DIPHTHERIA,

AS IT PREVAILED 91881

IN THE UNITED STATES FROM 1860 TO 1866,

PRECEDED

By an Historical Account of its Phænomena,

ITS NATURE,

AND

HOMŒOPATHIC TREATMENT.

BY

Chas.

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PREFACE.

In January, 1861, I saw my first case of malignant Diphtheria, a malady then hardly known in Philadelphia. Never having met with the disease before, I had recourse to the treatment recommended by the British and French physicians, and was unsuccessful.

I then determined to make myself, as far as possible, familiar with the nature of Diphtheria, by examining its records from the most ancient times. For this purpose I procured from the Library of the Pennsylvania Hospital all the works relating to the subject.

Since that time, now over six years, I have attended about one hundred and eighty malignant or severe cases of Diphtheria and diphtheritic croup, and at least four hundred and twenty slighter cases of the disease; including in this latter class all where the membrane, or a few patches of it, could be distinctly seen in the throat.

This treatise is the result of my researches and subsequent experience.

The more I contemplate this disease in all its details, the more I am convinced of its identity with malignant scarlatina

and membranous croup, and that these diseases are different manifestations of the same or a similar poison in the blood.

I have contributed my share towards the solution of this important question, and furnished practical information for a successful treatment. My labors, I hope, will not have been in vain.

C. NEIDHARD, M.D.

PHILADELPHIA, *March*, 1867.

[NOTE.—In order to obtain a clear and easy supervision of the remedies employed, it was my wish to have them printed in the margin of the text. By a misunderstanding they were printed as headings. Throughout the chapter relating my own experience this plan has been followed.]

ON DIPHTHERIA.

CHAPTER I.

HISTORICAL ACCOUNT.

THE historical researches of *Ozanan, Fuchs, Eisenmann, Hecker*, and *Bretonneau*, show that the malignant inflammation of the pharynx, now recognized under the descriptive term *Diphtheria*,[1] was known in its chief features to *Aretæus, Cælius Aurelianus*, and *Actius*, under the name of *Ulcera Ægyptica Syriaca*.

In the beginning of the latter half of the sixteenth century, the disease appeared epidemically in Holland, and was described by *P. Forest*. Towards the end of that century it swept a similar march through Spain, terminating with such general fatality in suffocation, that it received the name of *garrotillo*. From that period to the present, the disease has showed itself, at different times, and with greater or less intensity, in most European countries, and in North America, and has been described by a great number of writers of all nations, under different names.

The kingdom of Naples and Sicily seems to have been sadly scourged. In 1641, it is described by *Severinus* as carrying off many thousands of children. With such opportunities for post-mortem examinations, *Morgagni* blames *Severinus* for the remark that he was not willing to take upon him the tedious labor of delineating the seat of the disorder itself.

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[1] Διφθερίτης and Διφθερίας signify, that which is covered with a skin.

From 1745 to 1748, it spread throughout Europe, and about the same time showed itself in England, when it was ably described by *Dr. Fothergill.* As seen by him, the disease was *attendant upon scarlatina;* but the account published nearly at the same time (Philosophical Transactions, 1750) by *Starr,* refers evidently to a primary diphtheria, and the cases related by *Ghisi* as occurring at Cremona during 1747 and 1748, are independent of scarlet fever.

A very able description of the disease was given by *Bard,* New York, (1771.) He was the first to point out *its resemblance to croup,* denying its gangrenous nature. In modern times, the disease has been most minutely described by *Bretonneau,* who himself observed a violent epidemic in Tours, (1818 to 1820.) From 1818, the date of *M. Bretonneau's* work, to 1829, diphtheria has annually appeared as an epidemic in France, and sometimes in Switzerland; generally in the form described by *Bretonneau,* but sometimes showing a low type with ulceration and gangrene. In 1856 and 1857 it prevailed in Boulogne in a very fatal form. From Boulogne it crossed to England, and in the autumn of 1856 attacked various places, especially towns on the Channel coast. Since this date it has continued in England, appearing to diminish during the winter, and to increase in summer and autumn.[1] *Like most epidemics, the first cases in a locality are the most severe; as weeks pass, the disease gradually diminishes in severity.*

Dr. Brown, of Haverford West, describes an epidemic which prevailed there in 1849 and 1850. He treated two hundred cases, forty of which proved fatal. The pharynx, tonsils, larynx, trachea and bronchial tubes were found to be more or less coated with false membranes, and the stomach showed signs of irritation.[2]

About the year 1858, the disease appeared in the United States. It was particularly fatal in Albany and its neighbor-

[1] In the United States the disease seemed to improve, and even entirely cease, during the summer months.

[2] Remarks on Diphtheria, by *Francis Black, M. D.* Br. Jour. Hom., vol. xvi., page 637.

hood, from which circumstance it became known as the Albany sore throat. It afterwards appeared in other parts of the United States, even as far as San Francisco. The first severe cases that fell under my own observation were in the beginning of the year 1860.

According to the *Rock Island Argus*, diphtheria has been raging throughout *Western Illinois* to an alarming extent. The writer says that it is almost exclusively confined to children, and, when once under headway, death is almost certain to be the result. It will pass through whole towns, missing scarcely a household, and in some instances *whole families of children have been swept away by it.*

CHAPTER II.

SPECIAL DESCRIPTION OF THE PHENOMENA OF THE DISEASE BY THE MOST PROMINENT AUTHORS, FROM THE EARLIEST KNOWN PERIOD OF ITS EXISTENCE TO OUR OWN TIMES.

SECTION I.—DIPHTHERIA IN THE SIXTEENTH AND SEVENTEENTH CENTURIES.

Aretæus.[1] "Ulcers occur on the tonsils, some indeed of an ordinary nature, mild and innocuous, but others of an unusual kind, pestilential and fatal. Such as are clean, small, superficial, without inflammation and without pain, are mild; but such as are broad, hollow, foul, and covered with a white, livid, or black concretion, are pestilential. If the concretion has depth, it is an eschar, and is so called; but around the eschar there is formed a great redness, inflammation and pain of the veins, as in carbuncle, and small pustules form, at first few in number, but others coming out, they coalesce, and a broad ulcer is produced."

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[1] The extant works of *Aretæus*, the Cappadocian. Book i., chap. ix., pp. 253–255. London, 1856. Published by the first Sydenham Society.

SPAIN.

Villa Real.[1] The disease appeared in Andalusia and other parts of Spain in 1590–1591. The Spanish physicians studied the complaint very carefully, and described what they saw with great fidelity. "The apex of the mouth is at one time altogether white, at another a certain membranous crust, of a bluish color, covers the fauces, throat and gullet. The tongue, from the root upwards, is also either wholly or partially white. It indicates the existence of the white crust in the unseen adjacent parts, and also that it will presently appear in the œsophagus and throat. Tumefaction in the neck, behind and below the ears, such swelling being always present in this disease, but especially in cases where the crust tends to a livid hue, and resembles a membrane. The swelling of the diseased parts is not effused into the pores, but external to the parts, as if it flowed over the surface, which it covered like a solid membrane."

Hemorrhage from the nose and mouth, which, according to the experience of *Villa Real*, is invariably a fatal symptom, is so only in the more malignant cases. In the slighter cases it is often beneficial.

De Fontecha.[2] The disease described by this writer prevailed in an epidemic form in Spain, 1599–1600.

"Garrotillo sometimes began with little, sometimes with much pain. There was always more or less swelling of the throat, both external and internal. At one time large, whitish, scabby ulcers appeared; at other times only a white color.

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[1] *Joannis de Villa Real*, de Signis, Causis, Essentia, Prognostico, et Curatione, morbi suffocatis. Compluti, 1611. Not having access to these authors, I quote from the work of Dr. Greenhow.

[2] Disputationes medicæ super ea quæ Hippocrates, Galenus, avienas, necnon et alii Græci, Arabes et Latini, de aginarum naturis, speciebus, causis et curationibus, Scripsere diversis in locis, et circa affectionem hisce temporibus vocatam *garrotillo*. Opus Doctoris Johannis Alphonsi de Fontecha, etc., Compluti, 1611.

There was also at the beginning a blackish crust, inclining to a bluish or greenish hue. Fever often accompanied the disease, but was also frequently absent, particularly in certain epidemics. The disease was unquestionably present when, although there was little pain, a color like flour appeared in the throat and fauces,[1] accompanied by some difficulty of swallowing, by fever, and by a small, weak and irregular pulse. These signs denoted not only the presence of this throat affection, but likewise its intensity."

Herrera.[2] *Herrera* describes eight varieties or stages of this destructive disease.

The first two varieties closely resembled common sore throat, and were characterized by inflammation of the throat and surrounding parts, unaccompanied either by exudation or ulceration. *Herrera* places them in the same category, seeing that they may pass into it. The third variety had advanced a stage farther; there was excoriation attended by slight soreness. For the fourth, there was ulceration with purulent secretion and severe pain. In the fifth, a spreading, sanious ulcer, with still intenser pain and an offensive smell, but without the crust. In the sixth variety, the characteristic crust, from which the disease derives its modern name, *diphtheria*, was plainly observable upon the ulcer. In this variety, which was more dangerous than any of the preceding, the crust was of a white color. In the seventh variety, the crust was livid; and in the eighth, which is the worst variety of all, the crust was black. Lastly, he mentions the occurrence of a diarrhœa, as an unfavorable sign, at whatever stage of the illness it appeared.

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[1] This symptom, so long ago observed by *Fontecha*, is with me at this day one of the most certain and characteristic diagnostic symptoms of the disease.

[2] De Essentia, Causis, Notis, Præsagio, Curatione et Precautione Faucium et Gutturis Anginosorum ulcerum morbi suffocatis, *garrotillo* Hispano appellato de authore Doctore Cristophero Perez de Herrera, etc. Matriti, 1615.

ITALIAN EPIDEMIC.

Cortesius.[1] "Redness and inflammation of the surface of the palate and mouth, the tonsils remaining unaffected; more frequently, these glands were swollen, and sometimes so much so that they touched each other, thereby interfering with deglutition and respiration. In the beginning, there was usually swelling, heat and redness; afterwards, pain, and difficulty of swallowing. When there was only inflammation of the parts about the throat, the sick easily recovered; but sometimes a certain pituitous substance, (exudation,) descending from the head, so speedily and unexpectedly followed the inflammation, that the patient was suddenly suffocated. Very often a white substance, which soon became liquid and afterwards black, unaccompanied by pain, appeared on the inflamed surface. This material could be readily torn away from the subjacent parts, either by the finger or an instrument; but, although the operation caused no pain, the patient invariably died a short time afterwards, as happened, among others, to the son-in-law and the grandchild of *Cortesius*. Sometimes mortification, accompanied by fetor, quickly invaded some part of the throat; and when this occurred, whether fetor were present or not, remedies proved unavailing, and the patient died about the fourth day, or even earlier, rarely so late as the seventh day."

Cortesius notices the frequent occurrence of several fatal attacks in the same family. There was reason for supposing the disease to be contagious, and a case reported by *Cortesius* strengthens the opinion. A monk being attacked by the disease, constantly complained that he observed a foul odor proceeding, as he supposed, from his mouth; so to assure himself of the truth, requested a friend to verify the fact by smelling. Not many hours after doing so, in the presence of *Cortesius* and others, the friend was laid up with inflammation of the fauces and tonsils, and, remedies proving useless, died on the fourth day of his illness.

[1] Joannis Baptistæ Cortesii, Miscellaneorum medicinalium. Decades Denæ Messanæ, 1625.

Section II.—Diphtheria in the Eighteenth Century.

ENGLAND.

Dr. Fothergill.[1] "Children and young people were more liable to the disease than adults, girls more than boys, women more than men, the delicate more than the robust. The illness usually began with giddiness, chilliness or shivering, followed by fever, acute pain in the head, stiffness of the neck, soreness of the throat, and sometimes vomiting and diarrhœa. The pain, heat and restlessness increased towards night, and were often mitigated by the breaking out of a sweat towards morning.

"If the mouth and throat be examined soon after the first attack, the uvula and tonsils appear swelled, and these parts, together with the *velum pendulum palati*, the cheeks on each side near the entrance into the fauces, and as much of them and the pharynx behind as can be seen, appear of a florid red color. This color is commonly most observable on the posterior edge of the palate, in the angles above the tonsils, and upon the tonsils themselves. Instead of this redness, a broad spot or patch of an irregular figure, and of a *pale white color*, is sometimes to be seen, surrounded with a florid red; the whiteness commonly appears like that of the gums immediately after having been pressed with the finger, or as if matter ready to be discharged was contained underneath.

"Generally on the second day of the disease, the face, neck breast, and hands to the fingers, are become of a deep, erysipelatous color, with a sensible tumefaction; the fingers are frequently tinged in so remarkable a manner, that from seeing them only it has not been difficult to guess at the disease. A great number of small pimples, of a color distinguishably more intense than that which surrounds them, appear on the arms and other parts. They are larger and more prominent

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[1] An Account of the Putrid Sore Throat, by *John Fothergill, M. D.* 5th edition, London, 1769.

in those subjects, and in those parts of the same subject, where the redness is least intense, which is generally on the arms, the breast, and lower extremities.

"These white places presently became more of an ash color, when it was discernible that what at first might have been taken for the superficial covering of a suppurated tumor, was really a slough, concealing an ulcer of the same dimensions. All parts of the fauces were liable to be affected, but the disease generally first appeared in the angles above the tonsils, or on the tonsils themselves, on one of the arches formed by the uvula and tonsils, on the posterior wall of the pharnyx, on the inside of the cheeks, or on the base of the tongue.

"In the milder forms of the disease, an irregular, superficial ulcer, scarcely to be distinguished from the sound parts but by the roughness of the surface it occasioned, appeared on one or more of the above-mentioned parts. A thin, pale, white slough seems to accompany the next degree;[1] a thick, opaque, or ash-colored one is a further advance; and if the parts have a livid or black aspect, the case is still worse. The sloughs are not formed of any foreign matter spread upon the parts affected, as a crust or coat, but are real mortifications of the substance; since, whenever they come off, or are separated from the parts they cover, they leave an ulcer of a greater or less depth, as the sloughs were superficial or penetrating.

"In one case these sloughs were separated by a surgeon's probe without much difficulty, but the same parts were covered the following day with thick, dark, ash-colored sloughs, penetrating deep into the substance. The eruption was not always present, and especially in the winter of 1754, it either did not appear at all, or its appearance was retarded. There was commonly much swelling of the parotid glands and neighboring parts, and the tonsils and uvula were sometimes

[1] During the winter of 1862–63, diphtheria in Philadelphia was characterized by this appearance. The same white membrane was observed in the ulcers, sores, and even whitlows of diphtheritic patients. It seemed to mingle with all kinds of diseases and modify them.

so much swelled as to leave but a narrow entrance to the gullet, which was also frequently surrounded with ulcers and sloughs. Yet, although food was sometimes forced back through the nose, patients often swallowed with little difficulty or pain. An offensive putrid discharge, and a corrosive, sanious discharge from the nostrils often accompanied the complaint; it was also sometimes attended by an excessive faintness, the greater or less urgency of which seemed to indicate the degree of danger. There was less thirst than usual in other acute diseases, and the tongue was moist and seldom furred. Hemorrhage from the nose and mouth sometimes suddenly carried off the patient."

Dr. Fothergill distinguished the disease from scarlet fever, for which one of his cases was mistaken by the persons about the patient, but several of the symptoms he describes, particularly the appearance of a red rash on the second day, are rather those of scarlet fever than of diphtheria. It seems probable, as has happened in more recent epidemics, that *scarlet fever* and *diphtheria were intermingled; that the cases of scarlet fever had a diphtheritic character*, and that, while in all probability *Dr. Fothergill* saw some cases of uncomplicated diphtheria, especially of that kind in which the exudation remains until the subjacent surface sloughs, he nevertheless confounded the two diseases. Indeed, we have other evidence, both that scarlet fever sometimes presented unusual features, and that diphtheria, complicated with scarlet fever, prevailed in England about the time when *Dr. Fothergill* observed the particular form of sore throat described in his book.[1]

Dr. Nathaniel Cotton, St. Albans, 1748,[2] describes the same peculiar form of scarlet fever. "Upon looking into the

[1] During the recent epidemic in Philadelphia, I have observed this intermingling of scarlet fever and diphtheria in twenty cases. In fact I am more convinced every day, that the two diseases are the product of the same miasma in the blood.

[2] Observations on a particular kind of scarlet fever, that lately prevailed in or about St. Albans, in a letter to *Dr. Mead*, by *Nathan. Cotton, M. D.*

mouth, there were frequently seen, especially after the disease was a little advanced, ulcers scattered up and down the fauces, pretty broad upon and about the tonsils, superficial, and *covered with a whitish slough.* The *scarlet efflorescence differed as to extent and time of appearance;* there was high fever, intense thirst, a moist and but slightly-furred tongue, frequent cough, sudden loss of strength, and great dejection of spirits, especially towards evening, which continued for some time after the patient was convalescent."

Dr. Starr, Cornwall, 1748 or 1749.[1] "Swelling of the tonsils, parotid and submaxillary glands; gangrenous sloughs (which were evidently false membranes) often formed in the mouth at an early stage of the illness. Others again complained of a slight pain on swallowing, succeeded by fever; a short, low, barking, hoarse cough, which sooner or later was productive of a difficult, noisy, and strangulated respiration (croupy form). After an illness of a day or two, the voice usually became so hoarse that it was difficult to understand. The expectoration was never a well-digested or concocted phlegm, or mucus; on the contrary, the greater part of it was of a jelly-like nature, glairy and somewhat transparent, mixed with a white, opaque, thready matter, sometimes more and sometimes less resembling a rotten membranous body or slough.

"Such a slough I have seen generated on the neck and arm, where blisters had been applied. The blister had been dressed with colewort leaves, and ran but little; but contiguous to its place, small red pustules, not exceedingly fiery, arose, and, sweating plentifully, in a few hours became quite white. These, hourly enlarging their bases, united and covered a large surface,—fresh pustules arising in the adjacent parts. This white surface had the aspect of an oversoaked membrane that had become absolutely rotten." "I scratched the slough," says *Dr. Starr*, "with my nail; it separated with ease, and without being felt by the child."[2]

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[1] Philosophical Transactions, vol. xlvi.

[2] This is a most accurate account of the origin and progress of the

Dr. Huxham, of Plymouth, 1751 to 1753.[1] "The disease began in various ways, but commonly with chills and heats, pressure and pain in the head, soreness of throat and hoarseness, some cough, sickness of the stomach, frequent vomiting and purging. These symptoms occurred more frequently in children, and were then very severe; in adults they were less emphatically expressed. From the beginning, there were in all a great dejection of spirits, very sudden weakness, great heaviness on the breast, and faintness. The pulse was generally quick, small and fluttering, though sometimes heavy and undose. The urine, commonly pale, thin, and crude, was, however, in many grown persons, scanty and high-colored, or like turbid whey. The eyes were heavy, reddish, and weeping; the countenance very often full, flushed and bloated, though sometimes pale and sunk.

"How slight soever the disorder might appear in daytime, at night the symptoms became greatly aggravated, and the feverish habit very much increased; sometimes even delirium appeared on the very first night,—and this exacerbation constantly returned in the evening, through the whole course of the disease. Indeed, when it was considerably on the decline, I have been often surprised to find a patient had passed the whole night in a frenzy, whom I had left tolerably cool and sedate in the day. Some few hours after the seizure, and sometimes cotemporaneously with it, a swelling and soreness of the throat were perceived, and the tonsils became tumid and inflamed; and many times, even at the beginning of the attack, the parotid and maxillary glands swelled so greatly and suddenly as to threaten strangulation. The fauces also very soon appeared of a high florid red, or rather of a bright crimson color, very shining and glossy; and commonly on the uvula, tonsils, velum palatinum, and back part of the pharynx, several whitish or ash-colored spots appeared

diphtheritic deposit, such as we have witnessed very frequently in Philadelphia.

[1] Dissertation on the Maglignant Ulcerous Sore Throat, by *John Huxham, M.D.* London, 1759.

scattered up and down, which oftentimes increased very fast, soon covering one or both the tonsils, uvula, etc. These eventually proved to be the sloughs of superficial ulcers, (which sometimes, however, ate very deep into the parts.) The tongue at this time, though only white and moist at the top, was very foul at the root, and covered with a thick yellowish or brown coat. The breath also now began to be very nauseous; the offensive smell increased hourly, and in some instances became quite intolerable, even to the patients themselves.

"By the second or third day, the sloughs were much enlarged, and of a darker color, and the surrounding parts tended much more to a livid hue. The breathing became more difficult, with a kind of rattling stertor, as if the patient was actually strangling,—the voice being exceedingly hoarse and hollow, exactly resembling that from venereal ulcers in the fauces. This noise in speaking and breathing was so peculiar that any person in the least conversant with the disease might easily know it by this symptom alone; whence, indeed, the Spanish physicians named the disease *garrotillo*, expressing the noise made by those who are being strangled with a rope. I never observed in one of them the shrill, barking noise that we frequently hear in inflammatory quinsies. The breath of the diseased was very nauseous, of some insufferably fetid, especially in the advance of the distemper to a crisis; and many, about the fourth or fifth day, spit up a vast quantity of stinking, purulent mucus, tinged sometimes with blood, and sometimes quite livid. The nostrils likewise in many were greatly inflamed and excoriated, continually dripping down a most sharp ichor, or sanious matter, so excessively acrid that it not only corroded the lips, cheeks and hands of the children that labored under the disease, but even the fingers and arms of the very nurses that attended them. Not only the nostrils, fauces, etc., were greatly affected by this extremely acrid matter, but the windpipe itself was sometimes much corroded by it, and pieces of its internal membrane were spit up, with much blood and corruption. At

length the patient died tabid; though there were more frequent instances of the disease falling suddenly and violently on the lungs and killing in a peripneumonic manner."

Dr. Wall, of Worcester, 1751.[1] "Aphthous ulcers and sloughs on the tonsils and parts about the pharynx. Very few patients had the scarlet efflorescence on the skin, which was rather an accidental than an essential symptom; but in some persons the skin was covered with petechiæ and purple spots; and in one or two, when the disease was far advanced, large black spots appeared on the tonsils." (Our malignant cases.)

"The complaint was evidently infectious and very liable to return. If they who had it were at any time afterwards seized with a fever of a putrid kind, they seldom failed to have this complaint likewise. I have frequently known the parts very much swelled and covered with thick sloughs, though the sick person made little complaint of the soreness, and swallowed nearly as well as in perfect health."

Mr. Rumsey, Chisham, 1793 and 1794.[2] *Diphtheritic Croup.* "It was not confined to the town, which lies in a valley, but appeared with equal violence upon the neighboring hills, at a distance of five or six miles. The subjects were children from the *first* to the *fourteenth* year of their age, and it attacked many fine, healthy, robust children, as well as the pale, phlegmatic and delicate. The illness crept on imperceptibly at first, the patient appearing to be in good health, the countenance not altered, and, excepting at intervals, the appetite and spirits unimpaired; but it sometimes happened, that symptoms which had appeared trifling for two or three days, suddenly increased, and the disease then advanced so rapidly as to prove fatal before many hours had elapsed."

Mr. Rumsey met with about forty cases of this croup. The disease rarely proved fatal earlier than the fourth or fifth day;

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[1] Gentleman's Magazine, November, 1751.

[2] Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. ii. London, 1800.

often later. Two or more children in a family were sometimes seized with it, whilst on other occasions, when it proved fatal to one or two children, several others escaped without any particular pains being taken to keep the healthy apart from the sick. Many children suffered from erysipelatous inflammation behind the ears, in the groins, in the labia of girls, or wherever the skin folded, attended with very acrid discharge.

"At first the cough was dry, but in the course of the disease, by the third day or sooner, the passage of air was obstructed by viscid matter in the trachea, some of which was occasionally thrown up by cough or retching; and according to the quantity thrown up, respiration was more or less relieved. Several children brought up portions of a film or membrane of a whitish color, resembling the coagulated matter which was found in the trachea of those children whose bodies were opened. This was thrown off by violent coughing or retching, and the efforts made to dislodge it were often so distressing, that the child appeared almost in a state of strangulation. This was succeeded by an abatement of all the symptoms, until a fresh quantity of the same substance was formed, when the distress recurred as before.

"Most of the cases which occurred in November and afterwards, were attended with inflammation and swelling of the tonsils, uvula, and velum pendulum palati, and frequently large films of a white substance were formed on the tonsils. The swallowing was usually less impeded than might have been expected from the degree of disease which was observed in the throat."

ITALY.

Ghisi, Cremona, 1747 and 1748.[1] "Deglutition was frequently free and unimpaired; there was great thirst; the countenance was pale, and there was a dry, harsh cough. Respiration was difficult, and the larynx almost always affected

[1] Journal Général de Médicine, tom. xxxvii., p. 227. 1810.

by pain or a sense of pricking. The voice was shrill, pulse feeble and generally irregular, and the external fever scarcely observable. By and by these symptoms were followed by others of a more alarming nature; the pulse became extremely irregular and intermittent, the skin dry, and the extremities cold. There was excessive restlessness, so that even his bed became insupportable to the patient, and the respiration was most difficult and attended by agonizing efforts. The sufferers generally died on the third, fourth, or fifth day; sometimes, but rarely, as early as the second or as late as the seventh day. Although the cough was generally dry, the patient often, in the act of coughing, detached from the air-passages a substance very like the buffy coat of the blood or the pseudo-polypous substance met with in the heart or larger vessels after death. Many patients who had this tracheal form of angina continued to speak with a nasal voice, and to reject food through the nostrils for some time after recovery."

FRANCE.

Chomel, 1748.[1] "At first the uvula was elongated; there was slight heat in the throat, accompanied by some pain; the tongue was more or less swelled, and there was generally a little fever. Insensibly and within the first twenty-four hours, one or other of the tonsils became covered with a white, aphthous spot, which, extending in every direction, reached the uvula, descended towards the pharynx, and ascended to the pituitary membrane. These symptoms were fully developed within two or three days.

"About the third day, an aggravation of the illness was manifested by an increase of fever, a faint unpleasant odor, observable on approaching the sick, and by a whitish eschar, which, without extending much farther, grew thicker, became a crust, and seemed disposed to loosen, but was either still

[1] Dissertation Historique sur l'Espèce de Mal de Gorge gangréneux, qui a regné parmi les Enfants l'année dernière. Paris, 1749.

held by numerous pedicles, or, if it fell, left a second crust, hidden under the first. There was ichorous discharge, and often bleeding from the nostrils, and the smell became putrid and insupportable. The trachea was eroded by ulceration, the respiration became laborious and sibilous, and the lung ulcerated. Death took place sometimes on the fifth, more frequently on the seventh or ninth day. The sick emaciated from day to day, had a difficulty in articulating, and spoke with a nasal tone. Sometimes there were large swellings of the glands of the neck, which did not suppurate. Convalescence was much retarded; patients remaining long feeble and delicate.

"The illness was neither preceded by shiverings like acute and inflammatory diseases, nor was there headache, delirium, nor the other symptoms of malignant fever. The digestion was unimpaired. The patients were free from heat and thirst, and when pressed to drink were able to do so, and even to eat without pain. The disease especially attacked children, whom, when they lived together, it seized either all at once or one after the other, and but rarely affected persons above the age of fifteen or sixteen years."

SWEDEN, FROM 1755–1762.

Wilcke, Upsala, 1764.[1] "In many houses it carried off the children, proving fatal sometimes as early as the second, but more commonly on the fourth or fifth day of the illness. It appeared to be contagious; children from other houses, who visited the sick, being frequently seized by the disease shortly afterwards. The disease, as has so frequently occurred in other places, appeared under *two forms*. In one, the tonsils, uvula, and the pharynx were found, on inspection, to be the seat of the characteristic membranous exudation. In the other, the symptoms were almost exclusively referable to the larynx and trachea, which were found after death to be covered with false

[1] Dissertatio Medica de Angina Infantum in patria recentioribus.

membrane." On account of their difference of situation and character, the two varieties were regarded as distinct diseases by some of the Swedish physicians, the former variety being classed as malignant sore throat, the latter as croup. The description of the first form of the disease, given by Wilcke, does not differ materially from that of the physicians of other countries about the same time.

UNITED STATES OF AMERICA.

Dr. Samuel Bard, 1789.[1] "In general, this disease was confined to children under ten years of age, though some few grown persons, particularly women, (while it prevailed,) had symptoms very similar to it. Most of those who had it, were observed to droop for several days before they were confined. The first symptoms, in almost every case, were a slightly inflamed and watery eye, a bloated and livid countenance, with a few red eruptions here and there upon the face, and in one case a small ulcer in the nose, whence issued an ichor so sharp as to inflame and erode the upper lip. At the same time, or very soon after, such as could speak, complained of an uneasy sensation in the throat, but without any great soreness and pain. Upon examination, the tonsils appeared swelled and slightly inflamed, with a few white specks upon them, which in some increased so as to cover them all over with one general slough; but this, although a frequent symptom, did not invariably attend the disease, and some had all the other symptoms without it. The breath was either noways offensive, or had only that kind of smell which is occasioned by worms, and the swallowing was very little, if at all, impeded.

"These symptoms, with a slight fever at night, continued in some for five or six days without alarming their friends in others, a difficulty of breathing came on in twenty-four hours, especially in the time of sleep, and was often suddenly in-

[1] Researches on the Nature, Causes, and Treatment of Suffocative Angina, etc. By *Samuel Bard, M. D.* New York, 1771.

creased to so great a degree as to threaten immediate suffocation. In general, however, it came on later, increased more gradually, and was not constant; but the patient would now and then enjoy an interval of an hour or two in which he breathed with ease, and then again a laborious breathing would ensue, during which he seemed incapable of filling his lungs, as if the air was drawn through too narrow a passage.

"This stage of the disease was attended with a very great and sudden prostration of strength; a very remarkable, hollow, dry cough, and a peculiar change in the tone of the voice, not easily described, but so singular, that a person who had once heard it could almost certainly know the disease again by hearing the patient cough or speak. In some, the voice was almost entirely lost, and would continue very weak and low for several weeks after recovery. A constant fever attended this disease, but it was much more remarkable in the night than in the daytime, and in some there was a decided remission towards morning. The pulse at the wrist was in general quick, soft and fluttering, though not very low, and it was remarkable, that at the same time the pulsations of the heart were rather strong and smart, than feeble. The heat was not very great, and the skin was commonly moist.

"These symptoms continued for one, two or three days. By that time it was usual for them to be greatly increased in such as died, and the patients, though commonly somewhat comatose from the beginning, now became much more so; yet even when the disorder was at the worst, they retained their senses, and would give distinct answers when spoken to, although, on being left to themselves, they lay, for the most part, in a lethargic condition, only raising up now and then to receive their drink. Great restlessness and jactation came on towards the end of the disease the sick perpetually tossing from one side of the bed to the other; but they were still so far comatose as to appear to be asleep immediately upon changing their situation or posture. A universal languor and dejection were observed in their countenances; the swelling of the face subsided; a profuse sweat broke out about the

head, neck and breast, particularly when asleep; purging in several came on; the difficulty in breathing increased so as to be frequently almost entirely obstructed, and the patient died apparently from the suffocation. This commonly happened before the end of the fourth or fifth day; in several, within thirty-six hours from the time the difficulty of breathing came on first. One child, however, lived under these circumstances to the eighth day, and the day before he died his breath, and what he expectorated, were somewhat offensive; but this was the only instance in which I could discover any thing like a disagreeable smell, either from the breath or expectoration.

"Out of sixteen cases attended with this remarkable suffocation in breathing, seven died; five of them before the fifth day, the other two about the eighth. Of those who recovered, the disease was carried off in one by a plentiful salivation, which began on the sixth day, in most of the others by an expectoration of a viscid mucus.

"Some cases during the epidemic began with a few red pimples behind the ears, itching violently and discharging profusely. These ulcers would sometimes continue for several weeks, and appeared in some cases to be covered with sloughs, resembling those on the tonsils."

Section III.—Diphtheria in the Nineteenth Century.

FRANCE.

M. Bretonneau, 1821–1826.[1] "At the beginning of the disease a circumscribed redness is perceived, covered with a coagulated semi-transparent mucus. The first layer, which is slight, supple and porous, may be still further raised up by

[1] Des Inflammations Spéciales du Tissu Muqueux et en particulier, de la Diphthérite, ou Inflammation Pelliculaire, connue sous le Nom de Croup, D'Angine maligne, D'Angine gangréneuse, etc. Par *P. Bretonneau*, Médecin en Chef de l'Hopital de Tours. Paris, 1826. Also, in Memoirs on Diphtheria, selected and translated by *Dr. Semple* for the New Sydenham Society, pp. 176–7.

some portions of unaltered mucus, in such a manner as to form vesicles. Often in a few hours the red spots extend perceptibly from one to another, by continuity or by contact, like a liquid which is effused on a flat surface, or which flows by streaks in a tube. The concretion becomes opaque, white and thick, and assumes a membranous consistence. At this period it is easily detached, and does not adhere to the mucous membrane, except by some very slender prolongations of concrete matter, which penetrate into the muciparous follicles. The surface which it covers is generally of a slight red tint, with points of a deeper red, this tint being more vivid at the periphery of the spots.

If the false membrane, in detaching itself, leaves the surface of the mucous membrane uncovered, the redness which was obscured by the exudation returns, and the points of a deeper red allow blood to transude. The concrete coating is renewed, and becomes more and more adherent upon the points which have been first attacked; it often acquires a thickness of several lines, and passes from a yellowish-white color to brown, gray or black. At the same time, the transudation of blood becomes still more free, and is the source of those stillicidia which have been so generally remarked by authors.

At this time the alteration of the organic surface is more apparent than at the beginning; portions of concrete matter are often effused into the substance itself of the mucous tissue; a slight erosion and a few ecchymoses are observed in the spots, which, by their situation, are exposed to some friction, or from which the avulsion of the false eschars has been attempted. It is, above all, towards this period that the pellicles, which are being decomposed, exhale a foul odor. If they are circumscribed, the œdematous swelling of the surrounding cellular tissue makes them appear depressed, and by this appearance alone we might be tempted to believe that we have under our eyes a foul ulcer, with a considerable loss of substance. If, on the contrary, they are extended over large surfaces, they are partly detached, they hang in more or less

putrefied shreds, and they put on the appearance of the last stage of sphacelus."

M. Louis, 1824. "The commencement of the disease was marked by more or less severe pain in the throat, which, nevertheless, was sometimes preceded by the formation of false membrane in the nasal cavities, and by coryza. This pain was accompanied by a more or less vivid redness of the pharynx, tonsils, and soft palate, by slight swelling, tightness, pricking, and especially by difficulty in swallowing. The difficulty in swallowing, commonly inconsiderable at first, sometimes became so great that the patients returned a portion of their drink by the nose; or deglutition even became impossible, and the separation of the jaws impracticable. Sooner or later after the commencement of the pain in the throat, a false membrane was observed, which successively or simultaneously covered the pharynx, soft palate, uvula and tonsils. Once only, throughout the whole course of the disease, were any of these parts left uncovered by the membrane. The neck became more or less swollen. A slight pain in the larynx and trachea was observed sometimes before, sometimes simultaneously with the appearance of the false membrane, but always after the commencement of pain in the throat. This pain, the character of which was, in general, difficult to describe, manifested itself in certain subjects under the form of a burning heat, which they endeavored to mitigate by the application of cold. Soon after its appearance, the voice, which until then had exhibited only a change similar to that which occurs in simple sore throat, assumed a character more or less perfectly analogous to what is called croupal voice. Respiration became more or less difficult, but was rarely sibilous; and out of the five patients, whose cases have been related, it was only observed to be so in one, a few hours before death. Throwing back the head appeared in certain cases to lessen the dyspnœa. The cough was sometimes distressing, but generally so slight that it only inconvenienced the patient by exasperating the pain in the throat. Paroxysms of suffocation were very rare. Some of the patients exhibited great

uneasiness and anxiety; others, though very uneasy about their condition, did not lose the kind of quietness in which we saw them, till a few hours before death."

Dr. Mackenzie, 1825.[1] His views of the pathology of the disease coincide very exactly with those of Bretonneau, a circumstance, he says, in a subsequent paper, which, as it arose without any knowledge of each other's labors, tends to confirm the observations of both. In 1821, two cases of the disease proved fatal under Dr. Mackenzie's care. In both, the fetor of the breath and the sloughy appearance of the effused lymph were remarkable. "In the first case," he adds, "I was surprised, on dissection, to find the tonsils and uvula entire and coated over only with an effusion, for I had laid my account to find a gangrenous loss of substance in these parts." He now announced to several of his medical brethren, that what had been considered as ulcers and sloughs in this disease, were nothing else than effused lymph, the progress of which over the velum and uvula, and towards the alimentary and respiratory passages, he had distinctly observed.

The following description of the disease by Dariot very much corresponds to our Philadelphia epidemic:

Dr. Dariot, 1845.[2] I. "In the first stage, the pathological conditions were sometimes limited to a slight sense of uneasiness in the throat, accompanied by scarcely any difficulty in deglutition. There was, most commonly, in addition to these symptoms, a more acute pain in the pharynx, while the movements of the neck were constrained, and there was in some degree torticollis. The cervical and submaxillary glands soon became engorged, the face was congested and puffy, with injection and lachrymation of the eyes. On examining the lower part of the buccal cavity, all or nearly all the parts constituting the guttural fossæ were seen to present a deep rose-red color

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[1] Edinburgh Medical and Surgical Journal, vol. xxiii., p. 296.

[2] Relation Historique d'une Epidémie de Diphthéropathie observée dans le Département de Saone et Loire, et de la Nièvre, pendant les années 1841, 1842, 1843 et 1844. Par *D. J. Dariot*. Autun, 1845.

in children, and a more deep brown one in adults. There was also swelling of one of the tonsils, more rarely of both; the uvula was almost always tumefied and relaxed; there was almost habitually coryza. At these periods the disease, when suitably treated, lasted, in certain cases, for several days, but was terminated in other cases at the end of a few hours.

II. "When the disease passed to a more advanced stage, commencing often on the very day of invasion, and sometimes a few hours afterwards, this transition was inaugurated by a very remarkable state. The parts which were about to become the seat of a pseudo-membranous exudation, presented an œdematous appearance, similar in tint to a piece of meat bleached by the action of boiling water. Soon afterwards, there were observed upon the tonsils, the uvula, the velum palati, the posterior surface of the pharynx, etc., etc., either solitarily, simultaneously, or progressively, small vesicular points, formed by partial elevation of the epithelium, of a shining and whitish appearance, and which, though at first separated, in general soon became united and confused together, and then were transformed into patches of lardaceous, smooth, whitish, yellowish, or brownish appearance, irregularly circumscribed, more prominent in the centre, and becoming thin at their edges. Sometimes the primitive patches remained isolated, and appeared to rest on a depressed surface." (This latter I have seen very often in the Philadelphia epidemic.)

"With the appearance of false membranes, the glandular engorgements increased considerably, especially on the side where the tonsil was more swollen, and the pellicles were more numerous and thicker. Deglutition was more difficult. It was never painful in proportion to the inconvenience which must have existed, a character which establishes a well-marked line of demarcation between pharyngeal diphthérite and simple angina. The voice was altered and became nasal; cough was infrequent; there was stoppage of the nose, and a flux of a serous liquid by the nostrils; the patient was abundantly salivated, and voided a semi-transparent fluid, inter-

spersed with large bubbles, pouring out like white of egg and manifestly albuminous. Liquids were often thrown up and ejected by the nasal fossæ; the mouth exhaled an odor *sui generis*, compared to that of carious teeth. With the local pathognomonic symptoms were united some general symptoms, such as more considerable swelling, but less deep coloration of the face; more or less intense febrile reaction; the pulse was generally frequent, nearly always small and compressed; cephalalgia more or less marked; tongue swollen, covered with a thick and yellowish mucous coat; rather frequently nausea and vomiting. We often also remarked, on different parts of the body, diphtheritic patches, especially on the lips, around the alæ nasæ, behind the ears, around the circumference of the anus. of the vulva, of the nipples, on the penis and the hands, and on the blisters which had been applied to the patients.

"When the disease was about to terminate favorably, the extension of the false membranes ceased; the *latter* were then circumscribed by a red areola, were swelled up, and began to separate, and being detached in strips, allowed the oozing of a few drops of blood, and were then thrown up by the patients, together with a frothy saliva. These pellicles would be frequently reproduced in a short space of time, and we were often astonished at the prodigious quantity of decomposed matter which was expelled in certain cases. Those of the second and third formation were more white, thinner, and more transparent than those of the first; at least they ceased to be reproduced after their detachment.

"In proportion as the resolution of the disease took place in the pharynx, the lymphatic glands diminished in volume and ceased to be painful; there was a diminution, and then a complete cessation of all the general phenomena. Convalescence was established, but slowly and with difficulty, and was remarkable for a state of *languor, which remained for a long time*, and a peculiar paleness of face, etc.

III. "Lastly, the disease was aggravated—the tonsils became enormously enlarged, so as to touch one another, and to

form with the uvula, which was very large itself, a mechanical obstacle to the introduction of liquids, as well as to the passage of air. The membranous patches began to thicken, were very adherent, of a dull yellow-grayish or brownish color, and invaded the whole guttural cavity, the nasal fossæ, and very often the palatine arch; there was considerable enlargement of the cervical and submaxillary glands, extending sometimes as far as the clavicular regions, more marked especially at the base of the lower jaw, a circumstance which gave to the patients a peculiar expression; laborious respiration, accompanied by more or less noisy guttural rattle; not much cough; voice generally feeble; discharge by the nostrils of a sanious and fetid fluid; frequent epistaxis, sometimes so abundant as to require hæmostatic measures; mouth always open, and exhaling a gangrenous odor; spitting of a viscid purulent matter, mixed with membranous flakes, often blackish, and then presenting altogether the color and aspect of gangrene; lips bleeding and covered with brownish crusts; greater puffiness of the face; remarkable lividity of the complexion; continued cephalalgia; an expression of weakness and languor, but never great alteration of features; constipation, either persistent or replaced by a fetid diarrhœa, and fever, with irregular paroxysms. The pulse soon became thready, and lost regularity, the extremities were cold and covered with a viscid sweat, there was drowsiness in children, and agitation in subjects of more advanced age. Lastly, the patients, after having presented the paleness of the face which Laennec calls a semi-cadaverous phenomenon, expired, having exhibited all the symptoms of true asphyxia. If combined with pneumonia, it was uniformly fatal."[1]

[1] Several cases combined with pneumonia, in my practice, have been cured.

The Epidemic of 1857–60.

IN ENGLAND.

MILD FORM.

Dr. Greenhow, 1860.[1] "Diphtheria generally begins with very slight and almost imperceptible premonitory indisposition. Sometimes there is a slight malaise for a few days before the throat becomes sore; sometimes drowsiness or chilliness, occasionally amounting even to shivering, followed by febrile reaction. Sometimes aching of the limbs and loins, or headache, and less frequently nausea and vomiting are forerunners of the local affection. More commonly the earliest complaint is of slight stiffness of the neck or of soreness, or a sense of pricking in the fauces. On examination, the glands at the angles of the lower jaw are almost always found to be slightly swollen and tender. Internally, one or both tonsils are for the most part swollen, and usually reddened and inflamed, but occasionally much enlarged without much redness. The redness, when present, is of a rose color in young children, and of a crimson or deep claret color in older children and adults, the hue varying with the intensity of the disease. The arches of the palate, the velum, uvula, and sometimes the posterior wall of the pharynx, generally participate more or less in the inflammatory action. The tonsils are sometimes so much swollen that they touch one another and impede deglutition and speech, especially when, as is common in severe cases, the uvula is also much enlarged. Deglutition is sometimes painful, but is often easy, even to the termination of the worst cases; and is rarely, if ever, so difficult as in the angina of scarlet fever, or in ordinary tonsillitis. Indeed, the pain and difficulty of swallowing afford no index of the intensity of the disease, being sometimes very

[1] *Dr. Greenhow* on Diphtheria, 1860.

slight in the most serious cases, and severe in the slightest. Some of my patients have spoken of the uneasiness in the throat as being rather a sensation of fulness or of a "lump" in the throat, than of pain.

"The pulse is usually accelerated, but not very high at this period of the disease, and the temperature of the skin slightly, but not much, above the standard of health. There is never, so far as I have observed, the pungent heat or dryness of skin which accompanies scarlet fever and most other acute febrile diseases.

"The general malaise, drowsiness, discomfort and soreness of the throat bear no direct proportion to the severity of the succeeding attack, being frequently more marked in cases which do not present symptoms of a severe character than in others of the worst description. Indeed, in the severest forms of diphtheria, these premonitory symptoms are sometimes so slight as to escape observation altogether, and the illness is not noticed until it has assumed a serious aspect. It has frequently happened, especially with children, that patients have continued to go about without complaining until the disease has reached an almost hopeless stage. Thus far, there is little, if any, difference between true diphtheria and the cases of mild sore throat, that so often prevail simultaneously with it, and which, as I have already said, probably differ from it only in degree. The essential character of both is inflammation of the throat and fauces, but little prone to terminate in suppuration or ulceration; and, although the milder kind differs greatly from fully developed diphtheria, the two forms pass insensibly into each other, so that cases of intermediate degree of severity may often be observed in the same epidemic.

A MORE SEVERE FORM.

Dr. Greenhow. "If it be conceded that the kind of mild sore throat unattended by diphtheritic exudation, which prevails so commonly during epidemics of diphtheria, differs only in degree from the latter, then does the early stage above described sometimes comprise the whole of the disease. In

other cases it is but the prelude to the exudation of fibrinous material upon the inflamed mucous surface, the tendency to which constitutes the essential local character of diphtheria. In such cases the inflammation, instead of terminating in suppuration of the tonsils, or in ulceration of the inflamed membrane, as in the commoner inflammatory affections of these parts, is followed by an effusion of plastic fibrinous material upon the free surface of the mucous membrane, when it coagulates, forming a false membrane, or more rarely a pasty or friable deposit.[1] This exudation, which has frequently been mistaken for sloughs, takes place when the preliminary symptoms have lasted with more or less intensity for a time which in some cases extends to a few days, and in others terminates in the course of a few hours. It usually appears first on one of the tonsils or the soft palate; sometimes simultaneoúsly upon both, or upon the posterior wall of the pharynx, more rarely—at least, during the recent epidemic—upon the buccal mucous membrane of the gums.

"The exudation generally shows itself at first in the form of detached specks, which, enlarging at their edges, coalesce, forming plates of deposit, investing the inflamed surface, and bordered by a margin of inflamed membrane, the more or less deep hue of which presents a striking contrast to the white, gray or ash-colored concretion. In some cases both tonsils, the soft palate, and the posterior fauces are coated with exudation, which, if it coagulates firmly, forms an exact cast of the parts it envelopes. The disease often likewise creeps upwards into the nares, or begins there simultaneously with its appearance in the throat, or it extends downwards into the œsophagus, or through the glottis, into the larynx and trachea. Besides growing in extent with the wider spread or increased intensity of the inflammation, the deposit increases in depth by successive additions from below, until it occasionally attains a thickness of more than a line. In other cases the dis-

[1] This appearance the membrane assumes, according to my experience, in the latter stages of the disease.

eased action is more limited, the deposit manifesting but little tendency to extend either in depth or breadth, and appearing only upon the tonsils or posterior wall of the pharynx, when it may consist of a rough patch, or of several distinct patches, or of a mere film, covering the parts at first affected. The intensity and danger of a case, though mostly, are by no means always in exact proportion to the extent of the exudation. Sometimes cases attended by excessive exudation make a favorable recovery; at others, the exudation is of small extent, when the case is in other respects of severe character.

"The exudation is sometimes firmly attached to the subjacent mucous membrane, from which it is with difficulty removed; at others, it is so loosely adherent as to be easily rubbed off or removed with a forceps. In either case the subjacent membrane is generally more or less deeply reddened, and if there should have been difficulty in removing the false membrane, it exhibits spots of blood. With this exception, the mucous surface is in general free from abrasion or ulceration. In some cases, the inflamed membrane surrounding the exudation is much congested, very tender, and so lacerable that the slightest touch with any instrument used for depressing the tongue, or removing the false membrane, causes hemorrhage.

"When the exudation has been artificially removed, it commonly reappears within a few hours, and several successive false membranes may thus be formed on the surface of the throat. Sometimes, even when the exudation has come away spontaneously, it is followed by a second, or by several others in succession, but when this happens, the later membranes are, for the most part, less and less dense, more and more filmy, and whiter than the preceding, until the diseased part recovers its normal condition. Frequently, when the false membrane has exfoliated naturally, it leaves the subjacent surface unbroken, paler than in health, and either ragged, or sensibly diminished in size. The uvula, for example, if it has been affected, appears shrunken, the tonsils more or less excavated, the flat mucous surface depressed; the depression being often abruptly bounded, as if its margin corresponded

with that of the space lately covered by the false membrane. This depression of the surface, which has been covered by false membrane, is sometimes very marked after death; and is perhaps, in some measure, attributable to the loss of fluids by the part, consequent upon the exudation; but probably still more to the pressure of the false membrane, which, in coagulating, contracts, and will thus, when only moderately adherent, exert considerable pressure upon the subjacent surface. In other cases, the false membrane, instead of exfoliating entire, or in large slips, wastes insensibly, day by day, until it disappears; lessening from the circumference towards the centre, but probably, also, at the same time becoming attenuated.[1]

"The exudation varies much in texture in different cases, being sometimes dense, firm, coherent, and elastic; at others, soft, gelatinous, almost liquid, or dry and friable. In color it varies from white to gray or ash-colored, brown, and blackish. Although these varieties do not proceed from any essential difference in the nature of the disease, they indicate different degrees of its intensity, and their careful observation affords valuable aid to prognosis.

"In the several epidemics which I have had the opportunity of studying in different places, but more particularly in this metropolis, (London,) many cases of diphtheritic sore throat, the course and symptoms of which, save for the presence of exudation, have scarcely differed from those of simple tonsillitis, have been intermingled with the severest form of the disease. The most common, and, as regards danger or suffering to the patient, the least important of these, have been cases of inflamed sore throat, attended by a thin exudation, glazing the posterior wall of the pharynx or the tonsils, and manifesting little or no tendency to increase in breadth or thickness. Sometimes the exudation is almost

[1] This description is remarkably accurate, and I have seen the same lessening of the membrane from the circumference to the centre, in numerous instances.

transparent, and gives to the surface it covers the aspect of being painted over with varnish or thin glue; at others, it is opaque and white, but filmy, the mucous surface being covered with an extremely fine pellicle. The transparent glazing is most frequently seen on the posterior wall of the pharynx, where it is very apparent from its refractive property. The filmy pellicle is seen both on the tonsils, the posterior fauces, the inside of the cheeks, and the gums. The swelling of the tonsils is generally either absent or slight in these cases, and the redness of the inflamed mucous membrane is not intense. There is usually slight depression of strength, and more or less general malaise, but the constitutional symptoms are mild, and such cases rarely or never terminate seriously, or are followed by troublesome results.

"This form of diphtheritic sore throat, for the most part, yields readily to treatment, but it is very liable to relapse, and sometimes becomes chronic, causing uneasiness of the throat of many weeks' duration.[1]

DANGEROUS CASES OF DIPHTHERIA.

Dr. Greenhow. "The class of cases to which attention must be directed, is of a much more serious kind than any of those hitherto described. The exudation may, as in the former varieties, commence in the form of a thin, translucent pellicle, or in detached patches, but it rapidly becomes thicker, and, the separate patches coalescing, soon cover the inflamed sur-

[1] This form of diphtheria was very prevalent in Philadelphia during the last eighteen months. It is still prevalent (May, 1866) to some extent. I may truly say, that I have attended several hundreds of such cases during this time. The disease particularly attacked the tonsils, pharynx, and also roof of the mouth and tongue. If there was any tendency to bronchitis, pneumonia, or chronic catarrh, it was sure to complicate itself with these diseases, as well as with affections of the stomach and intestines. The throat affection was frequently accompanied with enlargement of the tonsils, a thin veil-like pellicle covering them, as well as the surrounding mucous membrane. It was frequently accompanied by a very hard, obstinate cough, aggravated by the reclining position at night in bed.

face, which often continues to widen in extent, until the disease has crept into the nose, the œsophagus, or the larynx. This variety of diphtheria is, in truth, one of the most formidable of diseases, and very often, indeed, baffles the best-directed efforts of the practitioner. The exudation may appear as a granular deposit, possessing little cohesion, and of various degrees of dryness or humidity, or as a more or less dense, elastic, and coherent false membrane. Doubtless, the two forms pass by insensible gradations into each other, and coexist on different mucous surfaces of the same subject.

"The most usual appearance of diphtheritic exudation is that of a false membrane, possessing more or less cohesion, and frequently very firm and elastic. Doubtless liquid, when first effused, it speedily coagulates, and, as it grows in thickness, becomes, denser, firmer, and tougher. It usually makes its appearance in the form of detached spots, very frequently upon one or both tonsils; these spots becoming thicker by successive additions from below, at the same time extend in circumference, and coalesce, so as to form a single plate of deposit. When first seen, they are usually white or ash-colored, and when these have united so as to form a uniform layer, they very closely resemble wet parchment, thus agreeing very accurately with the description given by Villa Real of the false membrane observed by him in the Spanish epidemics of the sixteenth and seventeenth centuries. By and by they become discolored from the effects of decomposition or exposure, or stained of a blackish hue, probably in consequence of a slight hemorrhage. In other cases, the membrane assumes a buff or brownish color, very much resembling damp wash-leather, and then usually adheres very firmly to the subjacent surface. In either case, the breath is apt to smell offensively, partly, no doubt, from the decomposition of the exudation; but likewise, and especially as the smell sometimes exists at a very early stage of the disease, from the depraved secretion of the tonsils. Whichever of these appearances the exudation may present, the disease is very apt, as has already been said, to spread along continuous

mucous surfaces. It will thus invade the nares, and sometimes, but rarely, the eye. It extends to the lower part of the pharynx, larynx, trachea, more rarely to the œsophagus, and sometimes on to the cheeks and gums.[1]

"The invasion of the nares by diphtheritic inflammation is generally manifested by redness of the margin of the nostrils, and a discharge of sanious ichor, resembling that common in scarlet fever and also like it, sometimes excoriating the upper lip. Epistaxis is not an unfrequent consequence of nasal diphtheria.

"Hemorrhage from the throat also occurs in pharyngeal diphtheria, but, unless in connection with purpura, less frequently, I think, than that from the nose. In either case, the loss of blood, by exhausting the already enfeebled powers of life, has sometimes appeared to determine a fatal result, and must always be regarded as an unfavorable symptom."

DIPHTHERITIC OPHTHALMIA.

Dr. Greenhow. "This variety of diphtheria is so rare that, according to Mr. Dixon, of the Royal Ophthalmic Hospital of London, there was only one genuine case out of thousands of cases of ophthalmia in that institution. The membrane was situated on every part of the conjunctiva of one eye, palpebral as well as ocular, and was concealed from sight by a thick layer of coherent lymph."

Professor Von Græfe, the celebrated oculist, has published an excellent monograph on *Diphtheritic Conjunctivitis.* We avail ourselves of the labors of *Dr. Liebold,* contained in the North American Journal of Homœopathy, November, 1866. Quoting Von Græfe, he says: "While in blennorrhœic inflammation the tissue of the mucous membrane is *loose, succulent* and saturated with infiltrated fluid exudation, in diphtheritis we find it *resistant, stiff* with *consistent* exudation all through it.

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[1] The spreading of the disease into the nares, larynx, and trachea, was most common in our epidemic, and generally in the most dangerous cases. In the eye, I have never seen it.

A lid attacked with blennorrhœa is consequently, in general, *soft, puffy,* easily to be turned; a diphtheritic one, *hard,* and without elasticity and mobility.

"*In blennorrhœa,* the mucous membrane presents *a dark-red, puckered* appearance, as if covered with small red grains, which look, in the higher grades, like so many papillary excrescences or intensely inflamed little warts. The histological examination shows the net-work of vessels under the epithelium very much enlarged in every direction; they expand most when the least resistance is offered, and therefore preserve externally those erectile loops, filled to overflowing with fluid blood. An incision, therefore, induces profuse bleeding, showing *that in blennorrhœa the circulation is so far free, that at least the majority of vessels contain coagulated blood.* A partial collapse follows the incision.

"Quite a different picture the mucous membrane presents in *diphtheritis;* instead of the dark-red color of *blennorrhœa,* the appearance is *pale,* of a yellowish-red, or white, or whitish-red; the surface is perfectly even and smooth. The small red spots of ecchymosis never unite in large suffusions; they give a speckled appearance to the pale-yellowish conjunctiva, but are visible on the conjunctiva bulbi, when the layer is thinner and the underlying white sclerotica heightens the contrast.

An incision into the diphtheritic mucous membrane neither *evacuates blood* nor *exudation;* there is no collapse and the cut gapes.

The *swelling* of the mucous membrane is much greater in diphtheritis than in blennorrhœa.

The *production of heat* and *pain* is very much greater in diphtheritic than in blennorrhœic and catarrhal inflammation. Many an eye is destroyed by gonorrhœal ophthalmia with remarkably little pain; but in diphtheritis Von Græfe had often to give chloroform when simply inspecting the lids, so excruciating is the suffering.

The *secretion* also presents essential differences; in *blennorrhœa* the discharge is of thick *yellow* pus, which gradually, as the disease subsides, becomes of a lighter color and more mu-

cous like; in *diphtheritis* it is a *thin, serous, dirty-grayish fluid,* in which shreds of pseudo-membrane of a yellow color are floating; it is very corroding, making the adjacent parts very sore."

Regarding the nature and causes of this *diphtheritic* inflammation, *Professor Von Græfe* observes: "Blennorrhœa has no necessary connection with any other disease; the perfectly healthy is just as liable to contract it as one suffering from other causes. Very different in *diphtheria.*" Among forty children so affected he observed three times death by croup; several times by pneumonia and hydrocephalus acutus; frequently, too, affections of the skin, diphtheritic patches on the genital organs, angles of mouth, blister sores and other wounds. During *dentition* he saw frequently the occurrence of *diphtheritis*, even relapses or returns of the disease, simultaneous with the cutting of single teeth. Altogether *diphtheritis* is more common in diseased and weak individuals than in healthy ones.

Diphtheritis appears mostly as an *epidemic.* The first cases, as in other epidemics, were always found to be the most acute and serious. Affections of the cornea were then often produced in a few hours, leading to rapid destruction of the eye, while later in the epidemic the cornea was affected in latter stages of the disease, or escaped entirely, a circumstance of the greatest importance with regard to prognosis. Other diphtheritic affections were at those times also prevalent, and almost every other acute inflammation of the conjunctiva showed a certain tendency to diphtheritic infiltration; tumefaction was harder, the exudation contained more solid ingredients, and the elimination of artificially produced eschars took more time.

DIPHTHERITIC CROUP.

Dr. Greenhow. "The extension of diphtheria to the larynx and trachea is a common occurrence in some epidemics, and in particular localities, but rare in others. It was very common in at least the earlier epidemics seen by Bretonneau, and in some of the older epidemics, which, on this account, obtained for the disease the name of *morbus strangulatorius,* or

garrotillo. Of fifty-two post-mortem examinations made by *Bretonneau* in two years, the larynx or trachea was only free from exudation in one instance, that of a child, who appeared to die from exhaustion, on the fifteenth day of the disease. The recent epidemics in the north of France, and the English epidemics of the last four years, have less uniformly manifested that character. In a few places the disease is said to have manifested no disposition to attack the larynx or trachea; in others, most of the cases ending fatally have terminated in croup, consequent upon the extension of the disease through the glottis. But in a large proportion of the districts where the disease has prevailed, its character has, in this respect, been mixed, many cases ending in recovery or death without affection of the larynx; others being complicated with the symptoms of croup. *Dr. Heslop*, of Birmingham, informs me that he does not think the disease has reached the larynx in more than five per cent. of the cases he has seen in that neighborhood. Of thirteen fatal cases in the practice of *Mr. Schofield*, of Highgate, near Birmingham, with the particulars of which he favored me, only three were accompanied by symptoms of croup. Diphtheria had been the sequel of scarlet fever in all three. Of nine fatal cases seen by *Dr. Capron*, of Guilford, only three died with laryngeal symptoms. Of twenty-six fatal cases reported by correspondents of the *British Medical Journal*, only nine, including one from bronchitis, appear to have proved fatal from laryngeal complication. *Mr. Thompson*, in an account of the disease in the neighborhood of Launceston, says, that of four hundred and eighty-five cases that came under his observation, the air-passages were involved in fifteen, eleven of which died, generally within a few hours after the commencement of croupy breathing."[1]

[1] Diphtheritic croup has been observed by me as only fatal when the diphtheritic poison in the blood has been in such quantities as to overpower the vitality of the system. The mere symptom of a croupy cough did not constitute a symptom of danger. Numerous cases of this kind were cured without any difficulty.

DIPHTHERIA OF THE ŒSOPHAGUS AND STOMACH.

Dr. Greenhow. "*Mr. Stiles*, of Pinchbeck, informs me that he has met with cases in which there was difficulty of swallowing, without any evident throat affection. He attributed this to the existence of diphtheritic exudation in the lower part of the pharynx, or in the œsophagus, beyond the reach of vision. In one instance, a patient thought, from a sensation of choking, that some substance was sticking in his throat, and, on passing a probang, shreds of false membrane were brought up on the sponge. Diphtheria existed in the patient's house at the time. Probably œsophageal diphtheria is most frequently caused by the extension of the disease from its usual seat in the fauces, and thus sometimes occurs after the disease would seem to have disappeared. It is attended by extreme difficulty of deglutition, often followed within a day or two by pain, either during the passage of food through the œsophagus, or after it has arrived in the stomach. Indeed, severe gastrodynia is not of infrequent occurrence during convalescence from diphtheria; but has not, under my observation, led to any worse result than delaying recovery by preventing the patient from eating. In one instance, in the practice of *Mr. Balls*, of Spaulding, diphtheria was followed, after apparent recovery, by intense pain at the epigastrium, vomiting, and collapse, which proved fatal in thirty hours. The patient had been imprudent in diet the day previous to the attack of pain, but this would scarcely have determined so serious an affection. Unfortunately, as no post-mortem examination was made, it is impossible to decide whether the cause of death was, as supposed, perforation of the stomach, or not. *Mr. Coleman*, of Wolverhampton, also had a case of diphtheria, that of a female, aged twenty-two years, in which severe pain of the cardiac extremity of the stomach, much aggravated by taking food or wine, came on after the exudation had disappeared from the throat, and the

patient was supposed to be going on favorably. The case proved fatal.[1]

Monsieur Espagne, of Montpellier, relates a case of œsophageal diphtheria in a patient, aged ten and a half years, suffering from typhoid fever. The diphtheria came on about the twenty-third day of the illness, and, after death, the arch of the palate, the uvula, and tonsils were covered with shreds of firm, gray-colored false membrane. The entire posterior wall of the pharynx was coated with a thick false membrane, which extended, without breach of continuity, down to the cardiac orifice of the stomach. This false membrane was exactly moulded upon the œsophagus, and about the thickness of a line almost throughout its entire length. It became notably thinner towards the stomach, ceasing abruptly at the lesser curvature, but ending by some very thin portions, prolonged in the direction of the greater curvature. The diphtheritic concretion formed a complete tube, flattened from before backwards, and plaited longitudinally. It was easily detached from the œsophagus, the mucous membrane below it being injected and of a violet color, without any trace of ulceration. The larynx and trachea presented no appearance of false membrane.

DIPHTHERIA OF THE MOUTH.

Dr. Greenhow. "The extension of diphtheria forwards into the mouth has been less common in this country (England) than it would appear from the French writers to have been in France. The exudation has occasionally appeared on the gums, has sometimes extended on to the buccal mucous membrane, and has more rarely formed a complete covering to the

[1] A similar case observed by me will be detailed in its proper place. The post-mortem examination showed the membrane not only in the stomach, but along the whole course of the alimentary canal. In one case, which recovered, the membrane was seen in the rectum and verge of the anus. *Dr. Guernsant*[1] also mentions a case where the membrane was discovered in the stomach; he showed it to *Dr. Albers*, of Bremen.

[1] *Dr. Guernsant*, on Croup, Dictionnaire de Médecine, 1833. New Sydenham Society, 1859, page 221.

palate and inside of the cheeks, and from the fauces to the teeth. One such case proved fatal in the practice of *Mr. Rush*, of Southminster, and in a second, the patient nearly died of starvation, from inability to swallow after the membrane had come away. The first case seen by me was one of pellicular diphtheria of the inside of the cheeks and gums; and I have observed exudation in the same locality in several other instances, but the danger in such cases has always arisen from the condition of the fauces, and not from that of the mouth.

DIPHTHERIA OF THE PUDENDA.

Dr. Greenhow. "The pudenda and vaginal mucous membrane are perhaps, after the throat, the most common situation of diphtheritic deposit." According to *Dr. Greenhow*, pudendal diphtheria is generally an accompaniment of diphtheritic disease of the throat, but sometimes it occurs without the latter. "The late *Mr. Edwards*, of Wolverhampton, saw two cases of vaginal diphtheria, both of which proved fatal from exhaustion. The disease accompanied diphtheria of the fauces, and both children were inmates of the same cottage, where there had already been two fatal cases. *Mr. Cooper*, of Cromer, had in one instance seen the pudenda of a little girl covered with exudation, unattended by diphtheria of the throat. *Dr. Nicholson*, of Redditch, also writes me word that he has met with one case of pudendal diphtheria in a patient, whose throat remained unaffected, and several practitioners in the fenny parts of Lincolnshire, Cambridgeshire and Norfolk, inform me that they have, from time to time, met with cases of pudendal diphtheria, unaccompanied by throat affections, anterior to the present outbreak. In *Dr. Nicholson's* patients, the parts were abraded by an acrid discharge; there was great depression, requiring the free use of stimulants, and recovery was very tardy."[1]

[1] In one or two cases I have met with this pudendal diphtheria, but the mothers of the children thus afflicted would with difficulty be persuaded of the existence of such a disease.

DIPHTHERIA ON WOUNDS.

Dr. Greenhow. "Wounds and abrasions of the skin often become covered with diphtheritic deposit, analogous to that on the throat. *Dr. Nicholson* mentions the occurrence of diphtheria on wounds without throat affections. One of these, a man aged thirty-two years, had been operated upon for fistula in ano. On the fifth day, diphtheritic exudation appeared on the wound, which eventually sloughed under the use of caustics. The patient died. The other case was that of a female, aged fifty-three years, who was suffering from caries of the metacarpal bones of the second and third fingers. On the third day after an abscess connected with the diseased bones had been opened, the wound became covered with diphtheritic exudation. The parts were subsequently amputated, but diphtheria reappeared on the new wound, hemorrhage from the bowels supervened, and the patient sank fourteen days after the operation.

More frequently diphtheritic exudation has appeared on wounds simultaneously with the occurrence of diphtheria in the fauces."[1]

DIPHTHERIA ON BLISTERED SURFACES AND ON ABRASIONS OF THE SKIN.

Dr. Greenhow. "*M. Becquerel* mentions the occurrence of eighteen cases of gangrene of blistered surfaces, during an epidemic diphtheria, at a hospital for sick children at Paris, in 1841. The gangrene was always preceded by the development of membrane upon the raw surface. This false membrane did not separate, but became confounded with the slough, which frequently spread so as to occupy a gradually widening surface. The affection sometimes occurred simulta-

[1] I have in numerous instances observed a deposit of diphtheritic membrane, in the ulcers of children, as well as in some grown persons; also, in panaritio and in the Schneiderian membrane of persons subject to the annual cold.

neously with diphtheria of the throat, but in several cases independently of any other diphtheritic disease.[1] According to *Bretonneau* these membranes are detached and reproduced with great readiness, within a period of six or seven days."[2]

Troupeau[3] also mentions numerous well-authenticated cases of cutaneous diphtheritis. The following quotations give his own view: "Where malignant angina exists in any person, the application of blisters is often followed by the most disastrous consequences, so that the skin becomes inflamed, covered with peculiar exudations, and gangrenous. Besides, in the same communes, and in the same houses, where the irritation produced on the skin by cantharides is at present so dangerous, blisters had previously been employed without the slightest inconvenience, and we could always easily calculate the local effects of this treatment."[4] In another place he says: "Only in the locality where some one is dying of malignant diphtheria do wounds assume suddenly a character of severity which they did not before present, etc." He also believes that cutaneous diphtheritis is sometimes fatal, and equally capable of propagating the disease as malignant angina.

Dr. Greenhow also quotes *Drs. Starr* and *Sanderson*, as mentioning cases where diphtheria made its appearance in connection with cutaneous eruptions.

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[1] Gazette Médicale de Paris, 1843, p. 692.

[2] Traité de Diphthérite, p. 356.

[3] Memoirs on Diphtheria, New Sydenham Society, London, 1859, p. 254.

[4] The cause of this violent action of cantharides is certainly owing to its being one of the principal remedies in the disease.

CHAPTER III.

DIPHTHERIA IN THE UNITED STATES, 1856–1864.

Dr. T. V. Tougeaud.[1] A terrible epidemic occurred at San Francisco and in other towns of California. In his monograph on this epidemic *Dr. Tougeaud* says:

"Few children attacked by it recovered. The disease begins in a very insidious manner, by a little engorgement or inflammation of the soft palate, pharynx and one of the tonsils. (The attack seldom commences on both at the same time, but soon extends to both, if not arrested.) At this period of the malady, the patient complains but little; there is often no fever, or it is very moderate. The pain in the throat is much slighter than in the usual forms of common sore throat; so slight, indeed, that the little patients go about playing, as if nothing was the matter.

"In some exceptional cases, however, the fever and inflammation are considerable from the beginning. The characteristic signs of the affection soon follow this period of invasion. They consist in small portions (plaques) of white or yellowish lymph deposited on the soft palate, the tonsils and the posterior part of the pharynx. The cervical and submaxillary glands become inflamed and swollen, and the pain in swallowing and opening the mouth is occasioned more by the engorged state of the glands than by the internal secretion of lymph. Then deposits go on increasing in size more or less rapidly, and, in violent cases, in a few hours the whole cavity of the throat is covered by them. Generally, one side is more affected than the other, and upon examination, the glands corresponding with the parts affected will be found more swollen than those of the opposite side."

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[1] Diphtheria, a concise Historical and Critical Essay, etc. Sacramento, 1858.

Dr. James Blake, of Sacramento.[1] "The first effect produced by the poison is evidently on the nervous system. Drowsiness, prostration and oppression are manifested by infants, or complained of by adults; and when the disease is prevailing, this desire of children to sleep at other than their usual hours should awaken our suspicions. The pulse is accelerated from the first, but, generally, soft and typhoid, although in some cases it is, for a few hours, rather hard. The temperature of the skin is raised, although it is seldom harsh or dry, but frequently moist or even covered with profuse perspiration. There is seldom any pain, rarely headache or backache. The tongue is usually coated, edges red, papillæ prominent. The appetite may remain good and digestion unimpaired. If we examine the throat, we may, even within twelve hours after the occurrence of the first slight symptoms, find the tonsil covered with a grayish, pultaceous exudation, which rapidly extends upwards into the nostrils, and downwards towards the larynx; and again, we might detect only a redness of the tonsil and a small point of exudation, two or three days after the commencement of the disease, and at a time when the symptoms of general prostration had become alarming.

"In almost every case that I have seen, I have considered that death was the result, rather of the action of the poison on the system than from obstruction of the larynx. In from twelve to twenty-four hours after the formation of the exudation on the tonsil, we generally find the cervical glands enlarged, and in protracted cases this enlargement may become so large as to afford a serious obstacle to deglutition and respiration. I have seen cases in which I think death was thus produced, when the patient might otherwise have rallied from the effect of the poison.

"The duration of the disease is very uncertain. I have seen it terminate fatally in four days from the first ascertainable departure from perfect health, and this in a strong, healthy

[1] Pacific Medical and Surgical Journal, August, 1858.

child; and I have witnessed it run along for two or three weeks and then terminate fatally. The cases that arise from contagion and remain exposed to the original source of contagion, I believe, as a general rule, run a more rapid course than the sporadic cases. Thus, we frequently find two or three children in the same family dying within a day or two of each other, although the sporadic case might have had the disease some days before the others took it. This is probably owing to the continued absorption of the poison in a state of concentration."

Dr. L. N. Beardsley, of Milford, Connecticut, writes to the *Boston Medical and Surgical Journal:* "This disease (diphtheria) appeared in an epidemic form and with great mortality, in this vicinity, during the months of March and April last. It first made its appearance in Orange, an adjoining town, (which is in an elevated situation and is a remarkably healthy place, with a sparse population,) and for a while was confined entirely to the scholars attending a select school in the village.

"Fourteen cases out of fifteen of those who were first attacked proved fatal, in periods varying from six to twenty-four days.

"Most persons residing in the district where the disease first appeared, sooner or later, had some manifestation of the disease. The period of incubation varied from five to twenty days. The lymphatic glands were in many cases greatly enlarged.

"The first symptom of this disease—and it is one which we have never seen referred to by any writer on the subject—was *pain in the ear.*[1] It was not only pathognomonic, but prominent, and almost invariably present in every case that came under our observation for a day or two before the patient made the least complaint in any other respect, and before the smallest point or concretion of lymphatic exudation could be discovered on the tonsils or elsewhere.

[1] In many cases I have observed this pain in the ear.

"The tonsils were enlarged and inflamed, with small points of lymphatic exudation upon them, which gradually spread upwards into the nasal fossæ, and downwards into the larynx and trachea.

"There was extreme prostration, depression of the nervous system, feeble pulse, etc., but in no case was there any mental disturbance."

Steubenville, Ohio, and vicinity, suffered terribly from the ravages of diphtheria. The disease attacked both old and young, but most generally children, among whom it was most fatal. The number of deaths from diphtheria in Steubenville was not far short of two hundred, during 1860. The deaths among adults were probably one-fourth of that number. Many families were made desolate from the virulence of the disease.

Dr. H. D. Paine, of Albany, New York, gives the following account of an epidemic of diphtheria which he witnessed during five months, from September, 1858, to February, 1859:

"Some idea of the grave nature of this sickness may be gathered from the fact that, since the breaking out of the disease, few, if any, less than two hundred and fifty deaths therefrom have occurred in the city (Albany) and its immediate neighborhood. The victims have been almost exclusively children and young persons. In fifteen families, there had been in each two deaths; in four families, there were in each three deaths, and one hundred and four children had been swept away by the pestilence.

"If the experience of other practitioners has been similar to ours, the total number of cases, of every kind and degree, must have been immense, not less, perhaps, than a fourth part of the entire population.

"The cases that have come under our notice, although exhibiting great variety in the manner of attack, symptoms, course, and termination, may be conveniently arranged, for description, in two or three groups.

"In the most severe and strongly-marked cases, there is violent inflammation of the fauces, tonsils, and uvula, extend-

ing as far back as can be observed, accompanied by a more or less extensive formation of false membrane, of a dull-white or ashy color, sometimes deposited in small, irregular patches, and at others covering a large part of the mucous lining of the throat on one, and occasionally on both sides. There is also in these cases, very frequently, a viscid discharge from the nostrils, and a most fetid breath.

"The appearance of the throat, before the occurrence of membranous deposit, is generally indicative of intense inflammation, not always equally diffused, but in spots of erysipelatous redness, or with streaks of a deeper redness, irregularly scattered over the inflamed surface. Deglutition is *generally* very painful and difficult from the first, indeed often more so at the beginning than in the latter stages; but instances have not been rare in which, notwithstanding a highly inflamed appearance of the throat, the patient manifested no difficulty at all in swallowing.

"The fever runs high, but is generally brief, seldom exhibiting much activity, except in the early stage of the disease, and is followed by a stage of depression and debility, apparently disproportionate to the amount of the preceding excitement. In many, even serious, cases, the febrile symptoms have scarcely been observed at all, but a tendency to an asthenic state of the system is evident from the first. * *

"Sometimes the membranous stratum is a mere film, and quite transparent at first, which may, perhaps, cause it to be overlooked; but it soon becomes thicker and opaque, and the color is usually of a dark-white or grayish hue.

"It appears to be of a fibrous structure, quite tough and firm. Specimens of it have been detached and thrown off, as thick as kid-leather, and I have seen some that were as thick as thin calfskin. When loosened and separated from the surface to which it is attached the underlying membrane very rarely exhibits any evidence of ulceration or other disorganization, but the plastic exudation is liable to form again, if the process of detachment be prematurely hastened.

"The space covered by the false membrane is subject to the

greatest variation. In slight cases there may be, perhaps, a few dots of it here and there, or one or two spots a line or two in diameter, while, in the more aggravated examples, the palate, tonsils, and fauces present to the eye an unbroken coating of this substance, at the same time that the other unmistakable indications prove its extension into the pharynx and trachea.

"As the disease progresses, and sometimes at an early stage of the attack, the breath becomes exceedingly offensive, so much so as to affect the atmosphere of the room where the patient lies with an almost intolerable fetor; at the same time the inflammation may extend to the nostrils, accompanied by a more or less abundant discharge of an acrid, foul-smelling secretion from the nose, not unfrequently mixed with the shreds of membrane.

"In addition to these symptoms, there is more or less swelling of the parotid glands, upon one or both sides. These swellings are sometimes very considerable, but seem not to be very painful, nor do they manifest any disposition to suppuration.

"The most frequent cause of death appears to have been the extension of the false membrane into the air-passages, producing the same mechanical obstruction to respiration, and terminating precisely in the same manner as in ordinary croup.

"In a portion of the cases, however, the fatal result seems to depend less upon the obstruction of respiration than upon the general prostration and exhaustion of the vital forces. The process of throwing out this plastic exudation appears to draw so heavily upon the system as, with the low typhoid character of the constitutional symptoms, to imperil the life of the sufferer from sheer exhaustion.

"In one or two cases that have come under our observation, the inflammation has so affected the organs concerned in deglutition, as to make the act of swallowing very painful, and wellnigh impossible; the half-lethargic patient preferring to die of starvation rather than undergo the distressing effort of taking the simplest nourishment into the stomach."

CHAPTER IV.

THE DIFFERENT FORMS UNDER WHICH DIPHTHERIA MANIFESTED ITSELF IN PHILADELPHIA.

FROM the year 1860, to January, 1866, I have treated at least six hundred cases of diphtheria, *including in this number all cases where a membrane could distinctly be seen by me in the throat on examination, no matter whether these cases were malignant or slight.*

They may be divided as follows:

I.—MALIGNANT CASES.

A.— With Predominance of Throat Symptoms.

Characteristic Phenomena.—Malignant cases are almost exclusively confined to children, or at least to young persons not over sixteen or seventeen years of age. From the very commencement of the attack, the whole face and neck are very much swelled. The tonsils are swelled, and a large patch of the membrane is visible on both tonsils at an early date, spreading in an incredibly short time over the whole pharynx, palate, and also tongue, and often the gums. If removed by remedial agents or caustics, it returns again, and this process is often repeated several times in the course of the disease. Drowsiness and complete loss of appetite are the forerunners of serious trouble. Immense prostration of strength.

Symptoms.—The elimination of the diphtheritic membrane was preceded for several days by chills, followed by fever, with great lassitude of body. The tonsils and the palate are swelled and inflamed. In children this inflammation is of a rose color, but in adults it is of a crimson or deep scarlet color. The deposit becomes visible on both tonsils about the third day.

Empis[1] observed that the exudation of a sero-mucous, transparent, slightly viscous and ropy liquid preceded the appearance of the pellicle on the affected part. "The serous liquid is sometimes very abundant, and in some cases there would even be, in the vicinity of a part already covered with pellicular exudation, a kind of sub-epidermic exudation, sufficiently considerable to raise the epidermis under the form of phlyctenæ, by the rupture of which the dermis, being exposed, soon becomes covered with the false membrane."

I have never seen this liquid in the form here described, but the membrane seemed to me always, in the first instance, of a more fluid form, becoming gradually more compact. Like *Empis*, I have observed that the pellicle never disappears at once, leaving a cicatrized surface in its place, and consequently detaching itself like a crust or an eschar; on the contrary, it is a continuous pathological process; the pellicle diminishes in thickness in proportion as the edges of the wound are cicatrized.

The color of the red border, limiting the exudation, gradually loses its intensity in proportion as the edges of the false membrane are raised by cicatrization.

In all severe cases, the whole countenance is pale and somewhat swelled, even at the beginning. On the Schneiderian membrane of the nose, the same false membrane is visible.

Bretonneau avers that the membrane produced by diphtheria and that produced by cantharides are so alike, that one cannot be distinguished from the other. This is true with regard to the commencement of the disease; but with the progress of the disease toward a fatal termination, the membrane becomes thicker and harder, in some cases like a piece of leather. If the remedies act favorably, the membrane softens and becomes pulpy, being easily detached from

[1] Researches on Diphthérite, founded upon an Epidemic of this Disease, observed at the Hospital Necker, 1848. By *G. S. Empis.* (Archives Générales de Médicine, 1850.)

the surface of the fauces and tonsils. The membrane seems to be perfectly distinct from the mucous membrane, which latter, after the detachment of the former, appears red and inflamed, with the blood oozing out. In all severe cases the membrane, even if removed partially by specific remedies, would often return three or four times in succession. There is also abundant testimony by various writers on diphtheria, that the disease may return in the same house or same child three to four times consecutively. This has so often happened to me in my practice that I consider it an established fact.

Dr. Lee Williamson, of Mississippi, corroborates this fact, affirming that the membrane, after being removed, renews itself several times, each time becoming thinner and whiter, and finally disappearing.

In one malignant case, that of an adult, I discovered the membrane even in the anus, and in six cases it assumed the form of panaritium.

If the slighter symptoms were disregarded by the family, and no medical aid sought, the membrane, which at first appeared only as a small speck on the tonsils, would, in an incredibly short time fill up the whole throat, palate, roof of mouth, and also the tongue and the whole pharynx as far as could be seen. I made it a point to examine the throat of even the smallest children at each visit. The glands of the neck, which were only slightly swelled at first, would gradually involve the whole circumference of the throat; the parotid glands soon became very large and indurated. The cellular membrane of the external neck, together with the whole face, cheeks and eyelids became swelled. In the beginning, the natural color of the face was still retained; but the disease advancing, *a deadly pallor spread over the central portions of the face from the forehead to the nose, mouth, lips and chin.*

In the most severe and dangerous cases, there was a very fetid odor from the mouth; in all of them, the smell of an *acid or mouldy* character was perceptible. Occasionally, after appropriate treatment, the fetor would diminish or disap-

pear, but, whenever the disease advanced to a more malignant stage, this smell would return. This would occur several times in the course of the treatment.

In many malignant cases the membrane in the throat at first looked white, afterwards became yellow, and finally turned entirely black, together with the tongue, which was swelled. The appetite now began to fail, and the food had almost to be forced down the throat, but the thirst for water and ice was very great in all cases. The patients would drink to the last. The urine was high colored and fetid. The discharge from the bowels had, generally, a natural appearance. A constant drowsiness and sleep, with difficulty of breathing, is among the early symptoms of the malignant type. There is also considerable heat in the forehead. The skin remains dry. The pulse is moderately frequent, and often, even in unfavorable cases, quite strong to the last. Finally, if the hands and feet get cold and the pulse sinks, all hope is over.

Of this malignant type, as above described, I have attended about one hundred cases during the last six years, of which I lost five by death,—all during the first year.

B.—Combined with Croup.

The disease always commenced with the ordinary diphtheritic symptoms of the malignant type. As the disease advanced, symptoms of croup would gradually manifest themselves. This form was very dangerous. I lost, however, only one of the twenty cases which I attended. The details will be given under the head of treatment. I was called in consultation in four cases of this kind, all of which terminated fatally. Two of these I saw only two hours before death.

The breathing, in such cases, is short and accompanied by wheezing, with frequent attacks of a croupy cough and suffocation. It is sufficient to say that the symptoms of croup would not in themselves constitute an element of danger if the system was not overpowered by the diphtheritic poison in the blood.

C.—Extension of the Throat Disease to the Stomach and Alimentary Canal.

These were cases where the disease, after being apparently cured in the throat, reappeared, with symptoms of vomiting and pain in the stomach, and great tenderness on touching the abdomen. There was generally great prostration of strength, deadly paleness of countenance, and sinking of the vital power. Fortunately, I had to attend a few only of these dangerous cases. In one case, of which a post-mortem examination was made, the true nature of the disease was discovered. The stomach and whole alimentary canal were lined by a membrane of an albuminous nature. The symptoms will be detailed in another place.

Dr. Greenhow also mentions a similar case. The following symptoms detailed by him clearly indicate the nature of the disease:

"Complained that swallowing gave him pain in the ears and head, and of being sick. Beef-tea and wine have returned several times; brandy was therefore substituted for wine. Sixteenth day: passed an uncomfortable night; there was difficulty in getting him to take any thing; was thirsty and craved for water, which very generally returned immediately after it was taken, as did food, brandy and the medicines, prescribed with the hope of allaying the irritable (?) stomach; pulse sixty, no fever, no pain. Seventeenth day: every thing is rejected by the stomach immediately, and alarming attacks of vertigo or swimming of the head were complained of, accompanied by temporary loss of consciousness; pulse, forty. By the eighteenth day, the action of the heart had declined to thirty-two beats in the minute; on the morning of the nineteenth day, it had fallen to twenty-four, but, on being disturbed to taste food, would suddenly rise to seventy or eighty per minute. He would lose consciousness in a minute. In the afternoon he died."

In the Philadelphia Medical Examiner, a similar case, that of a lady, is mentioned. She also died. The post-mortem revealed the nature of the case.

II.—Slight Cases, under the following forms:

A.—A slight Deposit of the Membrane is visible on the Schneiderian Membrane of the Nose, on the Tongue, Pharynx, Tonsils, etc. The Glands of the Neck are only slightly swollen.

These cases occur in adults as well as children. Numbers of these merely called at the office to be prescribed for, and recovered in a few days. *I counted over three hundred of such cases.* The glands of the neck were in many cases swollen only on one side; and on the same side a speck of the membrane was always visible on examining the throat. The appearance of the membrane was generally preceded by a violent chill and followed by very great prostration of strength, but no further evil consequences.

B.—Diphtheritic Cough, with or without Croup.

This variety occurred in adults as well as children. One case occurred in a man eighty-eight years of age. Patches of the membrane could be distinctly seen in all cases on the tonsils, extending down the throat. The disease was also characterized by a hard, dry cough, causing choking and often of a croupy nature. On auscultating the chest, there was discovered more or less wheezing and whistling, with oppression of breathing at night. Doubting at first the diphtheritic origin of these cases, the usual remedies for obstinate and croupy cough, *Belladonna, Phosphorus, Laurocerasus, Hepar sul.* and *Spongia mar. tost.*, were exhibited, but without the slightest benefit. There was no difficulty, however, in curing this cough with what I may call the diphtheritic remedies, as meeting not merely the symptoms, but also the pathological condition of the throat and ramifications of the bronchia. Such remedies were *Liquor Calc. chlorin., Kali bichrom., Lachesis*, and *Crotalus.*

During the autumns and winters of the years 1861 and '62, as well as '63 and '64, a great number of persons suffered with a sore throat, characterized by dryness, soreness, and

slight swelling of the tonsils. *More than a hundred* of such cases came under my observation. On examining these very carefully, the tonsils, palate, and pharynx, as far as could be seen, were covered by a veil-like membrane lining the throat, sometimes, also, hanging loosely in detached pieces. It was not mucus, but a skin. The disease was not at all dangerous, and was generally cured by a few doses of *Caustic.* 1 *and* 2, or *Calc. chlor.* ½.

Where, however, the patients were liable to bronchitis or chronic lung disease, the diphtheria always complicated itself with these diseases, and was on this account more difficult to eradicate. The cough was particularly severe at night in the reclining position. In addition to the specific remedies for diphtheria, *Kali hydriodicum, Calc. phosphor., Antim. sulph. aur.*, etc., had to be administered.

The typhoid fevers so extensively prevailing during the winters of 1862, '63, were more or less complicated with this disease. Although often determined not to see it, the evidence of its presence in many chronic and acute diseases was too convincing to be cast aside.

Where the attack commenced with croup, without any violent symptoms of the throat or severe general derangement, the cases invariably recovered, often, however, with great difficulty. *Their number was about thirty.* In this variety may be included a kind of diphtheritic fever, exacerbating in the evening and remitting in the morning, with want of appetite, great thirst and many other symptoms, according to the individuality of the case. That this fever was of diphtheritic origin, was evident from the mouth and pharynx being covered by a slight membrane.

C.—Characterized by a Mucous Diarrhœa and Dysentery.

When the disease was on the decline, many persons were affected by a peculiar diarrhœa, preceded by a pain in the stomach, particularly at night. The discharges consisted of large flakes of mucus, and were accompanied by a soreness in the hypogastric region. Ordinary remedies remained pow-

erless against this diarrhœa. The best remedies against the diphtheria were also the best against this diarrhœa.

Toward the close of 1864 and the beginning of 1865, the diphtheritic miasma again showed itself in the form of mucous dysentery, with straining of the bowels, white membranous and mucous discharges, thickly white-coated tongue, and sometimes, also, slight cough, with thin pellicular deposit on the pharynx, as far as could be seen. There was sometimes considerable fever, nausea and vomiting, and complete loss of appetite. That the disease was of the same origin was manifest, for the same remedies as were given in diphtheria were the best, with the addition of Gummi Gutta. I must have attended, on a close calculation, something *like fifty or sixty of such cases.* They were generally very obstinate, lasting from two and three days to two weeks; and two cases connected with scrofulous constitutions were even of longer duration. Although children from two to seven years of age were the most frequent objects of these attacks, they were not confined to them. A considerable number of adults also came to consult me. These were mostly but slightly affected. Latterly, some of the most obstinate cases of this mucous diarrhœa were cured by *Ac. muriat. dil.*, 1*st and* 2*d dil.*

D.—Diphtheria Complicated with other Diseases.

Although some of these forms are dangerous, I still have classed them among the slight cases, because I have not lost any of them.

The English writers mention such combinations as taking place with *scarlet fever, pneumonia, hectic fever with tuberculosis, small-pox, rheumatism, and pericarditis.* Excepting small-pox, I have seen all these combinations. Of the complication with scarlet fever, there came twelve cases under my treatment, generally slight, and all terminating in recovery.

The most dangerous combination is that with *cerebral affections*, and is very apt to occur in children liable to brain disease. I observed the disease also in one case of parturition and one of erysipelas.

Diseases of the lungs are particularly apt to be complicated with diphtheria, as already mentioned under *slight cases, B.* Hectic fever was a common symptom in tubercular patients, some of whom recovered with difficulty. *Dr. Greenhow* mentions that cases of ulcerated sore throat have sometimes been intermixed in the same epidemic. Cases from *Drs. Sanderson, Becquerel,* etc., are adduced to illustrate this statement.

Dr. Galli[1] mentions having seen in a child *suppuration of the inguinal glands* simultaneously with slight diphtheria of the fauces.

Albuminuria is a frequent but not a constant attendant upon diphtheria. Its occurrence was first observed by *Dr. Wade,*[2] of Birmingham, who, when examining the body of a person who had died of diphtheria, found such changes in the kidney as induced him to examine the state of the urine during life more carefully than he had previously done. He thus discovered that albumen is frequently present in the urine of patients suffering from diphtheria, a fact which has been confirmed by subsequent observers both abroad and at home. When albuminuria occurs in diphtheria it usually does so at an early period of the illness, generally within a few hours after its commencement. In this respect diphtheria differs essentially from scarlet fever, in which albuminuria is rarely found in the urine till a much later period of the illness.

I myself have discovered the presence of albuminuria, particularly in those cases connected with pneumonia.

Dr. R. Ludlam mentions a case of a friend of his, *Dr. Lord,* where two sets of symptoms succeeded each other with such distinctness as to attract the attention of the nurse and friends of the patient. The urine in each interval becoming clear, non-albuminous, and deficient in the chlorides, while a little of the sputa in the field of the microscope afforded a beautiful specimen of the crystals of *chloride of sodium.* He gives

[1] Second Report of the Medical Officer of the Privy Council, page 301.
[2] Midland Quarterly Journal of the Medical Sciences, vol. ii., p. 318.

two drawings of the experiments, and concludes as follows: "It is an interesting query for pathologists, to determine whether the presence of the *chloride of sodium* in the sputa and its absence in the urine—hitherto thought to be pathognomonic of hepatization of the lung—may frequently occur in case of functional disorder of the kidneys, as in diphtheritic albuminuria.

"From the foregoing observations, the following conclusions are plainly deducible:

"1st. That albuminuria may be produced by causes acting exclusively through the nerve-centres.

"2d. That disordered innervation of the kidneys may result in such a congestion or stasis of the blood, in their capillary vessels, as interferes with the function of excretion, thus permitting the escape of albumen along with the urine.

"3d. That albuminuria, from this cause, is usually transient. When, however, the cause is persistently applied, the symptom continues, and a structural lesion may finally result.

"4th. That the diphtheritic virus has a specific determination to the nerve-centres, but more commonly affects the renal nervous system, and may produce albuminuria as a concomitant of diphtheria, without structural changes in the kidneys themselves.

"5th. That the time when albumen generally appears, the freedom of the urine from epithelial casts in many well-marked examples of diphtheritic albuminuria, the possible alternation of this symptom with another, which involves a remote organ, as well as the fact that it may disappear at the end of a few hours or days,—a reason why it is frequently unnoticed,—and the complete absence of renal sequelæ in a majority of cases, all serve to establish the position we have assumed.

"6th. That this view of the origin of the diphtheritic albuminuria has a therapeutical bearing of which the intelligent physician may avail himself."

Besides *hemorrhage from the nose and throat*, there is also frequently purpura on the gums, mouth, etc. Claret-colored blotches of purpurous nature are not uncommon. *Other*

eruptions besides *purpura* sometimes accompany or follow diphtheria. *An irregular, measly mottling of the skin* is not infrequent at an early stage of the disease.

Dr. Greenhow has, in several instances, seen an eruption very closely resembling the *rose-rash* of typhoid fever. Similar eruptions were observed by other physicians.

I have seen, in six cases, an eruption resembling varicella, either preceding or following the disease.

Dr. Nicholson, of Reddish, observes that erysipelas of severe and unmanageable character commenced, increased, and declined simultaneously with diphtheria. An unusual prevalence of erysipelas has also been observed by practitioners of Birmingham, Brentwood, Maldon, Wirksworth, Derby, Dudley, Wolverhampton, and Leek. Puerperal and typhoid fevers were unusually frequent, as was also roseola.

In October, 1863, I was attending two children of the ages of five and three years respectively, who had diphtheritic angina, with erysipelas of the face. At first there were symptoms of swelling of the submaxillary glands and face, with diphtheritic membrane visible in the throat. Three days afterwards, the erysipelas appeared on both cheeks, accompanied by delirium at night. In one child, the erysipelas made its appearance, with convulsions lasting ten minutes. In November, 1864, I attended a child which had at first diphtheria, and afterwards very severe erysipelas of the face.

Two cases of chancre I saw complicated with diphtheria. The diphtheritic membrane was clearly visible, surrounding the chancre, on the penis.

In one case of secondary syphilis, where there were syphilitic ulcers in the throat, diphtheritic deposits could be seen mingled with them.

In another case, there appeared a white membrane over four very malignant chancres on the glans penis. Both chancre and diphtheria were cured by the alternate use of *Merc. precipt. rubr., one-tenth*, and the solution of *Chlor. of Lime*. The *Mercury*, which was at first used alone, did *not* cure the diphtheria.

According to *Bouchut*, diphtheria has been observed in combination with hooping-cough, phthisis, and eruptive fever. In the case of an elderly lady, occurring in my own practice, the phthisical symptoms were excited to such a degree that she was brought to the brink of the grave. Her life was saved with great difficulty.

In many cases of malignant typhoid fevers, which have been very common of late years, false membranes have been observed on the tongue and throat.

CHAPTER V.

NATURE OF DIPHTHERIA.

WHEN it is asked what is the interior nature of the disease which makes its appearance with such formidable symptoms, devastating a whole continent, and gathering its victims in every part of the world, we can only answer that we have made approaches towards unfolding the secret source of this scourge, but have not, as yet, succeeded in unravelling its complete mystery. We shall state here all the facts which have been discovered, and the speculations which have been entertained concerning its nature.

A.—Cause Miasmatic.

All authorities and writers on the subject agree that the main essence of diphtheria consists of a poison in the blood derived from miasmatic causes. Like all poisons of an epidemic nature, as that of cholera, small-pox, etc., it is most violent in its manifestations at the beginning of the epidemic, but is gradually diminished in power as it becomes more diffused, although occasionally it will show its ancient violence. *Professor A. E. Small*, in a letter to the author, observes "that the disease arises from a poisonous miasma, that first prostrates the vital

forces and predisposes to chilliness and fever; that particularly affects the mucous surfaces of the air-passages, causing an exudation upon them of a plastic substance, which soon assumes a pseudo-membranous character;" and subsequently he again avers, "that there is a specific poison or miasma that causes the disease, I firmly believe." The cause of diphtheritic false membranes consists, according to *Empis*, in a special morbid property, manifested by an inflammation on which it impresses its special characters. *Empis* also confirms the fact, indicated by *Roberts*, that wounds, before being invested with the diphtheritic pellicle, change their aspect, become more painful, and furnish a less abundant and thinner suppuration.

Dariot truly says, that pharyngeal diphtheria must derive its origin from *some agent* which is occult in its nature, but which *always determines pellicular inflammation*, and is similar in its effects to certain chemical substances, as *Mercurius*, *Chlorine*, *Ammonium*, the *Caustic Alkalies*, the *Ethereal Tincture of Cantharides*, etc., etc.,[1] which induce the same pathological state. Might not reagents, which demonstrate the presence of these different bodies, assist in discovering in the atmosphere the nature of the epidemic agent?

Dariot agrees with *Bretonneau*, that epidemic pharyngeal diphtheritis is a specific inflammation. The existence of the false membrane which constitutes its essential symptom, is due rather to the special character of the disease than to its intensity. Afterwards, *Dariot* comes on rational Homœopathic ground in saying: "The pellicular exudation is not the only distinguishing feature which exists between simple angina

[1] Must not the true specific be found among these similar agents? Of all these we have found the *Liquor Calcis Chlorinatæ* as the most powerful and trustworthy. It was not, however, selected owing to the above remark, but from the similarity of the symptoms both of *Chlor.* and *Calc. carb.* to this disease. More than the *Iodide of Mercury*, *Ammon. causticum*, and *Caustic Potash*, it seemed to arrest the progress of the disease in the blood. Next to it, and in some cases of decided benefit, were *Argentum Nitricum*, *Nitric Acid*, *Bichromate of Potash*, and also *Lachesis* and *Crotalus*.

and pharyngeal diphthérite. *The latter is not a purely local affection like the former, but it is found manifestly connected with a morbid state of the whole economy.*" This opinion has already been offered by the illustrious *Pinel.*

As a proof of this, *Dariot* truly remarks that he can discover it in the miasmatic or epidemic nature of the disease; in the rapidity of its course; in its severity, which is generally but little proportionate to the apparent mildness of the local inflammatory phenomena by which it is accompanied; in the very remarkable disposition of the cutaneous ulcerations to assume the diphtheritic and even gangrenous character in their course, as in typhoid affection; and, finally, *Dariot* discovers this proof in the length and difficulty of the convalescence, a general indication of a deep-seated affection of the whole organism.

Others have supposed it to consist of an effluvium arising from the decomposition of animal or organic matter.

Again, others have thought that it is due to a parasite, which enters the blood through the air-passages, and multiplies like fungus or muguet, (oidium albicans,) or as in mildew. This last idea has a great deal of truth in it. We shall furnish below the microscopical examinations.

B.—Its Appearance in Animals.

The diphtheria in man was preceded, in the eighteenth century, by a similar epidemic in animals, a pulmonary murrain and sore throat, as mentioned by *Drs. Brooklesby, Hurd,* and *Layard.* Also, *Ghisi, Wall, Severinus,* and *Maloni,* mention the same fact.

M. Maloni observes, in his account of the epidemic at Paris, in 1746,[1] that the disease among cows had already appeared in France, when children were attacked by epidemic sore throat. The same reporter, in his remarks of the disease of October, 1748, when this form of epidemic sore throat was again prevalent, says it had been noticed that oysters dis-

[1] Mémoires de l'Académie Royale des Sciences, page 562. 1748.

agreed with every one who ate them during the month, especially before the weather became cold. I have also seen the most violent symptoms produced by eating a plate of oysters during the height of our epidemic.

Both eruptive and pulmonary murrain have, in many districts, prevailed contemporaneously with diphtheria, as observed by *Greenhow*, of London. The fact was gathered from some respectable butchers, in extensive business. Pulmonary murrain and mouth and hoof disease have been very common among cattle during the year 1858, and the early part of 1859.

In 1857, there prevailed a kind of influenza among horses in England, which was very fatal. *Dr. Morris*, of Spalding, informed *Dr. Greenhow* that he had seen a horse with swelling of the glands about the jaw, in which the mouth and throat presented an appearance similar to diphtheria.

C.—Locality, Cold Air, Damp Air, etc.

Diphtheria has not existed exclusively in any particular kind of locality. It prevailed, according to *Dr. Greenhow*, in Birmingham, Wolverhampton, and Leek, places situate on high ground, forming, as it were, the backbone of England; in Hanley, said to be the most elevated town of its size in England; in villages on the ridges near Launceston, among which some of the smaller tributaries of the Tamar take their rise; in the flat parts of Sussex, Norfolk, Kent, and Essex, and in the fens of Lincolnshire. It prevailed both at Trimingham, the highest point of Norfolk, and in the neighboring parish of Southrex, a very low and marshy district.

Greenhow is of opinion that it has not prevailed to an equal extent in each of the above districts, having been, upon the whole, most common in places either marshy or otherwise damp, as from the retention of moisture by an impermeable subsoil or the proximity of water. It is also noteworthy, that the sporadic cases of diphtheria were always observed in marshy districts. On the other hand, whilst drier places have suffered very severely, damp districts in the vicinity have es-

caped. Dampness, therefore, cannot be the only cause. It may be regarded more as an auxiliary than the principal cause. This is the opinion of the English physicians. Still, the combined testimony is in favor of the noxious influence of moisture or dampness. With regard to the epidemic in Philadelphia, whilst during the summer or dry season the city is comparatively free from the disease, *diphtheria always returns with the appearance of the rainy season and cold weather.* I have observed people sitting near the window when the damp atmosphere entered, attacked by diphtheria. Several patients afflicted with diphtheritic fever from exposure to the damp atmosphere on board of vessels at Kensington wharves, were attacked by the disease for several consecutive years on the first appearance of cold and damp weather, whilst during the summer they remained entirely free.

Empis also states that all the parts of the body which are completely removed from the contact of the air are preserved from the invasion of the disease. He calls this a remarkable fact. It corresponds with my view given above.

In addition, it must be mentioned that the disease was very fatal in the neighborhood of Cape May, where there are numerous marshes and swamps. Nearly every family lost one or two children.

In this connection, we must also allude to what *Dr. Lea J. Williamson,*[1] of Lardis, Mississippi, says of the influence of locality on the high-water shed between the Tallahatchie and Mississippi rivers. "On each side are broad uncultivated valleys of matchless fertility, where grows vegetation of the richest and rankest character. Superadded to this are numerous lakes, marshes, and sloughs. The first cases of diphtheria occurred on August 5th, 1859. *Remittent bilious fever, the only disease from which the inhabitants usually suffer during the summer season, and which had been prevailing to its usual extent, seemed now merged in the prevailing epidemic; after the appearance of diphtheritis, not one case of fever was seen in the*

[1] American Journal of Medical Sciences, page 100. 1859.

epidemic region, where scores are wont to occur." *Dr. Williamson* further remarks that the patients were always worse during wet weather.

D.—Age, Strumous Constitution.

Age.—The greatest mortality of diphtheria is among children from the age of two to five years. From the tenth to the fifteenth year the mortality diminishes, and is trifling after the fifteenth year. The same remark is also applicable to scarlet fever and croup. After the fifteenth year, still fewer die of these diseases than of diphtheria. Of the five hundred and fifty cases which I attended from January, 1860, until January 1st, 1864, there were only about twenty adults, of whom only two were severe cases. None of these died of the disease. *Dr. Greenhow* remarks that sometimes all the smaller children of a family die, and then, again, sometimes all the female children. I observed the latter in one family.[1]

Strumous Constitution.—There is no doubt in my mind, that children inheriting a strumous and tuberculous constitution are most liable to the disease, and are most severely affected by it. The same remark holds good with scarlatina. All the deaths occurring in my practice were of such children; and although they seemed previously to enjoy good health, a closer examination generally determined me to pronounce them of scrofulous habit. *Dr. J. P. Dake,* in a letter to the author, October 30th, 1862, makes the following observation: "The scrofulous diathesis affords the most favorable field for the operation of this poison." *Prof. A. E. Small,* of Chicago, writes to the author, that in subjects of a scrofulous nature he has had but little success,—nearly all such cases having proved fatal.

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[1] Of the fifty-eight cases attended by *Dr. Williamson,* of Mississippi, sixteen were over fourteen years of age, (one was over forty, five over thirty, and nine past twenty;) the other forty-two had not reached the age of puberty. Twenty of these were between the ages of four and six.

E.—Chemical Examination of the Membrane.

My friend *Dr. Koch* drew my attention to a most exhaustive analysis of the diphtheritic membrane contained in the "Monatsblatt," of the sixty-sixth volume of the "Allgemeine Homœopathische Zeitung," by W. Kuchenmeister, in Dresden.

I herewith copy the whole table, as furnished by Kuchenmeister.

1. *Aqua Calcis.* (Pharmac. Saxonic. Containing as much lime as the water will dissolve, *i. e.*, one part of lime to thirty parts of rain-water.)	In the shortest time (from ten minutes to a quarter of an hour) entirely dissolved; much sooner already loosened, and falling to pieces with moderate shaking.
2. Acetum concentratum.	Soon strong swelling up and transparency, in which state the membrane remains for days.
3. Acetum concentratum, one part with three parts of water.	Ditto.
4. Acetum concentratum, one part with six parts of water.	Ditto.
5. Acetum concentratum, one part with twenty parts of water.	Ditto.
6. Acetum concentratum, one part with three parts of honey.	Soon strong swelling up and transparency, in which state the membrane remains for days.
7. Concentrated solution of Borax.	A slight swelling up.
8. Liquor Calc. carb.	Ditto.
9. Natrum aceticum, concentrated solution.	Ditto.
10. Kali chloricum, (Chlorate of Potash.)	Ditto.
11. Artificial herring's brine, (prophylamin with common salt.)	Hardly swelling at all.
12. Real herring's pickle, (remedy against croup.)	No effect whatever.
13. Acid. Muriatic. concentratum, one part to three parts of honey.	No effect except a greater condensation of the membrane.
14. Acid. Muriatic. concentratum, one part to three parts of water.	Ditto.

15. Acid. Muriatic. concentratum, one part to nine parts of water.	Ditto.
16. Acid. Muriatic. concentratum, one part to ten parts of honey.	Ditto.
17. Acid. Muriatic. concentratum, one part to thirty parts of water.	Ditto.
18. Acid. Muriatic. concentratum, one part to sixty parts of honey.	Ditto.
19. Liquor Kali caustic., (Caustic Potash.)	No effect whatever.
20. Liquor Kali caustic., one part to thirty parts of water.	A slight swelling.
21 Liquor Kali caustic., one part to sixty parts of water.	Hardly any swelling.
22. Acid. dilut. Nitr., (officinal.)	No effect.
23. The Acid of Copaiba, dissolved in ether.	No effect.
24. Argent. nitr., one part to six parts of water.	Only greater condensation of the membrane.
25. Ol. Terebinth., purum.	Preserves the membrane beautifully.
26. Ol. Terebinth., one part to five parts of spirits.	Ditto.
27. Kreosote-water.	Ditto.

From the above table, it would appear that *Lime-water* is the best solvent of the membrane.

Dr. Richard Foerster, of Dresden, has also furnished an interesting article on the solvents of the diphtheritic membrane, particularly with regard to the *Carbonate of Lithia.*

Previous to this time I had made experiments with substances recommended by other parties, but with almost no effect. Such were *Glycerine*, recommended by *Bouchut*, a solution of *Ammoniated Copper*, solutions of *Iodine* and *Bromine*, a strong solution of *Nitrate of Potash*, *Borax.*

The best effect was from the *Lime-water* and *Carbonate of Lithia.* The *Lime-water* occupies the first rank. *Dr. Foerster* truly remarks that there must be, of course, a great difference between the effect of these remedies in the test tube, and that produced by inhalation. He, himself, has had no cases of late for trial, but mentions *Dr. Biermer* as having used

the inhalations of *Lime-water* with success in a case of diphtheria.

Dr. Ozanam, of England, has made many experiments. According to him, "the *Chloride of Potassium* dissolves the false membranes completely in twenty-four hours; *Chloride of Sodium* in thirty-six; a solution of one-hundredth part of *Bromide of Potassium* in water, in twelve hours; a mixture of *Bromine* and *Bromide of Potassium* is more powerful still. One part of *Chromate of Potassium* in ten of water will harden the membranes in the course of two days. *The Sub and Bicarbonate of Potash*, in concentrated solutions, will dissolve the membranes in twelve hours. *Phosphate of Soda* is less active; the *Cyanide of Potassium*, in a concentrated state, will dissolve the membranes in fifteen hours; pure glycerine will soften them in twenty-four hours; but the mother water of urane soda will effect a complete solution in four or five hours."

Dr. Ozanam concludes, from his experiments, that, if it be intended to attack the membranes by dissolvents, alkalies should be preferred; and from what we have quoted above, it will appear that the Subcarbonate and Chlorate of Potash and the Phosphate of Soda, so long advocated, are the lowest on the the list in point of efficacy. If, on the contrary, segregation or separation be aimed at, the *Chloride of Bromine*, *Bromine itself*, and *Chlorine*, or else *Iodine*, *Perchloride of Iron*, and *Chromium*, should be resorted to, since they harden the membrane and make it detach itself.

Very naturally, no chemical test is sufficient to define the value of a remedy, although the hints received will be of great value to the practitioner of medicine.

Bouchut[1] says: "The false membranes are insoluble in cold water, and even hot water. *Sulphuric*, *Nitric* and *Hydrochloric acid* harden these productions, and they also shrivel and

[1] Memoirs on *Diphtheria* from the writings of *Bretonneau*, *Guernsant*, *Trousseau*, *Bouchut*, *Empis*, and *Dariot*, selected and translated by *Robert Hunter Semple*, *M. D.* The New Sydenham Society. London, 1859. Page 273.

detach them. *Liquid Ammonia* and *alkaline solutions* dissolve and convert them into a transparent and diffluent mucus."

From experiments made by myself, I have ascertained the following: *Concentrated Nitric and Sulphuric acid* will not dissolve the membrane, but only harden it, as mentioned by *Bouchut.* A solution of *Kali bichromic.*, one-tenth of a grain in half a tumblerful of water, dissolved a pretty large piece almost entirely; a solution of *Chloride of Lime*, two drachms to twelve ounces of water, dissolved the membrane partially.

Per contra, *Dr. W. Tod Helmuth*, of St. Louis, found *Hydrochloric acid* one of the best solvents.

Dr. Starr, of England, in a published account of this disease, states, that, on a chemical analysis, the deposit was found to be albuminous and not fibrinous, which latter statement, according to *Dr. Madden*, is of importance, as distinguishing diphtheria from croupy exudation.

F.—Examination by the Microscope.

At my request, *Dr. Keller*, the eminent anatomist, made a microscopical examination of the diphtheritic membrane. He said he could find nothing definite. This is also the opinion of *Empis*, who says, that microscopic examinations do not afford much information. He gives the following data with regard to the distinctive characteristics of the different membranes:

1st. *The pleuritic false membrane* is characterized by the absence of epithelial cells, which we shall find to exist in the other kinds of false membrane.

2d. *Membrane of a blistered surface.* This may be distinguished from the pleuritic false membrane, by the presence of epithelial cellules, which are wanting in the pleuritic exudation.

3d. *False membrane of Diphthérite.* Microscopical examination ceases to afford much information. The diphtheritic exudations present, in a microscopical point of view, the greatest analogy with the membrane of a blistered surface.

4th. *False membrane of Scarlatina Angina.* According to

Empis, we cannot distinguish by means of the microscope the scarlatinal membrane from the diphtheritic membrane. By a more perfected micrography we may, perhaps, in the future, obtain more definite information.

With regard to the similarity of aphthæ and diphtheria, *Empis* remarks, that, when studied by the microscope, aphthæ present peculiar characters, *not met with in any other kind of pseudo-membranous exudation.* It is an organized product, the position of which, in the vegetable kingdom, cannot now be contested after the researches of *Messrs. Berg* and *Gruby.* More recently, a detailed and minute description has been given of it by *M. Charles Robin*, in his work on the *Vegetable Forms growing on Living Animals*, (1847.) *Mr. Gruby* regards the vegetable form of aphthæ, as the analogue of *sporotrychium. Vogel*, who has described the vegetable forms of aphthæ, states that it is found in children and adults, in the *false membrane lining the mouth in diphtheria.*

Empis gives generic characteristics, common to pseudo-membranes, namely: 1st. Pleuritic, serous, fibrous exudations. 2d. Membrane of a blister. 3d. Membrane of diphthérite. 4th. Membrane of scarlatinal angina.

A. They present on the field of the microscope, a quantity of small filaments of fibrine, interlaced with one another in different directions, and crossing one another at acute angles, so as to form a kind of more or less regular net-work.

B. A second characteristic, also met with in each of these exudations, is the presence of a great number of small, irregularly rounded corpuscles, forming a series of granular dottings around the filamentous net-work. These small corpuscles, are formed in all pseudo-membranes. It is to them that *M. Seyfert* has given the name of molecular granules, and which resist, for rather a long period, the action of acetic acid.

C. A third characteristic belonging to all fibrinous exudations is, that when treated with a drop of the tincture of *Iodine* they immediately assume a very deep brown color.

Dr. Slade (Prize Essay) remarks: "Under the microscope

the false membrane of diphtheria exhibits the ordinary elements of such structures, although its characters would appear to vary somewhat. The elements usually detected are, chiefly, molecular particles, matted epithelium, cells of all kinds and shapes, pus and blood-cells. These are arranged in layers, and united, so as to form a membranous deposit." *Empis*, *Laycock*, and *Wade*, who made microscopic examinations, agree that the diphtheritic membranes are not a fungous growth. "They have not the power of organization, and never become vascular. Hence, they never concur in reparation of the tissue, but putrefy on the surface, if they be not removed, existing always as a foreign body."

Dr. Laycock, Professor of Practice of Medicine in the University of Edinburgh, in a clinical lecture, in the Medical Times and Gazette, 1858, points out an analogy between diphtheria and muguet, and endeavors to show, that both these diseases are due to the presence of a parasitic fungus on the surface of the mouth, fauces and other mucous structures. "The case before us has varied points of practical interest. The immediate cause of death was the exhausting, intractable diarrhœa. Now, this supervened coincidently with an attack of diphtheria or diphthérite. At the onset of the disease, and just before death, we found in the pellicle, formed on the tongue and fauces, the sporules and mycelium of the oidium albicans, a parasitic fungus, found also in muguet,—the epidemic aphthæ or diphtheria of infants in France. This is an interesting fact, at the present moment, when diphthérite is prevalent, more especially as the pellicle was also abundantly present after death in the œsophagus. I have little doubt that this pellicle was due to the action of the parasite on the enfeebled mucous surfaces of the mouth, fauces, &c. It acts, like all its tribe, as an irritant, inducing increased formation of epithelial scales, and effusion of mucous exudation corpuscles, or plasma. Intermingled amongst these, are the sporules and the mycelium of the microscopic fungus. The whole constitutes a pellicle or membrane, as it has been termed, varying in thickness and tenacity, according to the surface

attacked, and according to the condition of the patient. The parasite seems to act upon the capillaries of the subjacent tissue; as, when removed, blood is not uncommonly effused, and the surface looks raw. Diphtheria is not, however, necessarily limited to one form of disease. We have, in fact, had a case of syphilitic disease of the fauces and pharynx, in which the pellicle containing the oidium was noticed, and which seems to have introduced it into the clinical wards. Again, if the fungus multiply in a population, at the same time that there is an epidemic of scarlatina or rubeola prevalent therein, that epidemic may be expected to take the diphtheritic form in those cases which are attacked by the oidium. I must add, however, that we have reasons for thinking that the oidium, acting alone, will fasten upon the mucous membrane of the mouth and throat, and excite inflammation, and without the formation of a pellicle. Or, if it lead to the formation of a pellicle, this may be constituted of spores only, with exudation of corpuscles, constituting a tougher membrane than that usually found on the tongue and tonsils, and resembling the pellicle of croup.

"The diagnosis of diphtheritic oidium from ordinary aphthæ is founded, first, on the character of the morbid appearance; for, in ordinary aphthæ, the disease is vascular, and the white specks or patches are ulcers, while in diphtheria they are pellicular, and not ulcerative, while the redness is much deeper than in aphthæ. Besides, the microscope may reveal the spores and mycelium of the fungus. The development of mycelium is, however, by no means a necessary result of the action of the fungus. This seems to be a feature peculiar to the more advanced stages; at first, there is not even a pellicle, only characteristic redness of the affected surface. *Dr. Young*, our resident physician, got an attack of sore throat, shortly after one of the patients affected with oidium coughed in his face, while he was applying a remedy to the patient's fauces. *Dr. Young* had this characteristic deep-red congestion of the fauces, with but very limited production of pellicle on the pharynx, in which no mycelium was to be discovered. Further, it is

probable that, besides the stage of development, the condition of the habitat may make a considerable difference as to the morbid products. Thus, since warmth greatly promotes the spread of the disease in the form of muguet, the absence of mycelium in diphtheritic croup may be due either to the fact, that the weather is cooler when it prevails, or that the mucous membrane of the larynx and trachea, being cooler generally, from the transit of air, is less favorable to the development of the mycelium, than that of the mouth, fauces and œsophagus.

"Again, the condition of the intestinal mucous membrane seems less favorable to the formation of the mycelium, or of a pellicle upon it. Still, inflammation and even ulceration of the surfaces will occur, as the result of the irritative action of the parasite, in the same way as ulcerative inflammation supervened in the œsophagus of the patient in question. This remark applies, also, to the bronchial mucous membrane, in which, I am inclined to think, the oidium may develop an inflammation of the same low type as that seen elsewhere, an asthenic bronchitis with a purulent secretion."

In connection with this subject, I cannot help extracting the important observations of *Dr. Wilkes*, assistant physician to Guy's Hospital.[1]

Dr. Wilkes took the opportunity to examine the films which occasionally form on the mouths of those sick with various diseases, and on submitting them to the test of the microscope, felt some surprise in witnessing in all fungus growth which he had not been able to distinguish from that of diphtheria. Thus he lately had a woman die under his care, in Guy's Hospital, with acute cerebral and spinal meningitis, pleuritis, &c., of a supposed phlebitic origin, and on examination of the pharynx, after death, a pellicle was found composed of the parasite. Again, a child four years old presented itself among his out-patients, apparently dying with croup, but on examination was found to be suffering from an extension of diphtheritic disease into the trachea. The throat and

[1] Medical Times and Gazette, October, 1858.

tongue were covered with pellicle, a portion of which being placed under the microscope displayed very readily the oidium, the only difficulty about the case being the statement of the mother, that the child had suffered with a throat affliction for several weeks. *Mr. Hardy* made a post-mortem examination. The throat, trachea, &c., were covered with a pellicle, as before said; and on removing this, to find a cause for the chronic symptoms, a polypus of a capillary character was seen growing from one of the vocal cords, with thickened tissue around. Here was an explanation of the chronic symptoms; and upon this had arisen an acute inflammation, accompanied by the fungus. Another case was that of a man who died under *Dr. Wilkes'* care, in the hospital, with softening of the spinal cord. A few days before his death his mouth and tongue became covered with a white secretion, which very rapidly formed a complete layer over the whole buccal surface. An examination of this by the microscope showed a remarkably fine specimen of the fungus, the mycelium and sporules exhibiting themselves to perfection. On mentioning these circumstances to *Dr. Barlow*, he stated that he had under his care a child with a white film on his mouth, (the case not being one of diphthérite,) and he sent some of the secretion for examination, when it was found to resemble the specimens already named; the same occurred in one or two other cases. These facts are sufficient to show that a vegetable fungus may spring up on the buccal mucous surface in various cases of disease, but requiring, probably, some previously morbid condition for a nidus. Is it not so in diphthérite? Is the disease, strictly speaking, a malignant sore throat, and the formation of the pellicle an accident? Or is the latter an essential part of the affection? In the case of the child last mentioned, if no post-mortem examination had been made to discover the chronic disease, the case would have been called diphtheria; and in the man with spinal paraplegia, the condition of the mouth would have been sufficient to have marked it a case of the same kind, had there been no other affection present. Such cases may throw some light upon the opinions of those

practitioners who, not residing in diphtheritic districts, and who, seeing only isolated cases, regard the disease as a mere modification or peculiar form of some ordinary maladies, as cynanche and scarlatina, and this may, in some instances, be correct.

In speaking of the parasitic growth found in the above-mentioned instances, we are aware of the objection which can be made, that the fungus of diphtheria is peculiar, (supposing it always to be present,) and that found in the mouth and throat of other sick persons is in connection with aphthae, and is another variety. In answer, *Dr. Wilkes* says that he failed to discover in the above cases any difference; and, moreover, the character of the pellicle, and its rapid extension over the whole mouth, throat and tongue, was totally unlike ordinary aphthae. *Dr. Slade*, in his essay, gives a picture of the diphtheritic pellicle, as examined under the microscope, and the sporules and the mycelium of the oidium, (after *Robin*,) and the two are in appearance almost identical. *Dr. Francis Black* says: "I examined only one specimen of membrane, assisted by a friend who is daily engaged in the microscopic study of plants; *but we were unable to discover the least appearance of vegetable structure.* The same microscopist also informed me that the same results were met with by a friend who examined upwards of a dozen different specimens."

My friend, *Coleman Sellers*, took great pains to examine, by his powerful microscope, some specimens of diphtheritic membrane; but we could arrive at no definite conclusions about their nature. There certainly appeared to be no vegetable structure.

DIAGNOSIS.

Diphtheria is considered by some physicians to be analogous to dysentery, by others, to malignant scarlatina and croup. That there are great affinities between it and these diseases is undeniable; but it is difficult to establish the identity of their ultimate essence.

G.—Diagnosis between Diphtheria and Scarlatina.

Those who have carefully read my classification of the different forms of diphtheria, must have come to the conclusion with me that the disease has manifested itself in various forms since its first appearance in Philadelphia. At first, being very virulent, it attacked principally the fauces and larynx, and finally the brain, and was often suddenly fatal. At a later period, when it diffused itself throughout the system in a milder form, it was more manageable, although deaths would still occur from the more violent cases of this kind. During the year 1861 the greatest number of deaths from scarlatina occurred, as well as from diphtheria, namely, one thousand one hundred and ninety of the former, and five hundred and two of the latter. The same or similar causes must, therefore, have been productive in originating these two diseases. The fact is, the more I consider the matter the more the opinion gains ground that these two diseases, and perhaps, also, croup, are only modifications of the same poison, as we know the common bilious fevers of a country are only modifications of the violent yellow fever, and the same remedies will often be able to subdue them; scarlet fever being the most violent form of the disease, and scarlatina and croup manifestations of the same poison in different forms.

In the diagnosis of the two diseases by different writers, the main stress is laid upon scarlatina seldom or never attacking the larynx and bronchia. We have seen, by one classification, that some forms of diphtheria attack the stomach, the intestines, and even the anus, but still the nature of the poison may be the same. *Dr. Slade*, of Boston, in his prize essay, says: "By some persons, the two affections scarlet fever and diphtheria, notwithstanding certain points of strong resemblance, are regarded as essentially different. By others, diphtheria is regarded as a form of scarlet fever, in which the throat affection is unaccompanied by the eruption which usually characterizes it. We must admit that there are many circumstances which favor this latter opinion. For in-

stance, not only do the two diseases prevail frequently at the same time in the same region, but even in the same family; some members being attacked by all the symptoms of true diphtheria, while others present the symptoms of common scarlatina. Then, again, in some instances, in those who have been attacked by diphtheria, a rash very similar to that of scarlatina has been observed. This rash may have been very partial, and may have remained but a few hours, but its characters have been thought sufficiently marked to leave no doubt as to its nature."

W. H. Eddis, Esq., (Brit. Med. Jl., January 25th, 1861,) in giving an account of an epidemic occurring at Barton-upon-Humber, describes "diphtheria as so intimately connected with scarlatina, that it seemed almost impossible to separate them. I was indeed led to believe that they were identical, and only two forms of the same disease, modified by circumstances. It was only after having carefully observed the numerous cases that came under my notice, that I became convinced that they were two distinct diseases." He does this chiefly for the reason that the diphtheria appeared in some who had had scarlatina and were perfectly recovered, and in others who were grown up and remembered having had scarlatina in their childhood. But a modified form of scarlatina as well as diphtheria may occur in the same individual.

In the following tables I shall compare in detail the different points of scarlatina and diphtheria from our own experience, as well as what we could glean from the different writers on the subject, such as *Empis*, *David*, *Greenhow*, the prize essay of *Slade*, the treatise of *Ludlow*, and others. These statements show that there is strong probability of the diseases being of the *same nature;* the absolute certainty of their positive identity remains as yet, however, undecided.

SCARLATINA.	DIPHTHERIA.
1st. In the first place, the *rash* in scarlatina forms a main feature. It is nearly always present.	1st. In diphtheria the rash is only present in exceptional cases.

SCARLATINA.	DIPHTHERIA.
2d. The *pulse* in scarlet fever runs higher than in any other fever.	2d. In diphtheria it is only moderately frequent.
3d. According to *Empis*, the *membrane* in the throat in scarlatina is similar to aphthæ. (In many cases I have seen it in diphtheria the same.)	3d. Diphtheritic *membrane* is continuous and consistent. (*Empis.*)
(*a*) The white particle constituting it is detached with great facility.	(*a*) In diphtheritis the membrane adheres closely to the epidermis.
(*b*) The pseudo-membrane of scarlatina does not possess the invading property of diphtheritis. It remains localized at the point of its development.	(*b*) Diphtheritis extends frequently to the air-passages, where it becomes so suddenly formidable. It very often is seen in the Schneiderian membrane, the nose, the gums, intestinal canal, and anus, and also in wounds of the skin.
(*Laboulkue, V.*, Recherches Cliniques et Anatomiques sur les Affections pseudo-membraneuses, etc. Paris, 1861, referred to by *Dr. Ludlow*, says: "In certain cases of scarlatinal angina, especially when it is epidemic, the false membranes bear a close resemblance to those of diphtheria; they are thin, tenacious, consistent, and adherent; they may become reddish, brownish, or black in hue, and may assume a gangrenous appearance. Is this a complication with diphtheria, or a more aggravated form of anginal scarlatina?")	
4th. *Suppuration* of the glands of the neck is common after scarlatina.	4th. It is very rare in diphtheria. It occurred only in one out of five hundred cases in my practice.
5th. Anasarca is a common sequel of scarlet fever.	5th. Anasarca is hardly ever met with after diphtheria. I never saw a case. *Dr. Greenhow* met with one only.
6th. Arthritic affections are common after scarlet fever.	6th. They are never met with after diphtheria.
7th. Pericarditis is common after scarlet fever.	7th. Pericarditis is never met with after diphtheria.
8th. Paralysis occurs very seldom after scarlatina.	8th. Paralysis is very common after diphtheria.

In the differential diagnosis between diphtheria and scarlatinal angina, in the treatise of *Dr. F. G. Snelling*, it is said that in diphtheria the tonsils are covered with unmistakable false membranes, whereas, in scarlatinal angina, the tonsils are more bathed than covered with particles of membranous pellicles. In all slighter cases of diphtheria, as I observed in hundreds of instances, the tonsils look as if they had been brushed over by some white paint. Another characteristic is, according to *Snelling*, that the patches in *diphtheria* commence on the tonsils, and spread thence to contiguous parts, whereas, in *scarlatina angina*, the exudation, instead of commencing on the tonsils, simultaneously invades the whole cavity of the fauces, and even the posterior nares. This precise circumstance I have observed in numerous cases of diphtheria.

According to the same author, there is in diphtheria great tendency to attack the respiratory organs, whereas scarlatina has a tendency to attack the œsophagus. My experience in this respect has been above adverted to. *Dr. Snelling*, in summing up, however, asserts *that there are many cases which, without losing their character of scarlatinal origin, so assume the appearance of diphtheria, that it is impossible to distinguish them.*

The intimate relationship which exists between diphtheria and scarlatina is shown in many ways; the two diseases frequently coexist in the same house. In both, the throat symptoms are severe, and the constitutional irritation violent. Albuminuria also occasionally follows diphtheria as well as scarlatina. *Dr. Atkin*, of Hull, was the first to observe this. (*Dr. Jos. Kidd*, on Diphtheria, Brit. Jour. of Hom., vol. xvii., page 218.)

These characteristics of the two diseases are distinctive enough, but they may all be ascribed to the greater severity of the poison in scarlatina, where, when it attacks the brain, the patient may succumb in a few hours, or from one to two days, whereas, if it attacks the throat and fauces, it is of slower growth. In diphtheria, where the disease first pervades

the whole system and then finally manifests itself on the fauces, all phenomena are of slower growth. Both scarlatina and diphtheria, I have often observed, possess the power of propagation, if the least vestige remains in the system. Therefore the most active treatment can alone save the patient. If you have partially removed the throat disease by medicine, and you omit your remedies only a few hours, it will be after that time as formidable as ever.

H.—Diagnosis between Diphtheria and Croup.

DIPHTHERIA.	CROUP.
The great distinctive feature of diphtheritic croup is that it depends upon a peculiar blood crasis.	True croup is apparently not connected with any blood crasis.
Diphtheria commences in the fauces, and only reaches the windpipe by extension.	True croup commences in the larynx and trachea, and does not necessarily affect the soft parts of the glottis, (although in many cases the croup membrane can be seen in the back part of the throat.)
In the first period of croupy diphtheria, the cough is dry and sharp, the voice is low.	In membranous croup, in many cases the voice is almost extinguished.
In diphtheritic croup, during the second period, the respiration is difficult, but the cough becomes moist.	In true croup the cough has a dry and metallic sound, and is accompanied by fits of suffocation.

Bretonneau and nearly all the French writers consider diphtheritic croup and membranous croup as identical, particularly as croup, in France, is, like diphtheria, considered a contagious disease.

In the report of the proceedings of the Société Medical Homœopathique de France, held January, 1860, *Dr. Curie*, with *Dr. Cretin*, identifies croup and diphtheria, ascribing the difference in the respective membranes to their situation in each case, and the difference of the asphyxia to its suddenness in laryngeal affection. He asked whether, in contagions, the two supposed diseases did not equally transmit each other, the affirmation of which he considered as decisive of the

question. *M. Cretin*, without denying the distinct *forms* insisted on by *M. Raymond*, considered them, with *Dr. Curie*, as forms of the *same disease*, depending on the constitution and condition of the subjects, and calling for variations in the treatment. He pressed the fact that when, in "croup," the suffocation is prevented by tracheotomy, the patients very often sink slowly in an adynamic state, just as in "diphthérite." *M. de la Pommerais* had often seen, in the hospital for children, *a robust child with croup enter a ward where no diphthérite existed, and next day pharyngeal or nasal diphthérites broke out amongst the sickly ones.* Again, in a family, he saw a child die of "diphthérite" without "croup," and the latter form at once broke out in the two other children.

The great distinctive mark between diphtheria and croup, which is given in an admirable paper by *Dr. Ranking*, being in the locality of the two diseases, cannot be applied to this country; for I have seen over twenty-five cases of diphtheritic croup commence in the larynx. As these occurred during the prevailing epidemic, and were sometimes complicated with throat diphtheria, it is but rational to suppose they belonged to the same species of disease. *Bouchut* already remarks, that if we were to examine the throat of individuals afflicted with croup, we should probably, in every case, find the disease commencing at the throat in the first instance.

The question with regard to the different nature of croup and diphtheria is, therefore, still an open one.

I.—Diagnosis between Stridulous Laryngitis and Diphtheritic Croup.

It is important to establish a precise distinction between these two affections, which require entirely different therapeutical appliances.

Stridulous laryngitis is accompanied, like croup, by a dry, hoarse, sibilous, and more or less sonorous cough. The difficulty of breathing is extreme; the child appears as if about to perish by suffocation; still the larynx is free, and there cannot be any expectoration of false membranes. The phe-

nomena observed are purely nervous, they soon subside, and their progress is altogether peculiar. They appear suddenly, and in a very high degree of intensity, in subjects who are otherwise in good health or slightly affected with cold. They manifest themselves in the middle of the night. The paroxysm lasts about two hours, and is reproduced on the following two or three nights in succession, but it becomes gradually more feeble, and at last it disappears. Diphtheritic croup presents nothing like this, for the symptoms increase gradually, and suffocation presents itself only at the end of several days. The fits appear by day as well as by night, and they are reproduced as long as the false membranes in the larynx are not thrown up. Far from diminishing gradually, they become, on the contrary, more alarming every moment, and they terminate by carrying off the patient.

K.—Diagnosis between Diphtheria and Aphthæ. (*By Empis.*)

DIPHTHERIA.	APHTHÆ.
In diphtheria there is great force of cohesion in the membrane. True membranes are formed. The adhesion of the tissues is such that we are rarely able to detach them without causing the raw part covered by them to bleed in some measure.	Aphthæ present themselves in the form of a multitude of small white points, at first distinctly separate from each other, but which, in proportion as they become more numerous, touch one another, and are accumulated together so as to form a continuous whitish layer, which invests all the inflamed mucous membrane, and thus constitutes a pseudo-membrane. If we endeavor to detach this false membrane with a pair of forceps, we find it difficult to obtain strips of it, because each of the points adheres too slightly to the others; but if, with a fine compress, we lightly wipe the part, we easily remove all the whitish layer,[1] and we uncover the mucous

[1] I have often observed this in patients dying of consumption, when the aphthæ were thus easily detached, although they reappeared next morning.

The *diphtheritic* product has the greatest tendency to propagate itself over the mucous membrane of the air-passages, where its presence constitutes croup.

The appearance of *diphtheritis* is preceded by a very *circumscribed* irritation of the parts of the mucous membrane, which are completely covered by the pellicle.

Diphtheritis is preceded by a serous exudation, is never developed above the epidermis, and always adheres to raw parts.

membrane, which is red and inflamed, but by no means raw. As the adhesion to the mucous membrane is inconsiderable, there is no bleeding.

Aphthæ especially affect the buccal mucous membrane, and never extend to the larynx and trachea; there has been hitherto no example of aphthæ extending to the respiratory organs and producing croup, but they often extend to the pharynx and digestive canals.

Aphthæ are always preceded by a general inflammation of the mucous membrane of the mouth, characterized by a *general* redness and a very acute sensibility, which, in young children at the breast, presents an obstacle to sucking.

Aphthæ are never preceded by a serous exudation, but it appears in the mucous membrane when still covered with its epithelium.

L.—Pathological Anatomy.

I have made only two post-mortem examinations of the disease.

I. A professional friend called me in consultation in a case of a child, æt. 2, afflicted with the croupoid form of diphtheria. On examining the throat, the tonsils were found to be partially free from the exudation, but it had extended farther down the throat. His respiration was short and hurried, accompanied, every now and then, with a strangling croupy cough. His face was pale and swollen, as were also the submaxillary glands; and there was sopor. The case was evidently hopeless, and terminated fatally three or four hours after I saw it. This case was not very severe at the beginning; the violent symptoms appeared only during the last two days.

A post-mortem examination showed the membrane as having penetrated the larynx, trachea, and the smallest ramifications of the bronchia, for in all of them it could easily be detached in the softened state in which it was found. A specimen, a small piece of this lung, is still in my possession. One lobe of the lung was also hepatized, and there was a high state of inflammation visible along the whole course of the bronchia. All the other organs of the body were perfectly healthy.

II. In a case where the disease was apparently cured in the throat, it reappeared by sickness of the stomach, and complete poisoning of the whole system. The patient, a boy, æt. 12, died. A post-mortem examination showed the corrugæ of the stomach in a highly congested state, and covered with a softened diphtheritic membrane, extending, as far as I could perceive, through the whole alimentary canal. The liver was very much enlarged and also highly congested; the kidneys in the same state; the peritonæum not inflamed; the anterior part of the cerebrum softer than natural after death; the larger venous trunks engorged with blood, diffused through the parenchyma of the brain. Back part of the cerebrum more natural; cerebellum in a normal condition.

A resumé of the post-mortem examinations of *Bard*, *M. Louis*, *Ramsey*, *Greenhow*, and *Keller*, gives the following data:

The epiglottis and larynx generally were thickened; the respiratory mucous membrane reddened, the larynx, trachea and bronchia were lined with a tube of false membrane, which began in the pharynx and extended into the smallest traceable ramifications of the air-tubes. The exudation varies in consistency, from an almost liquid form to a more or less elastic membrane. It varies from a quarter of a line to a line in thickness (*Greenhow*). In one instance, *Greenhow* saw it two lines in thickness. In some cases it is so tough that it is difficult to tear it (*Bard*). There is generally more or less inflammatory effusion into the structures of the tonsils. The lungs were œdematous, not very crepitant, but floated in

water. The left pleura presented very extensive adhesions at its lower part; the right, only a few. The right lung was more congested than the left.

Professor Helmuth, of St. Louis, to whom we are indebted for three or four autopsies, speaks of a fluid gushing out from the trachea as soon as the knife penetrated the cartilaginous rings. "This transudation was sanious and frothy in character, and floating in it small particles of membrane were noticeable." The quantity was over a pint.

M.—Prognosis.

All writers on the subject agree that diphtheria is a very serious disease, and will often prove fatal in spite of all the remedies applied.

The croupoid form, where the disease attacks the trachea and bronchia, is considered particularly dangerous.

Bouchut remarks that when the false membrane, developed in the mouth, exists only on the epiglottis and at the superior opening of the larynx, the disease may be cured by suitable treatment. But if the products are extended to the trachea and bronchia, it is almost inevitably fatal.

Dr. Lea Williamson, of Mississippi, even maintains that all died when the disease invaded the larynx and trachea.

Drs. Greenhow and *Empis* agree with the above statements about the danger of the disease attacking the trachea and bronchia.

Empis relates a case of a child where the diphtheritis began on the point of the tongue, ran through its stages on that part, and disappeared on the thirteenth day, after a complete cicatrization of the affected part; then, on the fourteenth day, and when, by the disappearance of this local lesion, it might have been supposed that the child was henceforward out of danger, the mucous membrane of the larynx became the seat of a reappearance of the membranous exudation, and the patient was carried off by croup.

In a similar case occurring in my own practice, mentioned

under the head of Post-mortem Examinations, the disease was entirely cured in the throat, but a week later it returned, this time attacking the stomach and whole alimentary canal, and terminating fatally. Many such cases might be detailed in this place from various authors, both Allopathic and Homœopathic, showing the absurdity and uselessness, if not positive injury, of a mere local treatment in this disease of the blood. Nevertheless, I have cured about fourteen cases of the croupoid form of diphtheria, where the symptoms were not too severe.

As unfavorable symptoms, *Greenhow* also mentions, "complications with pneumonia, a brown or blackish appearance of the false membrane, hemorrhage from the nose, throat, and bronchial tubes or intestines, purpura, copious discharge from the nostrils, intense albuminuria, great swelling of the cervical glands, sickness of stomach or diarrhœa, especially at an advanced period of illness." All these symptoms denote, no doubt, the great severity of the disease, but if there is sufficient power of reaction they are not necessarily fatal.

With *Empis*, the paleness of the face, the feebleness of the pulse, and, particularly, the great prostration of strength, were signs of danger. He also remarks, that diphtheria is always serious when persons are already victims of an inveterate disease, and it may be followed by a fatal termination. Thus he has seen a child, affected with constitutional syphilis, sink rapidly under the influence of diphtheria.

The most fatal signs with me, during the Philadelphia epidemic, were complete want of appetite, or even aversion to food, with disposition to constant drowsiness and stupor. When these symptoms appear, the patient is not absolutely lost, but the physician who neglects to use the most active measures to restore the patient, *e. g.*, exhibiting the proper specific every ten minutes, with milk-punch, wine-whey, and other stimulants, will surely lose his case.

Sudden death in patients, whose symptoms apparently present nothing alarming, is one of the most remarkable features of this disease, and will caution us not to be over-sanguine

in our prognosis. I have met with several instances of this kind. In one case, where I was consulted, that of a little boy living in West Philadelphia, all the dangerous symptoms, the swelling of the cervical and submaxillary glands, and cellular membrane, the stupor, etc., had disappeared, and the patient was apparently getting better, when he suddenly died, as it were, from mere exhaustion. In another case, the disease had disappeared from the throat, and the patient was walking about, when he fell down suddenly and died. Quite lately, (May, 1865,) in another case of a little boy, aged four, in West Philadelphia, where I was called into consultation towards the close of the disease, the patient died very suddenly, with symptoms of anæmia and congestion in the spine and left lung. An hour before his death his symptoms were by no means alarming; he appeared much better. In three or four cases of the croupoid form in which I was consulted, the patients died very unexpectedly, without any apparent cause. A post-mortem was not permitted in most of these cases. One has been detailed under another head.

Dr. Greenhow remarks: "Sudden death in patients, the aspect of whose case is not alarming, or who appear out of danger, is a peculiar characteristic of diphtheria; and this circumstance has added greatly to the fear with which this disease has been regarded by the relatives of the sick and the public at large.

"*Mr. West* has sent me the history of a young woman, aged twenty, who presented herself as an out-patient of the Queen's Hospital at Birmingham, suffering from diphtheria. She declined to enter the hospital, but continued to attend, among the out-patients, for three successive days, on each of which she walked a distance of a mile from her home for this purpose. The throat improved in appearance daily; but, notwithstanding this amendment, she became weaker, and, returning home tired on the third day, she took some food and went to bed. She appeared very drowsy during the remainder of the day, was disinclined to exertion, refused nourishment, and continued in a dozing condition till the

following morning, when she asked for breakfast. Whilst being lifted to receive it, she fell back fainting, and died before assistance could be obtained."

Mr. Carr, of Blackheath, also mentions extreme suddenness of death as one of the most-marked characteristics of true diphtheria, and adds, that it occurs in an instant, when the patient has the power of sitting up in bed, of speaking and of swallowing. *Mr. Ritchie*, of Leek, had such a case, in which he had discontinued his attendance; the throat being well and the sick person apparently convalescent. The patient suddenly became worse; there was vomiting, the surface of the body was cold, and there was depression without hemorrhage or other ostensible cause. When visited, the patient sat up in bed and answered questions; but then, having laid himself back and stretched out his arms, he died before the medical attendant left the room. Sometimes sudden death has occurred after patients were able to resume active habits, and may, perhaps, have been induced by over-exertion whilst in the very depressed, anæmiated condition produced by the disease.

A boy, aged ten years, who had been suffering from diphtheria for five days, although well enough on the previous evening to hold the surgeon's horn, died on the sixth day of his illness. A carpenter's apprentice, convalescent from diphtheria, went home to visit his parents, who lived at a distance of three miles from his master's house. On his arrival he took a basin of bread and milk, went to bed, and died suddenly three hours afterwards. A man-servant, aged sixteen years, who had been ten or twelve days under treatment for diphtheria, seeming to be convalescent, obtained leave to go home and see his friends before returning to his occupation, and there died suddenly.

Dr. Bellyn mentions a case of this kind, that of a boy aged ten years, who, having been ill nearly three weeks, had so far recovered as to be able to go out, and on the day of his death walked to a farm-house at a considerable distance from his home. About ten o'clock the same evening, *Dr. Bellyn*, on

being summoned to see his patient, who had suddenly been seized with violent pain in the bowels, about an hour before, found him sinking from exhaustion. Although relieved by fomentations and other remedies, he died very soon after the visit. A post-mortem examination was refused. Convalescents from diphtheria cannot be considered out of danger until some time after the throat is well, and the very marked anæmia produced by the disease has disappeared. It is true that death, whether sudden or otherwise, usually occurs within a few days; but, according to *Greenhow*, sometimes as late as the sixteenth and seventeenth day of the illness. Such was also the case with the little boy from West Philadelphia, mentioned above.

N.—Sequelæ.

In the first place, it must be mentioned that, under a true Homœopathic treatment, there are no sequelæ of any consequence. In the great majority of the most malignant cases that I attended, the recovery was often slow, but no serious disease supervened. In a few of the more violent cases which recovered, a long-continued very fetid running from the nose and ear was observed. Patients liable to lung disease were afflicted with a cough which was difficult to cure. Chronic laryngitis and bronchitis were aggravated by the poison of diphtheria.

Among the other sequelæ are mentioned anæmia, impaired voice or power of deglutition, though rarely is there complete aphonia. I have observed several cases of anæmia, but none of aphonia, except for a short period of time. A husky, nasal voice is also very striking, according to *Greenhow*. I observed it only in one case. Paraplegia, hemiplegia, impaired vision and deafness are also mentioned among the sequelæ of diphtheria. One little boy, who was treated by a very good Homœopathic physician in the country, with strong doses of the *Biniodide of Mercury*, returned to the city with complete paralysis of the lower extremities, accompanied

with violent pain. A few doses of *Rhus. tox.* 3 restored him in two days.

Dr. J. B. Reynolds published in the May number of the American Journal of Medical Sciences, 1859, seventy-seven cases of diphtheritic paralysis.

Four children, who got very well over a violent attack of diphtheria, could not read *black letters* for a whole month. There was a complete obscuration of sight. These symptoms gradually disappeared without any remedies.

The most striking phenomenon after diphtheria is, according to my experience, an excessive prostration of strength. The convalescence is always lingering. The poison of the diphtheria has affected the whole nervous system.

O.—Contagion.

The special character of diphthérite according to *Bretonneau,* is the exudation, whence the name he has applied to the disease. No inflammation unattended by exudation is diphthérite. The virus of the membranous exudations, according to him, forms the distinctive pathological feature of the disease.

Bretonneau further asserts it to have been proved by numerous facts, that persons who attend cannot contract diphtheria unless the diphtheritic secretion, in the liquid and pulverulent state, be placed in contact with a soft or softened mucous membrane, or with the skin on a point denuded of epidermis, and this application must be immediate. In a word, a true inoculation is the only mode of transmission of the disease. On the other hand, he states that facts supplied by the epidemics of diphtheria which have broken out in the department of Indre et Loire, or which have extended to the surrounding departments, prove in the most evident manner, that the atmosphere cannot transmit the contagion of diphtheria.

Trousseau steeped a lancet in a false membrane which he had just extracted from a diphtheritic wound, and made a puncture on his left arm, and five or six on the tonsils and

velum palati. He found on his arm, on the seat of the puncture, that a vesicle was developed very similar to that of vaccination, but there was no result upon the mucous membrane.

Some physicians in England have experimentally inoculated dogs with the poison, without any very decided effect.

The opinion of the able *Bretonneau,* that the disease can only be propagated by actual contact, has received no support from subsequent observers. In no one instance have I seen the disease transmitted in this way.

During the five years that the disease has been prevalent in Philadelphia, it seemed almost to disappear during the summer months, but reappeared during the first damp, cold and rainy days of the autumn, attacking, according to constitutional idosyncrasies, more or less severely the younger members of families. It is of an epidemic miasmatic origin, but becomes, in time, endemic in certain localities favoring its growth. It becomes less violent and fatal in the course of time, but still occasionally will assert its ancient virulence. Like all contagious diseases, it is most easily communicated when concentrated in a family.

P.—Statistics.

From the accompanying table it will be seen that the wards on the outskirts of the city, with low grounds and marshes of stagnant water, near the Delaware as well as the Schuylkill, have the greatest mortality from diphtheria. Highest on the list stands the First Ward, with 137 deaths in a population of 30,886; next to that, the Twentieth Ward, with 132 deaths in a population of 29,963; and third, the Fifteenth Ward, with 119 deaths in a population of 32,091; all these during the last five years. On the other hand, the Second Ward, with a population of 29,123, has only 85 deaths; and the Seventh, with a population of 31,276, 92 deaths; the Eighth Ward, with a population of 27,770, 52 deaths during the last five years. The superior cleanliness of the Eighth Ward,

Statistics of Deaths from Diphtheria, Croup, and Scarlet Fever, in Philadelphia, during the years 1860, 1861, 1862, 1863, *and* 1864, *drawn from the reports of the Board of Health.*

The deaths from Croup and Scarlet Fever presenting phenomena similar to those of Diphtheria, we have added for the sake of comparison.

DISEASES.	Years.	Deaths, total.	Males.	Females.	Ages from under 1 to 15.	Ages from 15 upwards.	WARDS OF PHILADELPHIA.																							Unknown Wards.
							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Diphtheria....	1860	307	142	165	290	17	21	10	10	8	6	5	11	5	6	6	6	4	6	18	15	6	5	11	19	13	3	3	5	5	0	4
	1861	502	254	248	482	20	46	22	12	12	16	7	19	5	10	23	24	16	27	25	20	19	44	14	29	45	5	5	17	18	0	11
	1862	325	152	173	292	33	11	16	7	12	13	9	15	11	12	12	6	14	10	19	22	5	9	12	26	15	0	13	20	12	5	3
	1863	434	218	216	412	22	30	21	15	8	14	8	27	21	8	10	9	11	9	16	42	10	12	11	15	35	17	16	17	31	2	1
	1864	357	173	184	327	30	29	16	11	12	9	5	20	10	9	17	7	9	13	11	20	8	10	7	17	24	10	19	11	22	8	1
		1,925	939	986	1,803	122	137	85	55	52	58	34	92	52	45	68	52	54	65	89	119	48	80	55	106	132	35	56	70	88	15	20
Croup.....	1860	354	218	136	352	2	12	10	4	3	1	7	4	2	4	2	2	5	2	3	11	5	11	9	12	8	4	3	10	8	0	1
	1861	304	154	150	302	2	15	8	11	16	10	4	12	6	4	8	8	4	8	13	25	18	18	9	27	14	19	7	19	11	0	5
	1862	258	137	121	251	7	19	18	10	9	2	7	10	6	4	6	13	6	9	8	13	10	19	14	17	13	9	4	9	9	5	0
	1863	444	245	198	443	1	37	17	14	15	12	7	12	5	8	16	16	8	16	16	29	15	18	14	61	44	8	7	11	19	10	0
	1864	455	219	236	448	7	33	30	18	18	12	13	13	6	9	19	10	15	7	11	33	20	27	17	41	24	6	12	13	14	24	1
		1,815	973	841	1,796	19	116	83	57	61	37	38	51	25	29	51	49	38	42	51	111	68	93	63	158	103	46	33	62	61	39	7
Scarlet Fever.	1860	591	303	288	580	11	48	32	30	56	10	6	22	7	7	14	6	11	2	14	6	7	8	11	41	10	1	2	10	9	0	8
	1861	1,190	582	608	1,180	10	59	43	15	30	15	19	60	13	23	25	49	48	36	30	81	75	99	91	96	103	37	13	43	36	0	0
	1862	461	222	239	454	7	30	30	22	19	14	9	36	19	10	13	7	9	15	23	44	12	17	19	22	20	6	4	2	38	2	2
	1863	275	142	133	270	5	24	8	10	15	6	6	16	5	3	13	4	5	6	7	35	7	9	3	27	21	8	6	3	11	6	0
	1864	349	177	172	339	10	49	28	16	25	11	3	30	9	8	11	7	4	16	9	18	9	9	7	24	20	5	7	3	9	3	0
		2,866	1,426	1,240	2,823	43	210	141	93	145	56	43	164	53	51	76	73	77	75	83	184	110	142	131	210	174	57	32	61	103	11	10
Totals.....	.....	6,606	3,338	3,067	6,422	184	463	309	205	258	151	115	307	130	125	195	174	169	182	223	414	226	315	249	474	409	140	121	193	252	65	37

although of importance for the cure and prevention of all diseases, could not alone have caused this result, as it is the universal testimony of writers, that the disease is not produced by local effluvium or want of cleanliness. Sometimes children inhabiting the cleanest houses died, whilst those in filthy hovels escaped. *Dr. Greenhow* adduces many examples of this kind. My own experience corroborates his facts.

On the high ground of the Twenty-first and Twenty-second Wards the mortality is very small, 35 in the former and 56 in the latter during five years. A credible witness has also reported to me that in the parish of Terra Bonne, Bayou Plaquemine, Louisiana, in two plantations, containing 2,000 negroes, 400 died from diphtheria in one year, thus showing the influence of locality. The same per centage of death can be computed in the similar diseases of croup and scarlet fever in the same localities, and for the same reasons.

In New York City we have 422 deaths of diphtheria in 1860, and 453 in 1861. The later reports I have not been able to procure. The first mention of the disease in the City Inspector's Report (New York) of deaths was in 1857, with 2 deaths. In 1858 there were 5 deaths; and in 1859, 53 deaths.

As the different wards where the deaths occurred are not mentioned in the New York reports, we cannot state the influence of locality with regard to that city. In the report, obtained through the kindness of *Dr. Haynel*, for Baltimore, there were mentioned only 97 deaths from diphtheria in not quite three years. Baltimore, being situated on high ground, owes its small mortality, probably, to this cause.

I have also sought to obtain the statistical facts from Chicago, St. Louis, and Cincinnati, but without any result.

Mr. Ozanan has given a summary of thirty-nine diphtheritic epidemics, from 1657 to 1805, showing the mortality to be eighty per cent. The tables drawn by the Académie de Médecine, of epidemics, from 1805 to 1830, give a mortality of twenty-five per cent. On an average of later years the deaths have been about twenty per cent. *Seizures are most common from eight months to fifteen years of age.*

CHAPTER VI.

TREATMENT OF DIPHTHERIA.

Allopathic Treatment.

BEFORE I proceed to the specific Homœopathic treatment of this disease, let me glance for a moment at the older and the more recent Allopathic treatment.

Dr. Bretonneau. Abundant general and local bloodletting, emetics, blisters, and mustard pediluvia were prescribed without success in this dangerous disease. *Of twenty-one individuals attacked only three escaped death.*

The mercurial treatment, subsequently followed by him, was of no better avail. Large doses of *Calomel* were in some cases successful. To an infant at the breast, one grain was given every hour. A collar of mercurial ointment was ordered to be placed around the neck. *Castor oil* was given afterwards. The child recovered.[1]

The majority, however, it appears, died notwithstanding the exhibition of enormous doses of *Calomel.* The operation of tracheotomy was performed in many cases with but transient relief. In the epidemic of 1825, thirty-nine out of forty-six patients died. *Bretonneau's* remarks about the mercurial treatment are as follows: "The action of *Mercury* on the whole constitution was carried to such a point as to liquefy the blood, to produce hemorrhagic discharges, and to occasion gangrenous ulcerations on the surfaces which had been the primitive seat of the disease, *without the diphtheritic inflammation having been arrested in its course.*"[2]

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[1] Nothing is said, of course, of the deleterious effects of this medication upon the constitution of an infant.

[2] This experience of an eminent Allopathist may, perhaps, make some of our Homœopathic friends pause in their constant and undue use of the *Iodide of Mercury* which has no specific action on the disease.

In one case the treatment by *Calomel* was so little successful that *Bretonneau* remarks: "After seven days treatment and frequent injections, the nasal fossæ were still lined throughout all their extent by thick exudations. After a general and local mercurial treatment, the false membrane reached too near the orifice of the nostrils, and *on the thirteenth day of the disease we were unable to attempt its detachment, without exciting a flow of blood.*" Again, somewhat later: "In spite of all precautions, the consequences of the mercurial treatment became so formidable, under the influence of cold, that it would be desirable to modify the diphtheritic inflammation *by an agent, the subsequent effects of which would be less dangerous than those of the Protochloride of Mercury.*"

Bretonneau was, therefore, compelled to resort to some other less deleterious agent, and hit upon *Alum*, which, according to *Dr. Pommier's* affirmation, was a specific against croup. *Alum* is reduced to powder, and is introduced into the back of the mouth. It seems to have been of benefit only in the slighter cases. The mercurial hemorrhages, which one of the patients suffered, almost resembled those which are observed in yellow fever.

According to *Trousseau*, constitutional treatment can only be employed to remedy the general, never the local conditions, as if the local conditions did not depend upon the constitutional state of the system. My experience teaches me just the reverse. It is in the use of the topical remedies which are so powerful in most external diseases, that, according to him, the practitioner must confide, to effect a cure of diphthérite. In the first rank he places caustics: "*Nitrate of Silver, the Acid Nitrate of Mercury, Sulphate of Copper, Hydrochloric Acid;* after these, *Alum, Corrosive Sublimate,* and the *Chlorides of Potassium, Sodium,* and *Calcium.*" But he overlooks the fact that all of these drugs, if locally applied, exert, not merely a local, but also a constitutional influence upon the whole system. Several of the above-mentioned remedies exert, as is well known, a specific influence upon *diphtheria,*

particularly the *Nitrate of Silver, Muriatic* and *Nitric Acids,* and above all the *Chloride of Lime.*

Tracheotomy.—Trousseau advocates the operation because, out of *sixty* children, *eighteen* have recovered. "The only objection that can be offered," he says, "is the following: nothing proves that the children who survived would have died if they had not been operated upon. To this argument, I (Trousseau) reply, that almost all were operated upon in a state so near death, that it is impossible to believe that they could have lived, and that the symptoms were those which always announce a fatal termination; and this objection has no more value against tracheotomy in the case of croup, than against the same operation in the case where a foreign body is lodged in the larynx, or against the ligature or compression of a large vessel, which is allowing the escape of large quantities of blood; for, if the patient recovers, it may always be said he might have done so without an operation." *Bouchut* condemns bloodletting as dangerous in diphtheria, particularly in children. He also condemns tracheotomy.

Dr. Greenhow's Allopathic Treatment.—Dr. G. makes the following judicious remarks: "Observing that removal of the exudation, and the application of remedies to the subjacent surface, neither shortened the duration, nor sensibly modified the progress of the complaint, but that the false membrane rarely failed to be renewed in a few hours, I very soon discontinued this rough local medication to the tender and already enfeebled mucous membrane. The propriety of this course became evident at the very first post-mortem examination I had the opportunity of witnessing, and has been confirmed by all my subsequent experience. In the first place the application can but rarely extend to the entire diseased surface, and, in the next, the subjacent tissues are so deeply involved in cases of really malignant diphtheria that any application to the surface of the mucous membrane could apparently exercise no beneficial influence upon the disease." These observations show more wisdom than the practice of some of our Homœopathic physicians, who continue to make

these local applications. In one or two instances I have been tempted to make them, but acquiring sounder pathological views, and also finding the applications perfectly useless, I soon abandoned them. If the *Nitrate of Silver* apparently exerts a beneficial influence, it is owing to its undoubted specific action upon the disease.[1] In the very early stages of the disease, *Dr. Greenhow* derived much benefit from pencilling the throat with slightly diluted tincture of the *Sesquichloride of Iron.* He recommends for clearing the throat simple gargles of *Borax* and *Alum,* as well as salt. Emetics of *Sulphate of Zinc* and *Ipecac.* to begin with. After the operation of the emetics, the following have been found the most efficacious remedies: *Chlorate of Potash* in syrup and water; diluted *Hydrochloric Acid,* a minim for each grain of the salt; *Tincture of Sesquichloride of Iron,* dose proportioned to the age and condition of the patient.

Sesquichloride of Iron has been generally adopted by the (Allopathic) profession. When there is much depression from the beginning, *Sesquichloride of Ammonia,* decoction of *Cinchona,* wine, egg, or brandy.

In croup form: *Hydrargyrum cum Creta;* emetics of *Zinc;* operation of tracheotomy.[2]

Best nourishment: good beef-tea, chicken-broth, arrowroot, new milk, cream, eggs boiled up with milk, or wine, or brandy.

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[1] Only that caustic or other topical remedy can be permanently useful, which is most similar not only to the subjective symptoms, but also to the whole interior nature of the disease, with all its visible phenomena. Such a remedy might also be applied locally. But it must at the same time be used internally.

[2] The Allopathic school falls into the same error as some Homœopathic physicians in changing the remedy as the disease attacks different organs. Why should the treatment be changed? The essential nature of the disease remains the same, whether it attacks throat, brain, stomach or bowels, and must be met by the same specifics. A second remedy can only become necessary if a latent disease is called out by the diphtheritic miasma, or another acute disorder supervenes. In such cases, of course, another remedy will be absolutely necessary.

During convalescence: fish, chicken, solid food. If the disease creeps down to the stomach: *Bismuth* and *Hyoscyamus*, with fluid nourishment, especially new milk, eggs, and farinaceous articles of food.

Small doses of *Calomel* and *Dover's powder*, *Hydrargyrum cum Creta*. Sometimes diluted *Nitro-muriatic Acid* or combination with a light bitters, *Citrate of Iron* and *Quinine*.

In extreme anæmia: *Sesquichloride of Iron*, *Quinine*, a grain or two; *Sulphate of Quinine* with diluted *Sulphuric Acid*. Minute doses of *Strychnine* best tonic.

The epidemic which *Empis* witnessed was principally subdued by local treatment,—*Hydrochloric Acid*, *Nitrate of Silver* and *Nitrate of Mercury*. These agents, according to *Empis*, would limit the extension of diphthérite. But if, after this local treatment, diphthérite ceased to appear on the surface, and the wounds began to cicatrize, in many patients it would violently reappear and prove fatal.

He, therefore, would advocate the application of some general specific, and speaks of bloodletting and *Calomel*, which he found inadequate. The best effect he found from *Alum*, but confesses that as yet we are without any such remedy.

Dr. Ranking[1] condemns the solid *Nitrate of Silver* as a local application, but advises either a twenty-grain solution, or gargle of *Muriatic Acid*.

Internally he has great faith in the *Tinctura Ferri Sesquichloridi*. He also insists strongly on the necessity of wine in large quantities, believing that medicine is secondary to a vigorous support of the *general power by stimulants*. (*Partly true.*)

Dr. Daniel Dennison Slade, in his *Prize Essay on Diphtheria*, gives a summary of the treatment recommended by some of the principal practitioners of Europe and America.

Drs. Ranking, Hart, Kingsford, as well as most American

[1] "Diphtheria," a Lecture delivered at the Norfolk and Norwich Hospital, by *W. H. Ranking, M. D.* Cantab., 1859.

practitioners, recommend the *Tinctura Ferri Chloridi, Chlorate of Potash, Hydrochloric Acid,* and stimulants and tonics.

Drs. West, Temple, Camack, Thompson, Roche, and *Empis,* rely upon the local application of *Nitrate of Silver* or *concentrated Hydrochloric Acid.*

Dr. Perry: Oil of Turpentine, Carbonate of Ammonia.

Dr. Ramskill: Infusion of *Chamomile* with a few drops of *Kreasote* or *Liquor Calcis Chlorinatæ* to wash the throat; internally, *Chamomilla* with *Muriatic Acid.*

It will be seen that the chlorides play an important rôle in the cure of this disease. Almost all practitioners give it in different shapes and forms, and if there was not some success obtained, they would not constantly return to them. Even as a popular remedy a gargle of salt and water has been found eminently beneficial.

Finally, the Austrian physician *Bleyel* (Oester. Zeitsch. füer pract. Heilk., 1863, 13–15) has been very successful in the treatment of *diphtheria* by the local application of *Lime-water* and the internal exhibition of large doses of *Nitrate of Soda* and *Carbonate of Potash,* (℥j to ℥ij in a day.).

CHAPTER VII.

HOMŒOPATHIC TREATMENT OF DIPHTHERIA.

SECTION I.—BRITISH PHYSICIANS.

Dr. Suess Hahnemann. Biniodide of Mercury with External Application of Muriate of Iron. Successful Treatment.

Dr. Suess Hahnemann (British Jour. of Hom., vol. xviii., p. 652) relates the following case: "Miss S., aged nineteen, had, during the last two nights, been unable to sleep at all, so great had been the pain in the throat, and difficulty of breathing; the expression of her countenance was anxious, with staring eyes, and great external swelling of the submaxillary glands,

and left cervical glands; her pulse was very quick, skin burning hot, great thirst and loss of appetite; her voice was feeble and slightly hoarse, and her cough resembling that of croup. On examination, both the tonsils were found greatly enlarged and completely covered with a peculiar whitish exudation, which also covered the uvula and the whole velum palati. Her breath was intolerably offensive. I removed her myself by the next train to London, where I sought at once the assistance of *Mr. Engall* and *Dr. Dudgeon*, who both agreed with me that this was a most severe case of decided diphtheria, the prognosis of which was considered very doubtful. With regard to the treatment, which began on the 11th of July, it was thought best to follow the advice of *Dr. Madden*, and to administer ½ gr. of *Biniodide of Mercury* every two hours, as well as to apply locally to the exudation *Muriate of Iron* and *Glycerine*. As for the diet, the most nourishing food was recommended. The painting of the diphtheritic exudation caused, in the beginning, much pain, and seemed at first to render deglutition still more difficult. Continued fever and cough; no sleep, which the weakness and prostration increased, the smell remaining as intolerably offensive as before, so that doors and windows had to be kept continually open and the best disinfecting fluid freely used. On the 14th of July, part of the exudation in the velum palati was discovered to hang somewhat loosely to the mucous membrane underneath, and a fit of coughing brought it, the next day, clear away. On the 16th of July, another piece of membrane came away, and on the 17th the whole membrane which had enclosed the uvula came in one piece away." In continuation of the case, it will be sufficient to mention that the patient recovered, after several relapses, with great difficulty. In one of her relapses she discharged, under violent purging and vomiting, six yards of tænia. After her recovery she lost the use of her limbs, which were finally cured by *Dr. Trinks*, of Dresden.

Dr. Black. Biniodide of Mercury, First Tritur. Successful Treatment.

Dr. Fr. Black, in his able "Remarks on Diphtheria," (British Journ. of Hom., vol. xvi., p. 647,) publishes two cases treated with *Iodide of Mercury,* of which the first one recovered, and the other, being placed under Allopathic treatment, died.

"I. S. L., aged sixteen, a spare, delicate girl, living in a densely inhabited and low-lying part of Bristol, commenced to complain of sore throat on the 24th of August. She applied to me on the 27th. The tonsils are slightly swollen, and covered with a speckled mucous-like coating; the back part of the throat red; slight pain is experienced in swallowing, but the greatest complaint is of extreme exhaustion. To take 1 gr. of *Iod. merc.* every three hours.

"*August* 31*st.* The tonsils, the uvula, and back part of throat covered with a coating as if they had been smeared with a layer of starch which had dried; less pain in swallowing, weakness much increased; the patient can hardly stand, and she looks extremely ill. Pulse nearly natural. The throat was once dusted with about 2 grs. of *Iod. merc.,* and 2 grs. of 1st trituration ordered to be taken every two hours. As much nourishment as she can swallow.

"*September* 1*st.* Patient seen at her own house. The exudation is decidedly less marked. Repeat as on the 31st.

"*September* 3*d.* Hardly a trace of exudation. Two or three doses of *Iod. merc.* and then *China* for the extreme weakness. By the 7th the patient reported herself quite well."

Iodide of Mercury, 1. *Belladonna,* 3. *Bromium,* 1.

II. The second case, a little girl, aged seven, was doing well under *Iod. merc.* 1, *Bell.* 3, *Brom.* 1, when she was attacked by a fit of vomiting.

A member of the family, hostile to Homœopathy, placed her under Allopathic treatment, under which she died.

In the seventeenth volume of the British Journal, *Dr. Black* publishes nine cases which he alleges may be considered as a

sequel to those previously described. I shall give the result in his own words.

Dr. Black. Beneficial Action of Iodide of Mercury, 1.

"Cases I. and II. may rightly be regarded as illustrating the beneficial action of *Iod. merc.* 1, ½ to 2 grs. every two hours, for these cases presented the usual signs of a sharp attack.

Muriatic Acid of decided benefit.

"In my first notice of *diphtheria,* I gave less preference to *Muriat. ac.* than I now think it merits. In cases V. and VI., it was of decided benefit. I quite agree with *Dr. Kidd* in assigning it a prominent rank among our remedial means.[1]

"I was disappointed in the action of *Tinct. Mur. Ferr.,* but *Dr. Madden* and others speak very confidently of its curative power as a topical agent. The more the nature of *diphtheria* is studied," *Dr. Black* continues, "the less desire will medical men feel to employ such topical agents as act merely as caustics, and bear no Homœopathic relation to the general malady. If the disease invade the larynx, cauterization can be of little avail."[2]

Iodide of Mercury, 1. *Capsicum and Nitrate of Silver.*

A case of *Dr. Dudgeon's,* (a young lady aged fourteen,) published by *Dr. Black,* was doing well under *Merc. iod.* 1, alternately with *Capsicum,* and afterwards *Argent. nitr.* with *Nitrate of Silver* gargles; when the family, from some unaccountable whim, sent for an Allopathic physician who professed great experience of the disease in Boulogne, under whom she died very suddenly when sitting near a window.

Dr. Dudgeon concludes the relation of the case with the following remarks: "Of course, I cannot give this as a case

[1] I have also found *Muriatic Acid,* internally administered, of great use in *diphtheria,* but still inferior to *Chloride of Lime.*

[2] The above view with regard to the advantages of topical applications in *diphtheria,* coincides entirely with my own experience.

of successful Homœopathic treatment of diphtheria, as I had not an opportunity of treating the case to the end, *and it is just possible it might have died under my hands;* but still to me the case was very instructive, and the propriety of the treatment pursued was evident enough to myself, who watched the case with the utmost solicitude, (I saw the patient three or four times daily.)

"The subsidence of the enormous swelling, the detachment of the slough, and the evident arrest of the disease, were proof sufficient to me that the case was going on favorably under the remedies used, and the dietetic measures resorted to. The evident ill effects that ensued, when the food was omitted, showed me the importance of keeping up the supplies, both of nutriment and stimulus, in spite of the objections of the patient.

Ascribes success to Biniodide of Mercury.

"I think the *Nitrate of Silver* gargle did good, as the patient felt her throat clearer after its use, but perhaps any other gargle would have done as well.

"*I am disposed to ascribe to the Merc. biniod. the merit of the amelioration.* To it I accredit the rapid subsidence of the swelling, both outside and in, and the speedy detachment of the sloughs; and I would, from my experience in this case, earnestly advise those who have to do with this painful disease to give it a fair trial."

Biniodide of Mercury. Kali Bichromic. Favorable.

Dr. Madden (British Journ. of Hom., vol. xvii., page 230) remarks: "In diphtheritic sore throats I found *Mercurius biniodidus* and *Kali bichromicum* invaluable. Here I must take the opportunity of remarking, that the *Biniodide of Mercury* has, in my hands, succeeded much better in this complaint than any other mercurial preparation. When I sent my notes to *Dr. Black,* I observed that in true diphtheria I had found that *Mercury in every form did decided harm.* I had at that time tried *Merc. sol., Merc. corros., Merc. oxide rub.,* but I had

not used *Merc. biniodidus*, and I must say, that this last preparation has not disappointed me, even in the fully developed cases."

Dr. Madden continues: "We now come to the last and fully developed form of *true diphtheria;* and before describing the treatment which I have found so very useful in this dire disease, (I have not lost one patient since I adopted it, though I have attended at least three, which were, in all respects, similar to and quite as ill as the three boys, whose cases I recorded in *Dr. Black's* paper, and all of whom died,) I must revert a little to vegetable pathology, as it was by reasoning upon facts connected with horticultural experience that I was led to try the method which has proved so satisfactory.

"When referring to the wine mildew, I pointed out the fact that there must exist a proclivity to the disease in the plant attacked, in addition to the sporules of the oidium itself;—once, however, the oidium is established, its power of propagation is so great that no treatment directed to the tree can cure the disease. The oidium must be destroyed, or the crop will be lost. Treatment of the vine itself, is preventive. Destruction of the oidium must also be effected before a cure can be accomplished.

According to Madden, Local as well as General Treatment is necessary.

"In fully developed diphtheria ought we not to apply the same principle and attack the oidium in the throat as well as the constitutional malady? The Allopaths have attempted this by *Nitrate of Silver*, but I have met with at least two who have been disappointed with the results obtained with this substance; one in particular pointing out the fact that the deposit was rapidly reproduced upon the raw surface made by the caustic.[1]

[1] The same has happened to me in several instances when my views about the possibility of destroying the disease by local applications were the same as those of Dr. Madden.

"Some months ago it occurred to me that what we wanted was some application destructive of the oidium, but which would not injure the mucous membrane; and, while still undecided what remedy to try, I met with an account of the successful use of the *Terchloride of Iron* in this disease. At once the idea occurred to me that this remedy would answer the required purpose. The soluble salts of *Iron* are destructive to all vegetable growths, and the *Muriated Tincture of Iron* would certainly not destroy the mucous membrane, added to which, the fact of its having proved useful as a local application to *erysipelas*, seemed to militate in its favor. Accordingly, in the very next case of true diphtheria which fell in my way, I put the remedy to the test, and was much encouraged by the result. From that time I have treated all my cases as follows: As soon as the deposit begins to appear I direct the tonsil and velum to be painted over with pure glycerine three or four times daily, and about every twelve hours I apply the pure *Tincture of Muriate of Iron* (L. P.) with a paint brush to the whole surface affected. Internally I give the *Biniodide of Mercury* and *Bichromate of Potash;* and, in the event of prostration being very great, I give *Arsenic* 3*d dec.* and *Ammon. carb.* 1. As regards the supply of nutriment, I of course give as much as possible. With very young children, I direct glycerine to be given in half-teaspoonful doses four times a day, trusting to its lubricating the fauces on its way down the throat, and thus saving the little patients the worry and annoyance of the painting, which they dislike very much. I, however, have always applied the *Permuriate of Iron* with the brush, and have done it myself to insure its thorough application. Under this treatment, the swelling and redness of the mucous membrane steadily subsides, the excessive fœtor of the breath rapidly decreases, there is less difficulty of swallowing, and the deposit shrivels up, becomes loose and everted at the edges, and soon falls off. As yet, I have not seen a single case which has resisted this treatment, and I sincerely trust that my brethren will give the plan a fair trial, and meet with the same success."

According to Mr. Gelston, all Mercurial Preparations injurious in Diphtheria. Tincture of Aconite efficacious.

Mr. Gelston, (British Journ. Hom., vol. xix., page 417,) in an essay read before the Liverpool Med. Chir. Society, says: "I have been able to demonstrate to several of the members present, that *mercurial preparations* of *various forms,* in the higher and lower dilutions, in diseases of the throat with pellicular deposit and phagedenic ulceration, in an asthenic state of the system, instead of benefiting the patients, operated to their prejudice by an extension of the diseased action." He found *Tincture of Aconite* very efficacious.

Dr. Morgan. Successful Treatment by Iodide of Mercury internally administered, in alternation with Belladonna. Hydrochloric Acid as a local application.

Dr. Morgan (Monthly Homœop. Review, vol. v.) publishes a series of ten cases successfully treated by *Mercur.* and *Merc. iod.* in alternation with *Belladonna,* using *Hydrochloric Acid* as a local application.

Iodine most analogous to Diphtheria, according to Dr. Kidd.

Dr. Kidd (British Journ. of Hom., vol. xvii., page 214) remarks, "That the essential nature of the pathogenetic action of *Iodine* comes the nearest of all medicines to the special characteristics of diphtheria in its constitutional and in its local manifestations. Diphtheria plainly enters the blood through the air passages, and on its entrance exerts a violent local action on the pharyngeal mucous membrane at first, and subsequently on the laryngeal.

"The local action seems an expulsatory effort to cast out the poisonous miasm, and the constitutional result is of a depression on the nervous system, and of a disorganizer on the entire mass of the blood. The local and constitutional results are also sudden and severe at once, in most cases. In every one of those special peculiarities, *Iodine* is an exact analogue. The inhalation of its vapor causes sudden irrita-

tion of all the mucous membranes of the air-passages, nares, pharynx and larynx; it also excites on the mucous membranes a vesicular exudation of an acrid, excoriating nature.

"Few diseases require more prompt and vigorous treatment than diphtheria, in its more severe forms. If Hahnemann were alive to prescribe for it, he would be as likely to advise the lowest dilutions, in substantial doses, frequently repeated, as when he advised the strongest solution of camphor in cholera.

Muriatic Acid, next to Iodine, of importance, according to Dr. Kidd. Arsenic indicated in the last stage. Mercury. Ammon. Causticum.

"*Muriatic Acid* comes next to *Iodine* in the closeness of its pathogenesis to the symptoms of diphtheria, but it wants the peculiar, sudden, constitutional depression, and sudden irritation of the glandular system, which *Iodine* presents. The most decided action of *Muriatic Acid* is on the mucous membrane of the throat, which it causes to swell and become painful. It also produces a suffocating tightness of the chest with cough, but it does not excite coryza and profuse mucous exudation, as *Iodine*. In the last stage of the disease, *Arsenicum* is indicated, more especially when the swelling of the neck and throat is œdematous, as it often is; also when the odor is putrid, more from the throat and air-passages, not so much from *putrid salivation*. When this latter clearly exists, *Mercury* is the most closely indicated, but the practitioner must carefully distinguish this from the putrid exhalation of the air-passages from typhoid exhaustion, where *Arsenicum* is priceless and *Mercurius* worthless, worse than that, positively injurious. *Ammon. causticum* deserves most careful trial in the latter stages of diphtheria, from the singular homœpathicity of its provings to the disorganization of blood in the latter stages of the disease.

Nitrate of Silver in the Pharyngeal Variety as a Gargle.

"When diphtheria is altogether confined to the pharyngeal mucous membrane, it seems to me that gargling with a solution of *Nitrate of Silver* is called for most urgently, and called for also, strictly in accordance with the law of "*similia similibus curantur*," in its practical application.

"The appearance of the throat, in many cases of diphtheria, is singularly like that of a healthy throat after the application of a strong solution of *Nitrate of Silver*. Where diphtheria extends to the larynx, gargles seem quite uncalled for, and superseded by inhalation of the specific medicine, be it *Iodine* or *Muriatic Acid*."[1]

Stimulating Diet an absolute necessity. In Children, Nutritive Injections are best.

(Dr. Kidd prescribes in all cases of diphtheria a stimulating diet,—*e. g.*, port wine, claret, champagne, he considers but as stimulants. Occasionally, stout or pale ale, eggs beaten up with brandy, hot water and sugar; strong beef-tea mixed with port wine, according to the constitutional idiosyncrasies, are administered. I can, from my own experience, speak in the highest terms of the superior advantages of a stimulating diet; in fact no very severe case can get well without it. In the cases of children, who positively refuse to swallow, nutritive injections should be had recourse to *from the outset*. To use them effectually, they should be thrown above the sphincter, and only about one ounce at a time. The best injections are the yolk of an egg beaten up with a tablespoonful of new milk, and two tablespoonfuls of essence of rennet, or ounce of extract of beef, with a scruple of Boudautt's pepsine.)

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[1] Why *Iodine* and *Muriatic Acid* should be more specific in a blood disease pervading the whole body, when attacking the larynx than when only affecting the pharynx, it is not easy to perceive.

Bromine. Unsuccessful Treatment.

"A case of *diphtheritic croup*, in a child aged twelve months, was unsuccessfully treated with pure *Bromine*, internally administered, as well as by inhalation. The symptoms were, for four days gradually increasing hoarseness of voice, constant efforts to vomit, general prostration and tight suffocative cough. The structures behind the uvula formed one dense pultaceous mass of yellowish-white exudation, completely blocking up the top of the pharynx. Before the *Bromine*, the 1st decimal trituration of *Tartar Emetic* was given so as to increase the vomiting." (I have been consulted in four or five cases of diphtheritic croup where *Bromine* was freely administered, in large and small doses, without any effect. They all died. In one or two of my own cases, it was also administered without benefit. It would seem that *Bromine* has not much effect in diphtheritic croup, nor in diphtheria generally.)

Nitric Acid. Successful Treatment.

Dr. Kidd mentions several cases of superficial diphtheria as having been successfully treated with *Nitric Acid.*

Dr. Smith. Ammon. Causticum. Successful Treatment.

Dr. Smith, of Oldham, (British Journ. of Hom., vol. xviii., p. 160) treated, very successfully, several severe cases of diphtheria with *Ammon. caustic.* 1, after *Iodide of Mercury, Chlorate of Potash*, and *Nitric Acid*, had been fruitlessly exhibited. In the North American Journal, in "Elements of a New Materia Medica," the following post-mortem appearances, from the effects of *Ammon. causticum*, were given: "The nostrils were blocked up with an *albuminous false membrane;* the whole mucous coat of the larynx, trachea, bronchi, and even some of the bronchial ramifications, were mottled with patches of lymph. Hence it seems to produce a true *croupous inflammation.* The gullet and stomach showed red streaks here and

there, and there was a black eschar on the tongue, and another on the lower lip."

Of its general effects on the system we know very little. *Cantharides, Bryonia, Iodine, Hepar sulph.*, etc., also produce false membranes, and still are not so similar in all their manifestations as e. g. *Lachesis, Crotalus, Kali bichrom.*, and particularly *Chloride of Lime.*

Since writing the above we have met with *Dr. Bayes'* practical remarks on the use of *Carbolic Acid* and *Phytolacca decandra* in *diphtheria.* He comes to the following conclusion: "That *Carbolic Acid* lotion is the best means for removing false membranes from those parts which can be reached by it. That *Phytolacca decand.* gargle possesses the same power, but I have not yet treated a sufficient number of cases to be able to give an opinion on their comparative power. *Phytolacca* is pleasant, and every patient who used it said it soothed the throat, and was comforting to it, while all disliked *Carbolic Acid.* I think that *Phytolacca* will prove a most useful addition to our remedies for diphtheria, and hope that my own small experience of its value will induce others to test its powers."

Section II.—French Physicians.

Discussions of the Société Médicale Homœopathique de France.

Dr. Curie on Bryonia.—The French Homœopathic physicians, as appears from the discussions of the "Société Médicale Homœopathique de France," held January 16th, 1860, have employed only to a very limited extent the mercurial preparations, and the *Iodide of Mercury* not at all. They relied chiefly upon *Lachesis, Bellad., Bromine, Iodine, Hepar sul.*, etc.

Dr. Cretin. Unsuccessful Treatment by Belladonna, Lachesis, Hepar Sulphuris, etc.

Dr. Cretin (in the Bulletin de la Société Médicale Homœopathique de France, vol. i.) publishes some severe cases

which proved fatal. They were treated with *Bellad.*, *Lachesis*, *Hepar sul.*, *Nux vom.*, *China*, *Arsenic.*, and *Corrosive Sublimate*, *Dr. Cretin* ascribed death in all these cases to the same cause, viz., *to a poison infecting the general system, and not to the local disorder.* He protested, from sad experience, against cauterization, and quoted *Mr. Marshal* to the same effect. He recommended Homœopathic treatment exclusively.

Dr. Curie claims for Bryonia the merit of being a Specific for Diphtheria, "par excellence."

Dr. Curie was disposed, if there must be a "specific" admitted for diphtheritic affections, to claim the merit for *Bryonia*, having only lost one case out of twenty-five, in the winters of 1857–58 and 1858–59. For the dose, he gave a child six years old, six drops of the mother tincture, in eau sucrée, during twenty-four hours, in fractional doses every hour, averring that throughout the treatment generally the malady is arrested in twelve hours, *i. e.*, false membranes cease to form, respiration is freer, and the mucous surfaces less dry. Thenceforward, all that is not yet organized gradually separates, and generally in forty-eight hours, at the latest, the false membranes, *which have any consistence*, begin to detach themselves, and this goes on perhaps for a fortnight, whilst others disappear completely in from forty-eight to seventy-two hours. He objected to tracheotomy, except where death from suffocation is imminent. In the absence of *M. Teste*, he acknowledged our obligations to him for having, some years ago, made known the value of *Bryonia* alternated with *Ipecac.*, though he (*Dr. Curie*) gave all the credit to *Bryonia.*

M. Cretin succeeds with Bryonia. M. Raymond finds Belladonna efficacious. M. Molin protests against Generalization.

Dr. Curie claims on behalf of *Bryonia* "a real specific power over diphtheritic affections in general, on the ground of its pathogenetic property of *forming false membranes*, which the other medicines do not, (though he had something

to say in favor of *Bromine.*) *M. Teste* has cited an example of a person in whom were seen false membranes in the mouth, developed by *Bryonia. Orfila,* in his *Treatise on Toxicology,* gives an instance where they appeared on the retina in consequence of an injection of *Bryonia.* But as this medicine passes for an irritant, it may be asked whether these membranes are not the result of local action. Now here are some preparations which I have the honor to present to you in support of the contrary opinion. They are the tongue, the trachea, and the lungs of a rabbit, to which I administered *Bryonia* for eight months; at first giving two drops of the tincture per day, a dose which I progressively augmented to two hundred and fifty drops at least. You can see that there is formed a pseudo-membranous firm tube, which lines the trachea, and on the one hand penetrates the second and third ramifications of the bronchia, and on the other hand, lines the whole of the larynx. Some false membranes existed also in the mouth, at the base of the tongue, but these not being so strongly organized, have disappeared in the alcohol; one can, however, ascertain the red spot which formed their point of attachment. It cannot be supposed that we have to do here with a mechanical action; the penetration of an irritant liquid into the bronchia could not produce such an effect without also producing a deep disorganization of the tissues; besides the effect commenced with the mouth." *M. Cretin,* in the same discussion, confirmed the views of *Curie* with regard to *Bryonia;* he performed several splendid cures with it. *M. Raymond,* in the severe epidemics of 1858–59, at Paris, found *Belladonna* equally efficacious. The tonsils diminished rapidly, and then the false membrane broke and came away, as if under some mechanical influence. He insisted strongly on the specificity of *Belladonna. M. Molin* protested against the proposed generalization regarding *Bryonia,* on the ground of an anatomical symptom which, he had no doubt, we should find *equally produced by some other substances; these, he added, ought to be made the subject of similar experiments.* He pressed

the paramount importance, always and everywhere, of individualizing both the medicine and the malady.

Dose.

Dr. Curie explained his preference for the mother tincture, on the ground of the acute and rapid character of the disease in those instances. *Dr. Cretin* intended shortly to support this view by numerous observations, and alluded to two serious cases where the 18th and 10th dilutions, and 3d and 1st triturations were all tried, with *manifest superiority of the lower.*[1] The medicine was *Hepar.*

Laryngitic Croup. Unsuccessful Treatment by Hepar, Spongia, Iodine, Phosphorus, and Bromine.

Dr. Malaper du Peaux relates a case where *Aconite* and *Merc. viv.* 3 removed the angina, after which all the symptoms of laryngitic croup set in. He tried according to indications, *Hepar, Spongia, Iodine, Phosph., Bromine*, all in vain. On the ninth day of the croup, she died asphyxiated, with no trace of false membrane in the mouth or pharynx. He now relates several cases of diphtheria with swellings of the submaxillary glands and tonsils, enlarged and covered with false membrane. These were all successfully treated by *Dr. Teste's* remedies, *Ipecac.* and *Bryonia* in alternation.

Section III.—German Physicians.

Apis Mellif. Dr. Baehr's Indications for Different Remedies.

Dr. Bernhard Baehr, in his "Therapie nach den grundsaetzen der Homœopathie," is opposed to the local treatment of diphtheria, for the reason that it is a disease pervading the blood. With the same right, he truly says, we might use caustics to the small-pox patients. He seems not to be prac-

[1] This is my experience in almost every instance, after most faithful and exhaustive trials.

tically acquainted with the disease, and merely quotes the experience of other, particularly British, physicians.

Apis Mellifica. Successful Treatment.

Dr. B. also notices *Dr. Bauman*, who in a number of cases of diphtheria had remarkable success with the *Apis mellifica*. *Dr. Baehr* observes that the symptoms do not indicate this remedy. The *Apis* was given in the 15th dilution, one drop every two hours. As mentioned several times before, in the slighter cases almost any remedy will cure.

Dr. Baehr's Indications for different Remedies.

Dr. Baehr sums up the treatment of diphtheria according to the different indications of the remedies, as follows: In the beginning, *Belladonna;* after the formation of the membrane, *Merc. jodatus*, and afterwards *Kali bichromicum* and *Bromine*. In gangrenous destruction of parts, *Arsen.* and *Kreasote*. In less malignant cases, *Mercur.* or *Acid. phosph.*, *Acid. nitric.* and *Acid. muriatic*. In very slight cases, *Kali chlor*. Against the excessive weakness after the attack, *China*.

Dr. Meyerhoffer[1] (of Nizza) maintains that *Mercur.* and *Belladonna* had not the slightest influence on the pseudo-membranous process, but he found a solution of *Bromine* very efficacious.

Bromine successful.

The symptoms were the following: anxious expression of countenance; the voice hoarse; respiration oppressed and whistling; pulse 120, small.

The left tonsil was entirely covered with a cheese-like yellowish-white exudation; the right tonsil with a transparent, white, plastic formation; tongue coated white; albuminuria of the urine.

The disease was constantly on the increase until *Bromine* was exhibited.

[1] Neue Zeitschrift fuer Hom. Klinik, vol. xii., No. 7.

The family was decidedly scrofulous. For the subsequent weakness, great frequency of the pulse in the evening, burning hands, *Chin. arsen.* 2 was prescribed, with great benefit.

The appetite returned; and Bordeaux wine in small quantities, with good diet, entirely restored her.

The four younger sisters were attacked by the same disease. A solution of *Bromine* restored them. The croup symptoms did not appear. These cases were, no doubt, diphtheria; but not of the most severe kind.

In some cases, a solution of *Bromine* was applied to the membrane externally by a sponge. The author himself confesses that his cases were merely *approaching* the malignant form.

Bryonia.

In two still slighter cases, tincture of *Bryonia* was exhibited with benefit. The author truly remarks that they might also have got well by a mere expectant treatment. This remark will, therefore, also apply to his cases with *Bromine.*

A very interesting article on this disease is furnished by *Dr. Trinks,* in the "Neüe Zeitschrift fuer Homœopathische Klinik," August and September numbers. He gives a short but accurate historical account of the spread of the disease. He also considers the disease as contagious. "When one member of a family was attacked, the rest generally also took the disease." The different forms of the disease, as described by *Dr. Trinks,* differ in nothing from our Philadelphia epidemic. I may, therefore, aptly pass it over. I will only remark here that *Dr. Trinks* saw the disease, in the case of a little girl nine years old, on the labia pudendum.

Dr. Trinks makes one remark with which I cannot coincide, because my experience has taught me differently. He says that "the diphtheritic process never passes the boundary of the soft palate; the hard palate, the whole roof of the mouth and the surface of the tongue are never affected by it." On all these parts I found unmistakable diphtheritic deposits, in all malignant cases.

Brom., Phosph., Tart. stib., Carb. veg. Unsuccessful.

An interesting case is related by *Dr. John Schweikert*, of Breslau, Silesia, where the diphtheritic process had commenced in the larynx and trachea, and thence had spread itself upwards instead of downwards, as is generally the case. *Brom., Phosphor., Tart. stibiat., Carb. veget.*, were of no avail. The patient, a boy of six years of age, died.

Dr. Trinks on the Malignant Form.

With regard to the malignant form, as *Dr. Trinks* observed it in Dresden, it is characterized by the following phenomena: "From the very beginning there is a violent synochal fever, with strong membranous formation on the tonsils, the soft palate, the pharynx, extending as far as the nasal cavities, the Eustachian tubes, the œsophagus, larynx and trachea. There is, at the same time, a diphtheritic exudation in the vulva and on wounds of the skin. At the same time there appears fœtor oris, inflammatory swelling of the submaxillary glands, and salivation, and great prostration of strength. Finally, paralysis of the heart, if death does not ensue sooner by suffocation."

With regard to the treatment of diphtheria, the Allopathic school, according to *Dr. Trinks*, has had no success, either by their internal remedies or external applications. He justly condemns the application of *Argent. nitric.* in so many diseases, by that school, averring that the disease is often transposed to some internal organ, where it sooner or later makes its appearance with double force.

Dr. Trinks also confesses that among the many Homœopathic remedies, there is not one that can be decidedly pronounced a specific, enabling us to annihilate the poison in the blood.

Dr. Trinks, referring to the use of *Bryonia* in diphtheria by *Curie*, thinks that the exudations produced by *Bryonia* are more of a serous nature, and therefore not applicable to diphtheria.

Dr. T. enumerates a great number of Homœopathic remedies

as having been prescribed by different Homœopathic physicians; but I shall only give his own experience in this disease.

Belladonna and Apis Mellifica, at the commencement.

He recommends *Belladonna* and *Apis mellifica*, as useful at the beginning of the disease, and in the slighter cases.

Mercur. s. H. beneficial in all fully developed cases, but not in the Croupy form.

Mercurius sol. H., in the first or second trituration, is beneficial when the formation of the membrane has commenced, and is visible on the tonsils, soft palate and throat, and even if the mucous membrane of the larynx, trachea and bronchia is affected. No good effect will be obtained from *Mercury* if the disease has increased to a violent croupy cough.

Merc. Corros. Subl.

According to *Dr. Trinks, Merc. corrosiv. sublim.* has been used with success in St. Petersburg, by Homœopathic physicians.

Cyanuretum Mercurii—very favorable results.

The *Cyanuretum mercurii* was used with very favorable results by a very talented Homœopathic physician, *Dr. Berk*, in St. Petersburg. This knowledge was derived from its toxicological properties.

Acid. Nitric. highly spoken of.

Dr. Trinks speaks very highly of *Ac. nitric.* in the most malignant cases.

Also, Kali Bichrom.

Dr. T. avers that *Spongia, Iodine* and *Bromium* are of no use in the croupy form, but considers *Kali bichrom.* of great importance. When the diphtheritic process penetrates the bronchia, *Mercurius sol. Hahnem., Lobelia* and *Senega* are to be thought of.

A necrotic state of the local disease is to be met by *China, Arsenic, Carbo vegetabilis, Kreasote. Phosphorus* is to be employed in the paralysis of the heart which suddenly appears.

Wine, Camphor, etc., absolutely necessary in the state of Collapse.

After the removal of the local disease, in case of collapse, coldness of extremities, with sudden sinking of the vital powers, the pulse, etc., *Camphor, Moschus, Wine* must be employed. I have used these agents with the greatest benefit in similar cases; particularly the wine. Some cases cannot be saved without them.

In the sequelæ of the disease, *Dr. Trinks* has found *Cocculus, Argentum nitric.* and *Nux vomica* useful in paralysis. He also refers to *Anacardium, Arnica, Baryta muriatica, Phosphor., Plumb. ac., Rhus, Secale cornut., Stann., Sulph., Zinc.*, and *Electricity.*

Dr. T. is in favor of large doses, by which alone this malignant disease can be destroyed. During the period of convalescence, a nourishing diet is of great importance; also, a sojourn in mountainous regions free from malarious influences.

During the meeting of the "*Central Union of the Homœopathic Physicians of Germany*," held in August, 1864, at Brunswick, diphtheria was the subject of discussion. *Dr. Goldman* opened the discussion by the relation of a case cured by *Iodium*, which *Dr. Baehr* (the author of the new Homœopathic Therapeutics) did not consider diphtheria at all, but simply croup.

The different physicians, *Weber, Baehr, Elwert*, and *Bonhoff*, seemed unable to unite on the differences between *croup* and *diphtheria.* Some thought it could not be diphtheria, unless there was an absolute dissolution of the blood, a gangrenous destruction of the mucous membrane; whilst others, like *Elwert*, of Hanover, alleged that destruction was not necessary to constitute the disease diphtheria.

Merc. Iod. and Ac. Muriat. successful. Cuprum.

With regard to the application of different remedies, *Dr.*

Baehr found *Merc. iod.* and *Ac. muriat.* of benefit. The subsequent paralysis was cured by *Cuprum*. *Elwert* gave in most cases *Belladonna*, *Hepar* and *Spongia*, with good results.

Dr. Fisher treated twenty-two cases, some of them of a malignant form, with *Apis mellifica* 200, without losing a single case.

(It seems that in Germany, as well as in this country, all cases of diphtheria were invariably cured by the high dilutions, no matter what was the remedy used. It must be, therefore, sheer obstinate blindness on the part of the other physicians to shut their eyes against these facts, and not also employ them when they thus would be enabled to cure all their cases.)

Dr. Schneider treated a case, which at first appeared very slight, with *Arsenic*. Without his being aware of it, it soon assumed a very dangerous form, and the patient died. Some other cases which he treated more carefully, he succeeded in arresting by *Bromine* and *Arsenic*.

Apis Mellifica successful.

Dr. Kallenbach also speaks favorably of the action of *Apis mellif.* in diphtheria.

Arsenic and Mercury unsuccessful. Ac. Muriat.—favorable account.

Dr. Borchers, of Bremen, saw no good results from *Arsenic* and *Mercury*, but speaks very highly of *Ac. muriaticum*.[1]

Ice.

Dr. Bonhoff speaks favorably of the employment of *ice* in diphtheria. (I have used it in many cases with great benefit.)

Dr. Kunkel, of Kiel, has treated the disease successfully with *Kali bichrom.* and *Mercury* in the second and third triturations. He was not able to give distinct indications for these remedies. (No doubt of it. The characteristic symptoms of this blood-

[1] This corresponds with my own experience. Next to *Calc. chlor.* and *Kali bichrom.*, I have seen more beneficial effects from *Ac. muriat. dil.* than from any other remedy.

poison are the same in all cases, only modified by constitutional idiosyncrasies, which require special treatment.)

Dr. Kafka, of Prague, in his "Practice of Medicine," speaks of *Chin. arsenic.* 3 as having been of extraordinary service to him in scarlatina sore throat, and suggests that it might be equally beneficial in epidemic diphtheritis.

From the account which I have given of the treatment of diphtheria in Germany, it may be presumed that that country has by no means been visited by the most malignant form of this disorder. Very few or none of the cases described seemed to possess the extremely dangerous character of the cases prevalent in this country.

Section IV.—American Physicians.

J. P. Dake, M. D., of Pittsburg.

Dr. J. P. Dake, of Pittsburg, classifies diphtheria according to the following groups of symptoms, and varies his treatment accordingly.

1. Sensation of soreness of the throat, heat and dark redness of the tonsils, uvula or contiguous parts, and difficult deglutition, preceded by more or less chilliness, and accompanied with fever, and often with headache also. (This, of course, is the disease in its undeveloped state, as he himself mentions.)

Belladonna and Capsicum.

Remedies employed in this form: *Belladonna, Capsicum,* (with a combination of 1st, 7th, 14th and 31st dilutions.)

2. In addition to the symptoms enumerated above, considerable swelling of the tonsils, submaxillary and parotid glands, nasal obstruction, or fluent coryza, with a general feeling of soreness and languor, and sometimes, also, stiffness of the neck. Remedies: *Mercurius iod. 3d dec. trit.*, in alternation one day with *Belladonna*, and the following with *Capsicum*, giving one dose of the *Mercurius iod.* to two of the other remedies, and at intervals, between doses, of two hours.

Borax, Capsicum, and Belladonna.

3. Disordered stomach, loss of appetite, aphthous (?) ulcers on the tongue, in the buccal cavity, or on the tonsils and palate; soreness and pains in the epigastrium, occasionally with diarrhœa; the pulse generally rapid and small, with moisture of surface, and general debility. Remedies: in third or aphthous form, *Borax*, second trituration, in alternation with *Capsicum* and *Belladonna*. When there is much feverishness, he prefers *Belladonna* with the *Borax;* when there is great burning in the mouth and throat, *Capsicum* is better.

Malignant Form.

4. In addition to the symptoms in groups 1 and 2, and sometimes succeeding those of 3, white elevated spots on the tonsils, uvula, arches of the palate or posterior wall of the pharynx, appearing like the mucous membrane raised, thickened, hardened and whitened, in patches varying in size from the smallest fish-scale to that of a piece of white kid sufficient to cover the entire throat and half the buccal cavity. These patches have a border of deep red, and when removed leave a raw, rough, and bleeding surface. They sometimes form and spread very rapidly. Under successful treatment, they loosen, break, and are thrown off in fragments, with a sanious and bloody discharge. The breath is very offensive, the pulse small and generally rapid, with copious perspiration, and in the later stages there is extreme debility. (This is diphtheria in its fully developed state.)

Nitric Acid, Belladonna, and Capsicum.

Remedies: *Nitric Acid* 1, in alternation with *Belladonna* and *Capsicum*.

Croupoid Form.

5. Constant dry cough provoked by swallowing, and worse when lying; hoarseness and rasping respiration, such as characterize membranous croup.

These symptoms sometimes appear just after, or in connection with, those given in groups Nos. 1, 2, 3 or 4.

Bromine, Belladonna, Aconite, Nitric Acid, Spongia, Hepar Sulphuris, Kali Bichrom., Iodine. Not Favorable.

Remedies in this form: *Bromine* 2, in alternation with *Belladonna;* sometimes with *Aconite,* or occasionally with *Nitric Acid.*

Dr. D. also employed *Spongia, Hepar sulphuris, Kali bichrom.* and *Iodine,* in this form, without any very favorable results.

Ulceration of Nasal Ducts and Schneiderian Membrane. Ammonium Caustic.

In cases attended with great irritation of the nasal ducts, and ulceration of their lining membrane, he employed *Ammonium caustic.,* with very gratifying results.

He gives a tabular view of his cases, with the results of treatment as follows:

Class.	Number of Cases.	Recovered.	Died.
1.....	12	12	
2.....	40	40	
3.....	51	50	1
4.....	74	72	2
5.....	16	12	4
	193	186	7

Dr. Dake's practice of alternating *Belladonna* with all remedies in every group, we conceive to be a good one, for the great affinity between diphtheria and scarlatina cannot be denied.

In addition to the above observations, I will add here some remarks from a letter received from *Dr. Dake* in October, 1862:

"He who looks for remedies that will cure every case of diphtheria, looks in vain, for they can never be found. There are persons who, if attacked by this disease, will die under

any method of treatment, and with any remedies. So also with scarlet fever. The last fatal case that has been under my treatment, was that of a bright girl of sixteen. She was evidently of a scrofulous diathesis, though generally presenting ruddy cheeks and the ordinary appearances of health. The left tonsil, arch, and pendulum of the palate, and the left and posterior walls of the pharynx, were inflamed and then covered with the peculiar diphtheritic patch. The false membrane was successfully removed; also the hoarseness and difficulty of breathing, by my ordinary remedies. There was apparently a fine recovery in progress, when suddenly, on the morning of the nineteenth day, she began to feel cold, experienced great oppression in the region of the heart, felt nausea and a sense of sinking. I was called, but did not arrive till she had been some time dead. The day before her death, she complained to her sister of palpitation of the heart. From all I could learn, I have been of the opinion that she died of *paralysis of the heart*,—a failure of it to pass the blood through its wonted channels."[1]

Dr. B. Ehrman, in a letter to the author, dated Cincinnati, November, 1862, states that the reports of the Board of Health had ceased for some time in that city, and therefore he could furnish me with no statistics with regard to the mortality of diphtheria in that city.

Mercurius Iod. 2, *Kali Chlor. pur., in aqua.*

Dr. Ehrman relies chiefly upon *Mercurius iod., 2d trituration*, and *Kali chloric. pur.*, in water. With the last remedy, he alleges that he has been particularly successful.

Efficacy of Iodide of Mercury.

Dr. H. D. Paine, of Albany, N. Y., in his interesting report published with the Transactions of the American Institute of Homœopathy, speaks highly of the beneficial effect of

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[1] See the observations of *Dr. Peterson*, on a subsequent page.

Iodide of Mercury in diphtheria. I shall give the following account of his treatment: "The immense value of *Iodide of Mercury* in this disease will be easily understood by those who have experienced its efficacy in analogous diseases. We have given it mostly in doses of the first trituration, and the effect in arresting and detaching the false membranous formation has been, in many cases, most gratifying.

Belladonna and Rhus.

"Generally *Belladonna* or *Rhus* have been continued at intervals,—during the stages of febrile excitement,—the choice between the two being affected by the character of the fever, as well as by the appearance of the throat.

Arsenicum, Stibium, and Spongia.

"*Arsenicum* was given when, with the fetid breath, the lining of the nostrils became affected, and discharged a viscid, foul secretion, and there was great and increasing prostration of strength. When the inflammation, and consequent deposit, extend to the trachea and threaten to carry off the patient with the usual symptoms of the croup, the remedies that have been most successful in combating this alarming state of things have been *Stibium* and *Spongia*."

Drs. Ludlam and *Helmuth*, in their respective treatises, speak of having used the *Proto-iodide of Mercury* with success in some of the worst cases. In other cases, *Helmuth* found this and other remedies without avail.

Biniodide of Mercury—reliable remedy.

Dr. J. C. Peterson, of St. Johns, N. B., enters the list of the champions for the *Biniodide of Mercury* in diphtheria, and publishes three cases to illustrate its action. He says: "The remedies which have been most successful in my hands have been *Biniodide of Mercury*, given in doses of one-fifth to one-tenth of a grain, frequently repeated; *Hepar sulph.* 1, and *Iodium*, in doses of from one to five drops. Should the primary fever be severe, I have exhibited a few doses of *Vera-*

trum viride, and occasionally I have given *Belladonna*. But I have found that the *Biniodide of Mercury* is *the* reliable remedy, and I feel assured in stating that it has in many instances arrested the disease."

Iodide of Mercury unsuccessful. Nitric Acid.

Dr. J. Davies, of Chicago, Illinois, publishes, in the North American Journal of Homœopathy, three malignant cases. In the first case, rather severe, with the usual symptoms, that of a young lady of sixteen, he employed at first *Mercurius iod.* 1, in alternation with *Arsenicum* 1, with a wash of the *Chlorate of Potash*. He says that an improvement was manifest. Notwithstanding, he changed the remedies, on the fourth day, to *Nitric Acid* 1, internally, and strong *Nitric Acid* externally. We presume, therefore, that from the first remedies the improvement was not very lasting.

Iodide of Mercury, Gelseminum, Nitric Acid, Chlorate of Potash, Apis Mellifica, and Nitrate of Silver.

In the second case, that of a gentleman aged thirty-two, *Iodide of Mercury* 1, in alternation with *Gelseminum* 1, was given in water. He was better on the third day, but worse on the fifth; whereupon the treatment was changed to *Nitric Acid*, externally and internally. After a week he found it necessary to alternate the *Nitric Acid* with the *Chlorate of Potash*. In the third week he also applied *Nitrate of Silver* to the membranous deposit, and gave *Apis mellifica* and *Chlorate of Potash* internally, which completed the cure in the third week.

Chlorate of Potash and Iodide of Mercury, successful.

Under No. 3 was mentioned a family of six children, the youngest of which was eight years of age, all of whom were treated successfully by the *Chlorate of Potash* and *Iodide of Mercury*. The cases do not appear to have been very malignant.

Although these cases cannot be held up as models for imitation, I do not blame our colleague, who, in a dangerous and

often fatal disease, like diphtheria, so often changes his remedies. We are only too glad to save life.

I have only quoted these instances to show that *Iodide of Mercury*, although used with faithful perseverance, does not always even arrest the progress of the disease, and other remedies have to be tried to effect that purpose. A clear, decided effect of the remedy was by no means perceptible.

Iodide of Mercury. No striking similarity to Diphtheria.

Dr. D. A. Colton, of Chicago, Illinois, (N. A. Journal of Hom., vol. xi., p. 237,) says of *Merc. iod.* that "in its poisonous pathogenetic effects, it does not make so complete and striking a picture of diphtheria as to authorize us in relying upon it, if the disease does not soon yield under its administration." *Dr. C.* is in favor of the lower dilutions.

Large Doses. Merc. Iod. alternately with Belladonna and Ammonium Caustic., successful.

Dr. J. J. Diller, in an original article published in the Western Homœopathic Observer, failing to cure diphtheria with the *higher* and *middle* potencies, afterwards gives *Merc. iod.* 1, at first with *Bellad.*, and afterwards in alternation with *Ammon. caustic.*, with success.

Proto-Iodide of Mercury.

In the transactions of the Illinois Homœopathic Medical Association several members speak favorably of the action of the *Proto-iodide of Mercury*. The discussions are highly interesting.

Dr. A. E. Small. Identity of Membranous Croup and Diphtheria.

Dr. A. E. Small was of opinion that it would be generally considered that diphtheria and croup in its various forms were essentially the same.

This was contested by *Dr. Patchin*, of Fond du Lac, Wisconsin, maintaining that "in croup the convalescence is well-marked and rapid—not deceptive, insidious, and protracted,

as in diphtheria. In croup, the whole disease seems to be localized in the throat and trachea; there are no constitutional symptoms indicative of extreme debility. In diphtheria, the general symptoms are no less marked than the local ones; the poison affects the foot as well as the throat; every part, every tissue, is more or less implicated." To which *Dr. Small* rejoins, that "the pathology of both diseases is the same. The moment the blood fails to be furnished with air in requisite quantity and purity, respiration becomes abnormal, and suffocation ensues. This is what happens in croup, and well accounts for all the toxical symptoms of diphtheria." *Dr. Small* truly remarks that "there is a wide difference among cases of croup as well as of diphtheria. A great difference between spasmodic and membranous croup, etc." During the prevalence of diphtheria in Philadelphia, for the last five or six years, I have often seen cases of membranous croup, which were exactly the same as those I formerly attended, when no such epidemic prevailed. When the disease was only local in the larynx, and not the whole system poisoned, the cases all got well. I only considered them as a milder variety of the more deadly miasmatic diphtheria.

Dr. R. Ludlam, taking part in the disputation, says: "It seems to me that the part of hereditary influence in determining a liability to croup should be taken into account, while such predisposing causes seem possessed of little modifying influence over an epidemic of the malignant diphtheria. Furthermore, it is a recognized fact, that a liability to repeated attacks of the croup is by no means uncommon; indeed, in this country, is a very ordinary result of one such illness. Well authenticated cases of diphtheria occurring the second time in the same person are exceedingly rare." I have seen diphtheria return in the same person three or four times, sometimes every winter for several years, but of less severity than the first time. Scrofulous constitutions are most liable to diphtheria as well as croup.

Unfavorable effects of Bromine in Diphtheria.

Dr. Lord, the chairman, remarked, that *Bromine* was not Homœopathic to diphtheria, not producing similar constitutional or local effects. *Dr. Small* is of the same opinion. I must confess that I never saw any beneficial effects of this remedy, in any severe case.

Carbo Vegetabilis for the state of Collapse.

Drs. Kellogg and *Pratt* spoke favorably of *Carbo vegetabilis*, in the third trituration, for the state of sinking.

Two malignant cases of Croupoid Form cured by Bichrom. of Potash.

In conclusion, two interesting cases of diphtheria, from *Dr. Lord's* practice, are reported in detail. They were both of the croupy and malignant form, and apparently cured by the first triturations of *Kali bichrom.* Other remedies were exhibited, of which *Muriatic Acid* and *Cantharides* had the best effect.

Inhalation of Bichrom. of Potash.

According to *Dr. Lord*, of all remedies, *Aconite* and *Kali bichrom.* had the most decidedly beneficial effect. "Whenever the cough became dry, and respiration whistling, and suffocation seemed imminent, inhalations of *Bichrom. of Potash* were used with prompt relief. Of course it was only temporary, but it was a respite. It did not fail in a single instance of easing the breathing and loosening the cough, and ejection of membrane or large quantities of stringy mucus followed. The *Muriatic Acid* seemed at first to answer the same purpose, but the subsequent trials showed that it had no such effect. Perhaps its inhalation would have answered better." (The *Chloride of Lime*, according to my experience, internally administered, would have answered a better purpose.)

Prof. Ludlam, of Chicago, Illinois, who, in all his writings, is profound and exhaustive, groups, in his work on diphtheria,

the different remedies under the various indications they are calculated to meet. Thus he prescribes certain remedies for the febrile symptoms; for the cerebral disorder; for the mouth and throat, etc. He will permit me to differ from him with regard to this method of application. If diphtheria arises, as he himself says, from "a specific, invisible cause, which, in order to produce its legitimate pathological fruits, must first be introduced into the blood," this poison is the same, whether it attacks the brain, throat, or any other part of the human body. It must, therefore, be met by such remedies (simillima) as are most antagonistic to this poison, no matter what the locality of the disease. But, as this poison is undoubtedly modified by constitutional idiosyncrasies or peculiarities, many other remedies may come into play as adjuvants, but not as Homœopathic remedies, (specifics,) for this particular miasma.

At the conclusion of the work, the author remarks that constitutional treatment offers the only hope of life for the patient, or reputation for the physician, an observation to the justice of which I can cordially subscribe.

Phytolacca Decandra.

In *Dr. Lodge's* Homœopathic Observer, Detroit, 1864, *Dr. W. H. Burt* gives an account of his treatment of diphtheria by *Phytolacca decandra.* I shall quote the following data from his article:

"Pathogenetic effects of *Phytolacca decandra,* resembling diphtheria: Constant, dull, frontal headache, aggravated by motion. Drawing sensation above the root of the nose. Pressure in the eyes; dull, aching pain in the eyes. Loss of taste. Tongue is very rough, with blisters on the sides that smart severely. Pressing pain in the right side of the throat. Sore throat with great roughness in the pharynx. Constant inclination to swallow, which produces severe pains in the root of the tongue and fauces. Violent inflammation of the soft palate and tonsils; the left tonsil is swollen as large again as the right. Thick, white and yellow mucus about

the fauces. Violent inflammation of the œsophagus. Feeling as if something had lodged in the œsophagus. Profuse hemorrhage from the nose. Loss of appetite. Urine strongly albuminous. Bowels either constipated or loose. Violent aching of the back and limbs. Very weak and faint."

Dr. Burt continues: "These symptoms were all produced in myself. I took the remedy until I could not swallow any thing for two days, but a little liquid food. The toxical effect of the *Phytolacca* is mostly all spent on the throat. Among all the long list of remedies in our school we have none that can equal the *Phytolacca* in diseases of the throat.

Successful Treatment of eighteen cases by Phytolacca Decandra.

"In the treatment of diphtheria, *Belladonna* and the preparations of *Mercury* cannot be compared to it. I have treated eighteen cases of diphtheria with nothing else but the *Phytolacca decandra.* Twelve of these cases were of a very dangerous character; all of these were cured in from three to eight days. The one that lasted eight days, that of a young lady, was an extremely bad case. Two had died in the family under old school physicians. My case was the worst of the three."

Dr. B. publishes four cases, two of which were adults, and the other two children, of respectively nine and four years of age. None of them appear to me as cases of the most malignant kind.

The experience of *Dr. B.* with *Phytolacca decandra* has been corroborated by several physicians, who have been, as they allege, equally successful.

Phytolacca Decandra successful in Spurious Diphtheria.

Dr. Smith Rogers also treated successfully many slight cases of diphtheria or what he calls "spurious diphtheria," with *Phytolacca decandra,* in alternation with *Guaiacum.* He truly says, that "during the prevalence of any epidemic there is a strong tendency, in every affection, to assume some appearance of the particular form of disease which is prevailing."

Kali Bichrom. more successful than Proto-Iodide of Mercury.

In the transactions of the Michigan Institute of Homœopathy, *Dr. J. N. Eldridge* speaks very favorably of *Kali bichrom.* in diphtheria, but not so well of the *Proto-iodide of Mercury.*

Gelseminum in Paralysis following Diphtheria.

Gelseminum is favorably noticed by *Drs. Lodge* and *Smith Rogers,* as curative in the paralysis following diphtheria.

Antim. Tartar. in Paralysis of the Lungs.

Dr. J. K. Spranger details a case of paralysis of the lungs following diphtheria, cured by *Antim. tartar.,* ½ gr. in a tumblerful of water.

Dr. Freligh. Antim. Tartar. and Merc. sol. successful.

Dr. Freligh, of New York, treated six cases of diphtheria most successfully with *Antim. tartar.* 1 and *Merc. sol.* 1, with the external use of *Nitrate of Silver.* No details given.

High Potencies in Diphtheria. Dr. Ad. Lippe. Kali Bich. 200 *successful.*

Dr. Ad. Lippe relates two cases of diphtheria cured by *Kali bichrom.* 200.

The first case, a child, æt. 5, at first received *Belladonna* 200, followed in thirty-six hours by one dose of *Lachesis* 200, which removed all diphtheritic symptoms, and the case was considered cured, but afterwards had a relapse, when *Hepar* 200 and *Bromine* 200 were administered without any effect. The throat could not be examined, because the child would not open the mouth. In order to show the importance of small symptoms in the selection of remedies, *Kali bichrom.* 200 was prescribed on account of the presence of the following symptoms: "Violent stitches in the left ear, pain in the left side of the head and neck, where a large swelling with redness and inflammation appeared, which was also worse after midnight. Dry,

hard, spasmodic cough." The abscess on the neck broke on the ninth day and the child recovered. (When the swelling was only on one side, I always considered the cases very slight, although tedious.) The other case, that of a young lady thirteen years of age, was also cured by *Kali bichrom.*

In my estimation *Kali bichrom.* is one of the best remedies in diphtheria, although inferior in power to the *Chloride of Lime.* I have generally administered it in the first and second triturations. *Dr. Lippe,* at the conclusion of his article, makes the following observation:

"For the gratification of 'non-Homœopathicians' (?) I only remark, that most all cases of diphtheria which have come under my care have yielded to one dose of one, seldom two, properly selected Homœopathic remedies, in the smallest dose. The non-Homœopathicians who sneer at such reports would do better to make 'the experiment' before dealing denunciations."

I am far from sneering at his report, believing that we require all possible light in this intricate disease. Regarding myself, I have used the 200th dilution of *Lachesis, Belladonna,* etc., in some slight cases, with success. In severe cases they failed to give relief, and larger doses had to be resorted to. I know it will be answered to me, "Had you, instead of giving lower dilutions, gone still higher, to the 10,000th, the 50,000th, you would have cured your case." I must confess I had not the courage to attempt them. But I know, from reliable sources, that several children treated by these dilutions still succumbed.

Albumen with Milk as Nourishment.

In the discussions of the Homœopathic Medical Society of Oneida County, New York, *Lachesis* and *Ammon. caustic.* are mentioned as having been given with great benefit in diphtheria. A detailed description of the symptoms is wanting. It is also mentioned by *Dr. Paine* that the administration of *white of eggs well beaten up with two or three parts of sweet*

milk will produce a very happy effect, and be swallowed and retained when all other kinds of food were rejected.

Croton Tiglium an Active Agent.

Dr. Williamson, of Philadelphia, (North American Jour. of Hom., vol. xi., p. 169,) speaks of *Croton tiglium* as "one of the most active agents that can be used against the formation of the peculiar deposit in the throat in diphtheria. The result of the adoption in my practice of *Croton, Canthar., and Rhus*, as the principal remedies in diphtheria, has been to diminish the mortality one-half." From our knowledge of the present proving of *Croton tigl.* one would not suppose that it was a simile to diphtheria, for the eruption produced by it is not at all similar to that of diphtheria; but *Dr. W.* truly says, this may be one of the remedies "where known clinical symptoms have not been all confirmed by legitimate provings."

Belladonna and Mercur. Solubilis successful.

Dr. J. C. Peters, in his "Practice of Medicine," relates some very malignant cases treated successfully by the first and second decimal dilutions and triturations of *Belladonna* and *Merc. solub.*

External Diphtheria.

Dr. J. C. Peterson, of Union Springs, New York,[1] relates an interesting case of external diphtheria, which deserves to be recorded: Caroline S., aged two months, a bright, precocious child, with light hair and a scrofulous diathesis, was attacked with simple eczema, developing about the face, neck, and back. *Dr. P.* prescribed, October 22d, 1865, *Graph.* 30, every four hours. "On the 23d, the eruption had become confluent under the chin, and had a diphtheritic appearance, illustrated by the formation of the membrane over the eruptive surface. Some slight fever, tongue coated white, and thickly so; breath fetid; one nostril inflamed; bowels inclined

[1] American Homœopathic Observer, February, 1866, page 37.

to diarrhœa; no appetite; restless; considerable gastric disturbance, manifested by vomiting of what little food she took." He prescribed *Arsen.* 3, and *Canth.* 3 alternately, a dose every two hours. He continued his visits on the 24th, 25th and 26th.

On the 28th he found the neck in a bad condition. The parts swollen, and the entire surface, nearly from ear to ear, covered with a diphtheritic membrane. Also a patch at the lower part of the lumbar region. Throat slightly red internally, *but no trace of any membranes.* General symptoms as before described. Up to November 1st, a lotion of *Iodine* was applied externally, and *Rhus tox.* and *Arsen.* 3, alternately, were prescribed internally, every two hours.

Dr. P. continues: "November 1st not so well. Glands of neck swollen, and more heat about the parts. Gave *Arsen.* 3 and *Merc. proto-iodid.* 2, and locally the same, with the addition of *Hamamelis.* On the 2d, *Dr. H. Robinson, Jr.*, of Auburn, met me in consultation. He diagnosed the case with me as diphtheria externally, and prognosed a favorable result, provided it did not go in upon the internal organs. He advised a lotion of *Hydrastis Canadensis*, and internally, *Arsen.* 3 and *Rhus tox.* 3.

"On the 3d of November she was about the same; no symptoms showing themselves that would lead us to expect a fatal termination. *Dr. Lansing Briggs*, an eminent Allopathic physician, *Dr. Eddy*, of Geneva, a Homœopathist, and *Dr. Robinson*, saw her. Prognosis as before. Treatment continued.

"On the night of the 3d, I remained with her till 3 A. M., when I went to bed, and her father took my place at the bedside. At this time no unpleasant (?) symptoms had developed. In about two hours I was called up, and found her pulseless, hands and arms cold, feet and legs warm. She died without a struggle, in about half an hour, possessing her senses to the last."

Dr. Peterson was unable to account for her death, averring that a diphtheritic clot might have formed either in the heart

or aorta. He refers to a similar case published in the British and Foreign Medical Review, which was successfully treated with the *Perchloride of Iron.* The Doctor is determined to treat his next case with the *Iron.* He also quotes *Greenhow,* who found abnormal conditions of the heart in several cases that were examined.

The Doctor concludes his article with the following honest remarks: "I have lately given considerable attention to the subject of diphtheria, and the more I study it, the more do I desire to avoid the disease in practice. In fact, the form of it that appears in this section of the country baffles our skill by its sublime insidiousness. When I wrote on this subject for the *North American Journal,* in February, 1861, I then laid down a treatment that was always successful. Now, with the addition of *Bromine, Kali hydr., Biniodide of Merc.,* etc., cases die when we think them out of danger."

Continue your researches, O worthy disciple of Hahnemann! With such a determination, and such honesty of purpose, the true remedies will be revealed to you, sooner or later.

Permanganate of Potash with success.

Drs. Marsden and *T. Nichols,* of Belleville, C. W., have used the *Permanganate of Potash* with success in diphtheria. (American Hom. Observer, May, 1866.) *Dr. Thomas Nichols* says: "Within the past four weeks I have had fourteen cases of diphtheria, five of them with the much-dreaded laryngeal complication. No deaths."

Professor Allen, of Cleveland Homœopathic College, made a partial proving of the *Permanganate of Potash,* and comes to the following conclusions: "The *Permanganate* acts powerfully and at once, and like some other powerfully acting drugs, particularly *Camphor,* its action is very transient; hence it will bear a frequent repetition. Its sphere of action or range differs widely from *Arsenic,* affecting comparatively but few organs; but on these it acts promptly, and appears to expend all its force in a short time, unless repeated. In my opinion the *Permanganate of Potash* is destined to fill a va-

cancy in our Materia Medica, in the treatment of diphtheria, long felt by the profession. It appears to be best adapted to that malignant type of the disease with extensive swelling of the throat and cervical glands; pseudo-membranous deposit, partially or completely covering the entire fauces; profuse salivation; deglutition difficult or altogether obstructed; a thin, sometimes sanious muco-purulent discharge from the nares, excoriating the parts with which it comes in contact; speech thick and obstructed, and breath very offensive. In fact, the more offensive the breath, the more promptly its action appears to be manifested. There is no remedy in our Materia Medica that will so rapidly and surely remove the offensive odor of the diphtheritic breath, as the *Permanganate.* The *Chlorate of Potash* approaches its action in this respect more nearly than *any other remedy.*"

The *Chloride of Lime* is equally good.

In experimenting with the *Permanganate* on the diphtheritic membrane, the author remarks: "In twenty-five minutes the continuity of the deposit was completely destroyed, although it had been hardened by alcohol. I have several times since subjected the recent membrane to its action with still more prompt and satisfactory results. From these experiments I am convinced that as a topical application in diphtheria maligna it has no equal in our Materia Medica." *Professor Allen* dissolves the *Permanganate* in distilled or rain water, as, according to *Professor Hale,* alcohol will render the drug inert.

CHAPTER VIII.

MY OWN EXPERIENCE IN DIPHTHERIA.

General Remarks.

BEFORE I proceed to a historical account of my treatment of diphtheria, and my experience with different remedies, I would like to make a few remarks about the employment of specifics in diseases whose symptoms are as concrete and uniform as those of diphtheria.

Almost all writers, in speaking of the treatment of diphtheria, refer to certain remedies as having been useful for *certain symptoms* or for certain *groups of symptoms* during the progress of the disease. Thus, *Mercur. iodatus, Mercur. solub.*, and *Cantharides*, have been considered the most available in that species of diphtheria that chiefly affects the throat; *Nux vomica* has been recommended for the gastric complication; *Belladonna* for the accompanying scarlet rash; *Nitric Acid* in the most malignant variety and in hemorrhages; while for the croupy form of the disease *Bromine* and *Kali bichromicum* (generally in the lower triturations and dilutions) have been considered especially applicable.

According to my conception of the nature of the disease, the peculiar miasma that constitutes it cannot be essentially changed by attacking different organs, although constitutional idiosyncrasies may modify the poison. Taking this view of the disease, the best remedy and antidote to the diphtheritic miasma will be the one that meets best the "*totality of symptoms*," as they manifest themselves in brain, throat and other organs,—taking particular care that the *brain* symptoms of the remedy are similar to the brain symptoms of the disease.

The other plan pursued by some physicians—selecting different remedies as the disease attacks different organs—must, if the foregoing views are correct, be attended with

great danger to the patient; for when diphtheria is conquered in one organ, it is very apt to lodge in some other, and there prove fatal. On this account, all local applications to the membrane of the throat are to be condemned, unless such local remedies have also a specific action on the whole disease. In several instances, where powerful local remedies have been used, I have seen the disease leave the throat and prove fatal by attacking the intestines and brain.

In pursuance of my view, therefore, the point of paramount importance was to find the remedy, with our often imperfect provings, which would be able to overcome the disease, not only in regard to the production of a similar membrane, (the pathological substratum,)—for we have several remedies producing this effect, as *Bryonia*, *Ammon. caustic.*, *Cantharides*, etc.—but also by the similarity of all its objective and subjective symptoms. On the other hand, constitutional idiosyncrasies will oblige us to use other remedies in alternation with this one remedy, (whatever it may be.) Thus persons liable to croup will be more easily attacked by croup, whilst laboring under diphtheria, than those not naturally disposed to it. In persons with delicate lungs, diphtheria will often produce pneumonia. Patients predisposed to diseases of the stomach, liver, or the urinary organs, will require special treatment for their peculiar ailments. But notwithstanding all such individual variations, the specific poison in the blood—no matter where it may settle or what organs it may attack—will require one particular specific remedy for the full complement of its symptoms,—if such a remedy can be found.

Premising thus much, the reader will understand why it was my chief endeavor, throughout my practical acquaintance with diphtheria, during the last five years, to find a remedy that would correspond not merely to the external symptoms of the disease, but also to its innate and essential nature. The following pages will contain the history of my search for such a remedy.

The manner of my proceeding in selecting a remedy was that

which, I suppose, is adopted by all Homœopathic physicians in a disease of which they have no practical knowledge. They employ the remedies used successfully by other physicians who have had the requisite experience,—particularly if these remedies are also homœopathically indicated; and in case of failure they will naturally resort to new remedies which seem to them better adapted to cure malignant cases. Such was my sad experience with *Mecur. iod.*, and also *Kali bichromic.*, in some very severe instances, and at a time when new cases of diphtheria occurred with me almost daily,—so that they amounted in *six* years to *six hundred.* Consequently, I thought it my duty to make a very exhaustive study of this disease. In fact, for months, day and night, the subject was hardly ever out of my mind. Similarity of pathological product of disease and remedy was considered; similarity of objective and subjective symptoms; and innate cause. Great importance was attached to the action of both remedy and disease on the brain.

It soon became evident to me that the so-called scrofulous constitutions were the most liable to be attacked, and, comprising the most malignant cases, were the most apt to terminate fatally. I had, therefore, not only to select a specific remedy for diphtheria, but also a remedy for the scrofulous diathesis, in order to effect a thorough cure.

Where there was only a tolerable similarity between remedy and disease, slighter cases could easily be combated by such a remedy. Malignant cases, however, were the true test; since a medicine that would act very well in instances but tolerably severe, would not overcome those of a more virulent type. Such a partial remedy was, therefore, abandoned, in order to give place to a new and more appropriate one. In some malignant cases, two remedies were given in alternation.

I am daily more and more convinced that there are always three remedies more or less allied to every disease of a *concrete* form. These remedies must come from the three kingdoms of nature. To give some illustrations of my meaning, I will mention yellow fever and hooping-cough: In the

first, we exhibit *Mikania guaco* from the vegetable kingdom, *Arsenic* from the mineral, *Crotalus hor.* from the animal; in the latter, *Poth. fœtid.* from the vegetable, *Cuprum* from the mineral, and *Mephitis putor.* from the animal. These three remedies are respectively the best in these diseases, according to my experience. Constitutional idiosyncrasies will, of course, require other remedies. We can only apply this rule to diseases whose symptoms are always the same, and have been for centuries. In diseases whose symptoms and forms are continually variable, the strictest individualization must be our motto.

Inveteracy of the Disease.

There was a certain inveteracy in the severer cases of the disease that strongly reminded me of malignant yellow and scarlet fever. When, in these severer cases, an improvement had taken place, and the medicines were suspended for a few hours only, the disease would return with renewed violence; the submaxillary and parotid glands would be more swollen; the tonsils more enlarged; the membrane visible there would extend over the whole throat, involving the mouth, palate, and even the tongue and gums; and the face would assume that pale, deadly appearance foreboding trouble. By repeating the medicines more frequently, all these symptoms would gradually disappear, and in many instances the patients would recover.

Dose of the Remedy. Success with Low Dilutions in a Scarlet Fever Epidemic.

The lower dilutions and strong preparations were prescribed in almost every instance. In several malignant cases where the higher dilutions were employed, the disease went on its course. There were some respectable Homœopathic physicians who did not see the same difficulties, but maintained that the highest dilutions of such remedies as *Bella.*, *Lachesis*, etc., exhibited at not too short intervals, were sufficient to overcome the disease. I did not pursue this mode of treatment in diphtheria, because, in a scarlet fever epidemic prevailing in Philadelphia six years ago, I was very

successful by following a different course. Out of sixty cases, of which forty at least were malignant, I lost only one, (a young girl of thirteen, who, in a fit of delirium, threw herself down stairs, while her mother was engaged in the kitchen.) In these instances, the lower dilutions, from 1 to 3, were repeated every hour without any aggravation, but with decided benefit. In former epidemics, when a different course was pursued, my success was far less decided. I may, at some future time, give a detailed account of these cases.

I may also mention here, that in all diseases affecting the mucous membranes the lower dilutions are always of superior efficacy.

Proto-Iodide of Mercury.

When diphtheria first made its appearance in the United States we derived (as mentioned previously) our practical experience from the French and the British physicians. One of the remedies esteemed by the practitioners of Great Britain was the *Bin.* or *Proto-iodide of Mercury* in the first trituration. My experience with it has not been very favorable. After its use for three or four days, the diphtheritic membrane would still be visible, almost unchanged, in the throat. The only decided effect it showed was on the swelling of the tonsils and the submaxillary glands; and these were very much benefited by it.[1]

Non-success with Proto-Iodide of Mercury.

One of the first cases treated by me with the *Proto-iodide of Mercury* was that of a beautiful girl, of about twelve years. The case was one of the most malignant I ever saw. Immense swelling of the submaxillary glands and the cellular membrane on the whole neck and face; great enlargement of the tonsils, with a thick deposit of the membrane upon them, and upon the whole length of the throat as far as could be seen; there was also

[1] In making these observations, I speak of malignant cases. The slighter cases were improved by it, as well as by any other remedy that had some specific relation to the disease.

great difficulty in swallowing. Although the *Proto-iodide of Mercury*, in the lower triturations, was exhibited day and night, it did not prevent the poisoning of the blood and fatal action on the brain. Symptoms of collapse showed themselves on the third day, and the patient died very suddenly. The throat, in this case, was pencilled with *Muriatic Acid.*

Iodide of Mercury and other remedies unsuccessful.

Under the head of *Iodide of Mercury*, I ought to mention two fatal cases. One was a child six years, the other two years of age. The symptoms were the same as those detailed under malignant cases. In the child of six, we thought the disease subdued, and the little patient out of danger; but it returned with fresh and fatal violence. In the latter case, *Nitric Acid* and *Kali bichromic.* (particularly the former) had a decidedly beneficial effect, but it did not save the patient's life. A consultation was called during the second attack, and high dilutions administered, but without any avail. *Iodide of Mercury* had not the slightest beneficial effect; and *Chlorate of Potash* and *Ammon. caustic.*, administered every ten minutes, were unable to arrest the progress of the disease. Both children inherited from the mother a very deep-seated scrofulous diathesis.

In these cases the foul breath, the deadly pale hue of the countenance, the uninterrupted sopor, and the complete loss of appetite, showed conclusively that the source of life was poisoned. At any rate, nothing could avail against such odds; and, although my success with the *Chlorinated Lime*, even in such cases, has been wonderful, it is doubtful whether cases may not occur where even the best remedies would be powerless. The most violent cholera cases occur on the first appearance of the disease, when the system seems overpowered by the miasma, and nothing can check its progress.

Almost simultaneously with my use of the *Proto-iodide of Mercury* occurred my employment of the *Kali. bichromicum* in the first and second triturations; in fact, with some cases I used both in alternation. In all instances where it was exhibited alone, it appeared to exert a more direct, specific

action on the disease than the *Iodide of Mercury;* the diphtheritic deposit on the tonsils disappeared sooner under its influence.

Efficacy of Kali bichrom. in slighter cases.

At the beginning of my Homœopathic experience with *Kali bichromic.* I made the following note in my memorandum-book: "*Kali bichromic.* is very effective in tedious cases of diphtheria, but not in those of a dangerous, malignant character, when *Cantharides, Crotalus hor., Lachesis* and *Bromine* are indicated." Subsequently this experience was modified. "*Kali bichromic.* 3, in water, exhibited after the use of *Proto-iodide of Mercury,* removed diphtheritic membranes from the right tonsil in six hours, in the case of Mrs. S." In several other slight cases, where *Kali bichrom.* was employed alone, it removed the membrane much sooner than the *Iodide of Mercury.*

The similarity of the membranes produced by *Cantharides* and diphtheria has led some distinguished Homœopathic physicians to prescribe it, exclusively, in this disease. I myself have been led into this error. Many of my slighter cases were very much improved and even cured by it; but in those of a more severe character, this remedy was insufficient. A closer comparison of its symptoms with those of diphtheria, convinced me that its application was probably a mistake. Although the membranes in both remedy and poison were very similar, their constitutional symptoms were entirely different. *Cantharides* had neither the swelling of the tonsils, nor of the parotid and submaxillary glands, (so characteristic in this disease,) nor the great drowsiness. *Cantharides* would exert a very beneficial influence upon the first and general condition of the patient, but the membrane would disappear very slowly under its influence. Enlargement of the gland and drowsiness, in difficult cases, were hardly affected by it at all.

Bretonneau made some interesting experiments with *Cantharides,* which are thus recorded by him: "A ball of etherial extract of the powder of *Cantharides,* having scarcely the

volume of hemp-seed, dissolved in a small spoonful of olive oil, was administered to a goat. There was fatal poisoning, and the body was examined. There were no traces of the coriaceous epithelium which covers the tongue, the œsophagus and the first stomach; but the enormous concrete exudation which occupied its place exhibited the most exact model of the surfaces from which the exudation was being detached in prodigious quantity.

Bretonneau's Experiments with Cantharides.

"After having pointed out this similarity of epispastic action existing between two agents of such different origin, why should not something be said of the similarity exhibited by death between the Egyptian poisoning (diphtheria) and that from the poison of *Cantharides?* In both cases there is the same coldness, yielding to no process of warming, even in the midst of summer, the same absolute adynamia, (or rather it is complete loss of muscular power;) no other movements remain than those of the heart and the lungs, and even these are so slow that the pulse falls to fifty, then thirty, then twenty, then five pulsations in a minute, and finally to only one in two minutes. There is a corresponding decrease in the expiratory movements, and at last extinction of life; with this remarkable difference, that the death caused by the Egyptian poison (diphtheritic) is *real.* After the poison of *Cantharides* death is only apparent before becoming real. We have twice, and even thrice, seen this fictitious death repeated, and on these occasions, this apparent death so closely resembled the real death that the instinct of the great blue-fly was deceived by it. A swarm of these flies, that deposit their larvæ on meat when it is beginning to spoil, covered the commissure of the eyelids, the lips and the apertures of the nostrils with a thick and rounded layer of these larvæ. Each of these successive fits of lethargy was generally prolonged more than twenty minutes, without one's being able to perceive enough indication of life to excite even a dubious movement of the heart,—when, to our great astonishment, we saw a kind of resurrec-

tion, at first slow, then more rapid, so that the animals became able to stand and to walk. Subsequently, there was a prolonged relapse, and finally complete extinction of life."

Contemplating this similarity, wonderful in many respects, it is not surprising that several physicians, as well as myself, should have conceived the idea that this remedy was probably the principal specific in diphtheria; although, as I mentioned in a previous page, subsequent and more thorough study forced me to abandon it. Prescribed in the first dilution, it was useful in those slighter cases which almost any careful treatment may cure; but we must still hold firmly by the principle that severe forms of a disease are the true test of a remedy professing to be a specific against them, and in such forms *Cantharides* failed. The following remarks of *Bretonneau*, page 189, are applicable here.

"If arguments were drawn against the speciality of the Egyptian disease (diphtheria) from the similitude of the blistering and poisonous action of the oil of *Cantharides* and of the Egyptian disease, a great error would be committed; for, notwithstanding this apparent identity, there is a marked difference in the operation of these two agents. Cantharides croup, developed by the injection of a small quantity of oil of *Cantharides* into the trachea of a dog or a goat, produces the symptoms of Egyptian (diphtheritic) croup; but this cantharidic croup is far from extending or becoming aggravated. As soon as the expulsion of the false membrane is effected, the animal begins to recover; and, after this expulsion, I have tried in vain to prolong and aggravate the disease by repeated cantharidic injections; for the mucous membrane resisted more and more the vesicant action of the epispastic oil, and was seen exposed on the surface of the dog's tongue when wiped, as I have before stated. In the same manner, the effects of *Croton Oil*, when reapplied several times to the same region of the skin, have been seen to cease to be reproduced."[1]

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[1] *Bretonneau.* Fifth Memoir. Translated by *Robert Hunter Semple, M. D.*, and published by the New Sydenham Society. London, 1859.

So far *Bretonneau*, who never thought of using *Cantharides* as a remedy. He might have added that the diphtheritic membrane arising from an infected state of the blood can return three or four times, or even more frequently, and can hardly be extinguished.

To show the difference between a poisonous remedy like *Cantharides* and a miasmatic poison, he refers to the large doses of *Tartarized Antimony* gradually increased, exhibited by Rasori, not longer exciting vomiting. From *Arsenic* taken in poisonous doses, arsenic-eaters derive beauty, health and strength.

In a considerable number of cases, particularly adults, there was only a slight diphtheritic deposit, a few specks, like the remains of a blister, or a few white, and sometimes brownish, specks, the skin underneath being red and raw. There was often a croupy cough which, if the other symptoms were not very severe, was of little consequence; but if accompanying symptoms were of an aggravated nature, the croupy form became very dangerous. I do not consider this form so inevitably fatal as some writers do. One case, in which I was consulted by another physician, and which proved fatal, was subjected to a very careful auscultation, and by this means we found that the disease had penetrated the most minute ramifications of the bronchial tubes; a post-mortem examination was unfortunately denied. In slighter cases, this cough was not dangerous, but would often last three or four weeks; it was mostly confined to older children and grown persons. That this cough was of diphtheritic nature, the small patches of the membrane visible on the pharynx testified. From seventy to eighty cases of the mild as well as the more aggravated form, were treated by me with *Cantharides* in the first and second dilutions, with decided benefit. The disease seemed to be arrested by this remedy, although rather slowly. Mentioning this fact to my friend, *Dr. A. H. Okie*, of Providence, R. I., who happened to be in the city at that time, he corroborated my experience with *Cantharides*.

He made use of it with success even in the most malignant cases.

I subjoin a few cases treated by *Cantharides* exclusively.

Successful treatment of slighter cases with Cantharides.

Mrs. —— had symptoms of a hard cough, with tickling in the throat and hoarseness. Diphtheritic patches were visible in the throat. Several remedies, such as *Laurocerasus, Belladonna,* and *Merc. H.,* were prescribed with very indifferent success. Although *Cantharides* seemed less adapted to the mere symptoms, it cured the case because it had more affinity for the *whole disease.* The most deep-seated symptoms, as well as the pathology, must correspond to a true remedy.

Meta V. had four white patches on the right tonsil; the corresponding parotid gland was slightly swelled; foul breath; enuresis; tongue coated white; great drowsiness; fever moderate; slight perspiration. *Cantharides* produced violent perspiration, curing the case in a short time.

Argentum Nitric.

On comparing the pathogenesis of *Nitr. Argenti* with diphtheria, it will be perceived that there is a very striking similarity between the two. Even in the third trituration, the effect of this remedy upon the membrane is very evident. Its effect upon the general symptoms, also, is very beneficial. This will explain why the caustic application is so often successful, since the caustic effect alone is not sufficient to account for it. In *Bretonneau's* hands, the local application of *Nitrate of Silver* has given better results than *Alum* and *Hydrochloric Acid.* In Germany, *Dr. Lobethal,* of Breslau, a Homœopathic practitioner, makes the same observation.

Bretonneau refers to six malignant cases of diphtheria restored by the application of caustic alone. In several cases of very malignant type *Argentum nitric.,* from the first dec. to the third triturations, was of the greatest service. The symptoms were of a very severe character: palate and tonsils covered by the membrane, which spread also over the tongue

and fauces, and returned again and again after having been removed by remedies. (This was a usual occurrence, and was seen by me in nearly all malignant cases.) Submaxillary glands very much swelled, together with the face and whole head; sopor. The *Nitr. Argenti* was seldom exhibited alone, but usually alternated with *Crotalus hor.*

The following severe and most malignant case was entirely cured:

Laura P——, æt. two years and four months. The symptoms noted upon my first visit were as follows: Swelling of tonsils, with here and there a speck of membrane; yellowish aspect; fever, with constant drowsiness, with eyes half open; tongue, smooth and red, with dryness in the middle and swelling; moderate swelling also of the parotid glands and all the glands of the neck—the face, too, being involved; a red eruption overspreads the back. All these symptoms, thus early developed, denoted the commencement of a very severe case of the disease. I commenced to treat her with *Belladonna* 1 and *Cantharides* 1 in water, alternately every hour. The next day, all the symptoms had vanished as if by magic; the child was sitting up on the sofa, and looked very well. The remedies were continued in the same way. The next day, all the symptoms returned with greater violence, and the red eruptions had so extended over the body that the disease might readily have been taken for scarlatina.

Belladonna and Cantharides powerless; as also Iodide of Mercury and Kali bichrom.

The *Belladonna* and *Cantharides*, apparently remaining powerless in arresting the disease, *Kali bichrom.* $\frac{1}{10}$ and *Iodide of Mercury* $\frac{1}{10}$ were prescribed, with some diminution of the immensely increasing swelling of the parotid glands, the tonsils, and in fact the whole face. The sopor increased.

The improvement from the *Iodide of Mercury* and *Kali bichrom.* continued for a short time only. The disease returned with renewed violence, and all the symptoms were aggravated. *Iodide mercur.* $\frac{1}{10}$, administered *by itself*, every

hour, caused an increase of all the worst symptoms. *Crotalus h.* 3, *alone*, had a beneficial effect on the sopor and the poisoning of the blood; but the disease, as localized in the throat, continued to increase and to spread around the palate, and even to cover the tongue. We all thought the patient's end was near; but, as a trial in the critical emergency, I resorted to *Nitr. argent.* $\frac{1}{10}$ in alternation with *Crotalus hor.* 2, every half-hour, day and night. An improvement was visible within twenty-four hours; the appetite, which had entirely disappeared, was so far restored that the child was able to take some milk and wine whey. The medicine was continued. On the fourth day of the improvement, the little patient easily kept awake till three o'clock in the afternoon. Large pieces of the diphtheritic membrane were daily found by the mother in the passages of the bowels. The right eye was now less closed, and the swelling of the whole face, as well as the swelling beneath the chin and in the parotid glands, had very much subsided. The tongue, however, was more swollen than it had been; the child would not show it, but by opening the mouth, I could see the swelling, and a white mucus adhering to both tongue and mouth. The discharge from the nose and eyes was much less; the heat in the forehead almost gone; and the pulse stronger, from 110 to 120. Fæces very fetid and still having the membrane mixed with them.

Crotalus and Arg. nitr. successful.

I continued the use of the *Nitrate of Silver* in alternation with *Crotalus* from the 18th of September to the 7th of October, 1860, gradually lengthening the intervals between the doses. I now and then made the experiment of omitting the medicines for a short time; but the disease returned with violence, and I was obliged to continue them through the protracted period specified above. The struggle between the disease and the remedies was prolonged and terrible.

At a later period, the eyes, nose and ears discharged an acrid and fetid humor. There also appeared a large abscess behind the left ear. The tongue had, for a long time, a smooth, glazed, reddish appearance, and the appetite would not return.

Spirit Terebinth. 1 was prescribed with the most happy effect. It not only increased the appetite, but restored the voice, which had been gone for three weeks. After taking this remedy for a few hours, the child began to talk for the first time.

Besides the remedies mentioned above, *Calc. phos.*, and afterwards *Sulphur*, were prescribed for the swelling of the glands of the neck, after the subsidence of the more violent symptoms; both with evident benefit. Whilst writing this—five weeks since the commencement of the disease—the discharge from the ear still continues. In every other respect, the child is perfectly well.

In the second year of the epidemic, there occurred in my practice a case of diphtheria entirely different from any other that I ever treated, and which I wish briefly to relate here.

Intestinal Diphtheria. Crotalus h. 3 *and Arg. nitr.* 1 *not successful.*

C. C., a boy, æt. 12, and his sister, æt. 9, were attacked by the disease with equal severity; diphtheritic deposits on the mucous membrane of the nose, tonsils, palate, and pharanyx on both sides, with swelling of the submaxillary glands and face. The sister recovered in a few days, under the exhibition of *Arg. Nitr.* 1 and *Crotalus h.* 3. The boy improved very much under the same remedies, but the disease seemed to have made a more powerful inroad upon his constitution, and he continued very weak. Nevertheless, in a comparatively short time, the swelling in the glands of the neck and in his face, together with the diphtheritic membrane in nose and throat, had entirely disappeared. There remained only an unaccountable weakness; there were also a redness of the tongue, slight drowsiness, and occasional vomiting. It was with difficulty that he could be prevailed on to take any nourishment, and he had as unconquerable an aversion to the stimulants which were ordered.

Vomiting being the most prominent symptom, it was arrested by *Ol. terebinth.*, in alternation with *Calc. carb.*; but soon a violent pain in the region of the stomach came on,

together with soreness, under touch, of the whole abdomen. From these symptoms I judged that, though the local indications of the disease in the throat had been removed, the poison was still in the blood, and had penetrated to the intestinal canal, an opinion which a subsequent post-mortem examination confirmed.

Upon the appearance of the abdominal symptoms, sopor returned, with deadly paleness of face, (anæmia.) Towards the last, he lost his sight, and slept all the time. The remedies which had relieved him before, failed in their effect, and he died in two weeks from the date of his attack.

This case proved conclusively to my mind, that though the local symptomatic expressions of this blood disease may be cured in the throat, the poison may remain and develop itself in other organs; and that we must recognize the destruction of the dyscrasia in the blood as the only radical cure in malignant cases.

In many cases of malignant diphtheria, I have derived the greatest benefit from the action of *Crotalus* and *Lachesis*, in preventing the poisoning of the blood and the consequent unfavorable constitutional symptoms. No remedy sooner than *Crotalus*, in the 2d and 3d triturations, will cure the fever and sopor, as well as the swelling of the submaxillary glands; and although, since my first employment of these medicines, I have discovered a remedy that is a truer antidote to the disease, I frequently make use of *Crotalus* to counteract the poisoning of the blood.

Acid Nitric., Cantharides, Belladonna.—L. K., five years of age, was attended by Dr. ———, for four or five days before I was called in consultation. The case presented the following features, when I first saw it. There was such a peculiar, bluish-white appearance, from the forehead down the centre of the face to the chin, that the most casual observer would be struck by it. The eyes were duller than usual, but still bright. The glands of the neck, on the right side, were con-

Unsuccessful treatment by Canthar., Bell., Lachesis and Crotalus.

siderably swollen. On examining the pharynx and soft palate, a thick diphtheritic membrane was visible on each tonsil. The breath was foul, the appetite entirely lost, and there was constant drowsiness. The remedy which had had the best effect, prior to my consultation, was *Nitric Acid.* Under its influence the disease seemed to have been arrested for a time, but it subsequently reappeared with all its former violence. (This same recurrence of the disease occurred, it will be remembered, in a case of my own, given above. The patient appeared to be almost out of danger for three days, but afterwards succumbed to the disease in its recurrent form.) We immediately concluded to prescribe *Cantharides,* every hour, and a frequent repetition, in small quantities, of such stimulants as milk punch, etc. The beneficial effect was very perceptible, the patient's countenance became more animated and most of the other symptoms improved. But again, in a few days, this seeming convalescence ceased, and new symptoms of a dangerous character made their appearance: very fetid breath, sordes of the teeth, dryness and swelling of the tongue, and so great an aversion to food that it had to be forced down the throat; very slow, full pulse. There was also a great drowsiness; yet, on being roused from sleep, the boy was perfectly conscious. *Belladonna* in alternation with *Arsenicum,* and afterwards with *Lachesis,* (all in low dilutions,) repeated every hour, seemed again to resuscitate his life, which was fast ebbing away; the pulse became more frequent, there was fuller consciousness, the swelling of the mouth and tongue was diminished, and, what was more remarkable, the swelling of the face and of the glands of the neck entirely disappeared. But notwithstanding these favorable appearances, we both thought the case hopeless, since there was hardly any strength left with which the organism might rally from its utter prostration. As a dernier resort, *Crotalus h.* 3, in water, was recommended, and I left word that if there was the least favorable change I should be notified of it. To my surprise, I was summoned, two days afterwards, to the bedside of our little patient, with the joyful

news that he was better. On examination, this could not be gainsaid. The whole disease seemed to have disappeared. The swelling of the face and neck was entirely gone; while the swelling and the color of the tongue were better. The boy was still drowsy, but answered every question correctly. There was no coma. The medicine had apparently conquered the disease, but the patient's strength was exhausted; stimulants, in small doses, were only of temporary benefit, and the child sank towards evening and died without a struggle.

CROUPY DIPHTHERITIC COUGH.

When I was first called to see cases of croupy cough with the diphtheritic membrane visible in the throat, I thought they would require special remedies. And such an opinion is undoubtedly true. We must vary our remedies according to constitutional idiosyncrasies. But if we are in possession of a true remedy for the blood dyscrasia, it should never be omitted; and the other remedies ought to be made to alternate with it. At that time, I conceived *Crotalus* and *Lachesis* to be the chief remedies for the poison in the blood; consequently I gave them (particularly *Crotalus*) in alternation with other remedies, in cases of the croupy form of diphtheria, and was generally very successful. According to the predominating symptoms, *Antim. sulph. aur.*, *Kali bichrom.*, *Bromine*, or *Calc. phos.*, were exhibited. In scrofulous children subject to chronic cough, *Antim. sulph. aur.* and *Calc. phosph.* were prescribed. To persons more particularly liable to croup, *Bromine* was administered when the disease assumed a febrile form, and *Kali bichrom.* in the more chronic form.

Crotalus h., Bromine, Antim. sul. aur., Calc. phos.

I was called in consultation by several physicians in five cases of the croupoid form of diphtheria. In all these cases *Bromine* had been extensively used previous to my being called in, but without success; they all resulted in death. Such persistence of unfavorable issue did not en-

Experience with Bromine not successful.

courage me to proceed in the path that seemed to have led to it; and although numerous cases of the croupoid form came afterwards under my treatment, in no one instance did I rely upon this remedy alone to effect a cure.

My experience with the *Iodide of Ammonium* in the croupy, as well as in other malignant forms, is not more favorable than that with *Bromine*. A cure of the croupy form by this means is, however, detailed in the United States Homœopathic Journal.

Neither can I give a better account of the *Chlorate of Potash*, so highly extolled by the old school. It was absolutely powerless in several malignant cases in which I used it, and other remedies had to be resorted to. *Chlor. of Potash.*

Liquor Potassæ Causticum.

From the similarity of the symptoms, the *Liquor Potassæ causticum* was also tried in several cases of diphtheria, and apparently with benefit. In fact, the slighter cases are cured by almost any remedy that has some affinity to the disease. *Liq. Potas. Caust.*

Borax.

At the close of the second year of the epidemic, there were presented a number of cases (I counted eighteen) of diphtheritic fever, a disorder that might have readily been mistaken for some other disease, if the characteristic membrane had not been discovered in the throat in every instance. These cases were defined by the following phenomena: Chilliness towards evening, (four cases,) after which, fever all night. The head hot, but the rest of the body cold, (three cases.) During the fever, thirst, foul breath, want of appetite, and nausea, (three cases.) Constipation of bowels, (three cases.) Sometimes pain in the right knee; towards *Borax in Diphtheritic Fever.*

evening stiff neck. No perspiration. Tonsils swelled with diphtheritic deposit. In these cases *Borax* was the prominent remedy, selected according to similarity of symptoms. Some of them were aided also by *Canth.*, *Arg. nitr.*, and *Crotalus.* None of them was of serious import.

Solanum Mammosum Tuberosum., Ammon. Caustic., Calc. Chlor.

Influenced by some very striking symptoms of the *Solanum tuberosum ægrotans,* contained in *Mure's Materia Medica,* I have employed this remedy in several cases of diphtheria. The benefit derived from it was evident, but not sufficiently decisive to induce me to make extended trial of it.[1]

Ammon. causticum.

Only in one very malignant case had I occasion to make use of *Ammon. causticum.* Its action was not so favorable as to induce me to employ it in other cases.

Effect of Chloride of Lime.

The conclusions to which I was forced, by my experiments with the various remedies thus far detailed, gave favorable pre-eminence to *Kali bichromic.*, *Cantharides*, *Nitrate of Silver*, and *Crotalus.* Still, since several of my malignant cases had succumbed to the disease notwithstanding active exhibition of those agents which my experience had proved to be the most efficacious, I could not help feeling that there must be some remedy of still greater affinity to the disease both in its chemical and its dynamical relations. Such a remedy I conceived to be the *Chloride of Lime.* In the first place, in all the recorded instances, the local application of *Muriatic Acid* to the membrane seemed to have exerted a decidedly beneficial effect, more than a mere chemical

[1] It is a curious circumstance that diphtheria and the potatoe disease seem to have made their appearance at the same time; and it is noticeable, too, that a German agriculturist, by washing his potatoes in Chlorine water, and drying them before planting, secured the greatest immunity from this disease.

effect. Of all the solvents, as has been seen above, *Lime-water* was the best. Besides, upon comparing the symptoms of *Calcarea* and *Muriatic Acid* with those of diphtheria, the similarity is very striking. It is true that *Chloride of Lime* has never been proved; but in dangerous cases we have not always time to wait for such a proving. The proving of *Chlor.*, by *Dr. C. Hering*, will give us very suggestive hints. E. g.: "He could not swallow. Fetid ulcers in the throat. Malignant inflammation of the throat. The mucous membrane of the mouth and nose severely affected. Immediately after taking diluted *Chlorine water* it penetrates the bronchia, causing a feeling of suffocation with violent cough. The attack ceases with an increased secretion of mucus."

Dr. Elb, of Dresden,[1] says: "That *Chlorine* produces attacks of suffocation is a well-known fact, and that by accidental inhalation of the *oxygenated muriatic acid*, attacks of suffocation would take place, in consequence of which *membranous concrements* were ejected very similar to those produced by croup."

An assistant in a drug-store gave me, among others, the following symptoms, as having been produced in him by respiring the chlorine gas: sensation of suffocation, inability to think, fainting weakness, sleepiness.

The great similarity of diphtheria to scarlet fever is well known, as well as the great efficacy of *Chlorine* in the cure of that form characterized by putrid sore throat.

On the other hand a superficial examination of *Calcarea carbonica*, as contained in *Jahr's Manual, Noack and Trinks*, and *Hahnemann's Chronic Diseases*, must convince us that there are strong points of resemblance in their essentials between the symptoms of *Calc. carb.* and of diphtheria. I shall quote here the principal phenomena indicating this similarity:

"*Rush of blood to the head* with heat of the face. Heat in the head and considerable orgasm of the blood. Heat all over the head in the evening. *Sore ulcerated nostrils.* The skin of the nose feels as if covered with oil. Profuse discharge of

[1] Hom. Vierteljahrschrift, vol. ii., page 382.

mucus from the nose, with obstruction of the same. Pale, thin face. Painful swelling of the cheeks. Swelling of the face without heat. White spots on the face, with itching. *Chapped lips.* Swelling of the upper lip early in the morning. Ulcerated angles of the mouth for a fortnight. Scurfy pimple on the margin of the vermilion border of the lower lip. On the left side of the lower jaw, considerable swelling with drawing pain. *Hard swelling of a submaxillary gland,* as big as a hen's egg, with painful tension when chewing, and stinging pain when touching it. *Swelling of a submaxillary gland,* with a sense of pressure in it. *White, yellowish little ulcer* on the right tonsil. *Thick white coating on the tongue,* with sensation as if it were without any skin, and sore. Blisters on the tongue, which prevent eating. Little blisters on the tongue, with burning pain and heat in the mouth. *Sore throat with swelling of the submaxillary glands.* Sore throat like an internal swelling, extending into the ears. *Sore throat as from a plug in the throat, when swallowing. Sense as if a foreign body were lodged in the pharynx,* which constantly obliges one to swallow. Sensation as if the throat and the mouth were sore and raw. Swelling of the tonsils, with elongation of the uvula and sense of constriction of the œsophagus. Swelling and inflammation of the palate; the uvula is dark-red and *covered with little blisters. Great dryness of the mouth and tongue. Dryness in the throat.* Phlegm in the throat. Loss of appetite. Painless hoarseness. Titillating irritation in the larynx, which becomes loose by clearing the throat. Painless glandular swelling in the nape of the neck. Swelling of a cervical gland on the left side, of the size of a hen's egg, with a stinging sore throat when swallowing. Swelling of the neck on the left side, with pain when touching and turning the head, and with sore throat. The cervical glands are painful. Hard swelling of the cervical glands. *Drowsiness in daytime and weariness. Tired and sleepy the whole day.* Attack of general exhaustion, etc., etc."

There is also an important fact, which cannot be overlooked. It is the universal use of the *Chlorides* and their

combinations by the old school, such as the *Chlorides of Iron, Soda, Potash*, etc., and also *Muriatic Acid*. The almost universal popular use of salt, also, comes into this category. There is always some truth at the foundation of such common popular practices. The people would not use these remedies did they not find benefit from them.

Regarding my own experience with this remedy, I have made almost exclusive use of it in diphtheria, during the last five years, in at least three hundred cases. In many cases I have employed it in the form of *Liquor Calcis Chlorinatæ*, from five to fifteen drops, in half tumbler of water, of which a teaspoonful was taken according to the urgency of the symptoms, at intervals of from a quarter of an hour to six hours. For other slighter cases, a trituration of the remedy was prepared, of which I have seen also good effects. In the majority of these cases it was prescribed alone; in others it was alternated with different remedies, according to constitutional idiosyncrasies.

During these five years I have lost only two cases by death from this disease, although many of the three hundred cases appeared to me equally severe as those previously treated by other remedies, when I was not so successful. One of the above-mentioned cases was a young man, who had been addicted to drinking, which he suddenly relinquished, when he was attacked with diphtheria. Notwithstanding my advice of not omitting his accustomed stimulants during the attack of this sickness, he would not resume it, and died a victim of his otherwise praiseworthy resolution. The second fatal case was that of a child two years of age. The diphtheritic bronchial croup had already progressed three days before I was called in. A large thick greenish membrane was visible all the way down the throat.

The action of the *Chloride of Lime* in diphtheria is not like that of the caustics and acids, which remove the membrane at once as if by a charm. As long as the blood is infected with the diphtheritic poison, this external manifestation of the disease will return immediately, or develope itself lower

down in the œsophagus, stomach or bronchia, and thus prove fatal. Very different is the action of the *Chloride of Lime.* By examining the membrane in the throat of a patient under the effects of this agent we perceive that the progress of the disease has been impeded from within. The patches of the membrane have ceased to spread, they look shrivelled and dead, the inflammation around their edges diminishes gradually and the healthy mucous membrane reappears.

It should also be mentioned, that in all severe cases stimulants, such as wine whey, milk punch, etc., were of incalculable benefit.

Without entering into the details of the cases, which would be neither instructive nor interesting, I will quote from the records of my practice the principal symptoms of about thirty cases, and the treatment pursued.

In one most malignant case of throat diphtheria, where *Iodide of Mercury* 1 and the *Liquor Calcis chlorin.* had been given in alternation, I omitted the *Calc. chlor.* for twenty-four hours and gave only *Iodide of Mercury* 1. All the symptoms were aggravated. I then returned to the *Chloride of Lime* alone, when the whole case perceptibly improved, the drowsiness and sopor diminished, the membrane became shrivelled, and the whole disease assumed a more favorable aspect.

In five very severe cases of diphtheria in children, of from two to eight years of age, when the whole throat was covered with the membrane, and the swelling of the submaxillary glands was very great, *Calc. chlor. solut.*, alone, (eight drops dissolved in a half tumblerful of water, of which a teaspoonful was given every half hour to two hours,) cured them in a short time.

In some of the cases there was scarlet eruption on stomach, chest and head, which soon disappeared. In these cases *Belladonna* was alternated with the *Chloride of Lime.*

In others *Kali bichrom.*, 1st or 2d trituration, was alternated with the *Lime.* Here there were more discharges of vitiated

bile, a yellow complexion, want of appetite, little taste in mouth, nausea, etc.

In two of these cases there was also severe fever every night, with pain on the top of the head. In other instances there were frightful dreams and aching in the eyes. No change of the medicine took place owing to these symptoms.

Many cases of this kind of greater or less severity have occurred in my practice, in all of which the *Chloride of Lime* was the principal remedy. *My main object always was to save life.* I have given the remedy alone, when this was possible, but when there were complications of the disease with chronic miasmas I never hesitated to alternate it with others. If the symptoms in many of our provings were mathematically certain we should have less difficulty, but whether this is the case, let every candid Homœopathic physician answer.

In very severe and dangerous cases the *Chloride of Lime* ought to be repeated every half hour or even oftener. In some cases of this kind it was exhibited every ten minutes. This constant application of the remedy undoubtedly also acts locally.

Calc. chlor. not only cured the ordinary diphtheria, but also the diphtheritic croup. In two of the most formidable cases of this kind, for greater security, the *Chloride of Lime* was alternated with the *Kali bichromicum.*

C. R., æt. seven, was for several days unwell with a cold in the head, and catarrh, when, suddenly, one night the child was attacked with a suffocating croupy cough, with strangling, bluish countenance, quick, oppressed breathing. The physical examination detected a wheezing, whistling sound in both lungs, with occasional rhonchus. The whole fauces, palate, and tonsils, as far as the eye could penetrate, were covered with a thick whitish membrane. The tonsils were also enlarged; on the external neck there was a swelling on both sides, particularly on the right side. Considering that the mother had died of consumption, and the child suffered from luxation of the left hip-joint, the case was formidable enough. The persistent alternate use of the *Liquor. Calc. chlorinat., guttæ* 8,

in water, with *Kali bichrom.* 1, every half-hour, produced at first a mitigation, and in a few days a cure of these dangerous symptoms. The child being very delicate, it was some time before she entirely recovered. After having entirely recovered, she took a severe cold, with a cough and pain in the left lung, which was with some difficulty subdued by *Kali hydr.* ¼ of a grain, in repeated doses.

An even more severe case than the above, that of a little boy, æt. eleven, from New York, was also cured by the alternate use of *Kali bichrom.* 1 and *Liquor Calc. chlorin.* The swelling of the glands of the neck with the surrounding cellular membrane, and the extent of the diphtheritic deposit was much greater than in the former case. The croupy cough was even more severe. There was also sopor and great prostration of strength. Every one despaired of his recovery. A consulting physician was called in, who gave no hope; nevertheless he was entirely cured by the faithful employment of the above two remedies.

Calc. chlor. in the slighter cases.

Innumerable cases of the slighter form of diphtheria were prescribed for at the office. They all presented the same phenomena. Patches of false membrane were visible on the tonsils, pharynx, or a veil-like cuticle enveloped the whole fauces. The symptoms of a sensation of dryness, swelling, and choking in the throat, were invariably present. Then also occurred very frequently a sensation of scraping and rawness, with hawking of phlegm. Some cases were complicated with a tickling cough and slight swelling of the tonsils and submaxillary glands. In some persons, liable to lung diseases, there were various pains in the lungs. The standard remedy in these cases was always the *Calcarea chlor.*

In cases of chronic bronchitis, this remedy was alternated with *Kali hydr.* 2, if the pain was on the left side, and sometimes also with *Kali bromat.*, if the pains were on the right side. The *Cimicifuga racem.* also deserves consideration in the latter cases. In one case, complicated with epileptic

spasms, *Cuprum ac.* was exhibited in alternation with the *Liquor Calc. chlorin.*

In many cases of diphtheritic mucous diarrhœa *Ac. muriat. dil.* seemed to have a still better effect than the *Liquor Calc. chlorin.*

Ac. muriat. dil. in Diphtheritic Diarrhœa.

CHRONIC DIPHTHERIA AND SEQUELÆ.

In conclusion, I must say a few words about chronic diphtheria and its sequelæ, often lasting for months or a year, and longer, particularly after Allopathic treatment. Patients have come to me with the chronic diphtheria, the membrane still visible in the throat, dryness and soreness in the mouth and throat, tenderness and swelling of the submaxillary glands, etc. In many instances they had tried every conceivable remedy from domestic practice, as well as from various physicians, without any permanent benefit. They were invariably cured by the *Chloride of Lime.*

I will detail a few cases of this chronic diphtheria.

1. Miss S. had for over five months a dryness and choking in the throat. On examination, a thin membrane, having the appearance of a spider's web, was visible in the throat and upon the pharynx as far as the eye could penetrate. All kinds of Homœopathic medicine were taken without benefit for four months. Three drops of the *Liquor Calc. chlorin.*, in a tablespoonful of water, was prescribed every three hours. She immediately, to her great astonishment, improved after the commencement of this treatment, and was cured in a very short time. Her general health also improved.

Calc. chlor. best remedy also in Chronic Diphtheria.

2. Mrs. K. was subject for six months to a pain the bowels, a soreness on the left side, with constipation; at the same time she discharged great quantities of mucus of a stringy nature, like diphtheritic membrane in a state of partial solution. This form is not unfrequent, consisting of a metastasis of the dis-

ease of the throat to the intestines. She was attended by a skilful Homœopathic physician for some months, and had also the advice of several other practitioners, without deriving the slightest benefit from their treatment. On my being called in, and considering the disease of diphtheritic nature, I prescribed to her the *Calc. chlor.*, which cured her in less than a week.

3. In one case, which had existed for a year, the *Liquor Calc. chlorin.* was of incalculable benefit. In addition to the throat symptoms, there were also present constant pain and uneasiness in the stomach, and a white, thickly-coated tongue. The pale, anæmic child soon became blooming and healthy.

No less efficacious was the *Chloride of Lime*, when the diphtheritic membrane attacked the Schneiderian membrane of the nose.

In a few cases, where chronic diseases of the throat were hereditary in the family, *Causticum* and *White Turpentine* were of great assistance to me after the acute attack of diphtheria.

1. I. B., sore throat and dryness; cough, with soreness from the chest to the back; steady pain in kidneys; eczema in face. *Terebinth.* 1 cured.

2. Mrs. S. S., æt. forty-eight, dark eyes and complexion; dryness and fulness in the throat, with scraping and hawking of phlegm; diphtheritic membrance still visible in throat; aching pain in right kidney, with stitches. *Terebinth.* 1 cured.

Two other cases noted down, and characterized by dryness, soreness, and swelling of the throat, also hoarseness, with constipation of the bowels, were likewise cured by the *White Turpentine*, 1st trit. Although diphtheria was often complicated with different constitutional ailments, the *Chloride of Lime* was always an important remedy. Thus, in a nervous disease, connected with the climacteric years, *Lachesis* only gave relief, after the main symptoms had been subdued by the *Calc. chlor.*

Among the *sequelæ*, an interesting case of paralysis came under my notice. B., æt. seven, had a severe attack of diph-

theria during his sojourn in the country. He was treated by a Homœopathic physician of the neighborhood, chiefly, as far as I could learn, by large doses of the *Iodide of Mercury*. This remedy is still preferred by many Homœopathic practitioners in the treatment of the disease. He was cured with great difficulty, and arrived at home with paralysis of the lower extremities. The chief characteristic symptom of the case was, that the pain in the hips and legs was excessive, whenever the little boy was made to stand up. To my astonishment *Rhus tox.* 3, in water, every two hours, enabled him to walk a little in about twenty-four hours. In the space of a week he had the complete use of his limbs, as well as ever.

Paralysis cured by Rhus tox.

A very singular case of headache and spinal irritation, as a consequence of diphtheria, came under my treatment. Eliza T., æt. nine, was left with a great sensitiveness of the whole spine, after an attack of diphtheria. The least touch was extremely painful. At the same time there was a sensation of great heat on the vertex, and extreme sensitiveness to the slightest touch. This sensitiveness was so great, that even holding the hand at a considerable distance above the head was hardly bearable. It caused extreme suffering. At the same time it was impossible for her to lie flat on the bed, without increasing the pain in the head. She had to sleep in a sitting position. She felt best leaning forwards. She had also a hacking cough and frequent bleeding from the nose. The hands became benumbed on lying down. Subject to ascarides. *Rhus* and several other remedies were prescribed without much relief. *Aconite* 6, in water, entirely cured the sensitiveness in head and spine.

Aconite — best remedy in Sensitiveness of Head and Spine.

A not unusual complaint after diphtheria was enlargement and induration of the submaxillary and parotid glands. These were invariably cured by *Conium mac.* 1, in water.

Conium cures indurations of submaxillary glands.

Chloride of Lime, of such superior efficacy during the height of the disease, is also exceedingly useful and active in that form of sequelæ characterized by anæmia, dropsical swelling of the abdomen, soreness of kidneys, sick stomach, vomiting of every thing eaten, finally of phlegm only, and by black and sanguinolent urine, showing a dissolution of the blood. *Chinin. arsenic.* and several other remedies remained powerless in such cases. A solution of *Chloride of Lime* effected a cure very quickly. The symptoms of several of these cases were truly alarming, but all recovered under the influence of the *Lime*. One case, attended by two other Homœopathic physicians, where I was called in at the close of the scene, died.

Chloride of Lime in Anæmia.

Several cases of soreness and dryness of the throat after an acute attack of diphtheria, not yielding to the action of *Chloride of Lime*, were cured by *Alumina* 3.

Alumina 3, *dryness, etc., in throat.*

A partial paralysis of the glosso-pharyngeal nerve, after diphtheria, was cured by *Dr. Kidd*, with *Gratia, Ferrum sulphuricum*, and local galvanism. The case was that of a young man æt. eighteen. His legs and arms much wasted. His voice was indistinct and muffled, requiring a strong voluntary effort to articulate. Every effort to swallow liquids caused choking, unless they were allowed to flow gently over the tongue without effort.

Disease of the Spinal Cord after Epidemic Diphtheria, by Dr. Trinks.

"The debility of the feet became perceptible immediately after she got through *diphtheria*, and kept increasing from time to time. She was also struck, as soon as she quitted her bed for the first time, with a furry sensation in the soles and toes of both feet. She was unable to raise herself by her own strength from her seat on the sofa, but required the support of another, nor could she stand upright alone, but had to rest her hands on the tables, or be propped up under the

arms; so also, in attempting to move two steps forwards, she could not lift her feet, but pushed them on along the floor. After long sitting her feet became stiff and inflexible, and on each attempt to raise herself by her own exertions, her knees bent under her. When sitting or lying down, she felt drawing pains in the flesh of the thigh and leg. During the last four weeks she also had experienced stiffness and awkward powerlessness of the hands and fingers, which were no longer in a condition to grasp and retain small objects, but let them fall again directly, nor could she any longer play the piano. She has frequent occasion to pass water, being unable to retain it as long as when she was in health.

"A private examination of all the cervical, dorsal and lumbar vertebræ, and of the sacral region, discovered nothing more than a curvature of the spine towards the left side, established in early youth; not a single vertebræ painful or prominent. Also, the patient had no painful symptom in the spinal canal or marrow of the dorsal or sacral region. She had become emaciated, but no wasting of the muscles of the neck, the back, or the upper and lower extremities could be observed. The brain was free from all morbid symptoms. Latterly it became difficult for her to hold up her head long. The sensation in her head and feet had become more and more dull; the numbness or furry sensation of the toes and soles of the feet specially troublesome, with which, also, a certain heaviness of the feet was associated. Minute physical examination of the organs of respiration and circulation, and of the abdomen, discovered nothing abnormal. The appetite, digestion and stool were not deranged; the urine continued bright and clear, and was proved acid by testing. The monthly period occurred regularly, (scanty and short duration.) Sleep often interrupted, not refreshing and restorative. All these morbid symptoms, which manifested themselves in the spheres of sensation and motion of the upper and lower limbs, indicated some disorder of the spinal cord, which had developed itself subsequently to the diphtheria, and may well be considered as a sequela of it.

"The prognosis in this case could not be favorable. Here was an affection of the spinal cord, the nature of which could not be precisely ascertained from existing circumstances, but which, at any rate, already extended beyond functional disorder, and placed in very near prospect some alteration of the nervous substance, either in the way of wasting or softening. Moreover, since its first manifestation after recovering from diphtheria, it had spread over a period of nine months, and the symptoms had increased both in extent and intensity. It had advanced from the lower extremities to the peripheral terminations of the brachial plexus, and had also already seized that portion of the spinal cord from which that plexus originates. From the "curative powers of nature" there was so much less to be expected, inasmuch as the progressive extension of the disease shut out any prospect of the occurrence of such aid. Here art alone could avail, for the so-called "nature cures" must be set down amongst other rarities. Repeated favorable experience determined the choice of *Cocculus*, which had already proved useful to me in several similar cases. I prescribed a simple but nourishing diet, and gave the patient three drops, morning and evening, of the 2d decimal dilution of the tincture, on the 20th October. After taking this medicine for fourteen days, she noticed a decided diminution of the drawing pains in the lower limbs, and increased power on rising from her seat and standing. Then the monthly period came on, which brought the progressive improvement to a standstill. After this, the same medicines were taken again, and by the next month the amelioration had proceeded so far, that she again began to attempt walking in the room, and kept gaining strength in the lower extremities. At the same time her sleep became quiet, and with the commencement of a better appetite she became visibly stouter.

Cocculus, 2d dil., performed a complete cure in the Disease of the Spine from Diphtheria.

"In the third month, the sensation of numbness and furriness in the fingers, soles of the feet and toes gradually disap-

peared; she could also resume manual employments, and began to play the piano again. Thus, within half a year, all the above-named morbid symptoms in the sensorial and motorial spheres of the upper and lower extremities were removed. At the commencement of spring she was so free from all these troubles that she could sit, stand, walk as long as she liked, without feeling any weakness in her limbs, and she had become stout in person and robust."

SUMMARY.

1. It is the general, we may say almost universal, opinion of medical authorities, that diphtheria is a miasmatic disease of the blood.

2. There is strong evidence that scarlatina, membranous croup, and diphtheria, are only varieties of the same or a similar miasma in the blood.

3. There is little doubt that cold damp air fosters the development of the disease.

4. Persons of a so-called scrofulous constitution are particularly liable to it, and are most fatally affected by it.

5. All *slighter* cases are cured by *various* remedies having some affinity to the disease.

6. *Kali bichromicum, Kali chloricum, Ac. muriatic.* and *nitric., Belladonna, Cantharides, Lachesis, Crotalus* and *Arg. nitric.*, generally in the lower preparations, are the remedies which have been used with most success in the most malignant cases by the great body of Homœopathic physicians.

Some physicians speak favorably of their success in this disease with the *Iodide of Mercury;* others condemn it. The use of *Bromine* in diphtheria or diphtheritic croup has met with but little or no success.

7. During the last five years, I have made almost exclusive use of *Chloride of Lime* in slight as well as malignant cases of diphtheria, and with constant, sometimes almost wonderful success. This remedy is not merely similar to diphtheria in its production of a membrane, but also, and chiefly, in its innate resemblance to the disease, in its objective as well as

subjective symptoms. On this account, it is superior to *Bryonia*, *Cantharides*, *Ammon. causticum*, and *Bromine*, which all produce similar false membranes.

8. The fact of lime-water being the best solvent of the diphtheritic membrane, as seen on page 73, cannot be without some weight in estimating the virtue of this agent in diphtheria.