirely loſt. The propriety or impropriety of theſe different names will appear hereafter, when we conſider the different theories of Phyſicians.

In Scotland it is commonly known by the names of the CROUP, CHOCK or STUFFING; and in this city it is called the HIVES.

HISTORY OF THE DISEASE.

IT has been generally ſuppoſed that this diſeaſe was unknown among the ancients. Dr. Home obſerves, that "there is little to be learned from enquiry, and ſtill leſs from books." It is true, that before he favoured the world with his moſt excellent treatiſe on this diſeaſe, and his diſſections of thoſe who had died of it, Phyſicians were ignorant of its nature; but that the diſeaſe was till then unknown, ſeems very improbable. Many circumſtances in early times prevented its diſcovery. The age of the patient, from whom little could be learned—the ſlow and unalarming approach of the diſeaſe, from which circumſtance the Phyſician was ſeldom called to viſit the patient till it was too late; and, above all, the great averſion that people had to diſſections, which alone

could have unfolded the nature of the diſorder, were inſurmountable difficulties. However, of late years, parents have been appriſed of the danger of neglecting the complaints of children, and have applied to the Phyſician much ſooner.

Their willingneſs alſo to ſubmit to the opening of dead bodies, which ſhews their progreſs from the ſuperſtitious notions of the ancients to a more enlightened æra, have furniſhed opportunities to the modern Phyſician for obtaining that knowledge of the diſeaſe by diſſections, which was much wanted, and which it is hoped will one day put a ſtop to its dreadful ravages, by eſtabliſhing a ſure and certain method of cure.

In ſupport of the opinion I have advanced, I beg leave to quote two or three paſſages from the ancients. Hippocrates in his Aphoriſms, ſpeaking of the diſeaſes of the throat and fauces, has the following words: "Ex anginis, graviſſimæ ſunt, et celerrime interimunt, quæ neque in faucibus, neque in cervice quidquam conſpicuum faciunt." Galen in his commentary on the Aphoriſms of Hippocrates, where he is ſpeaking of the Aſthma, as a diſeaſe particularly incident to children, has an obſervation ſo applicable to the Suffocatio Stridula, that I am induced to believe he muſt have confounded the two together. His words are, "Jam vero ſit ob anguſtiam eorum quæ ſunt in pulmone ventriculorum. Hæc vero anguſtia fit, *repleto viſcere ab iis quæ deſuper veniunt defluxionibus*. Nam et ex utero ad aerem ambientem transitus, & alimenti mutatio eos omnes *imbecilles* reddit, ſi ad hæc etiam *fluxiones* ad pulmonem acceſſerint nequaquam ſuſtinêre poſſint."

That the Suffocatio Stridula has been often confounded with the Aſthma Infantum, will not appear ſtrange when it is obſerved, that Dr. Millar expreſsly ſays, that the diſeaſe deſcribed by Dr. Home is exactly like the ſecond ſtage of the diſeaſe which he calls the ſpaſmodic Aſthma of children, and therefore it is probable, that other writers may have fallen into the ſame miſtake.

Michaelis inſiſts upon it, that no caſes of this diſeaſe are to be found earlier than the time of Tulpius, who, he ſays, has deſcribed one caſe of it in a taylor, who threw up, by coughing, pieces of a white thick ſmooth membrane. This caſe, however, is ſo very ſhort and imperfect, that it is impoſſible to determine upon it. Beſides, the ejecting of pieces of a membrane, cannot be ſaid to be a proof of the preſence of the diſeaſe; becauſe this takes place in other diſorders of the mouth and fauces, and alſo in caſes of a Polypus in the Trachea*.

Michaelis dates the firſt account we have of this diſeaſe from the caſe mentioned by Tulpius; and then mentions ſeveral Phyſicians who have ſeen and deſcribed it before Dr. Home publiſhed his treatiſe. He particularly notices an Italian Phyſician by name

* See Medical Tranſactions, Vol. I. and Michaelis, page 116.

Ghiſi, who ſaw the diſeaſe prevailing as an epidemic, and deſcribed it very accurately. At Upſal, in the year 1764, a graduate, by name Wilcke, publiſhed a diſſertation, in which he gives one or two caſes of this diſeaſe, but confounds it very much with the Scarlatina. About the ſame time, a piece on the diſeaſe appeared in the Act. N. Nat. Curios. by Dr. a Bergen; and in the year following Dr. Home publiſhed his Enquiry*.

I have mentioned the account given by Michaelis, and traced what could be known of it down to Dr. Home, not only to ſhew how wrong ſome people have been in calling it a new diſeaſe; but alſo to ſhew, that from its being known ſo much earlier than was generally thought, there is reaſon to ſuppoſe that no fixed period can be aſſigned to its exiſtence.

The Suffocatio Stridula is frequently an epidemic diſeaſe. It is peculiar to no country, and is generally met with in low wet and marſhy places; and thoſe near the ſea, or other large bodies of water. Dr. Crawford mentions a very particular fact, reſpecting a place in which it prevailed. He ſays it was very common in a wide plain, called the *Carſe of Gowrie*, which is ſtretched along the river *Tay*, in *Scotland*. This plain has lately been dried up, ſince which time the diſeaſe is rarely met with in that place.

It is not, however, confined to theſe places, for Dr's. Cullen and Roſen von Roſenſtein mention its appearing in midland countries, and thoſe far diſtant from the ſea. It appears, generally, in Autumn, eſpecially if the weather be moiſt, in the Spring, Summer and Winter, only when the weather is damp.

Dr. Roſen von Roſenſtein is the only writer who conſiders this diſeaſe as contagious. Of this, however, he can produce but a ſolitary inſtance, and, as he has evidently confounded the diſeaſe with the ulcerous ſore throat, we cannot from thence deduce its contagious nature. Beſides, there are inſtances of children living *eodem hypocauſto*, with a child ſick in the diſeaſe, without their being affected by it.

Children are generally the ſubjects of this malady. Grown perſons are, however, ſometimes attacked by it. Dr. Kuhn, in his lectures, mentions an inſtance of a perſon upwards of 40 years of age, being attacked with all the ſymptoms of the diſeaſe, and cured by the uſual remedies†.

With a few exceptions of its attacking grown perſons, the diſeaſe is ſaid to be peculiar to children from the time they leave the breaſt till the twelfth year of their age, though it ſeldom attacks thoſe above ſeven or eight years old. I can, for my own part, ſee no reaſon why it ſhould not attack at any period during infancy,

* See Michaelis de Angina Polypoſa ſive membranacea, page 5.

† See alſo Ghiſi, and if the caſe mentioned by Tulpius is to be conſidered as an inſtance of the diſorder, it will further ſupport the truth of this obſervation.

and I entertain no doubt but that it does. Children's complaints are not eaſily known, and it would be almoſt impoſſible to diſcover this diſeaſe in an infant, when there is ſo little pain or difficulty of ſwallowing, unleſs the ſymptoms were very ſtrongly marked. If children were able to make known their complaints at ſo early an age, I have no doubt, we would meet with many caſes of the diſeaſe during the firſt year of their exiſtence.

Dr. Sauer, in a letter to Dr. Michaelis, giving an account of the diſeaſe as it appeared epidemic at Wertheim, has the following words in ſupport of what has juſt been ſaid. "Infantes plurimos hoc morbo correptos vidi, qui materno adhuc alebantur lacte."

Children of a full and groſs habit of body, who are of a lively diſpoſition, and apparently enjoy the beſt health, are particularly liable to the diſeaſe. In general, it is ſlow in its attack, though it ſometimes comes on ſuddenly. The child appears languid, droops, and becomes drowſy and heavy, refuſes to join in any of its uſual amuſements, and becomes ſad and peeviſh. There is a ſlight degree of hoarſeneſs, the preſence of which ſymptom frequently miſleads parents into the opinion that the child has only caught cold, and, on this account, they ſeldom apply for aſſiſtance at that period. This is one reaſon why the diſeaſe proves ſo fatal. There is, however, very little or no cough, and when preſent, it is ſhort and ſtifling, and leſs convulſive than the catarrhal cough, and is attended with little or no expectoration. Deglutition is never affected.

The child grows warmer than uſual, the tongue is covered with a white mucus, the pulſe is quick and hard, and if the child is able to expreſs its feelings, it preſently complains of a dull ſenſation (ſeldom, if ever, of an acute pain) at the head of the trachea. The anterior part of the neck, anſwering to the upper part of the trachea, ſwells a little, and is painful when preſſed; but this pain is never acute. The diſeaſe makes its appearance in this way, for the firſt two or three days, gradually becoming more alarming. The face is ſometimes red and ſwelled, though it is more frequently overſpread with a deadly paleneſs, or is of a livid colour. At times, the patient is thirſty, and affected with ſickneſs at ſtomach and headach; and the urine is with or without ſediment. Theſe four laſt ſymptoms are adventitious circumſtances, and by no means conſtant attendants.

The breathing, though but little impaired in the beginning, ſoon becomes more quick, difficult and laborious, ſeeming to threaten inſtant ſuffocation. To prevent this, the ſhoulders are raiſed, and the muſcles of the abdomen contracted with great force, in order to dilate the thorax. There is no apparent cauſe for this difficult reſpiration, or the other ſymptoms. On looking into the fauces, we obſerve nothing worthy of remark, or different from what is natural, except, that in ſome caſes they have appear-

ed ſomewhat ſhining, or covered with a tough white mucus. Joined with, and accompanying this difficult, and, for the moſt part, deep reſpiration, there is a change or total loſs of the voice, attended with a peculiar ſhrill noiſe on inſpiration, which has been likened to the crowing of a young cock*. It is difficult to deſcribe it, though eaſily known by a perſon who has once heard it. Sometimes this noiſe attends each inſpiration—at other times, it is only perceived when the child cries, coughs or calls out. The ſkin becomes dry, the body is coſtive, and the belly ſwelled. In ſome patients, the hands and feet ſwell, the tonſils ſometimes, though ſeldom, and even then not to any high degree.

In ſome caſes theſe ſymptoms encreaſe very faſt, and often to ſuch a height, that a diſeaſe, which, a few hours before, ſeemed to require no medicine, is now frequently beyond all means of relief. The difficult breathing and anxiety are ſo great, that ſuffocation is expected every moment. The pulſe becomes quick, ſmall and irregular, and ſometimes intermitting; a cold ſweat breaks out upon the face and neck, and often over the whole body.

This period of the diſeaſe is frequently attended with a vomiting and a violent coughing; both of which have ſometimes thrown up a large quantity of a tough white mucus, or pieces of a hollow membranous concretion exactly reſembling the figure of the trachea or bronchiæ. In conſequence of this evacuation, the reſpiration is very much relieved, all the ſymptoms ſeem to be changed for the better, and frequently, if all, or a large portion of the membrane is ejected, the patient is relieved of all his complaints, and regains his former health; but the natural tone of the voice is ſeldom recovered for many months†. If, however, a great part of the tough mucus or membrane remains, or when ejected is very ſoon reproduced, all the ſymptoms grow worſe, and the patient, who, a ſhort time before, was thought out of danger, is ſuddenly carried off in a fit of ſuffocation, or quietly ſinks into the arms of death.

During all this time, the child appears eaſy, owing, probably, to the abſence of pain; and retains its ſenſes and reaſon to the laſt. It has even been ſuppoſed, that the ſtrength of the mind is increaſed, and that a preternatural judgment has been diſcovered before death.

I ſhould alſo obſerve, that, very often, all the ſymptoms ſuddenly remit, and put on a more favorable appearance, without any evident cauſe, or even the evacuation of the mucus or membrane,

* Michaelis ſays it reſembles the noiſe made by a young hen more than any thing he knows. Other writers compare it to the noiſe of a hen when frightened; and others to the barking of a dog or fox.

† I had an opportunity, not long ſince, of ſeeing a very ſtriking inſtance of a recovery of this ſort, and had part of the membrane in my poſſeſſion for ſome days.

which we have juſt mentioned; and which we ſhall ſay hereafter, has been found in the trachea, by diſſection after death. When this remiſſion happens, the reſpiration is freer, and becomes in a manner natural; and the child is able to riſe out of bed and walk about the room. Theſe remiſſions, however, continue but a ſhort time; the diſeaſe receives, as it were, a new ſpring; the ſymptoms return with redoubled violence, and the child is ſuddenly ſuffocated. Others are taken off in a ſlower manner—the ſymptoms gradually increaſing, reſpiration becoming difficult and laborious, the pulſe weaker, more freqnent, intermitting and tremulous. This laſt termination of the diſeaſe is rare. Other ſymptoms may occaſionally attend; but then they are by no means fixed, or certain. The diſeaſe may likewiſe be combined with other diſorders, particularly a catarrh, when the ſymptoms of each will be blended together.

There is no fixed time for the diſeaſe to finiſh its courſe, whether the patient dies or is cured—many have died on the third or fourth day, and not a few on the ſecond. The ſucceeding days however, are by no means without danger. An inſtance is mentioned by Hallenius, of its proving fatal on the eighteenth day. Many are ſaved after the third or fourth day, and even longer periods—in adults the diſeaſe laſts much longer; and in the Act. Nat. Curioſ. there is an account of a boy, twelve years of age, who recovered, by throwing up the membrane, after the diſeaſe had continued five weeks. A child that has once had the diſeaſe, is, nevertheleſs, liable to future attacks of it.

To compleat the hiſtory of the diſeaſe, which has juſt been given, we ſhall give an acccount of what has appeared in thoſe who have died of the diſeaſe, on

DISSECTION.

THE external appearance of the body reſembles that of perſons who have died of ſuffocation. The face is ſwelled and livid, the eyes are prominent and turgid with blood, the veins of the neck are ſwelled, and ſometimes the anterior part of the neck is red and tumid with blood. The fauces are free from every appearance of inflammation or other affection, according to moſt authors. Sometimes the glands at the root of the tongue are ſwelled; the mouths of their excretory ducts are much diſtended, and the parts ſurrounding the glottis are covered with a white tough mucus.

In the thorax the lungs were, in moſt caſes, found of an healthy appearance and ſound: In ſome, they were tinged with a red colour and turgid with a great quantity of blood.

On laying open the trachea, we diſcover a great quantity of a tough white mucus, or a hollow membrane with ſimilar qualities putting on the appearance of the internal ſurface of the trachea.

When the membrane is found, there is always a quantity of mucus lying between it and the trachea, which prevents it from adhering to the inner membrane. Sometimes it has been found fixed to the lower part of the trachea, and in attempting to take it out has been lacerated—Ghiſi ſays that in one inſtance it reſiſted even the knife. Dr. Home has kept it macerating in water for many days without diſſolving it. This membrane has been found ſo long as to ſtretch down from the top of the larynx into the ſmall ramifications of the bronchiæ; ſometimes it extends no farther than the bronchiæ; and frequently only two or three inches from the upper part of the trachea. In ſome caſes, it is not thicker than writing paper; in others, it is ſo thick as nearly to ſtop up the wind-pipe.

The mucus is found in the trachea and bronchiæ and may be ſqueezed out in great quantity from the lungs, by preſſure.

The inner ſurface of the trachea, in general, ſhews no ſigns of inflammation. In moſt of the diſſections made by the phyſicians in this place, no marks of inflammation were diſcovered*. Dr. Home frequently obſerves that "no ſigns of inflamation" were to be ſeen.

In addition to what has juſt been ſaid, I beg leave to give the following quotation from Dr. Home. "The ſeat of this diſeaſe appears to be the cavity of the wind-pipe. The place firſt and moſt particularly affected is the upper part of the trachea about an inch below the glottis; for, in that part, they complain of a dull pain; the external ſwelling has been obſerved there; and the morbid membrane we have found ſtretching from that place downwards. The back part of the trachea, where there are no cartilages, ſeems from the inſpection of thoſe that die of this diſeaſe, to be its firſt and principal ſeat, as this morbid membrane is often found there, when it is in no other part. No wonder that the morbid appearances are chiefly found there; for there are lodged the greateſt number of glands, deſigned for the ſecretion of mucus."

DIAGNOSIS.

IN the beginning of this diſſertation we took notice of the frequent miſtakes committed by parents in ſuppoſing that the firſt appearance of this diſeaſe is a ſimple CATARRH or COLD; phyſicians unfortunately fall into the ſame error; and it will be found very difficult, in the beginning, to make a diſtinction. However, in the Suffocatio Stridula, there is frequently no cough, and when it is preſent, it is ſhort and ſtifled; and not ſo convulſive as the catarrhal.

* See Dr. Kuhn's lectures.

Dr. B. Duffield, a practitioner of eminence in phyſick, and lecturer on midwifery, in Philadelphia, informs me, that he has made many diſſections, all of which bear teſtimony to the abſence of inflammation. See alſo Sparman's tranſlation of Roſen Von Roſenſtine, on the Diſeaſes of Children.

When the peculiar ſhrill voice, and laborious reſpiration take place, the difficulty of diſtinguiſhing vaniſhes. Extraneous bodies falling into the trachea, have produced ſymptoms exactly ſimilar to thoſe of this diſeaſe. In ſuch caſes the pain at the head of the trachea will be acute and not a dull ſenſation as in the hives. If the pain changes its place in coughing, it will aſſiſt in forming a diagnoſis. We ſhould enquire too, whether the child has been in a ſituation to get any thing into its trachea that might ſtick there and give the ſymptoms peculiar to this diſeaſe.

Another diſorder with which this has been confounded is a ſpaſmodic diſeaſe of the lungs, to which children are liable and which is totally different from the diſorder under conſideration. As this has given riſe to various diſputes among phyſicians, I ſhall beg leave to ſpend ſome time upon it, and endeavour to prove from the ſymptoms, treatment and termination of this diſeaſe, that it is not of a ſpaſmodic nature.

SPASMODIC DISORDERS of the lungs come on ſuddenly and generally at night; they go off quickly and are attended with conſiderable remiſſions or intermiſſions, which leave the patient free from all complaints. The ſuffocatio ſtridula or hives comes on gradually, and is two or three days before it arrives to any conſiderable height. It is attended with very little remiſſon or intermiſſion and even then, the patient is not entirely freed from the ſhrill noiſe, difficult reſpiration, &c. until all the obſtruction in the trachea is removed. The voice ſuffers no change in ſpaſmodic diſeaſes: in the hives it is conſidered as the *Pathognomonic* ſymptom. Spaſmodic diſorders are periodical in their attacks, and are accompanied with an evacuation of pale limpid urine: circumſtances which do not take place in the hives. In the ſpaſmodic aſthma, the pulſe is quick, ſmall, irregular, and contracted. In the hives it is hard and quick in the beginning, and becomes weak, feeble and irregular towards the cloſe. Dr. Millar ſays, that the ſpaſmodic aſthma is ſometimes attended with a train of nervous ſymptoms; ſuch as involuntary crying and laughing, delirium, ſubſultus tendinum, &c. and that a ſlight delirium was obſerved in moſt caſes. Theſe ſymptoms never appear in the hives.

During the paroxyſm of a ſpaſmodic conſtriction of the lungs, there is no ſecretion of mucus, but as ſoon as this takes place, the conſtriction is removed. In the ſuffocatio ſtridula, there is a diſcharge of mucus from the trachea, which may be diſtinctly heard rattling in it. When part of the membrane is thrown up there can be no doubt of the nature of the diſeaſe; as no membrane has ever been diſcovered in thoſe who died of the ſpaſmodic aſthma.

The want of irritability in the inner membrane of the trachea ſeems to oppoſe the idea of its being owing to ſpaſm. Bleeding, bliſtering, and antiſpaſmodics are the remedies moſt ſucceſsful in ſpaſmodic diſeaſes; but are uſeleſs, and rather hurtful in the hives.

Spaſmodic diſorders ſeldom prove fatal on the firſt attack; whereas the hives are generally ſo.

Michaelis has confounded this diſeaſe with a true POLYPOUS CONCRETION in the trachea. It is therefore neceſſary that we ſhould know how to diſtinguiſh ſuch affections. Theſe may be known by their coming on very gradually, and being generally attended with a ſlight cough, and ſenſe of irritation in the trachea, many months before they ſhew ſigns of any great obſtruction to the reſpiration: or when they come on quicker, they are preceded by inflammation of the parts, and the effuſion of ſerum, or of blood into the bronchiæ or air veſſels of the lungs.*

REMOTE CAUSES.

Theſe are generally divided into prediſpoſing and exciting or occaſional; according to which diviſion we ſhall conſider them. From what has been already delivered on the hiſtory of the diſeaſe, it appears that its prediſpoſing cauſes are a certain period of life, viz. INFANCY; a particular habit of body, namely, A GROSS AND FULL HABIT; and laſtly, a peculiar ſtate of the weather, ſuch as A WET AND MOIST ATMOSPHERE, attended with cold.

The reaſon why *children* are moſt liable to the hives ſeems to be owing to the redundancy of fluids, with which they are furniſhed, in order to ſupply the neceſſary nouriſhment to their growing ſolids. This redundancy of humours is found in every young animal, and is demonſtrated from the gelatinous ſtate of all their ſolids. Children, moreover, are in general the ſubjects of ſeveral diſeaſes, which have a great effect in weakening the organs of reſpiration, and to which grown perſons are leſs obnoxious; viz. meaſles, catarrh, chin-cough, &c. Children of a groſs full habit of body, as abounding more in this redundancy of humours, muſt be the particular ſubjects of this complaint. Another reaſon may be, that children are more apt to neglect, or are leſs able to throw up this tough mucus, when ſecreted in a large quantity, than adults.

A *wet* and *moiſt atmoſphere* produces a general relaxation of the whole ſyſtem, and is univerſally obſerved to have a great effect in producing affections of the breaſt. In the preſent caſe we ſuppoſe its effects to be particularly exerted on the organs of reſpiration and adjacent parts. And that this cauſe conduces to the formation of the diſeaſe, appears from the time in which it is moſt prevalent, and the places where it is moſt commonly met with; in ſome of which it is ſaid to be almoſt *endemic*.†

A ſituation near the ſea is alſo conſidered as favourable to attacks of this diſeaſe. This may act in two ways; firſt, by the moiſture which is imparted to the air by the exhalations from the ſea.

* Nec raro poſt Hæmoptyſes obſervantur, unde eos ex ſanguine conflari veroſimillimum evadit. P. 29.

† See the fact mentioned by Dr. Crawford reſpecting the plain called the Carſe of Gowrie, and quoted above.

2dly. By the ſaline impregnations* which it derives from the ſame ſource, ſtimulating the glands of the trachea, and cauſing them to ſecrete a greater quantity of mucus than uſual.

The occaſional cauſes are whatever debilitates and relaxes or ſtimulates the mouths of the glands in the trachea, and cauſes them to ſecrete a greater quantity than uſual of that mucus which is conſtantly ſecreted to moiſten it in health. Hence this diſeaſe is frequently ſeen to come on after thoſe diſeaſes which have a tendency to weaken thoſe parts. e. g. meaſles, chin-cough, catarrh, &c. This is alſo proved by analogy. A Lucorrhœa is produced from a relaxation of the glands of the vagina, and a gleet is the conſequence of a relaxation of thoſe of the urethra. And even when the ſtomach is weak or relaxed, a quantity of tough mucus is poured forth from its glands.

Another exciting cauſe is cold, which, by ſuppreſſing the perſpiration, determines the fluids to the internal parts. When this takes place, different parts are affected by the determination; but why one part ſhould be affected in preference to another we are unable to conjecture. In the preſent caſe, we ſuppoſe the fluids to be determined to the glands of the trachea, in conſequence of which, a greater ſecretion of mucus takes place. Perhaps cold may act by ſtimulating the glands, and thus produce the diſeaſe.

PROXIMATE CAUSE.

WHILE phyſicians were unacquainted with the appearances on diſſection, they had no idea of what was going forward in the trachea; nor could they form a juſt idea of the diſeaſe. But when Dr. Home favoured the world with his very valuable diſſections; the nature of the diſeaſe was evident, and its cauſe clearly diſcovered.

By the information we have derived from diſſections and from the hiſtory of the diſeaſe and its cauſes as treated of above; we ſhall endeavour to lay down a Proximate cauſe, which it is preſumed will be perfectly ſatisfactory. This we ſuppoſe to conſiſt in a preternatural ſecretion of a tough, white and thick mucus from the glands in the trachea. To this ſome have added the preſence of the membrane before mentioned, but this is an effect and depends upon the duration of the diſeaſe. Children that have died ſuddenly, and have been opened after death, ſhewed no appearance of membrane, but the trachea and bronchiæ were full of mucus.

When a child is expoſed to the remote cauſes, they produce a preternatural ſecretion of that mucus, which is deſigned by nature to line the trachea, and defend its tender coats from irritation; and if the patient is unable from age, or weakneſs of the parts, to ſpit it up, the diſeaſe is produced. While the mucus is poured

* It is a fact generally received, that the air on the ſea ſhore imparts an evident ſaline taſte to the tongue. This is accounted for, from the common ſalt in the ſea being ſwept along with the moiſture and mixed with the air. See Home's enquiry into the croup.—Page 40.

out from the glands, its thinner and more aqueous parts are carried off partly by abſorption,* and partly by the air in reſpiration, and its remaining parts are formed into a thick tough membranous ſubſtance. While theſe circumſtances take place, the ſecretion is ſtill going on and increaſes the thickneſs of the membrane at the ſame time that it prevents it from adhering to the trachea.

This account of the production of the membrane is plauſible and I expect, on examination will be found to be the true one. But as Michaelis entertains a different idea, ſuppoſing it to be a true polypus of the trachea† ; it will be proper to take ſome notice of his opinion. The matter diſcharged from the trachea and lungs by coughing or hawking, during the whole courſe of this diſeaſe has all the properties of mucus. "This fluid is ſeparated from glandular bodies, depoſited betwixt the different membranes, which are perforated by an infinite number of almoſt imperceptible holes, that give a paſſage to the excretory ducts of thoſe glands‡." The membrane, as was before obſerved, is generally found at the upper and back part of the trachea where the glands are numerous, and no where elſe. The glands too at the root of the tongue and their excretory ducts have been found enlarged: all which clearly ſhew, that the glands are principally affected and that the ſecretion of mucus from them muſt have a great ſhare in producing the diſeaſe. The appearance of the membrane does not oppoſe this opinion, as all writers agree, that mucus is capable by ſtagnation of becoming hardened into a tough membranous or cruſt like appearance§. Dr. Ruſh obſerves, "that were the paſſages of the noſe leſs in our reach, it is probable, that a membrane reſembling that found in the trachea would be found in it every 24 hours¶."

Polypous concretions of the trachea are generally ſolid: but the membrane in thoſe who died of this diſeaſe was always found tubular.

Michaelis ſays polypous concretions of the trachea putrify very eaſily, but that mucus does not. Dr. Home ſays, that this preternatural membrane did not diſſolve, though purpoſely kept for many days, in warm water; now this we know is one of the firſt appearances of putrefaction, laying aſide the probability that ſo accurate an obſerver as Dr. Home would have taken notice of any appearance of putrefaction had it been diſcovered.

If this membrane was formed, as he ſuppoſes, entirely from the coagulable lymph, we ſhould have ſtronger marks of inflammation attending the diſeaſe—or, even granting that inflammation is an

* See Haller's phyſiology, vol. I. chap. vii. ſec. 229.

† Mihi ſingulare illud reſpirationis impedimentum, verus aſperae arteriae polypus eſſe videtur." Page 23.

‡ Home. Page 35.

§ Haller's Phyſiology. Chap. VIII. ſect. 190.

¶ Letter to Dr. Millar. Page 16.

attendant on it, why don't we meet with large quantities of pus and a fetor of the breath, for, as Dr. Home has juſtly obſerved, there cannot be a fitter ſituation for its formation?—See alſo the diagnoſis.

In the laſt paragraph we hinted at an opinion that prevails, reſpecting the diſeaſe being of an inflammatory nature; and, though the contrary ſeems from the hiſtory of the diſeaſe, and the diſſections to be clearly proved, we will treſpaſs a little longer on the patience of the reader, particularly as Dr. Cullen and moſt of the European authors are of a different way of thinking. To conſtitute this, an inflammatory diſeaſe, the uſual phænomena of inflamation ſhould preſent themſelves. On looking into the fauces, however, there is *no appearance of inflammation or other affection:* The ſenſation at the head of the trachea is a dull, not an acute pain; and the external ſwelling correſponding to it, is not inflamed, but appears from a diſſection made by Mr. Wardrobe and communicated to Dr. Home to be rather œdematous than inflammatory. The deglutition is not affected; and though they conſider it as an inflammation of the inner membrane of the larynx and trachea, there is no cough, acute pain, very ſtrong pulſe, or feveriſh ſymptoms: Nor is the diſeaſe followed by the uſual terminations of inflammation. In ſupport of ſome of theſe aſſertions, I ſhall beg leave to quote ſome authorities. The hiſtory of the diſeaſe, as given by writers to which I refer the reader, will prove many of them. Dr. Home, ſpeaking of the opinions of phyſicians on this diſeaſe, ſays, "Had theſe muſcles, (viz. of the glottis) or any of the coats of the trachea been inflamed, or mortified, as others have thought, the pain would have been greater than it is before the mortification, and the pulſe would have been ſtronger than it generally is, as the parts are membranous*." Dr. Home has been quoted as ſaying, that the trachea appears inflamed on diſſection, but this quotation conveys a different opinion: Beſides, in moſt of his diſſections, he ſays there was no inflammation of the trachea to be ſeen, nor any diſorder of the lungs. And we have the authority of Michaelis to ſay, that the buffy appearance of the blood is very rarely to be met with.

With regard to the diſeaſe being attended with fever. In addition to what was ſaid in the hiſtory of the ſymptoms, we obſerve, that Dr. Sauer, in his account of the diſeaſe as it prevailed at Wertheim, ſays, "Febris initio nulla." Michaelis obſerves, that the diſeaſe was ſeldom attended with fever, and that when it was preſent, at the beginning, it was ſo ſlight as to be perceived with difficulty†.

If what has been ſaid is not alone ſufficient to prove the abſence of inflammation in the hives, the appearances on diſſection

* Home, page 37.

† Michaelis, page 88.

ſhould place the matter beyond a doubt. In confirmation of what was ſaid on that ſubject, we will add the following authorities: Dr. Roſen von Roſenſtein takes notice of the caſe of one child opened by a Profeſſor Martin, and of three others, communicated to him by a ſurgeon at Fahlun, by name Shulz; in all the four caſes the membrane was found, but there was no appearance of inflammation in the lungs or trachea, they being quite ſound. And Dr. Kuhn, who was preſent at the diſſection of ſeveral perſons who had died of the diſeaſe in this city, declares that he never ſaw the leaſt appearance of inflammation in the trachea*. A very ſtrong argument in favour of the proximate cauſe we have adopted, and very much againſt Dr. Cullen's theory of the diſeaſe is, that upon the ejection of the mucus or membrane, the diſeaſe is removed, and the patient recovers†. This would not be the caſe if the diſeaſe depended on inflammation. The method of cure which is found to be moſt ſucceſsful in this diſeaſe, will likewiſe be a means of proving that it does not depend on inflammation.

RATIO SYMPTOMATUM.

HAVING thus endeavoured to eſtabliſh a proximate cauſe, we are next to ſee if it will account for the ſymptoms. The hoarſeneſs and change of the voice depend upon the preſence of the mucus in the trachea obſtructing the glottis. As the ſecretion increaſes, it becomes more obſtructed, and the voice is ſhrill. When the trachea is filled with mucus, and the glottis totally obſtructed, the voice is entirely loſt, and the intermediate changes will depend on the greater or leſs obſtruction given to the paſſage of the air through the glottis. In the caſe deſcribed by Mr. Balfour, and communicated to Dr. Home, of a child who had died of all the ſymptoms of this diſeaſe, which was occaſioned by a piece of a ſhell lodged in the trachea; the ſhrillneſs of the voice was particularly noticed.

The following caſe, in many reſpects ſimilar to the foregoing, is mentioned from its being attended with a favourable termination.

In the month of March 1785, Hartman Kuhn, the eldeſt ſon of the Profeſſor of that name, when between thirteen and fourteen months old, put an Engliſh ſix-pence into his mouth, in the preſence of his mother, who concluded he had ſwallowed it. Some time after, he was frequently attacked with a wheezing and difficulty of breathing exactly reſembling the ſymptoms of the ſuffocatio ſtridula, but as they generally continued only a ſhort time, and came on when he was heated by exerciſe, or other cauſes, leſs attention was paid than the immediate ſymptoms appeared to require and it was conjectured they were occaſioned by teething, as

* Dr. Kuhn's manuſcript lectures.

† A caſe of this kind is related by Dr. Shippen.

he was then cutting his dentes canini. In the month of Auguſt he was attacked with a regular intermittent fever, in the courſe of which he took ſeveral antimonial emetics, ſome laxatives and the Peruvian bark which removed his fever, but the *wheezing* and *difficulty of breathing* continued as uſual. In the month of September he was unexpectedly attacked with a moſt violent fit of coughing, which terminated in great exertions to vomit, and in one of theſe violent efforts of coughing and retching at the ſame time, he threw up a large quantity of mucus accompanied with ſome blood and the Engliſh ſix-pence which he had put into his mouth upwards of *ſix months* before, and which during that period, muſt have been lodged in the upper part of the trachea. His voice was not affected with hoarſeneſs or any alteration; which circumſtance was the principal reaſon that the wheezing and difficulty of breathing did not excite any apprehenſions of immediate danger from thoſe ſymptoms; although at one time the child was ſuppoſed by an experienced phyſician to labour under the croup.—The ſubject of the foregoing caſe is now a fine hearty boy and free from *every complaint*.

On this caſe I cannot help remarking, how fortunate it was for the child that his parents had no ſuſpicion of the preſence or ſituation of the piece of money; as it is more than probable ſuch efforts would have been made for its removal as of themſelves might have proved fatal. And we may conclude, that it is very poſſible a phyſician's ignorance of the cauſe of a complaint may in ſome inſtances be the fortunate means of his patient's ſafety. The favourable termination of this caſe will, at leaſt, point out the impropriety of a too quick recourſe to violent meaſures in ſimilar circumſtances.

The total abſence of pain is owing to the preſence of mucus lining the trachea, and defending it from irritation—When the membrane is preſent, there is always a quantity of mucus found between it and the trachea, which prevents its cauſing any irritation—beſides, as the membrane is formed from the mucus, and very gradually, the trachea will become uſed to any irritating quality it may be ſuppoſed to poſſeſs; and, in a ſhort time will be quite inſenſible to it. The laborious breathing is a neceſſary conſequence of the obſtruction in the trachea; and the difficult paſſage of the air through it. The increaſed reſpiration and change of colour which take place in the face, are owing to the difficult paſſage of the blood through the lungs, occaſioned by the ſame cauſe, preventing the neceſſary quantity of air from being taken into them.

PROGNOSIS.

THIS diſeaſe comes on with ſymptoms ſo trifling in appearance, and ſo much reſembling the attack of a ſlight cold, that it is ſeldom diſcovered in time. It is alſo ſo quick in its termination,

that it frequently proves fatal, before we are aware of the danger. For theſe reaſons, it has juſtly been conſidered as a very fatal diſeaſe. The younger the patient, the greater is the danger, and the longer the diſeaſe has continued, before aſſiſtance has been procured, the leſs chance of a recovery.

Phyſicians have conſidered the diſeaſe as being divided into two ſtages. The firſt is reckoned from the beginning of the diſeaſe, to the formation of the membrane; the period after this is called the ſecond ſtage; and is conſidered as extremely dangerous.

If we are called to the patient in the courſe of the firſt twenty-four hours, and find the breathing not very laborious, the anxiety not very great, the pulſe firm and hard, the face but little changed, and the voice altered only in crying, coughing or hallooing; we may entertain hopes of a favourable termination. On the other hand, if we do not ſee the patient before the third or fourth day, at which time the membrane is ſuppoſed to be formed; and the reverſe of the favourable ſymptoms has taken place; ſuch as a laborious, difficult reſpiration, ſoft, quick and irregular pulſe, the face ſwelled, and of a livid or leaden colour, great reſtleſſneſs and anxiety, the voice low and ſcarcely to be perceived, attended with the ſhrill noiſe which is peculiar to the diſeaſe; the worſt conſequences are to be expected. Deſperate however as this latter caſe may appear, ſome have recovered from it; by a critical cough or vomiting ſupervening, and ejecting the mucus or membrane.

The firſt ſigns of a favourable event are the cough becoming ſtronger and moiſt, accompanied with the ſymptoms that attend moiſt lungs.

METHOD OF CURE.

THIS, it is plain, muſt be adapted to the two different ſtages of the diſeaſe which we have juſt mentioned. Before we lay down the Indications to be purſued in the treatment of the ſuffocatio ſtridula we will ſpend a few minutes in the conſideration of a remedy that has been and is ſtill uſed in the cure of it, namely BLOOD-LETTING. This remedy muſt have been recommended from the idea generally entertained of the diſeaſe being of an inflammatory nature, and in this intention would have been very proper: but if the theory of the diſeaſe and the proximate cauſe we have endeavoured to eſtabliſh is a juſt one; this remedy muſt certainly be improper and will prove injurious by the debility it induces in the ſyſtem.

In many of the caſes related by authors, bleeding was uſed and yet many of the patients died; although in ſome caſes blood was taken away on the firſt day. Bleeding will always relieve the ſymptoms for the preſent, and it is probable that this effect has in ſome degree led to a freer uſe of it; but the ſymptoms are apt to return ſoon after and with greater violence than before; and the

pulſe inſtead of being hard, becomes ſmall, quick and weak. The pulſe will ſometimes ſink immediately after bleeding; we ſhould therefore be always on our guard in ordering it. Sometimes the diſeaſe is combined with ſymptoms of catarrh or the angina inflammatoria, in which caſes, bleeding may be of ſervice; but even in theſe, it may be omitted and give place to other evacuations, particularly *Purging*.

In a plethoric habit, however, it may be proper to take away a ſmall quantity, to relieve the difficulty of breathing and favour the tranſmiſſion of the blood through the lungs, and ſo prevent a ſudden ſuffocation; but that it has any effect in removing the proximate cauſe or curing the diſeaſe we utterly deny.

The method of cure we will conſider under the three following Indications.

1. To prevent a too great ſecretion of mucus into the trachea.
2. To remove the mucus when in a very large quantity or when it has been formed into a membrane, and
3. To guard againſt a return of the diſeaſe.

The firſt indication is chiefly ſuited to its beginning or forming ſtate. To anſwer this indication BLEEDING, BLISTERING, DIAPHORETICS, PURGATIVES, &c. have been recommended. Of BLEEDING we have already ſpoken.

BLISTERS are another remedy. They ſhould always be uſed in the firſt ſtage and are to be applied round the neck. By the evacuation they produce, they relieve the congeſtion in the trachea—they give a new determination to the flux of the humours, and by emptying the abſorbent veſſels they increaſe their power, and thereby cauſe a greater abſorption of the mucus.

The STEAMS of hot water and vinegar drawn in with the breath are highly recommended by Dr. Home in this ſtage. He ſuppoſes they act by diſſolving the mucus and preventing its concretion; and obſerves that the patient always ſpat a great deal after it, and that the lungs appeared moiſter.——Another remedy recommended with a view of evacuating the mucus lodged in the trachea, is VOMITING.—In the beginning of the diſeaſe it is certainly hurtful; for beſides the debilitating effect it has on the ſyſtem, it determines the fluids upwards and will encreaſe the ſecretion it was meant to remove. Beſides they ſeldom anſwer the intention for which they are given. But, ſhould they have the intended effect, and the mucus be ejected, the determination of the fluids upwards and the debility induced, will encreaſe the ſecretion of mucus nearly as faſt as it is evacuated.—From which it appears that in the beginning of the diſeaſe they are far from being uſeful and can never be conſidered as a certain cure.

DIAPHORETICS, as they determine the fluids from the internal parts to the ſuperficies, are very uſeful; they are particularly indicated in thoſe caſes where the perſpiration is ſuppreſſed. Dr. Brown,

a phyſician in the late Continental Army, a man of reſpectability and eminence in his profeſſion, placed his whole dependance for a cure, in exciting and ſupporting a gentle diaphoreſis by Antimonials, and confining his patients during the courſe of the diſeaſe to a cloſe room, to prevent any bad effects from expoſure to the external air. The removal of the patient from the operation of remote cauſes is always deſirable, and it is probable, that confinement to a cloſe room might have ſome effect this way, and that dry, warm air, may act in ſome peculiar manner on the ſecretion of mucus in the trachea. With the ſame view, the WARM BATH is recommended and uſed with very beneficial effects. Diaphoretics are beſt given combined with PURGATIVES.

Keeping the bowels conſtantly open is generally recommended, and for this purpoſe, gentle laxatives of the cooling neutral ſalts have been adminiſtered: but the ſtimulating cathartics ſeem to be more proper, as our intention is not merely to evacuate the inteſtines, but to produce a greater ſecretion from the glands of the bowels, into their cavity. For this purpoſe, no medicine ſeems to have a better effect than CALOMEL, which is now conſidered as the only radical cure (if we may be allowed the expreſſion) and on which we place our principal dependance. When this medicine can be had, it will almoſt ſupercede the uſe of any other remedy in the firſt ſtage of the diſorder. Calomel is ſuited to every ſtage of the diſeaſe but it is moſt effectual in the firſt. In what manner this medicine produces its good effects, is now to be conſidered—It poſſeſſes a purgative quality, is very inſoluble, an univerſal ſtimulus and has a peculiar action on the glandular ſyſtem, in preference to any other. It's uſe as a purgative we have mentioned; from it's inſolubility, ſtimulus and peculiar action on the glandular ſyſtem, it will ſtimulate the glands through the whole tract of the primæ viæ, *ab ore ad anum* and produce a very plentiful ſecretion of mucus into the fauces, æſophagus, ſtomach and inteſtines: in conſequence of which the ſecretion of the mucus in the trachea will be leſſened, and the humours determined to the cavities juſt mentioned.

Calomel to be of ſervice muſt be given in very large doſes, and theſe frequently repeated. The following caſe taken from Dr. Kuhn's lectures on the practice of phyſic, will point out its efficacy, and ſhew in what quantities it may be given, "On the third day of the diſeaſe he was called to viſit a child, the only one of a gentleman in this city, to whom a variety of medicines had been given to no effect; vomits, pediluvia, bliſters and bleeding, had by no means been neglected. Calomel was then propoſed and given, and though the child was about ten months old, it took twenty grains of calomel in ſixteen hours, and, by this means, was ſnatched from the jaws of death—In all human probability it muſt have been ſuffocated in twenty-four hours, had not this method been purſued." In

addition to this he obſerves, " That when called in at an earlier period he has in ſeveral caſes given it with equal ſucceſs; though the diſeaſe had not arrived at it's ſecond ſtage and the membrane was not formed." I ſhall diſmiſs the ſubject of calomel with the following expreſſion of another profeſſor. " The bark is ſcarcely a more certain remedy for intermittents, than calomel, when thus adminiſtered, is, in this ſpecies of cynanche*.

The only remedies, beſides the one laſt mentioned, ſuited to the ſecond indication are the exciting of VOMITING or COUGHING, although we do not approve of vomiting in the beginning of the diſeaſe, yet when the mucus is in great quantity in the trachea and ſeems to threaten ſuffocation, or when the membrane is formed, vomiting may be very uſeful; accordingly we have inſtances of it's evacuating the mucus or membrane and thereby compleating a cure or elſe by exciting a cough which has had the ſame effect.†

Although vomiting has ſometimes produced this deſirable effect, yet it ſeldom ſucceeds and at beſt is but a doubtful remedy. But as it is incumbent on us to do all in our power for the recovery of our patient, we ſhould neglect nothing that has ever been ſerviceable or that might poſſibly relieve him. To excite vomiting, tartar emetic, in large doſes, is recommended.

It has frequently happened that a ſpontaneous COUGHING coming on, has ejected the membrane and removed the diſeaſe. Several caſes of this kind are related by authors, and one, not long ſince fell under my own notice. But unfortunately, we are ſeldom able to copy nature in this ſalutary exertion—The trachea is ſo inſenſible, in this diſeaſe, that nothing ſeems capable of exciting it into action. Steams received into the mouth are recommended, and fumes have been tried, but without effect.

The fumes of the capſicum or piper guineenſis may be tried, as they are found to excite a cough ſooner than any thing elſe.

When every thing that has been recommended fails, and there are no hopes of the patient's recovery; the laſt and only remedy we can have recourſe to is TRACHEOTOMY. This will not afford relief unleſs the membrane is extracted; but when we reflect that this lies looſe and floating as it were in the trachea, it ſeems probable that it would be no difficult taſk.—The operation was performed once in this city, by a gentleman eminent in phyſic and ſurgery, but without ſucceſs; this ſolitary inſtance ſhould not deter us from other trials and while there is the leaſt probability of its being ſucceſsful, we ought to attempt it. The operation is ſeldom recommended before every other remedy has been tried in vain and the patient is ſuppoſed to be incurable. In ſuch a caſe the hazard of the operation is much more commendable, than conſigning the patient to his fate, without this laſt though doubtful chance. When-

* Dr. Ruſh's Obſervations and Enquiries, Vol. I. page 124.

† See the caſe related by Dr. Shippen in his Lectures.

ever the membrane is evacuated, no matter by what means, it will be proper to continue the Calomel for ſome time or until the patient is perfectly recovered.

To anſwer our third indication or to prevent a return of the diſeaſe, the remote cauſes muſt be carefully avoided or guarded againſt---For this purpoſe, the patient ſhould be removed into a warmer and drier ſituation, where he can have the advantages of a pure, dry and temperate air; and perhaps the method practiſed by Dr. Brown would be ſerviceable in this caſe: He ſhould avoid wet and cold, and ſhould guard againſt the effects of ſudden changes of the weather, by good warm cloathing. But if any ſymptoms of the diſeaſe ſhould return, we muſt have immediate recourſe to the remedies mentioned in the firſt indication, particularly diaphoretics and purgatives—above all, calomel: To this we may add a ſmall quantity of tartar emetic, in order to produce a gentle determination to the ſurface. The calomel muſt be given in doſes to move the bowels and is to be continued until all the ſymptoms vaniſh. TONICS will likewiſe be of ſervice, particularly in thoſe caſes where the diſeaſe has been preceded by the chincough, meaſles, &c. which were obſerved to have a great influence in promoting the diſeaſe.

The preparations of ſteel, peruvian bark and the cold bath, are remedies which ſhould not be omitted.

Where the diſeaſe ſeems diſpoſed to return frequently, a SETON, or ISSUE, in the neck, and continued for ſome time, ſeems likely, to be of ſervice.

"I ſhall only add, upon the ſubject of this diſorder, that inſtances of its mortality have been very rare, in Philadelphia, ſince the general uſe of the remedies which have been mentioned*."

† Dr. Ruſh's Obſervations and Enquiries, Vol. I. page 125.