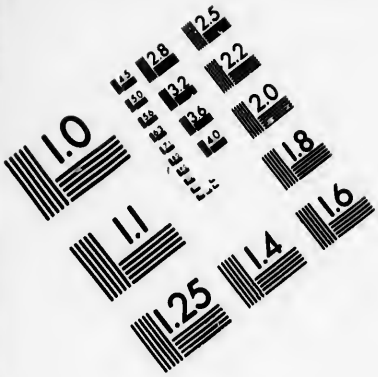

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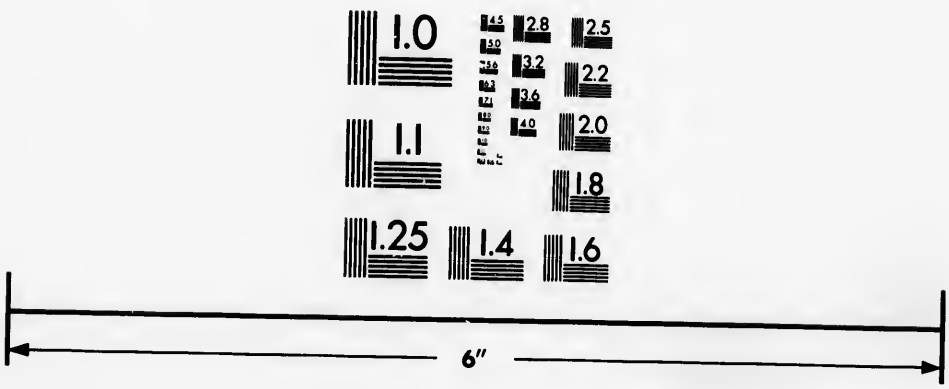

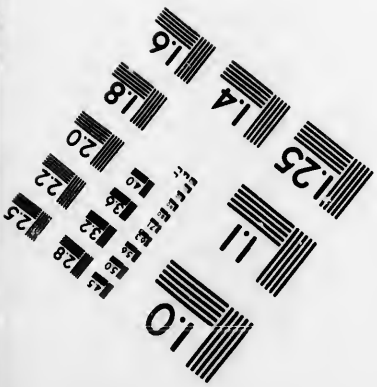

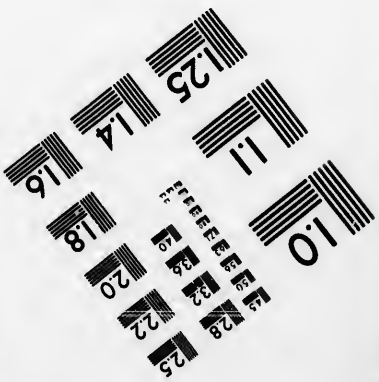

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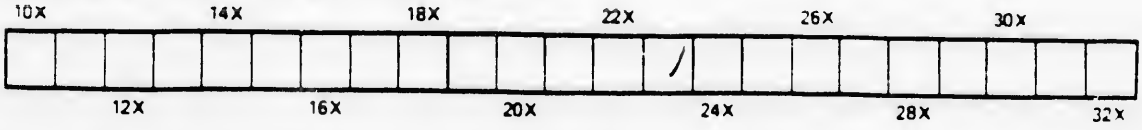

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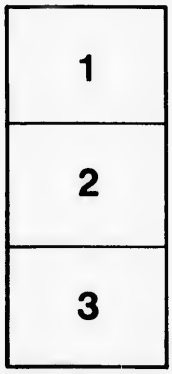

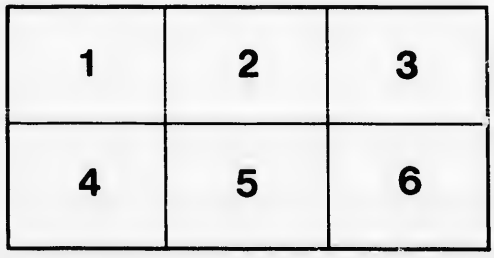

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MONTREAL TRACTS ON HOMŒOPATHY.—NO. 1.

DIPHTHERIA

AND ITS

MANAGEMENT.

BY

THOMAS NICHOL, M.D., LL.D., B.C.L.

MEMBER OF THE COLLEGES OF PHYSICIANS AND SURGEONS OF ONTARIO AND QUEBEC; MEMBER OF THE AMERICAN INSTITUTE OF HOMŒOPATHY; CORRESPONDING MEMBER OF THE HOMŒOPATHIC MEDICAL SOCIETY OF PENNSYLVANIA, AND ONE OF THE CONTRIBUTORS TO THE ENCYCLOPÆDIA OF HOMŒOPATHIC PRACTICE.

Montreal:
W. DRYSDALE & CO., 232 ST. JAMES STREET.
1884.

[PRICE 10 CENTS.

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PROTECTOR OF THE ILLUSTRIOUS HAHNEMANN,
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DIPHTHERIA AND ITS MANAGEMENT.

——:o:——

Diphtheria was but rarely lectured on in any medical school when I received my professional education, and the best text-book of the day—Wood's Practice of Medicine—devoted a scanty four pages to what is now one of the leading diseases. Sir Thomas Watson, too, the Macaulay of British Medicine, gave it just thirty-two lines in his justly celebrated work. And so it came that when one bright morning in September, 1858, I received a call to a patient in Woodhouse, County of Norfolk, Ontario, I was greatly startled when I recognized the disease which had so recently crossed the channel and was even then raging in England. My only source of information as to the disease was the aforesaid four pages; and for treatment I was confined to *Jahr's Symptomen-Codex*, for none of our writers on Practice, not even the illustrious Hartmann, as much as mentioned the disease. To the well-thumbed, oft-conn'd pages of Jahr I turned, and, guided by the Law of Cure, I had little difficulty in selecting the remedy. The patient recovered, and this was, I believe, the first case of diphtheria in the county, the advanced guard of the fatal epidemic which devastated it for over six years. During that period I saw over twelve hundred cases, including every possible aspect of the malady, and adding to that experience that which I have obtained in Belleville and in Montreal, I feel quite competent to write a tractate on "*Diphtheria and its Management.*" I will try to place before my readers a clear account of the disease, dwelling especially on the difference between it and other diseases, for the life of the patient often depends on the prompt recognition of the malady. Further, as I am writing for the public, not for the profession, I shall write in the very plainest of English.

Diphtheria, then, is an acute febrile disease, produced by a specific poison; epidemic and endemic; usually but feebly contagious. There is an eruption, but it is not at all characteristic, for it is often altogether absent, and the distinctive feature of the disease is the deposit of lymph upon the mucous membrane of the throat and tonsils. At the same time the glands of the throat and neck swell, and the disease is accompanied by prostration of the vital powers out of all proportion to the local mischief. I have said that diphtheria is *endemic*, that is, the specific poison takes possession of a house or neighbourhood and remains there for a longer or shorter period, and it is often very difficult to break up these local centres of contagion. An *epidemic* of diphtheria is usually made up of a number of endemics.

Many people have the idea that diphtheria is a modern disease —a disease of our own day—but in reality it is one of the most ancient. Some writers trace it to the time of Hippocrates, and there can be little doubt but that the writings of Aretæus, who lived in the second century of the Christian era, contain a minute account of a disease styled by him *Ulcus Syriacum*, which exactly corresponds with diphtheria. A Roman physician, named Macrobius, describes an epidemic of diphtheria which ravaged Rome in the year 380 of our era, but no record has been preserved of any epidemic during the long period of the Middle Ages. Hecker describes an epidemic in Holland in the year 1337, and ever since the middle of the sixteenth century it has been noted in almost every country under the sun. It appeared in Holland in 1557, and passed through France and Switzerland to Spain, and after ravaging various parts of that country for forty years it passed into Italy. In both Spain and Italy it was characterized by a marked contagiousness and an extraordinary depression of the vital powers.

In 1739 it made its first appearance in England, and soon after it broke out in France, Sweden and Norway. Its first recorded appearance on this Continent was at Roxbury, Mass., in 1643, and again in Maine in 1671. In 1735 it re-appeared at Kingston, N. Y., and in 1741 it raged in Cambridge, Mass. In 1771 Dr. Samuel Bard, of New York, wrote a treatise upon

an epidemic sore-throat which seems to have been identical with diphtheria. From that date the disease was little known till its outbreak at Tours, France, in 1818, though Dr. Aitken, one of the best medical writers of our day, affirms that "it terminated the life of the celebrated Washington, and of the Empress Josephine." Bretonneau, one of the keenest of observers, watched the Tours endemic, and his very accurate account of it appeared in 1821, and from that year till 1829 it was never absent from France and Switzerland. All memory of the disease had almost passed from the English medical mind when, in 1849, a Welsh surgeon, named Brown, practising at Haverfordwest, announced its appearance on British soil; he reports 200 cases, with 40 deaths.

In 1856 it prevailed in Boulogne in a very fatal form, and the following year it crossed the Channel, and during the years 1858 and 1859 it caused no less than 20,000 deaths in England alone. In 1856 it appeared simultaneously in the States of New York and California, and in 1858 it passed into Ontario from Michigan. It would be a monotonous task to give a detailed history of the disease since 1858, for the cases were innumerable and the literature almost unlimited, but I think that nothing is more certain than that we will have recurrences of the disease periodically for a number of years, when it will depart to return after an absence of half a generation.

There has been much dispute concerning the essential nature of diphtheria, but at present the generally received opinion is that certain minute vegetable organisms, spoken of as *bacteria* or *micrococci*, are quite inseparable from the disease, that in fact, in the words of an acute German observer, "*without micrococci there can be no diphtheria.*" These minute organisms, which are really exceedingly small fungi, first attach themselves, as a general rule, to the mucous membrane of the throat or nostrils, and from these points of inoculation they spread themselves through all the adjoining tissues with astonishing rapidity till all the tissues and all the membranes are thronged with them. Thus it is that diphtheria, in the first place a *local disease* of the throat or nostrils, soon becomes a *blood disease*, at

times so virulent that many patients die at the very beginning of the process of exudation. The precise manner in which these *bacteria* act upon the blood is as yet unknown. It may be by consuming the very life of the blood, thus causing a kind of decomposition, or it may be by producing a poisonous action peculiar to itself. I incline to believe that the bacteria are not themselves the poison of diphtheria, but that they are merely *the bearers of the poison* into the interior of the system. At any rate a change takes place in the blood which I have repeatedly had an opportunity of verifying; the blood loses its red colour and assumes a brownish tint like plum juice, staining the fingers purplish-brown. This profound change in the blood is undoubtedly the cause of the sudden and extraordinary loss of strength, and probably of the semi-paralytic state which so often follows the disease. Quite a number of physicians hold that the contagium of diphtheria is not a micrococcus, but that it is of a gaseous nature, the result of decomposing fæcal and other organic matters. Still another section maintain that diphtheria is a purely local disease.

Is diphtheria contagious? This question is of great moment to the friends of the sick, and the answer is not altogether consoling. Diphtheria *is* contagious, but, as a rule, only in a moderate degree. But it must be noted that at times it is *exceedingly* contagious. The diphtheria poison is by no means as virulent as that of scarlet fever or small-pox, for a healthy person generally requires close and somewhat prolonged contact in order to acquire the disease. Some patients take the disease twenty-four hours after exposure, and, according to excellent authorities, the period of incubation may last from one to two months. The poison clings to the patient and all his surroundings, his clothes, bedding, books, and especially to the carpets. But I know of no authentic case in which diphtheria has been carried from one family to another by the passage to and fro of persons who were themselves unaffected by the disease. Convalescents carry the poison about with them for a considerable length of time. About two years and a half ago a young girl, in the County of Argenteuil, had a very severe attack of

diphtheria, and on her recovery she found much difficulty in getting a temporary home. So six weeks after recovery she came to Montreal and took service in a family living in the west end of St. Catherine street. No diphtheria prevailed in town at that time, and her employers, quite unsuspicious, allowed one of the children, a delicate little fellow of five years, to share her bed. At once the child was attacked with diphtheria, and only recovered after a desperate struggle. It must be noted that a very mild case may communicate the disease in a very serious form, and on the other hand exposure to a bad case may bring on a mild attack. The severity of the attack depends upon the exposed person's state of health, and especially upon the age. Again, a difference of susceptibility exists even in members of the same household, and this difference cannot be recognized beforehand. Exposure to fresh air seems to dissipate the poison, and yet I have known instances in which, in spite of disinfection, the poison clung tenaciously to houses, promptly attacking all new-comers. And yet the poison is not capable of any very wide diffusion in the air.

How does the poison obtain access to the system? Bretonneau, a great French authority, thought that the disease could not be communicated unless the poison came in contact with the mucous membrane or with the skin when denuded of the epidermis. But here he is most certainly mistaken, for I have often had eyes and lips and nostrils covered with diphtheritic secretions while examining patients, without taking the disease. In very many cases—perhaps a majority of the whole—inhalation of the poison is the first step in the development of the disease, and hence the constitutional symptoms, such as fever, malaise and nausea, are often noticed before any visible symptoms in the throat. Mr. W. B. Power, of London, has proved that milk may be the vehicle of the poison, and I am certain that danger often lurks in the curious compound which Montrealers style water.

Still, in spite of all that I have said, I would repeat that, as a rule, diphtheria is but moderately contagious.

Sir William Jenner describes a number of different forms of

diphtheria ; the mild form, the inflammatory, the insidious, the laryngeal, and the asthenic. But amid all these diversities of form and all the variety of the local affections, it is always the same disease which we encounter. For it is certain that *diphtheria is a unit*, and it is always diphtheria just as it is always scarlatina, whether the form be simple or anginose, mild or malignant. The differences in the disease depend upon the peculiarities of the individual, precisely as in small-pox or measles.

Diphtheria is not caused by defective drainage, though defective drainage is the evil soil in which the diphtheria poison germinates. During the present winter (1883-4) the best built and best drained quarter of Montreal has been severely scourged while low lying, ill-drained parts of the city have escaped in great measure. I feel certain that, as a rule, the vicinity of large bodies of water favours the development of the disease, and dwellers on the banks of Lake Erie suffered far more than those at some distance from the lake ; damp, marshy districts are supposed to be favourite haunts of diphtheria ; but I have often seen it sweep over dry, rolling lands which had always been exceptionally healthy. The truth is that it prevails alike in lonely farm-houses and in the crowded streets of a large city, in the poor homes of the needy, and in the mansions of the rich. One of the worst local outbreaks I ever saw was in an isolated farm-house in Charlotteville, Norfolk, Ontario. The family consisted of father, mother and ten children, and I was first called to a fine boy of seven years who lay, silent and stupid, on his mother's lap with livid face and bluish forehead. They had had no intercourse with infected districts yet *all* had a virulent type of the disease. No one, except myself, went near the house, and no one left it till the endemic burnt itself out, and the pestilence spread no further. Three died, including the child, hopeless when first seen, and the results were fairly good.

Again, it may be endemic in one quarter of a town for some time, and then suddenly shift its quarters to another part. In the year 1879 the *Witness* newspaper published a most remarkable document entitled " A Health Map of the City of Montreal,

showing the annual death rate per thousand for the average of the years 1876, 1877 and 1878, resulting from Small-pox, Typhoid fever and Diphtheria. Prepared by Messrs. Bovey and Dawson." In this curious document, for the accuracy of which almost the entire profession can vouch, St. Bonaventure street and the neighbouring streets are credited with a death rate of 25 to 30 per thousand from these diseases, while St. Catherine street and its vicinity get credit for a death rate not exceeding 5 per thousand. But during the present winter, the dwellers on the line of St. Bonaventure street have enjoyed comparative immunity, while those on the line of Ste. Catherine have suffered severely.

Season has but little influence in causing the disease, and yet my own experience leads me to believe that most cases occur in winter. Some observers hold that want of cleanliness does not produce the disease, but while this is true in a certain qualified sense, it is certain that filth contributes to its development and its spread. The less care that is given to ventilation and cleanliness, and especially to *the removal of the expectorated matter*, the more virulent does the disease become.

Sex has no influence on the frequency of diphtheria, but *age* has a very strong influence in predisposing to the disease. Infants under one year are not so liable as older children, and most of the cases occur between the ages of one and seven. Diphtheritic croup is most frequent and most fatal in children under five, though no age is exempt from this disastrous phase of the disease.

Diphtheria is the most insidious of all the acute diseases. I have seen children running about, apparently in perfect health, who were certain to die within twenty-four hours. I remember one Christmas morning I paid a flying visit at a friend's house on my way to a distant patient. I noted that my friend's oldest child, a fine boy of two and a half years, had a darkish substance projecting from both nostrils. I called him to me and found it to be a true diphtheritic membrane, and on examining the throat, he vomited half a saucerful of very offensive matter. Apparently there was little the matter, but prostration set in very

rapidly and he sank in forty-eight hours, and this was the commencement of a local outbreak of extreme malignity. But, most fortunately, the malady usually gives some warning of its advent, though the very trifling febrile symptoms might precede almost any acute disease. When you examine the throat during this slight fever you often find no morbid appearance whatever; only occasionally you note a very slight inflammation of the tonsils. I have often noticed, too, that pain is more common in the mild cases than in the severe ones, and this presence of pain, often alarming to the mother, is really a sign for good. The fever begins with a very slight chilliness, malaise and aching in the limbs, headache, drowsiness, loss of appetite and sometimes nausea and vomiting. So frequent is the latter symptom, especially in the more severe forms, that its occurrence in young children during an endemic of diphtheria should always excite suspicion. After this has lasted from twenty-four to thirty-six hours, you find on examining the throat that it is slightly red, and this redness, even from the commencement, differs from that of simple sore throat, in that it is bluish-red or even violet in hue. At the same time the neck feels a little stiff, and on examining the glands at the angle of the jaw they are found to be swollen and tender. Very soon a patch of whitish membrane appears on this bluish-red base, almost like a patch of cream, and from this time the redness spreads rapidly. Even at this early stage, it must be noted that the depression of the patient is out of all proportion to the apparent danger of the sore throat. The face has a sad and wearied expression which is quite characteristic. The swelling of the glands increases, but the nostrils, in these milder cases, is seldom affected. The tongue is thickly coated, with red, enlarged papillæ, and the odour of the breath is offensive in most cases. The pulse varies from 120 to 140, and the fever always remits in the morning and rises towards evening. The other tonsil is speedily invaded, and they are often so much swelled that they touch each other. Swallowing is almost always easy, and the diphtheritic membrane rarely extends towards the front of the mouth. By the fourth or fifth day, or in some cases even earlier, the exudation

begins to fall off, leaving behind very superficial ulcers which soon fill up, or else dark reddish patches. But after the first membranes drop off, others may take their place, thus prolonging the disease to ten days or even two weeks. At the same time the fever declines, the swollen glands diminish in size, the tongue cleans, and the patient enters upon convalescence. But he continues weak for quite a length of time, in this respect differing from all other forms of throat disease.

This is the course of the disease in the milder forms, and very many cases stop here and never go any further. But the membranes in the throat may keep on spreading and thickening, and the cream-like appearance is replaced by a dingy ash-colour, always of evil omen; speech becomes thick, even when no croupous symptoms are present, while the prostration deepens rapidly. Sleep is restless and disturbed, and violent earache, coming on in paroxysms, adds to the child's discomfort. The glands at the angle of the jaw become very large, and all the neighbouring tissues participate in the swelling. A thin, offensive discharge escapes from the nostrils and the breath is very offensive. On placing the hand over the heart it will be noted that its action is very feeble, and the pulse, as might be expected, is small, weak and irregular. The tongue becomes dry and dark, and the lips are cracked and hard. The passages from the bowels are usually normal, though diarrhœa may be caused by swallowing the fetid membranes, which may readily be detected in the stools. As the disease advances the face becomes bluish in hue, especially on the forehead and around the eyes, and this I have learned to look upon as a most characteristic sign—*not* for good. The urine is scanty and often loaded with albumen. Ulceration of the throat often accompanies and succeeds the diphtheritic process in these severe cases; I have even seen the uvula—that curious little tassel that you see on looking into the throat—wholly or partially destroyed by this ulcerative process. In spite of the prostration of the patient, he is generally able to walk, and he often persists in being up and dressed even when very ill indeed.

If now the disease is about to terminate favourably, the swell-

ing of the glands diminishes, and the diphtheritic membranes are detached and thrown off, often in large patches. Frequently these patches increase in thickness, apparently from an infiltration of thinnish pus, just before they are detached, and the parts which were the seat of false membrane continue red and swollen for a number of days. The pulse becomes fuller and stronger, the fever wholly disappears, the tongue cleans, the breath regains its sweetness, sleep becomes quiet and restful, and only the dreadful feeling of weakness remains. Such a case will last from ten days to a fortnight.

But should an unfavourable issue be at hand, the weakness increases hour by hour, the skin becomes cool, the pulse almost or quite uncountable, the glandular swelling enlarges, a horrible smell issues from the nose and mouth, and the patient, utterly exhausted, passes quietly away.

But a still more malignant type of the disease, fortunately not common, remains to be described, in which from the very first the false membranes in the throat are tough and elastic, resembling moist kid-leather. In this form membranes soon appear in the nostrils, with profuse and fetid secretion and a highly offensive carrion-like odour. At times the secretions remind one of the old-time mercurial salivation, now quite rare. The glandular swelling is very great, often passing beneath the chin and down the neck. I have numbers of times witnessed true gangrene in these terrible cases, and owing to the presence of poisoned blood in the brain, but little pain is complained of. At first the fever is quite high, but as the disease advances the patient becomes cooler than natural, with a feeble, fluttering pulse. Death takes place from exhaustion, and the mortality is great.

I have repeatedly seen *diphtheria of the eyes* without any throat affection whatever. It looked like a small patch of cream on each eye, but the bluish forehead and the complete prostration of the vital powers showed that the eye disease was no mere local affection. Diphtheritic ophthalmia may appear as part of the general disease, but I have generally seen it separate and alone.

A few days after the commencement of the disease it may attack the larynx, causing the very serious form known as diphtheritic croup. The child is hoarse with a rough, harsh cough, while the breathing is sawing and difficult. The temperature rises and the pulse is rapid, small and irregular. The hoarseness and difficulty in breathing rapidly increase, and even when the disease is of a mild type the chances of recovery are not good.

Diphtheria is sometimes followed by paralysis, and this is more likely to follow in mild than in severe cases. A partial paralysis of the throat is perhaps the most common form, and here, of course, swallowing is difficult, and drinks return through the nose. Or the partial paralysis may attack the heart, causing a remarkable retardation of its action with feeble, slow and irregular beats. I remember two cases, in one of which the heart-beat was 24 to the minute, and the other 28. A gradual and progressive weakness often follows this disease, such a profound exhaustion of the powers of life that the patient may die long after apparent recovery. All these varied states speak eloquently of *blood-poisoning*. The paralytic sequelæ of diphtheria, even the alarming heart state, usually end in recovery, but the utter exhaustion of the vital powers is less amenable to treatment.

How will you distinguish diphtheria from other diseases of the throat? As a rule it is easy to do so, but when there is *no sore-throat* and *no exudation at all* it is not so easy. The swollen and reddened throat with grayish patches quite adherent to the tonsils, the swelling of the glands at the angle of the jaw, and the fever, combine to form a morbid state which stands alone.

Catarrhal sore-throat is quite different from diphtheria, and yet it is often mistaken for it. In catarrhal sore-throat there is a moderate redness and swelling, with an excessive secretion from the tonsils. But the redness is not nearly so intense as in diphtheria, and it is not so evenly diffused, and the glands at the angle of the jaw are very rarely enlarged. Again the exudation of catarrhal sore-throat is in the form of small isolated spots of pus at the entrances of the follicles of the tonsils, and

this is entirely unlike the diphtheritic exudation already described. In catarrhal sore-throat the inflammation extends over the entire throat; diphtheria, as a rule, affects only one side. Lastly, a mere catarrhal sore-throat is never followed by profound exhaustion, such as that which succeeds diphtheria.

Quinsy is something like diphtheria, and is often mistaken for it. But in quinsy the difficulty in swallowing is much greater than in diphtheria, and the soft yellowish secretion is not at all like the diphtheritic membrane. Then quinsy often progresses to the formation of matter, but the formation of matter is no part of the diphtheritic process. In quinsy again the lymphatic glands are not enlarged at the onset of the disease; in diphtheria they almost always are.

On the whole perhaps scarlet fever resembles diphtheria more closely than any other disease. Both have sore-throat as a leading symptom, and both have a red rash on the skin. But there are numerous points of difference between the two diseases, and it is well to learn these as they frequently prevail simultaneously in the same locality, and even in the same household. But in scarlet fever the throat affection is almost invariably preceded by severe fever; in diphtheria the fever is not nearly so intense. The well-known rash is present in the vast majority of cases of scarlet fever, but the red rash is seldom present in diphtheria, and I have seen severe epidemics in which it was never noted. The rash of scarlet fever is punctated and is followed by scaling-off; the rash of diphtheria is a smooth uniform reddish blush, and is not followed by scaling-off. Croup, again, is very rare indeed in scarlet fever; it is unfortunately too common in diphtheria. The redness in the scarlet fever sore-throat is uniformly diffused, but in the sore-throat of diphtheria the redness is concentrated on the part about to be the seat of exudation. Pain is the leading characteristic of the sore-throat of scarlet fever; pain is generally absent in the sore-throat of diphtheria. Finally, one disease does not secure the patient against an attack of the other, so that the conclusion is that with many points of resemblance they are entirely distinct diseases.

When a child is attacked with diphtheria, what likelihood is there of recovery? Much depends upon *the type of the disease*, more upon *the time at which the disease is recognized*, but most of all upon *the kind of treatment instituted.* If the medical attendant tortures the little one with blisters, and gargles, and swabbings and cauterizations, the outlook is far from being bright. But if the disease is promptly recognized so that treatment can be commenced at once, and if that treatment is *mild, not meddlesome*, then the chances are much better. But it is well to bear in mind that though the danger undoubtedly increases in proportion to the extent of the exudation, still it is also true that very slight throat symptoms give no guarantee of recovery. A slight case may become malignant within twenty-four hours, and sudden death in children apparently not very ill, is one of the peculiar characteristics of diphtheria.

If the fever continues beyond the third day there is danger of a fatal issue. The glandular swelling is a very accurate measure of the gravity of the disease, and a diminution of the swelling is a very favourable sign. The younger the child the greater the danger, and children born when the mother is ill of diphtheria always die. A complete loss of appetite with disposition to drowsiness is very ominous. If the larynx becomes implicated the chance of recovery is but slight, for the least hoarseness of the voice or cough, and especially of the breathing, is of most evil omen. A copious deposit of albumen in the urine is still another threatening symptom. A good deal of exudation in the nostrils, accompanied by acrid discharge, is a bad sign. Vomiting and purging at the commencement of the attack always indicate danger, the more so as the medical attendant is apt to be thrown off his guard. A very quick pulse after the second day indicates danger, and so does nightly delirium. A rapid elevation of temperature is a bad sign, but a rapid fall is even worse.

At times the mortality is very great. Thus in Italy in 1873, out of a total of 3,319 cases, 1,101, or very nearly one in three, proved fatal.

Dr. Guild, of Rupert, Vermont, reports that in the epidemic

of 1862 the mortality was 90 per cent., but then that was under blood-letting and calomel.

On the other hand, Dr. John Bridger, of Cottinham, England, reports that from 1862 to 1864 he treated 3,000 cases with the loss of only 75.

Dr. A. Jacobi, of New York, states that in many a year the morality is not higher than 5 per cent. of all the cases, adding that 10 per cent. is certainly a high rate. He further states that in severe epidemics, of the cases in which the larynx is invaded the mortality is 95 per cent.—19 *out of every* 20.

In a recent issue of the *Cincinnati Lancet and Clinic*, Dr. Mary J. Finley, City Physician, of Mansfield, Ohio, reports 329 cases in that city from January 1st to December 1st, 1883, with 27 deaths—a mortality of a little over 8 per cent.

Let us now turn to the homœopathic statistics. Dr. Bernhard Bœhr, of Hanover, Germany, states that "in many epidemics at least fifty patients out of a hundred have died under allopathic treatment, whereas, under similar circumstances, the homœopaths only lost ten out of a hundred."

Dr. Adolphus Lippe, of Philadelphia, reports that in his cases which had taken no allopathic, mongrel or domestic treatment, his mortality was not above one per cent.

Dr. Charles Neidhard, of Philadelphia, during an epidemic in that city, reports but two deaths out of three hundred cases treated by him.

Dr. G. H. Carr, of Whitehall, Michigan, during the fall and winter of 1878-79, treated one hundred cases without any deaths.

Dr. J. P. Dake, in 1861, treated, within the period of four months, one hundred and ninety-three cases, at Pittsburgh, Pennsylvania, losing seven of the number.

Dr. W. C. Dake, of Nashville, Tennessee, in two months treated twenty-six cases, mostly of a malignant type, of which he lost two.

Dr. J. N. Brigham, of Grand Rapids, Michigan, lost but one case out of fifty, in the summer and fall of 1877, during a period when it was exceedingly malignant.

Dr. G. H. Wilson, of New Meridan, Connecticut, treated two hundred and twenty-five cases with eleven deaths.

Dr. De Forest Hunt, of Grand Rapids, Michigan, lost but eight out of two hundred and fifty cases.

When diphtheria is prevalent, all children should have their throats examined at least once a day, and twice is a good deal better than once. When the disease has actually broken out in a house, the healthy children of that family should be at once withdrawn from school. Of course, when the endemic is at all severe, all schools should be closed—better empty schools than empty chairs at our hearths.

Children ill with diphtheria should be sent to the upper story of the house, for it is a well ascertained fact that *the poison ascends*.

In all suspicious cases the throat should be gargled with a mixture of equal parts of spirits of wine and water. This was introduced by the late Dr. Von Grauvogl, and it is the only gargle worthy of confidence.

The food question is very important in diphtheria, for unless it is given in proper quantity, all treatment may be unavailing. Milk, beef-tea, oyster-soup, custards are all excellent, but nothing salt or sour should be given.

Water is by far the best drink, but tea is quite admissible. The water should be first boiled, *then* filtered.

A small piece of ice, kept almost constantly in the mouth, often has a very happy effect in the early stage of the disease.

The patient should have his clothing changed every day or two, and it should be carefully aired and warmed before it is put on. The bed clothes, too, should be changed at frequent intervals, with the same precaution.

The discharges from the throat and nostrils are carriers of contagion, and should be at once neutralized by means of a strong solution of sulphate of iron. A still better plan is to receive them on pieces of soft calico which should be promptly burned.

Ventilation should be carefully attended to, and the best plan is to let down a window from the top in a neighbouring room.

All carpets, curtains and unnecessary drapery should be

removed from the sick chamber, for all these harbour the poison of the disease.

On no account should curtains saturated with chloride of lime be hung in the door-way of the sick-room. Croup is one of the most dangerous of the complication of diphtheria, and chloride of lime invites croup more effectually than any agent with which I am acquainted.

Some writers advise that diphtheria patients should have a tent made over their cribs by means of curtains or blankets, steam being conducted within this by means of an elastic tube fixed to the sprout of a kettle, but the so-called tent is often made entirely too hot, and it is quite sufficient to keep the air moist by boiling water in an open vessel over a spirit lamp.

A sponge-bath of tepid water is always in place, for it is important to preserve the excreting powers of the skin.

A patient convalescent of diphtheria should abstain from mingling in society for some time. School and church and all public gatherings should be let severely alone for several weeks, and before resuming attendance at school the child's person as well as its clothes should be thoroughly fumigated with sulphur.

The attendants on the sick should frequently wash the hands in chlorinated soda, especially after handling the discharges from throat and nostrils.

Should death unfortunately take place, the funeral should be as prompt and as quiet as possible. Few should attend, and most certainly no children nor young people.

Sewers and drains, especially the water-closet drain, should be carefully investigated by a sanitary engineer, and attention should be given to the trapping of overflow, lavatory and all other waste pipes, in order that the house drains and sewers may not be ventilated into the bed-rooms.

But drains should never be opened while any one in the house is ill of diphtheria. In the last week of August, 1881, I was called to see a boy, aged five, living in St. Antoine street. I found him very ill indeed with diphtheria, and, when giving directions, I made some inquiries as to the drainage. Through

some misapprehension an expert was sent for and all the drains thrown open, and as a result of the liberation of the diphtheria poison from its lair, father, mother, three children and the housemaid were struck down. After a hard struggle all recovered. *Drains should never be opened while any one in the house is ill of diphtheria.*

The clothing and bed-clothes of diphtheria patients *should not be washed* till they have been most thoroughly fumigated with sulphur, and, if possible, baked in an oven at a temperature of 212° F. for one hour. As an illustration of the danger of neglecting this very simple precaution, I quote the following instructive case from a recent report of the Provincial Board of Health, Ontario. It is reported by a medical gentleman from District V. of Toronto:

"We have lately had five cases of diphtheria here, three of which were fatal, originating from a servant girl having washed a bundle of clothes worn by her master while nursing part of his family who were down with the disease near Toronto. No part of the bundle of clothes washed was worn by any one of those down with the disease. The servant girl in question, fourteen years old, died; her sister, twelve years old, who assisted to nurse her, contracted the disease and died, and a third sister, seventeen years old, in the same house, also succumbed to the disease. The three died within fifteen days. Two other children, neighbours, were in the house in question two or three times and took the disease. Both have about recovered."

Disinfection must be looked upon as a most important means of prevention, but it is a fallacy to suppose that a mere odour of carbolic acid will suffice to disinfect. After an abundant experience, I reject all disinfectants save *fumigation with sulphur* only. In the sick room itself the best disinfectants are pure, fresh air and strict cleanliness, combined of course with the indispensable isolation.

The sulphur method of fumigation is simple in the extreme. The room to be disinfected should be closed as tightly as possible. In the centre of it should be placed a large wash tub but partly

filled with water. Then in the middle of the tub four bricks should be placed, pillar-fashion, to support a large tin or iron dish filled with hot coals. On these coals a quantity of good sulphur should be placed, and the room should remain closed for twenty-four hours. A second fumigation is quite in order, followed by abundance of hot water and soap with plenty of fresh air.

Dr. McNeil, one of our latest and best writers on diphtheria, suggests the use of ozone, "nature's own disinfectant," but though the suggestion is valuable, the means for applying this chemical agent are entirely too intricate for common use.