Facts about fevers, or, Practical rules for preventing the spread of indection : especially in relation to outbreaks of scarlatina and typhoid fever / by David Page.

FACTS ABOUT FEVERS;

OR,

PRACTICAL RULES

FOR

PREVENTING THE SPREAD OF INFECTION,

ESPECIALLY IN RELATION TO

OUTBREAKS OF SCARLATINA AND TYPHOID FEVER.

BY

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To the Memory of

MY FRIEND

ALFRED DUDLEY KEIGHTLEY.

This little Work

IS

AFFECTIONATELY INSCRIBED.

PREFACE TO THE FIRST EDITION.

THERE are few persons who, in the course of a lifetime, manage to escape, and there is probably not a household which does escape, one or more of the numerous complaints which are popularly known as *Fevers*.

The distinguishing character of this group of Diseases is that of infection or contagion, or, in other words, power of communication from person to person. With this remarkable property, as well as with the many unsuspected ways whereby infection is spread, some acquaintance is absolutely necessary for the successful employment of preventive means.

The object of this pamphlet is therefore to give shortly and to the point, to the reader, who may have neither time nor opportunity to obtain it for himself, that information about well-established medical facts concerning these matters, which may prove useful in the safe management of the sick room, and for the protection of the healthy against infection.

DAVID PAGE, M.D.

NETHERFIELD, KENDAL,
1*st March* 1880.

PREFACE TO THE SECOND EDITION.

THE rapid demand for the whole of the first edition of this pamphlet has confirmed the author's belief in the existence of a pretty general desire amongst educated people for better and more precise knowledge of those principles of health protection which it has been his aim to impart in its pages.

He sincerely trusts that where, in any of the wide-spread households to which this little work may have found its way, the need has unhappily arisen, his object in this respect may have been fulfilled.

In the present issue a short chapter on house drainage has been added. This addition has been partly suggested by the remarks of Sir William Jenner, on a recent occasion at the Mansion House.

DAVID PAGE, M.D.

1*st September* 1880.

FACTS ABOUT FEVERS;

OR,

PRACTICAL RULES FOR PREVENTING THE SPREAD OF INFECTION.

SANITARY precautions during Infectious Sickness, to be in the highest degree effectual, require :—

I. SEPARATION OF THE SICK FROM THE HEALTHY.
II. DISINFECTION OR DESTRUCTION OF THE FEVER-POISON.
III. TIMELY INFORMATION TO THE OFFICERS OF THE SANITARY AUTHORITY OF THE EXISTENCE OF SUCH SICKNESS.

Foremost of all precautions against infection is *the prompt isolation of the sick.* This is the golden rule of prevention. It ought to be known that this is quite as needful for the welfare of the patient as for the safety of the healthy, inasmuch as the terribly malignant and quickly fatal character which infectious diseases, particularly Scarlet Fever, are oftentimes too apt to assume, and of which many who read this may be well aware, is frequently caused by overcrowding, or, in other words, want of room, of fresh air, and of common cleanliness. For the patient's own sake, therefore, who ought to be placed under conditions favourable to a mild attack rather than a malignant one, and to recovery rather than to death, attention to this rule is the duty of every parent or guardian.

Early information of the outbreak of infectious illness ought to be given to the Authority in every instance, as, although their assistance or interference may not be required, it is highly important that they should become aware of the existence of every case of infection springing up in their district. It is not always within the opportunities of one individual to cope with the risks of infectious sickness, and a single neglected case may blaze into an epidemic entailing an untold amount of suffering and misery.

The existence of such sickness, even in a private family, becomes, therefore, a matter of real public concern, which it is the duty of the doctor, when called in, to announce to the head of the household, and of the latter to notify forthwith to the Authority. Concealment of the existence of such sickness is tantamount to reckless and dishonest indifference to the welfare of the neighbourhood.

The diseases which form more especially the subject matter of these pages are :—SCARLET FEVER or SCARLATINA;* DIPHTHERIA; TYPHOID FEVER (known also as Enteric, Gastric, or Low Fever); and SMALLPOX.

* Scarlatina is merely the Latin and medical name of Scarlet Fever (febris scarlatina), and not a mild variety of the latter as some suppose—an absurd and dangerous error.

What must be done to Prevent the Infection from Spreading? is the first question to be asked when infectious illness breaks out in a family.

It is the aim of these instructions to furnish a practical reply.

The following well-ascertained facts in connection with these disorders ought to be generally known :—

1. These disorders have the peculiar property of infection or contagion, that is to say—the power of spreading from person to person, from the sick to the healthy. The infection is catching from the very earliest symptoms of the illness, *and for some time after the patient is apparently well again*,—a most important fact to be borne in mind.

In connection with this point, a serious question arises, as to the proper time for change of air, return to school, or contact in any way with the healthy.

How long will the Infection last, and how long before the risk of giving it to others is over?

The answer is, so long as the diarrhœa or looseness of the bowels in Typhoid Fever continues, so long as the least particle of peeling skin in Scarlet Fever or Measles, and of scab in Smallpox, is seen upon the face, hands, or feet, *and for a fortnight* after the apparent disappearance of these signs of infection. By experience it is found that no patient is free from infection until six weeks from an attack of Typhoid Fever, Measles, or Diphtheria, and two months in the case of Scarlet Fever. No case of Scarlet Fever is safe, and no child recovering from Scarlet Fever should be received at school until the end of the eighth week from an attack. By neglect of these precautions children will almost certainly bring infection with them, and with the result that other healthy children will carry it to their homes.

The mere enumeration of cases where no infection has followed after exposure within shorter intervals, does not in the very least degree affect this general rule. Here is an example of the danger attending neglect of it :—

"On 1st April 1878, Master P. left school at Wimbledon, on the fortieth day of an attack of Scarlatina for his home at Brighton. Before leaving desquamation had to all appearances terminated, the feet having desquamated twice. Also he had repeated carbolic acid baths, and he had left all his infected clothes behind. After reaching Brighton, his face and feet desqaumated again ; and four days after his arrival his mother fell ill with Scarlet Fever."

I. It is characteristic of these disorders that, while the symptoms may show themselves almost immediately after exposure to infection, more commonly the infection lies dormant in the system for some time before the sickness declares itself. This interval between the reception of the fever-poison, and the first appearance of the symptoms, is known as the period of incubation or latency of the disease.

A knowledge of this fact is of practical importance in finding out the source of infection, and more especially in answer to the following questions :—

How long will the Disease be in showing itself in a person who has been exposed to the risk of Infection?

How soon may a person who has been exposed to the risk of Infection be pronounced safe?

The following are the well-ascertained dormant periods of the chief infectious disorders :—

1. SCARLET FEVER—In a large number of cases, forty-eight hours —in none longer than seven days to earliest symptoms of sore throat and stiffness of the neck. The rash in Scarlet Fever usually appears on the second day of sickness.
2. DIPHTHERIA—From two to five days.
3. MEASLES—*Ten days to earliest symptoms* of running at eyes and nose. The rash comes out on the fourth day of the sickness.
4. TYPHOID FEVER—Commonly fourteen days—*may be twenty-one days.*
5. SMALLPOX—From *ten to fourteen days* to earliest symptoms of fever and pain. The eruption of Smallpox appears on the third day of sickness.

The longest intervals above mentioned are therefore the proper periods during which any one who has been exposed to one or other of these infectious diseases, and who may therefore have received the infection, is not safe, but should be kept under observation. Should the disease not appear in this interval, then there is the satisfaction of knowing that it has been escaped.

This fact is of special importance in regard to the question of breaking up boarding schools or similar institutions, as showing that no child should, under such circumstances, be sent from an infected household among the healthy and susceptible until the expiration of the longest interval belonging to the disease in question, during which, the child having been kept apart from the sick, no symptoms of illness have appeared.

For example, when Scarlet Fever breaks out in a household, and the sick are promptly separated from the healthy, the latter, if already infected, will sicken probably within forty-eight hours, and certainly within a week, after which they may be pronounced safe, and after baths and entire change of clothes, with perfect safety sent home.

The following occurred under my own observation, and shows the value of adhering to this rule :—

"A girl of seventeen years of age came on a visit to an orphanage, 23rd February 1880. She had been a former inmate, but was just then out of a situation. She slept with one of the elder girls. On 25th February she fell ill with Scarlet Fever, and was removed to the sanatorium of the institution. The girl with whom she slept ought to have left on the 28th of February for a situation in the West of England, but it was decided to postpone her departure and keep her under observation for a week. On the evening of the 28th she sickened with Scarlet Fever."

II. Infectious diseases exhibit widely different degrees of severity, but it is well to bear in mind that the slightest and most incipient degree is as intensely infectious as the most alarming

and developed, and that the same unrelaxed precautions are required for the one as for the other. Mildness of attack is only a matter of good fortune to the sick person thus attacked, and gives no security whatsoever to the healthy.

Do not forget that infection is a quality of the fever poison, and not altogether one of dose or length of exposure. The mildest case and a moment's exposure may give the infection and the disease in its most malignant form, the issue depending upon the state of the individual and his sanitary surroundings at the time, or in other words, *the seeds of infection are always the same, the result depending upon the soil in which they happen to be sown.* I have known some of the worst and most fatal outbreaks of Scarlet Fever to have been preceded in the affected households by the mildest possible attacks.

Of very many instances of this kind, the following, told by a late eminent physician, Dr Murchison, may serve as notes of warning :—

"An officer in the Limerick Artillery, aged twenty-two, arrived in London on 2nd September 1858. On 5th September, in the afternoon, he visited a friend, whose little girl had Scarlet Fever, but so slightly that she was not confined to bed. He took the girl on his knee and kissed her. On the morning of 8th September he was quite well; but towards evening he was attacked with headache, heaviness, and sore throat, followed by a dusky, scarlet rash, ulcers on the tonsils, constant delirium, sleeplessness, and great prostration. He died on 14th September, at eleven A.M."

The second case, with its sad ending, told by Dr Murchison of himself, is even more instructive, as it shows how very slight indeed, and even unrecognisable by a skilled doctor, the source of infection may be.

"In the afternoon of 14th May 1863, while from home, I was myself seized with general pains, fever, sore throat, and great prostration. I did not get home until eleven o'clock, and all next day I was very ill in bed with the same symptoms, but there was no rash. Suspecting that I had Scarlatina, I sent for a medical friend to advise me as to sending away my only child; but, by the time that he arrived, late in the evening, I was so much better, that he gave a decided opinion that my attack was not Scarlatina, and next morning, as I was able to get up and attend to my duties, I believed that he was right, and did not send my child away. I have no doubt now from the sequel, and from what I have seen in other cases, that my attack was Scarlatina. I may add that at the time I was much exposed to the disease, that I never had Scarlatina before, nor have I had it since, and that for many months after that attack I was anæmic and out of health. On and after 16th May I saw my child as usual. On the morning of 20th May she was attacked with Scarlatina in a malignant form, of which she died on the 27th."

It is for this reason that of several persons exposed in seemingly an equal degree to the chance of infection, a few only may catch the disease. It also explains why a person may escape infection on one or many occasions of exposure, and yet catch it in the end.

Children are the great nursery of infectious disorders of all kinds, but it is a most mistaken notion to look upon these disorders as ailments which children are bound to have. No child is bound to have Scarlet Fever or Diphtheria, not even Measles, and to have any one of these

diseases points to bad hygienic conditions, and generally to some one's ignorance or neglect.

Always be on the alert against suspicious symptoms of illness in a child, and should fever be known to prevail in the neighbourhood, act at once on the suspicion by withdrawing the child and the rest of the family from school. This is a prudent and safe step, doing no harm, but possibly preventing much, for a very few days at the outside will clear up all doubt as to what the illness may turn out to be.

The appearance, for example, of a rash on the face, neck, or chest of a child, accompanied by soreness of the throat, however slight, should be the signal of instantly suspecting Scarlet Fever, and for acting upon the suspicion by keeping the children from school and neighbours' houses. The child may, indeed, be so very mildly attacked as not to be confined to bed, or for a doctor to be called in, but every precaution needful for preventing the spread of infection in more serious cases should be honestly carried out. Look at the child's hands, and see whether the skin is beginning to peel; if it is, then be certain you are dealing with Scarlet Fever in its most infectious stage. Keep that child warm and within doors, for there is not only danger to those about him, but to himself, as exposure to cold may bring on inflammation, ending in dropsy, and perhaps death. *Do not let a child go out of doors after Scarlet Fever while the skin is peeling, or for a whole fortnight afterwards.*

It is a mischievous delusion to look upon slight attacks of Scarlet Fever as something else, "as a scarlet rash going amongst the children," or the like.

By thus dealing promptly with early cases of Scarlet Fever, it ought not to be a matter of great difficulty to prevent the spread of infection in a school, to close which is always a serious affair, leading to much disorganisation and loss of valuable time.

In the management of boarding schools and similar institutions, everything will assuredly turn on the promptitude and decision bestowed in dealing with the first case of sickness. I know no other circumstance of life when the French maxim, "C'est le premier pas qui côute," has its truth better exemplified.

In ninety-nine cases out of a hundred the history of the introduction, say of Scarlet Fever, into a boarding school is the return of a boy after the holidays with the fever latent in his system. In a day or two the sickness declares itself, and then is the time for showing the necessity as well as the value of isolation. Every school ought to have a sanatorium or detached house in constant readiness for such emergencies as it is designed to meet. Not only should the boy and his clothes and bedding be forthwith removed to such a place, but his next companions should be removed to an "observation" ward, and kept apart for a week from the rest of the school, as it is amongst their number that the subsequent cases, if any, will appear. In large public schools, where the boys are located in several houses, the isolation should extend to the whole of the house in which the first case has broken out. These precautions may seem somewhat strict to those who have had no experience of outbreaks of fever in public institutions, but my acquaintance with the results of neglect of these I have just cited, in the case of an important institution to which I was consulting medical officer, convince me that the utmost

precaution that can be taken at such a time can err only on the side of laxity. In the event of an outbreak of fever in a boarding school, no boy should be allowed to return home until after a period of quarantine equal to the latent stage of the disorder in question.

The circumstances which may be held to justify the continuance of day schools during prevalence of Scarlet Fever are those wherein the children would otherwise be exposed to much risk in playing about the doors of infected houses, with children belonging to infected families, and more especially with children who are barely recovered from illness, whose skin has not yet done peeling, but who are in too many instances suffered by negligent parents to go out of doors. Under such circumstances, provided always that the teacher is able to exercise due supervision over the children who may be sent each morning, a child runs less risk by regular attendance at school.

This is particularly true in regard to town and village schools, as distinguished from the smaller schools of scattered country districts, where the children coming from considerable distances are brought together only during school hours. In these latter, the breaking up of the school is, according to my experience, the best and safest course.

It is otherwise with Measles, which being highly infectious in its earliest stage, and before it may be recognised, makes it almost impossible to prevent its spread in schools, and with Hooping-cough, which is infectious long before the hoop is heard. So also German Measles or Rötheln, a trifling disorder, deserving of mention only on account of its superficial resemblance to Scarlet Fever and common Measles. It resembles Measles in the duration of its latent stage, but is of much shorter course. The rash is of a brighter red than that of Measles, and with a tendency to become general and diffused as in Scarlet Fever, hence the name *Rötheln*, Red Measles (*Röthel*, ruddle, or red chalk), in contradistinction to *Masern* (*Maser*, a spot or speckle), Common Measles.

What is Infection?

Do not cheat yourself, and do not allow others, not even old women "who have seen a great deal of fever, and know what it is," to cheat you into the belief that an attack of Scarlet or Typhoid Fever is "only a surfeit of cold," that infection comes in the air, or is dependent upon the weather or the fall of the leaf. This is utter nonsense. Infection always springs from a previous case of sickness *somewhere, and from nothing else.*

It is quite true that there may not be, so far as you are aware, another case of sickness in the neighbourhood, or for miles around, and it is also true that one very often fails to trace the first case of Scarlet Fever or Typhoid Fever, or even of such a rankly contagious disease as Smallpox, occurring in a locality to any known source of infection. But negative evidence of this sort proves nothing, unless, indeed, the facilities and unseen ways which abound for spreading infection. Here is an example in which the knowledge of the source of infection was purely a matter of chance, and might easily have escaped attention :—

"On 1st March 1864, Mrs M. took her two children, Robert, aged four and a half, and his brother, aged two and a half, to University College Hospital, the latter having rickety deformity of the legs. They

were in the out-patient room from two to four P.M. While there Mrs M. sat next to a woman nursing a child who was very ill and had its throat wrapped up, and the woman told Mrs M. that she had four other children at home ill with 'Scarlatina and Diphtheria.' Mrs M. kept her younger child in her arms, but Robert stood at her side, next to the woman with the sick child. Early in the morning of 3rd March Robert was taken ill with shivering, sickness, and drowsiness; in the evening of the same day a scarlet eruption began to appear on the skin, which next morning was very copious and bright all over the body; and on 8th March the boy died. The younger child sickened with Scarlatina on 10th March, and died with pyæmic abscesses on 7th April."

In Robert's case the period of incubation was not longer than forty hours.

What you have therefore to believe and to keep in mind is this, that the experience of those whose practical acquaintance with these dangerous disorders entitles them to speak with authority, points to but one source of infection—the body of the sick person. From this source the infection is given off in the form of very small invisible particles of living matter. These constitute the fever-poison.

How Infection leaves the body of the Sick.

During illness the infection is thrown off from certain parts of the body which may be looked upon as its breeding places. The main outlets for the infection of these disorders are:—In Diphtheria, the throat; in Scarlet Fever, the skin and throat; in Smallpox and Measles, the skin, and the discharges from the mouth, nose, and eyes; and in Typhoid Fever, the discharges from the bowels. A knowledge of these facts is very important, for it will enable you to comprehend how it is that some of these disorders are more catching than others, as well as the reasons for the special precautions necessary to prevent their spread.

In Scarlet Fever, Measles, and Smallpox, the poison being given off by the surface of the body readily infects clothes or whatever else it may alight upon, thus making the sick person a source of direct infection to all about him. In Typhoid Fever, on the other hand, the poison being chiefly confined to the discharges from the bowels, there is but little risk to those who nurse or are about the patient save indirectly by carelessness in handling and disposing of the discharges, or of linen and bedding soiled by them. But bear well in mind that the whole of these diseases are highly infectious, that the poison is in every case thrown off in the form of small particles, and that the greater risk of direct infection in the one group than in the other, is owing simply to the circumstance that in the former the poison happens to be given off by the skin. As applied to these diseases, there is no longer any distinction in the use of the terms "infectious" and "contagious," a mere juggle of words having an origin in bygone ignorance of the precise mode of communication of the fever-poison.

How Infection is spread, and how it reaches the body of the healthy.

There ought to be no difficulty in understanding that infection when once it is thrown off from the sick person's body, *if not destroyed at once*

by disinfection, may be spread in an infinite number of ways, all, however, dependent upon the wholesomeness or unwholesomeness of local conditions, or, in other words, upon the degree of cleanliness of the house and its surroundings. *Filth and dirty houses harbour infection; ignorance and neglect promote its spread.*

A house which, on entering from the open air, smells close and stuffy, is one wherein the air is stagnant from want of ventilation, and foul from the effluvium of dirty rooms. This is exactly the kind of house to act as a fever nest, in which, during illness, the very air becomes infectious, and a source of peril to every one who crosses the threshold, and where afterwards the infection may lurk unaltered for months, perhaps for years, clinging to dirty surfaces, absorbed by fusty wall-papers, and wherever it is beyond reach of fresh air. It is for similar reasons that a damp house must always be an unhealthy home, and especially detrimental to children.

In the open air infection goes but a little way, not even across a street, certainly not in the wind, as was once imagined of the Asiatic Cholera.

Infection is carried about by much more definite agencies.

The undisinfected clothes and bedding of the sick may give the disease to those who wash or come into contact with them.

The following instance of infection conveyed by clothing is the best and most painful which has ever come under my investigation :—

"On 15th February 1880, M. S., whose children were just getting better from Scarlet Fever, and one of whom had died, 11th February, after an illness of fourteen days, sent a woollen jacket worn by her whilst nursing them to her sister-in-law, as a pattern for a new one. This sister-in-law, a girl of twenty, lived with her aged mother, some four miles distant, in a remote valley of the English Lake District. When she opened the parcel containing the jacket, she jestingly remarked to her mother, 'I hope I may not catch the fever from it.' She cut a pattern from it, wrapped it up, and sent it back that forenoon. Next day, 16th February, she complained of sore throat towards evening, and she died on 17th February of malignant Scarlet Fever. She had not been from home for at least a fortnight, and there were no other cases before or afterwards nearer than her sister-in-law's."

The undisinfected slops and discharges carry the infection wherever they may be thrown, infecting in return privies, cesspools, and drains, gaining access by leakage from these into wells or other sources of drinking water, or entering houses where the faulty connections of sink and other waste pipes let in effluvia from the sewers. Milk may become the medium of infection, without intentional adulteration, by accidental washing of the vessels in such polluted water, or by the direct infection of the milk itself from the hands of a person who is recovering from these disorders. But by whatever channel the infection reaches the healthy, it ultimately enters the body by the breath, in drinking or eating, and in certain cases through wounded surfaces.

Can Infection be carried from one person to another by a third person not suffering from the sickness in question?

This is a query which I have frequently put to me. I can only say that I have not the slightest doubt about it. Instances wherein both Hooping-cough and Scarlet Fever have been thus conveyed have come under my observation.

Disinfection.

The object of disinfection is to prevent infectious diseases from spreading by destroying their *Contagia* or specific poisons.

To attain this result every care must be taken that nothing which has been about the sick escapes disinfection. Everything turns on this, and a single slip of the attention may and likely will end in total failure. The following instance, told by Sir Thomas Watson, is to the point:—

"Scarlet Fever had attacked several persons in a large household. When it was fairly over, the house was left empty, and then (as was supposed) most thoroughly ventilated and purified. A year afterwards the family returned to the house. A drawer in one of the bedrooms resisted for sometime attempts to pull it open. It was found that a strip of flannel had got between the drawer and its frame, and had made the drawer stick. This piece of flannel the housemaid put playfully around her neck. An old nurse who was present, recognising it as having been used for an application to the throat of one of the former subjects of Scarlet Fever, snatched it from her, and instantly burned it in the fire. The girl, however, soon sickened, and the disease ran a second time through the household, affecting those who had not had it on the first occasion."

This is a remarkable example; yet it is just in this way, by overlooking one trifling or insignificant looking point of detail, that infection is not so thoroughly stamped out as it might be. An instance very closely resembling the above has quite recently come under my own notice:—

"Scarlet Fever attacked one child in a large family of ten children. Every precaution that could be devised was taken during the illness and afterwards. So it was thought. A cravat, however, which had been worn by the patient during some part of the illness had escaped destruction. Two of the other children got hold of it, played with it, and threw it around their necks. Within a week both children were down in the fever."

There are other instances where a book or a toy used by the convalescent having escaped destruction, has months afterwards lighted afresh the outbreak in the household.

Common sense will enable any thoughtful person to appreciate the fact that, to disinfect with security against the spread of infection, the disinfectant must be applied directly and without delay to the infected material, wherever this may be,—in the actual discharges from the sick, in bedding or clothing soiled by these discharges, or in privies, drains, and whatever else may have received them. It is utterly useless to place the powder in saucers up and down the house, or to sprinkle it upon the floors; this practice may give a false sense of safety and create a smell, causing much discomfort, but it is not disinfection. In all cases, cleanliness and ventilation, the abundant use of water, and the admission of fresh air, are essential to successful *disinfection*.

HOUSEHOLD RULES

FOR THE PREVENTION OF THE SPREAD OF INFECTION.

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1. Upon the outbreak of infectious sickness in the family, *all the children should at once be withdrawn from school, kept at home, and apart in their walks, or when at play, from other healthy children during the illness*, and until all danger of infection is past.

No one from an infected household should go to church or chapel or place of public resort.

2. The sick person should be lodged in a separate room, and from which all needless articles of furniture, such as bed curtains, carpets, and contents of drawers, shelves, cupboards, books, pictures, and the like have been removed beforehand. *The fewer things there are in the sick-room the less chance there is of harbouring the infection, and the less trouble of disinfection afterwards.* Outside the door of the sick-room a sheet should be hung up as a curtain, which has been wrung out of a solution of pure carbolic acid in water of a strength of 1 in 40 parts of water, and kept moistened as required by syringing it with more of the solution.

3. In the sick-room *cleanliness and ventilation are all important;* and if there is a fire-place in the room, a small fire kept constantly burning will greatly help to ventilate the room and lessen the risk of infection to others living in the house. All the windows of the house should be opened at suitable times every day, *and even those of the sick-room may be opened with perfect safety and much advantage to the patient if due care against draughts be taken.*

4. A wash-hand basin, water, and towel should always be in readiness for the doctor's and the nurse's use. *The latter ought to make it a never-failing rule to wash her hands before touching food, either belonging to herself or the rest of the family.* A bottle of Condy's Fluid should be at hand, and enough poured into the water to colour it deeply purple on each occasion of use. Condy's Fluid should be added to the water used for sponging the patient or for gargling the mouth. Herring's alcoholic solution of sulphurous acid may be used in the same way.*

* Medical practitioners keeping in view the safety of their puerperal patients, and the terrible risks the latter run by exposure to the Scarlatinal poison, should, in addition to other precautions of changing the clothes worn in visits to Scarlet Fever patients, wash the hands in a solution of carbolic acid of the strength of 1 in 40 of water, rubbing it well in about the finger nails, *and allowing it to dry upon the hands so as to penetrate the epidermis.* By using the pure carbolic acid employed in antiseptic surgery, such a solution is quite free from the disagreeable smell and harshness of the common form of acid. Herring's alcoholic solution of sulphurous acid may also be used undiluted for this purpose.

The words of the late Dr Snow (who was the first to direct attention to the fact that this and other diseases may be communicated by impure water) are worth bearing in mind. They have special reference to Cholera, but apply equally to Typhoid Fever :—

"In the event that water free from suspicion cannot be obtained, it should be WELL BOILED, and, if possible, also FILTERED. When Cholera prevails very much in the neighbourhood, all the provisions which are brought into the house should be well washed with clean water, and exposed to a temperature of 212° F. (heat of boiling water), or at least undergo one of these processes. *By being careful to wash the hands, and taking due precautions with regard to food, I consider that a person may spend his time among Cholera patients without danger.*"

5. DURING THE ILLNESS NO ONE BUT THOSE ACTUALLY IN ATTENDANCE SHOULD ENTER THE SICK-ROOM. THE VISITS OF FRIENDS AND NEIGHBOURS SHOULD BE FORBIDDEN, FOR EVEN PERSONS WHO ARE THEMSELVES PROTECTED FROM THE SICKNESS BY A PREVIOUS ATTACK, MAY STILL CARRY THE INFECTION TO OTHERS.

6. Articles of food which have been in the sick-room, or partaken of by the sick, should not be touched by the healthy.

7. It is a safe practice to carry a shovelful of red-hot cinders—upon which flowers of sulphur or pounded brimstone are sprinkled—through the house morning and evening. In Smallpox, the smell of burning brimstone is grateful to most patients, and the fumes remove offensive smells.

8. During illness, all articles of clothing and bedding removed from the sick should be at once plunged into boiling water, to which carbolic acid or chloride of lime has been added, in the proportion of one pint of the acid, or eight ounces of the chloride, to every four gallons, left to steep over night, and afterwards *washed separately from those of the rest of the family.* The nurse's clothes must be dealt with in a similar fashion.

9. Soft linen rags instead of handkerchiefs should be used for the patient's eyes, nose, or mouth, and got rid of at once by burning.

10. The discharges from the body should be received into utensils kept ready charged with disinfectants, a teacupful of carbolic acid powder or chloride of lime, or a pint of the carbolic acid solution mentioned in Rule 8. As much disinfectant again should be mixed with the contents each time the utensil is used.

The discharges should be immediately removed from the house, and if it can be done, buried in the earth to a depth of two feet at a distance from the house, and from any source of water supply. If there is no other alternative but to empty these down a water-closet or sewer, use every possible care as to cleanliness, and flush well with water afterwards. Never throw discharges into a privy.

11. Keep house premises clean. Every night carbolic acid powder or chloride of lime should be thrown down the privy seat over the contents, also over the refuse in the ash-pit ; one of these disinfectants, stirred up in water, in the proportion of a pound weight to the gallon, or the solution mentioned in Rule 8, should be poured down sinkstones and all drains about the house.

12. In the event of death, interment should take place with as little delay as possible. It is best for the body to be wrapped in a sheet wrung

out of a strong solution of carbolic acid, while a layer of carbolic acid powder or of chloride of lime should be spread within the coffin. Do not invite friends and neighbours to the house; remember there is a risk of infection to every one who may enter. In the case of Smallpox and Scarlet Fever, it is unsafe for the coffin and persons from the house to enter the church, and the clergyman is properly justified in forbidding this.

13. Scarlet Fever and Smallpox may be communicated by the sick person when the severity of the illness is past, and while health is being restored; this is owing to the fact that every particle of skin which comes off the hands and other parts of the body, in the case of Scarlet Fever, and every scab which falls off the face and elsewhere in the case of Smallpox, is a carrier of infection. Too great care cannot therefore be taken so long as these processes are going on, in preventing the patient, who is at this time even more dangerous than when laid up and unable to move about, from coming near the healthy.

In Scarlet Fever the skin should be rubbed night and morning with camphorated oil from the commencement of the rash until the skin ceases to peel. This prevents the particles of skin from flying about, and at the same time affords relief to the patient. While the skin is peeling the patient should have a warm bath, to which Condy's Fluid has been added, using plenty of soap (Carbolic or Terebene soap is excellent for this purpose), every night at bed time. This hastens the process, and relieves the itching of the skin.

14. Every person over fifteen years of age ought to be re-vaccinated, and when Smallpox is prevalent in the district, every person past childhood who has not four good well-pitted marks of previous vaccination ought to undergo re-vaccination. *Re-vaccination successfully performed affords certain protection from Smallpox.*

15. When the illness is over, a period which will vary from six weeks in Typhoid Fever or Smallpox to two months in Scarlet Fever, the rooms occupied by the sick should not be used until disinfection by fumigation with brimstone, whitewashing the ceiling and walls, scraping off all the paper, and cleansing the floors and wood-work have been thoroughly effected.

16. The thorough disinfection and cleansing of the sick-room should be done in the following way:—

FUMIGATION.—Before removing the bedding or other articles which have been there during the illness, the room should be fumigated by burning sulphur. For this purpose spread out the blankets over chairs, and set the mattresses on end. Close the windows and chimney, then take brimstone (or sulphur) in the proportion of 1 lb. to every 1000 cubic feet of space, place it in a stoneware dish or iron pot over a bucketful of water in the middle of the room, and set fire to it by throwing some red hot cinders upon it. Shut the door, and stuff up any crevices which may allow the fumes to escape.

VENTILATION.—In four hours the room may be entered, the window flung open, and a fire lit, if possible, to make a free draught of air through the room.

WASHING.—The blankets and other articles may now be taken out, and everything washable at once treated as in Rule 8.

Feather beds, mattresses, and woollen things which cannot be washed should be hung up on lines in an outhouse, and stoved with brimstone for a day. Afterwards they should be exposed to the fresh air and sunshine for several days.

WHITEWASHING.—The walls and ceiling should be thoroughly scraped and whitewashed. If there are wall-papers in the room, these should be stripped off.

SCRUBBING.—The floor, bedstead, and all the wood-work of the room ought lastly to be well scrubbed with soft soap and hot water.

17. At the end of illness, the privy and ashpit should be emptied, and the walls limewashed, adding a pound of chloride of lime to every pailful of lime wash. This must always be done after Typhoid Fever.

POINTS TO BE ATTENDED TO

IN HOUSE DRAINAGE AND WATER SUPPLY.

The extreme importance of preventing at every point the chances of entrance of sewer air into dwelling-houses, cannot very well be exaggerated. Wherever these chances exist, the inmates are certainly exposed to the dangers not only of such maladies as Typhoid Fever, Diphtheria, and Scarlet Fever, but to a variety of ailments, all having a common origin in blood-poisoning. Ulcerated throat, headache, so-called bilious attacks, and that general out of healthiness, with its characteristic loss of appetite, listlessness, and want of tone, are of common occurrence amongst those who habitually breathe foul air. In one instance I traced a prevalence of diarrhœa, confined to the servants of a household, to the direct connection with the sewer of the sink pipe in the kitchen, where, with doors closed and a large fire burning in a close range, they sat together of an evening. The pipe was cut off from the drain outside, and the attacks of diarrhœa which had been of frequent occurrence ceased.

In the larder of a house where the meat became putrid in a couple of days, it was discovered that the basement was damp, and the drainage as bad as it could be. Recently at Welbeck, several persons were poisoned from partaking of beef which had been hung up in a larder, in which an untrapped drain inlet allowed free communication with the sewers. Perfect safety, therefore, from this grave source of mischief can only be secured by avoiding direct continuity between houses and drains.

The requirements of a healthy house are thorough disconnection of the house pipes from the outside drains.

In towns the communication between the house drains and the common sewer should be broken by means of a water trap and ventilating shaft to the open air.

Provided that all outside work has been honestly and intelligently done, and the glazed stoneware pipes properly jointed and laid, the following points should be attended to, compliance therewith making all the difference between a healthy house and an unwholesome one.

1. The house drain should end outside the house, and the pipes conveying waste water should be carried outside to meet the drain.

2. The house drain should be ventilated at its upper end or extremity by means of a shaft of not less than four inches diameter, carried up above the house away from the eaves, windows, or chimneys.

3. Waste water pipes from baths, pantry, kitchen, and housemaids' sinks or lavatories, should be cut off from the drain, and should discharge in the open air over a grating upon a trapped inlet to the drain. For the sake of appearance the outlet of the pipe may be placed below an iron grid.

4. The cistern overflow pipe should discharge separately in the open air upon a grating, as in the case of rain water pipes.

Pipes conveying merely waste water may be led into one another, but *never* into a water-closet soil-pipe.

This latter connection in the case of a cistern overflow pipe will almost certainly result in the poisoning of the drinking water by sewer air.

5. Every water-closet should be placed against an outer wall, and the soil-pipe immediately taken outside. The soil-pipe having a diameter of at least four inches, should be carried upward, without bend or zig-zag, above the eaves, and away from any window or chimney. At the foot the soil-pipe should discharge into a ventilating syphon trap, and by this means be cut off from the drain. In this way the risk of air connection between the house and drain through the soil-pipe is simply and effectually prevented. This plan has been adopted, at my recommendation, for some time past both in private houses and public institutions with complete success. The faint but extremely nauseating smell perceptible in most water-closets is quite absent in these when this has been done. I have chosen Buchan's trap for the purpose, on account of its simplicity of construction and moderate cost.

6. A periodic examination of traps, drain inlets, and cisterns should be made a matter of domestic routine.

H. & J. Pillans, Printers, 12 Thistle Street, Edinburgh.

OPINIONS OF THE PRESS.

"Couched in plain and simple language, and gives all needful information to the population at large as to the infectiousness of fevers, and the precautions which are necessary to prevent their propagation."—*The British Medical Journal.*

"We heartily recommend all persons and bodies interested in the preservation of the public health to encourage the wide dissemination of cheap and useful pamphlets, such as Dr Page's little book, which, in a small compass, describes the characteristics of the various infectious diseases and the measures to be adopted for minimising the risk of infection to the healthy, at the same time laying down rules for the management of the sick-room."—*The Local Government Chronicle.*