earthly mantle, which I shall drop ere long, shall be swiftly enfolded in flames and rendered powerless to affect, harmfully, the living. I stand for cremation even in death as I have sincerely meant in life to stand by the great cause of poor, oppressed humanity."

Mrs. Alice N. Lincoln, who had witnessed the cremation of some much loved one, said: "As we stood in silence watching the rosy glow which played over the white surface of the retort, a feeling came to me of awe, certainly, but also of peace and rest. There was something spiritual, elevating in the absolute purity of the intense heat; it seemed far less appalling and depressing than the blackness of an open grave."

And thus only may we rest in peace.

Continental Block.

DISCUSSION.

DR. C. F. ULRICH, Wheeling, W. Va.—I have been fighting for cremation for almost forty years. I have always said that if I can induce my relatives to cremate me when I am gone, I want them to do it. I have spoken of the sanitary view of it where I live for the last twenty-five years, and I tell them sometimes that if they had seen what I have seen they would change their views very quickly. Cremation is the most beautiful, the cleanest, and I might say the most esthetic way to dispose of the dead. This paper takes up this subject from every point of view, and I am glad that I was here to hear it. Some years ago I wrote an article on cremation which was published in a Southern medical journal (*Moody's Magazine of Medicine*, Atlanta, Ga., since discontinued) and quite favorably commented on at the time, but it was not as well written nor as complete as the one we have just heard. I advocated the cremation of the dead from a sanitary standpoint. That is the view I took of it. I think everybody who will think of this thing, and who will look at the matter in the right way can but say that the disposition of the dead by cremation is the best and only way.

DR. FISHE, of Missouri—I can not agree with the principles involved. In dealing with this question we have to go a little beyond our human interest, and consider the welfare of the world at large: what it would do with any human body or any body. In burning our dead we destroy a certain amount of matter which by no means can be restored to the world, and which lessens the amount of ordinary animal or vegetable life which otherwise could be used in the service of ourselves. Perhaps this objection may appear trivial, but if you will consider the amount which, according to these principles, would have to be burned every year, the amount of nitrogenous substance destroyed in this way is enormous, and it can in no way be replaced. Any forest fire, any destruction of organic substances, means a loss to the world, and therefore the principle of the cremation of our dead means that loss to us.

SCARLATINA: SCARLATINOUS SORE THROAT.

A SYNOPSIS OF THREE HUNDRED CASES SHOWING THE PRESENCE OF THE DIPLOCOCCUS SCARLATINÆ.*

BY W. J. CLASS, M.D.

CHICAGO.

In presenting this paper it is not my intention to give a detailed description of the germ discovered by me, nor to enter into a discussion of its cultural characteristics, etc., as these are things that do not interest the clinician to the same extent that they do the bacteriologist. What I will attempt to bring forward is the clinical aspect of the finding, its value in diagnosing scarlatina, and also, briefly, my reasons for believing that the *diplococcus scarlatinæ* is the specific causative factor of the disease under consideration. I have examined cultures taken from the throats of more than three hundred patients with scarlet fever and scarlatinous sore throat. Of 300 of these, a brief record was made; 212 were cases of what is generally called scarlet fever, i. e., a fever accompanied by a more or less distinct

eruption consisting of small red spots, separated at first, but soon becoming united by a diffuse scarlet erythema and followed by desquamation; 88 were cases of angina without any, or at least a scarcely perceptible, skin lesion. In all of these 300 patients the primary throat culture showed the presence of the micro-organism previously described by me as the specific scarlet fever germ. In about 80 instances the different germs composing the throat cultures were isolated by means of a modification of the plate method, and the "*diplococcus scarlatinæ*" obtained in pure culture.

The throat normally contains a great variety of micro-organisms, therefore every culture taken from it shows the presence of a contamination. It might therefore be asked: "Is the '*diplococcus scarlatinæ*' present in sufficient numbers in cultures taken from scarlet fever throats to lend a distinctive character to them?" I wish to answer this in the affirmative, particularly if the culture-medium advocated by me is used, although coagulated blood serum also furnishes a fair medium. Cultures taken from a scarlet fever throat on the first or second days of the disease will invariably show its presence in great numbers, while those taken later in the disease, though still present, show it in diminished numbers.

There is little difficulty for one at all familiar with bacteriology to recognize it after once having become familiar with its cultural and morphologic characteristics as already described by me. Its chief cultural one is the glutinous character of the growth. This characteristic is usually, though not always, well marked in primary cultures of the scarlet fever germ taken from the throat; subcultures, as a rule, do not show it. The chief morphologic features are their size, primary cultures usually showing it as an organism resembling a huge gonococcus, and the fact that unless the culture is rubbed very hard the germs will show a distinct tendency to group in bunches. A given culture taken from the throat therefore, which, when a loop of the material of which it is composed is taken up, shows a tendency toward being drawn out in threads, and which under the microscope shows large numbers of large diplococci having a tendency toward clumping, may be safely called a scarlet fever culture. In this connection I wish to state that when grown on blood serum the culture usually adheres very firmly to the surface of the medium. The germ also shows quite well in slides made directly from the mucus of the throat, but this method is less accurate than by means of the culture.

I have made mention in this paper of a scarlatinous angina without the eruptive phenomena of scarlet fever, something in regard to which all may not agree. Dr. Jaques, in a paper read before the Chicago Medical Society recently, stated that at present a large number of cases of tonsillitis were caused by the "*diplococcus scarlatinæ*." My experience in this respect agrees with his, and I think the majority of those present-to-night have frequently met with anginas, the throat lesions of which were identical with those seen in typical scarlet fever. I would like to mention a few instances in which the connection between the scarlet fever and the tonsillitis was so evident that, even without finding the same germ, it was plainly shown that the contagion was the same.

CASE 1.—This concerns a family consisting of four members, the father, mother and two daughters aged 18 and 14, respectively. I was called to see the oldest daughter, March 11, 1899, and found her showing all the symptoms of a typical attack of scarlet fever, the

*Read before the Chicago Pediatric Society, Dec. 14, 1899.

rash fully developed. The throat showed a catarrhal erythema with a granular deposit on each tonsil. Cultures were made from the throat and from a few drops of blood taken, under antiseptic precautions, from the lobe of the ear. These, when subsequently examined, showed the presence of the "diplococcus scarlatinae." The course of the disease was favorable and, excepting a slight albuminuria, no complications occurred. The patient desquamated profusely, this beginning about the seventh day after the onset of the disease. While the desquamation was still in progress, although I had ceased my visits, I was again called, as the father and younger daughter had been taken ill. The symptoms of both patients were almost identical: both complained of a sore throat, headache and malaise. The throats showed a catarrhal erythema with similar patches to those that had been noticed in the throat of the other patient. Cultures were made from the throats of both father and daughter at the time of this visit, and examination the next morning showed the "diplococcus scarlatinae" in both in great numbers. On calling the next day the scarlet rash was well-developed in the daughter, while the father showed no sign of any eruption, nor did he develop one. In both, however, there was a pronounced albuminuria.

CASE 2.—In a family consisting of a father and four children, aged 3, 4, 7 and 10 years respectively, I was called Jan. 6, 1899, to see the youngest child. Examination showed that it was suffering from a typical attack of scarlatina. Cultures made from the secretion of the throat and blood showed the "diplococcus scarlatinae." At the time of my first visit two of the other children in the family, aged 4 and 7 years respectively, were also feeling rather bad; their throats showed a marked catarrhal erythema, and there was some rise in temperature. On this account I took cultures from their throats, and these also showed the diplococcus. Upon visiting the patients the following day, the two children, who had only a sore throat the day previous, also had the scarlet rash. The cases ran the usual course and desquamation began on the sixth day of the disease, the scales again showing the presence of the diplococcus.

On January 16 I was called to see the oldest child, who had been taken sick in a manner similar to that of the other children. Temperature was 104 F., and there was catarrhal erythema of the throat with two small white granular patches on the tonsils. The throat culture showed the same germ as in the other cases. This boy, however, did not develop any rash, and there were no germs present in his blood, although repeated examinations were made.

CASE 3.—This family consisted of father, mother and five children, three boys and two girls, the oldest child being a boy of 10 years, the youngest a girl of 2. The youngest boy was seen about the middle of September, 1899, and was suffering from a typical attack of scarlet fever. The throat secretion and blood showed the presence of the "diplococcus scarlatinae." As the family had only three small rooms at their disposal, no attempt at isolation could be made. About three days after the first child was taken sick, the second youngest boy developed scarlet fever, and about a week subsequently the oldest boy, all three cases being absolutely typical.

After these three patients had recovered and had almost completed their desquamation, I was called in to see the youngest girl, who had been taken ill suddenly, with vomiting and high fever. On examining the child she presented a sore throat, considerable swelling of the upper cervical glands and a temperature of 104.6 F.

A culture was taken from the throat and, the following morning, showed great numbers of the diplococcus. Not much change in the patient's condition was to be seen, except that there were noticed, on close examination, a few scattered papules over the upper part of the chest. These disappeared within a few days. The patient made a slow recovery on account of a subsequent nephritis and bronchitis. At no time was there any reddening of the skin. The oldest girl escaped altogether, although not protected by a previous attack.

I have mentioned only these three instances of those that could be given *ad infinitum* in my experience and that of other physicians for whom I have had the pleasure of examining cultures from scarlet fever cases, because they show, with almost absolute certainty, even without considering the presence of the germ, that the infection was the same in all of the patients. These cases of what I would call scarlatinous sore throat, mentioned in these three instances, occurred simultaneously with the presence of typical scarlet fever in the family. Admitting, therefore, for the present, that their occurrence in the presence of scarlet fever is possible, I would like to ask whether their sporadic occurrence would not also be possible? In this connection I also wish to state that I have found the "diplococcus scarlatinae" in about 20 per cent. of the cases of acute tonsillitis examined during the last few months. Recently I made a few additional experiments toward establishing the relationship of the germ under consideration and scarlet fever, which it may be of interest to briefly mention.

As stated in some previous articles of mine, the diplococcus, when obtained from the blood of scarlet fever patients, grows very poorly, especially when the culture is taken after the second day of the disease. This was thought to be due to the inhibitory action of the blood present. In order to determine whether the same action would occur when blood from a patient who had passed through an attack of scarlet fever was added to a culture obtained from the scales, a number of experiments were made:

A loop of pure culture of the diplococcus was diluted with fifteen minims of distilled water. One-half of this was poured over a plate of glucose agar, to the other half were added ten drops of blood from a patient who had just recovered from an attack of scarlatina, and this mixture was poured over a similar plate. Both were put in an incubator the temperature of which was kept at about 36 F. At the end of twenty-four hours the plates were examined. The plate made from the culture without the addition of the blood showed innumerable minute colonies of the diplococcus, while on that to which the blood had been added there were only very few colonies. Presumably these had grown, because, from the tendency of the germs to clump, some of them had not been exposed to the action of the blood. This experiment was repeated five times with almost identical results. Each time there was a slight growth of the culture to which the blood had been added, but the growth was so much more profuse in the one made without this addition that the inhibitory action of the scarlet fever blood on the growth of the germ could be plainly demonstrated. Blood from a child 5 months old, where the possibility of a prior infection with the germ could safely be excluded, produced no inhibitory action. My own blood gave a partial reaction, but the inhibitory one was not nearly so well marked as it was when the blood from a recently recovered patient was used. Never having had scarlet fever, this reaction could only be

ascribed to an attack of scarlatinous sore throat passed through some years ago.

The other experiment consisted in inoculating four ordinary gray mice, each of which received five minims of a solution of a virulent culture of the "diplococcus scarlatinæ" in distilled water. Two of the mice had previously received, by subcutaneous injection, five minims each of blood serum taken from a patient recently recovered from scarlet fever. The two animals that had not received the blood inoculation died within eighteen hours, while of the two that had been injected with the blood, one lived about forty and the other seventy-two hours. This last experiment will have to be repeated before arriving at a positive conclusion, still, it seems to suggest that the blood of a patient who has passed through scarlet fever contains an antitoxic substance.

In closing, the writer will briefly state his reasons for believing his "diplococcus scarlatinæ" to be the causative factor of scarlet fever.

1. Because the germ is invariably present in the throat secretions, blood and scales of a patient having scarlatina, and because it is a separate and distinct organism not heretofore described.

2. Because it has been proven to be a pathogenic micro-organism, killing mice, when injected in minute quantities, in a space of time varying from less than one to twenty-four hours according to its virulency.

3. Because it produces, in swine, a disease whose macroscopic lesions closely resemble those seen in scarlet fever as it occurs in the human subject.

4. Because the presence of blood from a patient who has just recovered from an attack of scarlet fever inhibits its growth.

5. Because the subcutaneous injection of a virulent culture into guinea-pigs will, under certain conditions, produce a nephritis.

6. Because the experiment quoted in this paper apparently shows that the blood serum of a person who has passed through scarlet fever protects an animal against the invasion of the germ.

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Therapeutics.

Treatment of Typhoid Fever.

The profession is fairly well agreed on the hygienic treatment of this disease. The dietetic treatment, however, is undergoing some change. Certain eminent physicians, not only in the United States but in Europe, have recently advocated feeding typhoid patients with light or solid food. One physician reports that he has allowed ten patients in succession to have solid food the moment they craved something to eat. Their recovery was uneventful and rapid.

During the course of typhoid, water is needed more than nourishment. Large quantities of water serve to eliminate waste products. The character of the blood indicates a deficiency of water and patients should be encouraged to drink freely of it whether they ask for it or not. It is well to remember that in this disease the sense of thirst is as much obtunded as that of hunger. The late Dr. John Forsyth Meigs was an enthusiastic advocate of water in typhoid fever, and his graphic description of the disease, in a lecture at the Pennsylvania Hospital, in 1879, when he was insisting with great emphasis on supplying water in abundance to typhoid fever patients, is worthy of quotation:

When I stand by the bedside of a severe typhoid fever, and see the patient motionless, insensible, dead to all the usual senses of the living; when I look at his half-closed eyes, his gaping mouth, his dried and fissured tongue; when I brush the unheeded flies from his poor, unconscious face; and when I

touch his hot and burning skin—I ask myself into what lower estate the human body can fall. Not only has the patient lost all appetite for food, not only is he dead to all that surrounds him, but this hot and withered body, his dry and pasty mouth, filled with desiccated crusts and sordes, knows no longer even the sense of thirst. This has been the last sense of which he has been deprived. So long as he retained any consciousness at all he would ask for water or for ice. Now he feels not even this great want. It is in this crisis of his life that he is to be saved, if saved at all, only by the constant care of his physician, nurses, and relatives. And woe to the physician who can look on such a sight and not yearn to know all that his art has acquired through centuries of experience and study.

The fact that the majority of typhoid fever patients will recover on the hygienic and dietetic treatment alone does not justify in every case the withholding entirely of medicinal and other treatment.

In another portion of THE JOURNAL, the treatment of typhoid fever is most ably discussed by competent authorities. Here, we will quote formulæ and methods recommended by other physicians for treating complications; making disinfectants, etc.

DIARRHEA.

Dr. Frederick P. Henry, says: "Among the most efficacious means for this purpose are opium suppositories, acetate of lead, gallic acid, nitrate of silver, sulphate of copper, and salicylate of bismuth. Of these drugs I have found the last in 5-grain powders every three hours decidedly the best, and this I attribute to its well-marked antiseptic properties."

Dr. J. W. Wilson says: "The preparations of bismuth, as the subcarbonate, subnitrate, salicylate or subgallate, administered by the mouth in full doses and with a frequency dependent upon the urgency of the diarrhea, either alone or in combination with small doses of opium, Dover's powder or deodorized laudanum, constitute in most cases efficient medication; or, again, opium may be advantageously administered in enemata of starch-water or in suppository; or a combination of the aqueous extract of opium and the extract of cannabis indica in suppository may be employed. Such drugs as naphthalin, thymol, and resorcin, supposed to act directly as intestinal antiseptics have in my experience proved far less useful, while such astringents as alum, plumbic acetate, silver nitrate, tannic acid, catechu, and kino have only a historic interest. If the stools be highly fetid or ammoniacal, half-dram doses of animal charcoal in the form of an impalpable powder may be administered in the broth. Creosote and carbolic acid may also be of service."

Notwithstanding Dr. Wilson's opinion of intestinal antiseptics, many able physicians believe them to be efficacious not only in diarrhea and tympanitis, but in shortening the duration of the disease.

In addition to the Woodbridge treatment, which is too familiar to every physician to quote, the following prescriptions have been recommended by various clinicians:

R. Creosoti carbonatis.....3xix
Thymoli3vi
Mentholi3iii
Eucalyptoli3viss
Alcohol, commercial, q. s., ad.....3viii
M. ft. solutio. Sig.
This is stock solution of carbonate of creosote compound.
To make an emulsion from the above, in order to better administer it, use
R. Creosoti carb. comp., solution.....3v
Acaciæ gummi, pulv.....3iss
Aque pura.....3iv
M. Sig. One teaspoonful every three hours in a wineglass of water, to be followed by a drink of water.

—T. W. Simmons.

R. Pulv. carbonis ligni.....3iii
Iodoformigr. xv
Naphthalinigr. lxxv
Glycerini3vi
Carnipepton3iss
M. Sig. A teaspoonful every two hours in one-third glass of water.

—Bouchard.

R. Thymoli3ii
Saponis medicinalis, q. s.
M. ft. capsulæ No. xxx. Sig. One every four hours.