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SCARLET FEVER,

(SOMETIMES CALLED SCARLATINA)

AND

ITS PREVENTION.

BY

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SCARLET FEVER, AND ITS PREVENTION.

MEMBERS of the profession who may happen to have read a letter by Mr. Bradley of Marlborough College, which appeared in the *Times* of December 5th, and in which he sets forth the conflicting responsibilities imposed on the master by the case of boys at school convalescent from scarlet fever, cannot have failed to sympathise deeply with that gentleman in the difficulties of his position. On the one hand, Mr. Bradley shows, in forcible terms, that a long detention in the sick-house is full of evil, moral and physical, to the boy ; on the other, he is reminded that to send a scarlet-fever convalescent away through the country is not only to inflict an unwarrantable peril on the community, but to infringe the law. Happily, medical science is in a position to furnish an escape from this very painful dilemma. If, in fact, the patient can be so treated as to cease to be an active source of infection by the time he is able to travel, the difficulty is over. Now, if my own experience can be trusted, nothing is easier. Much more, indeed, can be done to limit the spread of this malignant fever than the common practice in it would seem to indicate.

There is good reason to believe that not only the eruption on the skin, but everything that is shed by the body of the infected, is heavily laden with the germs or seeds by which (alone, no doubt) the disease is propagated. The discharges from the throat and nose are, I imagine, especially virulent. It is more than suspected, on grounds on which I need not here insist, that those from the bowel are scarcely less so. As the kidney is known to be affected in a very special, and often in a very severe way, by the poison, this organ probably furnishes another outlet for it. All analogy tends to indicate, indeed, that in this case the renal epithelium, which is cast off so plentifully, performs the same eliminative function as that which is cast off in still greater profusion by the outer surface of the body. As the bulk of all these excreta soon finds its way to the cesspool or sewer, the large part which sewers and cesspools are known to play in the dis-

semination of the fever, and which, quite lately even, has been so strangely misinterpreted, is easily understood. I could enlarge much on this topic, if I had time to do so. It must suffice for the present to say, once for all, that all that has been shown to hold of typhoid fever in regard to these relations—contamination of drinking-water included—may be applied, with little qualification, to scarlet fever also.

Taking these considerations as our data, the one thing to aim at, therefore, in seeking to prevent the spread of this fever, is to annihilate the germs proceeding from these various sources, on their very issue from the body, and before the patient leaves the sick-room. In accordance with this view, I have long been in the habit, in all cases which fall under my own care, of enforcing the following simple precautions.

1. The room in which the patient is detached is dismantled of all needless woollen or other draperies which might possibly serve to harbour the poison.*

2. A basin, charged with chloride or carbolate of lime or some other convenient disinfectant, is kept constantly on the bed, for the patient to spit into.

3. A large vessel, containing water impregnated with chlorides or with Condy's fluid, always stands in the room, for the reception of all bed and body linen immediately on its removal from the person of the patient.

4. Pocket-handkerchiefs are proscribed; and small pieces of rag are used instead for wiping the mouth and nose. Each piece, after being once used, is immediately burnt.

5. As the hands of nurses and of the medical attendant of necessity become frequently soiled by the specific excreta, a good supply of towels, and two basins, one containing water with Condy's fluid or chlorides, and another plain soap and water, are always at hand, for the immediate removal of the taint.

6. All glasses, cups, or other vessels, used by or about the patient, are scrupulously cleaned before being used by others.

7. The discharges from the bowel and kidney are received, *on their very issue from the body*, into vessels charged with disinfectants.

By these measures, the greater part of the germs which are thrown off by internal surfaces are robbed of their power to propagate the fever. Those which are thrown off by the skin require somewhat

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* In this, as in infectious fevers generally, it is almost superfluous to say that free ventilation, by an open fire-place and otherwise, is in the highest degree desirable.

different management. If my information do not mislead me, it is in dealing with these that the practice of medical men generally is most defective. There are, no doubt, distinguished exceptions; but, for the most part, either nothing is done, or, what is done, is done imperfectly or too late. And yet to destroy, from the first, as far as possible, the infectious power of what emanates from the skin, is, for obvious reasons, the most important object of all in the way of prevention.

In the first place, as the skin is at once the most extensive surface of the body, and is, *par excellence*, the seat of what, by a very just figure, is called the *eruption*, the crop of new poison which escapes by the skin probably far exceeds in amount that which escapes by the other surfaces. It is impossible to speak in exact figures here. We cannot count these things as we can count peas, or beans, or grains of wheat. But the case of small-pox furnishes us with a standard which cannot far mislead us. And, as we know that, in a case of confluent small pox, enough new poison is thrown off actually to inoculate with small-pox myriads of others, so there is every reason to believe that the skin-crop in a severe case of scarlet fever is little, if at all, less prolific.

In the next place, as the process of desquamation, by which this crop is finally cast loose, is a very slow one—lasting, for the most part, over many weeks—the infection from this source is much more abiding than that from the internal sources. But what renders it still more so is the all-important fact that the poison which is liberated by the skin is liberated in the dried state. It is well known—and, indeed, the circumstance has been taken advantage of in the practice of inoculation by cow-pox and other poisons—that animal poisons, when dried at a gentle heat, retain their powers for quite indefinite periods of time. But to be dried at a gentle heat—a heat lower, in fact, than that which attended its own generation—is precisely the case of the scarlet-fever poison, as cast off by the skin.

Another danger is created by the minute and impalpable form in which the particles armed with the poison are set free. The skin peels off in part, no doubt, in flakes of palpable size, but in still greater part under the guise of dust, which floats in the air, impalpable, like motes in the sunbeam. Each of these little atoms is, potentially, the scarlet fever. While they adhere to the body they may be readily disarmed; but, once afloat, they are in great degree beyond our power.

It is to these various circumstances—to the countless profusion of the new seed, if I may so speak, which is generated and sown broadcast by every fresh case—to the length of time during which it hangs about the sick, capable every moment of being transferred, with all its deadly power to thing or person—to the impalpable minuteness of

the organic particles in which this seed is imbedded—and, lastly, to the long retention of their properties, in virtue of being in the dried state—that we must look mainly for the true explanation of the well-known subtleness and tenacity of this particular infection. To the many striking illustrations of this subtleness and tenacity already on record, I could, if there were need, add many of my own, quite as striking, and free from all ambiguity; but it is waste of time and space to burden the page with what is already conceded, and with what most men must be sufficiently familiar.

These same circumstances are the source of the peculiar embarrassment and perplexity which, in scarlet fever, hang over the disposal of the convalescent, and the period, so much debated, and at present confessedly undetermined, at which he may be safely restored to society. They are the source of the dilemma, for instance, to which Mr. Bradley gives such painful expression in the letter referred to at the outset of this paper—a dilemma with which, in private life, medical men have so often to contend, but which, in public schools, if we may judge from the columns of the *Times*, is continually recurring.

Many readers, I dare say, remember the pathetic appeal to the profession which appeared in that journal some ten or twelve months ago, from the pen of a distracted father, urgent to know within what time, and by the use of what measures, his son, who, being convalescent from scarlet fever, was pining in the dreary seclusion of the sick-house of one of our great public schools, might be let out of captivity, and restored to his family. Several letters in reply—one or two, especially, bearing the signature of "A Fellow of the Royal College of Physicians"—offered some more or less sensible suggestions; but all, if my memory do not mislead me, united in the humiliating confession, that no definite time could be named at which persons who had gone through this infection could safely mix with others.

According to my own experience, these difficulties and perplexities may be entirely averted by the employment of the simplest precautions. To be successful, these precautions must be put in force early, and must be thoroughly carried out. The first thing to aim at is, to prevent the minute particles, which are the carriers of the poison, from taking wing until they can be disinfected *in situ*. This, I find, can be perfectly effected by simply anointing the surface of the body, scalp included, twice a day with olive-oil. The oil I use is, generally, slightly impregnated with camphor. As far as the main object is concerned, the addition is perhaps unimportant; but it is agreeable to the patient, and probably has some part in the relief, which almost always follows the inunction, from the troublesome itching which is

a well-known incident of some stages of the disorder.* I may add, that the process, so far from being trying, is very soothing to the sick; and, if it exert any influence at all on the evolution of the disorder, this influence appears to be beneficial rather than otherwise. The precise period at which it should be begun varies somewhat, no doubt, in different cases. As early as the fourth day of eruption, a white efflorescence may often be observed on the skin of the neck and arms, which marks the first liberation of the new death-giving brood. This efflorescence should be made the signal for the first employment of the oil. From this time, the oiling is continued until the patient is well enough to take a warm bath, in which the whole person—scalp again included—is well scrubbed, disinfecting soap being abundantly used during the process. These baths are repeated every other day, until four have been taken, when, as far as the skin is concerned, the disinfection may be regarded as complete. It is not necessary for this result that the desquamation should have entirely finished. I have, in several cases, allowed convalescents, whose skin was still peeling, to mix with their family, without any infection ensuing. If, however, there should be any misgivings as to this point, the addition of half-a-pound of green copperas (sulphate of iron) to the last bath, may be relied on as making all safe. If the health be quite recovered—if, in particular, there be no disease of kidney and no discharge from throat or nostril—the patient (equipped, of course, in a new or perfectly untainted suit) may generally be restored without risk to his family. A week or ten days additional quarantine is, however, seldom objected to; and is, on the whole, perhaps more prudent.

It will be observed that by the various measures here laid down, disinfection is brought to bear, in its fullest power, on everything that issues from the body, except the breath.

As, in the great majority of cases, the lungs are not specifically affected, the breath probably derives its poisonous taint chiefly from passing over the diseased throat and nostrils. Happily, the best remedy for the morbid condition of these surfaces is the repeated local application of disinfectants.

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* Being myself surprised at the quite unfailing success, in my own hands, of this method of prevention, it occurred to me as well worth inquiring whether the popular idea as to the disinfecting power of camphor might not be well founded. Accordingly, since the last edition of this paper was published, I have instituted a series of experiments, which appear to show conclusively that camphor is a strong disinfectant. So that it seems probable that by the use of *camphorated oil* the infecting power of that portion of the Scarlet Fever poison which is eliminated by the skin, is destroyed as soon as this poison comes to the surface, and before it is cast off from the body.

Treatment, here, has the double advantage of greatly helping the recovery of the patient, and of largely adding to the safety of the attendants. After long and careful trial of various agents, I have finally settled upon a watery solution of Perchloride of Iron, as answering both indications better than anything else.

Many medical men are in the habit of fumigating the sick room, either constantly or several times a day, with chlorine or sulphurous acid, pending the whole course of the fever. There can be no objection to this measure; but I do not myself attach much importance to it. Experience of the largest and most decisive kind has shown that chlorine—and I believe the observation applies equally to the other chemical agent—in the degree of atmospheric impregnation respirable by man, has no appreciable influence in preventing the spread of infectious disorders.* It is of the highest importance to know that such fumigations, where the disinfectant is necessarily very much diluted, are no substitute whatever for the precautions recommended here, the very essence of which is, that the chemical agent is brought to bear in a concentrated form and with destructive power on the poison as it emerges from the bodies of the sick.

To complete the preventive code, immediately after the illness is over—whether ending in death or recovery—the dresses worn by the nurses (which, where possible, should be of linen, or some smooth thing) are washed or destroyed, and the bed and room that have been occupied by the sick are thoroughly disinfected. With these measures, when well and thoroughly done, the taint is finally extinguished.

The success of this method, in my own hands, has been very remarkable. For a period of nearly twenty years, during which I have employed it in a very wide field, I have never known the disease spread in a single instance beyond the sick room, and in very few instances within it. Time after time, I have treated this fever in houses crowded, from attic to basement, with children and escaped infection† The two elements in the method are, separation on

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* The following, among many other instances to the same purport, may be cited as striking illustrations of the fact.

Speaking of the great epidemic of Cholera at Moscow, Dr. Albers says—"At the time when the Cholera Hospital was filled with clouds of chlorine, then it was that the greatest number of the attendants were attacked." Some years ago chlorine was tried at the Small-pox Hospital with a view of arresting the progress of Erysipelas;—all offensive smell was, as usual, overcome, but the power of communicating the disease remained behind.

† One word should be said for the benefit of those who, having yet escaped infection, are living in an infected neighbourhood. For persons so situated, it

the one hand, and disinfection on the other.* It is almost needless to add, that neither can be secured in the degree here indicated in the houses of the very poor. There are, unhappily, large masses so utterly destitute of every needful thing, that it would be little short of mockery to speak of such measures as those I have just described in connection with them. But the conditions which are denied to the houses of the needy, should always be at hand in the fever hospital; which—small, if you like, but a model of its kind—would, if modern societies knew what belongs to their safety, never be far to seek in any crowded communities. In these matters, beyond all others, the social organisation should be in its perfection, strictly correlative with that of scientific knowledge. If science can point out practicable conditions by which such great evils may be averted, society is, in the highest degree, not only unwise, but blameworthy, if these conditions are not realised. It is high time, at any rate, that some more concerted action should be taken to abate the ravages of this terrible scourge. There is scarcely a year but that scarlet fever slays some twenty thousand persons in England alone. There are few families that have not at one time or another felt its deadly power; and it is now and then the cause of tragedies which, although occurring only in single families, are of such agonising bitterness as to move the heart of the nation. If the measures here suggested were systematically and energetically put in force against this great enemy of man, the annual number of the slain would soon fall to a low figure.

P.S.—I take the opportunity afforded me by the issue of a fourth edition of this paper to say, that the experience I have had of scarlet fever since its publication, and which, on account of the prevalence of the disease in this city, has been considerable, bears out to the letter every statement made in the paper as to the efficacy of the mode of prevention recommended in it.

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is well to know that the frequent flooding of their house-drains with disinfectants is a great safeguard. In Bristol, the need of this is superseded by the action of my friend Mr. Davies, who very wisely keeps the sewers of all districts infected with epidemic disease in a state of permanent disinfection. But it is not every town that can boast of such a zealous and enlightened health-officer. In all places where scarlet fever is prevalent, especial care should be also taken to have the drinking water perfectly pure.

* As to the date of separation. I have seen many instances in which the disease was communicated by persons who at the time were suffering from sore throat only, and in whom the eruption had not yet appeared. Whenever scarlet fever is prevalent, it is wise, if this symptom occur in any member of the family, to separate the subject of it from the rest until the opinion of a medical man can be got.

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