misms, from decomposing organic matter. Wherever any of this class puts in an occasional appearance, diarrhoea is certain to be a regular visitor, whenever the temperature rises above the ordinary standard, and continues high for any time. It has been imputed to the rise and fall of the water-line in the subsoil in connection with the rainfall of the district. A close investigation of conditions under which summer diarrhoea arises in those towns in which it is prevalent—such as London, Leicester, and Berlin—shows conclusively that, although the highest mortality corresponds with the lowest level of ground-water, there is no relative proportion in any other point. A relation does exist between the origin of the disease and heat. The greater the heat the greater the mortality; the lower the amount of moisture in the air, the higher the death-rate from diarrhoea. A fall in the death-rate follows upon the return of atmospheric saturation. The fall in the level of ground-water, the increase of temperature, and the diminution of water in the air, all occur together. Then it is that those who inhabit cellars, underground dwellings, dark ill-ventilated houses, houses in which dry rot is taking place, all places likely to get an excess of carbonic acid in the air, suffer from the disease. Hand-fed children suffer first and most heavily. This appears to prove that the food is the main starting point. The food, when given, is about to undergo some change, promoted by living organisms, which flourish most luxuriantly under the conditions mentioned. They obtain a lodgment in the mucous membrane of the alimentary canal, and destroy the child by destroying the nourishing properties of the food exhibited. Pettenkofer thinks that locality has more to do with the disease than the introduction of any particular germ—that removal from the place will prevent or even cure the disease. He imputes it to some influence produced upon the people by the rise and fall of water in the subsoil. This rise and fall is connected, but it is as a coincidence. The conditions which give rise to infantile diarrhoea are those which promote the growth of certain living organisms. Such growth takes place most rapidly at high temperatures, when evaporation is rapid, and when the underground air has an excess of carbonic acids in its composition, together with the organisms which accompany that excess—conditions which are likely to be in association with a low water-line, conditions which are always followed by heavy rainfalls. The z in the equation $x y z$ = infantile diarrhoea, is some living organism developed by continuous heat, by dry air, excess of carbonic acid in that air, and some other unknown condition. This organism finds admission into the stomach with the food, sets up a fermentation, by which the nourishing power of the food is destroyed; produces an irritating material, which, uniting with x , causes prostration; and, if this be not fatal, the child is starved to death. The localities in which diarrhoea arises are the favoured haunts of cholera and enteric fever, under other meteorological states in which heat and dryness are not contingencies. Pettenkofer considers their origin to be due to local and personal considerations, and believes that quarantine is useless. The conditions which herald the approach of cholera are progressive from place to place. The factor x may be brought in, and the disease produced earlier than it otherwise would if it had to wait for development *sub sponte*. The observations of Dr. Klein have established the coincidence of living organisms and typhoid in a way which is beyond cavil. In solving the power of each member of the equation $x y z$ = enteric fever, we may be certain that the factor z is a living organism capable of reproducing its like in any situation in which fecal contamination has occurred, and in which the products of filth-decomposition are to be found.

Do any of these diseases arise *sub sponte*? The sudden way in which some of them develop sanctions the idea. This is especially the case with enteric fever and scarlatina. Many intelligent and accurate observers have been unable otherwise to account for the appearance of those diseases in given cases. Yet, the ordinary laws of natural history would forbid the suggestion. Growths, apparently spontaneous, are common in the vegetable kingdom, but in no case is it supposed that the growth has taken place without the previous presence of appropriate spores or seeds. The sudden and wide-spread appearance of eczema epizooticum among cattle, or the destruction of potato by potato-blight, seem to be spontaneous, yet those diseases spread by contagium-particles; we may reasonably suppose that the propagation depends upon spores like to *Penicillium glaucum* or *mucor mucedo*. Those spores are to be always found only waiting for a suitable situation to grow and become fertile in a few hours. They are both aerial and aquatic, and produce different results, according to the dryness or moisture of the position in which they are found, and are modified by the acidity or the alkalinity of the media in which they multiply. Bacteria of different kinds are found in one, vibrios in another; why should not those forms produce a potent matter in their growth, capable in itself of producing disease? We know that certain kinds of fish may be eaten to-day with impunity, but to-morrow they set up serious disturbances in

the animal economy. Vibrios to-day may be harmless, but to-morrow they may produce disease. The secretion from the peritoneum to-day may do no mischief; to-morrow an irritative action may arise which will set up a most virulent and infectious complaint. In peritonitis, a most fatal form of infective disease may be set up, and the infectivity arises *sub sponte* because certain circumstances have been altered, and the bioplasm, existing normally in the tissues, has taken on a new action. The germs were there, but, the vital conditions being altered, a comparatively harmless secretion is turned into a virulent poison.

I believe this to be the case with those specific forms of contagion which are multiplied by filth. Scarlatina and typhus, enteric fever and cholera, arise apparently *sub sponte*, because certain germs or foci of potent matter have been altered by the circumstances in which they are placed, and infective power has been added, just as infectivity is produced in the peritoneal secretion by inflaming the membrane which secretes it. The ordinary excreta of carnivorous animals which contain the *débris* of animal food may or may not be so placed as to produce the germ upon which filth-disease depends, just as dry rot may or may not arise in a building, according as to whether ventilation has been provided for and new wood kept out of the fabric. But if those germs be introduced into the human economy, the disease arises and spreads in the usual manner. So again with scarlatina, long continued observation and analogy forbids the idea of an origin, except from some bioplasm finding a suitable soil in which it may develop its poisonous character.

Time fails me to go through the list of zymotic diseases, and show the character of z in each class. There is a close analogy, a continuing alliance, and a similar explanation can be made as to the value of z in each member of the class.

Zymotic disease, in the majority of instances, has its power of producing evil more in the character of the recipient than in the quality of z . Obedience to sanitary law in private life, together with the performance of public duty by local authority will give comparative immunity from epidemic and infectious diseases, and render us in a great measure independent of the trammels of imperfect quarantine.

As zymotic disease has its main impetus in the disregard of duty, those who advocate the performance of that duty must be prepared to encounter opposition and witness an ebb-tide in sanitary work. It is imperfect knowledge on our part which gives strength to opposition. It is our duty to persevere in the prosecution of a more perfect work. Motion as opposed to stagnation, simplicity as opposed to complexity, should be our cardinal points; and if to this we add the peremptory utilisation of animal *débris*, the sting of epidemic and infectious disease will be taken away, and in the words of the Psalmist, "we need not be afraid of the pestilence which walketh in darkness, nor of the destruction which wasteth at noon-day."

It is our duty to strive to reach this point of perfection. It can be obtained only by educating the people as well as ourselves aright, and we must trust to Providence for our reward.

AN ADDRESS

DELIVERED AT THE OPENING OF

THE SECTION OF MEDICINE,

At the Annual Meeting of the British Medical Association,
in Sheffield, August 1876.

By CHARLES CHADWICK, M.D., F.R.C.P.,
Consulting Physician to the Leeds Infirmary; President of the Section.

In the true interests of this Association, I should not have accepted this position; but, when offered it, I could not resist the temptation of meeting my old friends in the West Riding in friendly discussion, and thus manifesting my interest, still strongly existing, in my old profession, though, through circumstances, I am forbidden the exercise of its functions for a time. Again, I wished to embrace, it may be a last opportunity of expressing my opinion, formed through much experience, of the general tendencies of professional inquiry, and to say how warmly I hail the greater attention now paid to therapeutic science, and the registration of facts under this head; in this way remedying the fashion which has prevailed since the days of Forbes's *Young Physic*, a fashion natural, it may be admitted, when remembering the then customs of our practitioners, but, unfortunately, carried to a dangerous and, to the profession, damaging extent. I have noticed this tendency to a restoration of a rational balance in the teaching of Sir J. Paget and many others. We are building up a structure of medical science which, as we are progressing, will require ages to bring to perfection; in the

meantime, and under the sanction of this so-called scientific providence, we have neglected to some extent our proper duties—the cure of disease. I had purposed to bring this view of our position before you, but I have abandoned it to a more convenient season, as the following will prove I have been warranted in doing. I am old enough to remember, and to have attended, the last meeting of our Association held at Sheffield, and the inquiries then made into disease prevalent here. Previously to this, I had been associated with the late Dr. J. Thompson, and his assistants, Dr. W. Thomson and Sir James Simpson, and very much interested in their inquiries into the collier's black spit, a spurious melanosis, then only supposed to occur in Scotland. At this early period, too, I had found, in extensive infirmary and dispensary practice, many results of inhalation of flax-dust and stone-chippings in producing or aggravating lung-diseases. Returning, then, in our annual migrations, as we have done, to this important seat of one of the typical diseases of this class, it occurred to me that, if I could obtain a series of papers on the entire question of the disease due to inhalation of irritant substances in trades, it would form a very important and interesting addition to our knowledge, by showing the present position of this question. And in this I have been successful beyond my expectation; but with this likewise has come the conviction that our time will prove very short for what we have before us. I have therefore determined to absolve you from my half-hour infliction, in order that more time may be at the disposal of our section, and be content with a simple opening of five minutes' duration. I feel that I shall thus be justified in insisting more rigorously, although always prepared to bow to the decision of the section, on the observation of the time allotted to each reader of papers and speakers in the discussion. And looking to you for support in this particular, I trust we shall go through the business of the session with pleasure equal to the profit.

I may observe that nearly all the writers of the series of papers to which I have referred are here in consequence of my personal application to them, and I here tender to them my special thanks. But I cannot fail to refer particularly to my old friend, Mr. Robert Baker, the factory inspector-general, who, with all his experience on these subjects at command, has kindly consented to take part in our discussion, and thus renew an old friendship, after a separation of something like thirty years.

FORTY-FOURTH ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

Held in SHEFFIELD, August 1st, 2nd, 3rd, and 4th, 1876.

FIRST GENERAL MEETING, TUESDAY, AUGUST 1ST.

THE first general meeting of members was held at the Cutlers' Hall, at 8 P.M. Dr. FALCONER, the President of the Council, occupied the Chair.

Dr. CARPENTER (Croydon) moved that the minutes of the last general and special meetings should be taken as read.

Mr. HUMPHREYS (Shrewsbury) seconded the motion, which was carried *nem. con.*

Election of President.—Dr. CHADWICK (Tunbridge Wells) said that he was honoured by having to propose the first resolution; and he was honoured still more by the references which he would have to make in proposing it. He moved that Dr. De Bartolomé be elected President of the Association for the ensuing twelve months. [*Cheers.*] One subject of regret suggested itself to his mind, and that was the absence of the late President, Sir Robert Christison, who would, no doubt, with greater force and better effect have spoken on the matter than he could do. Because he had recently enjoyed the honour of the presidency, he would necessarily feel all the more interested in devolving it upon his successor, who, he was aware, stood very high in the opinion of Sir Robert Christison. He had been recently in communication with Sir Robert, who had explained to him the reasons why he was compelled to forego being present on this occasion, and the regrets which he felt in regard to that necessity. The greatest of all those regrets was, that he was not able to be present to do honour to an old pupil and personal friend. [*Cheers.*] In the highest possible terms he had spoken of their President-elect; and, from his (the speaker's) former knowledge, and from the fact that he had personally fulfilled the duties of the office, he had the greatest confidence in proposing that Dr. De Bartolomé do occupy the Presidential Chair for the next twelve

months. [*Cheers.*] He was sure that the honour and the interests of the Association would be maintained untarnished during his period of office by the gentleman whom they were about to elect. [*Cheers.*]

Dr. SIBSON (London) had great pleasure in seconding the nomination. At the same time, he felt that the cordial support accorded to the formal proposing and seconding of the nomination, although it was general, did not come with so much force from the members of the Association, who had come from all parts of the United Kingdom, as it did from the professional gentlemen of Sheffield, who knew Dr. De Bartolomé. [*Cheers.*] The medical men of Sheffield knew that by honouring the nomination they also honoured themselves and the Association. [*Cheers.*] And undoubtedly, as far as he could look back—as far back as the year 1843—upon the history of this Association—perhaps the most important and the most delightful part of its work had been that year after year it had honoured men in different parts of the country, who had from time to time been selected to fill the presidential chair by their fellow physicians and surgeons. He said that that did more to raise the standard at which they should all aim, and which they should all admire and practise, and it had done more to keep up a high tone in the profession, than all the rules of ethics which might be laid down by any body of ethical societies that might exist. [*Cheers.*] Of this he was quite sure, that, if Sir Robert Christison had been present to welcome his old pupil—and more than his old pupil—the friend who worked with him as a fellow-student in his laboratory at Edinburgh, he could not do more honour to Dr. De Bartolomé than those would do who were now present. [*Cheers.*]

The motion was carried *nem. con.*, amid loud applause.

Dr. FALCONER said that, in the absence of the retiring President of the Association, it became his special duty to induct Dr. De Bartolomé into the presidential chair. [*Cheers.*] Those who had heard the speeches of the mover and the seconder of the resolution would require no other reason to account for the honourable position in which he had been placed.

President's Address.—Dr. DE BARTOLOMÉ having taken the chair amid loud applause, said: Gentlemen, I sincerely thank you for the warm manner in which you have received my nomination. My feelings are overflowing with congratulation, as well as with gratitude, towards you, for the gratification which I feel at being appointed to this high honour, which, if it could be enhanced, has been enhanced by the terms in which the mover and seconder of my nomination—formerly my fellow-students—have spoken of me. The honour would have been still more enhanced if my old and valued friend Sir Robert Christison had been present, but the reasons stated for his absence to-night are sufficiently cogent to convince me that he would have been here if it had been possible for him, at his advanced age and with his increasing infirmities, to have made the journey. Gentlemen, I was never an eloquent speaker, and, upon the present occasion, my words almost fail me; permit me, however, to thank you most sincerely for the elevated position which by your kindness, and not through my own merits, I have now the honour to occupy [*loud cheers*]. Dr. De Bartolomé then delivered his Address, which is published at page 169. During its delivery the address was repeatedly applauded.

Vote of Thanks to Sir Robert Christison.—Dr. MCINTYRE (Odiham) said that he felt highly honoured by having had a motion entrusted to him which required no eloquence in its introduction to the meeting, inasmuch as it spoke for itself—it was its own happy introduction—for approval. It referred to the services of a gentleman in his official capacity, and he would go further and say that, whether they looked upon Sir Robert Christison either as a gentleman, as a physician, or as the late President of this great Association, he knew that he should carry their sentiments with him, when he said that it would be long before they would “look upon his like again” [*cheers*]. He had, therefore, great pleasure in proposing “That the cordial thanks of the Association be given to Sir Robert Christison for the able and courteous manner in which he has presided over the Association during the last twelve months.” [*Cheers.*]

Dr. OGLE (Derby) cordially endorsed the remarks of the last speaker. Personally for him to speak of the merits of Sir Robert Christison would be to insult the members present, every one of whom was well acquainted with his ability. Those who had ever had any dealings with him, either in a public or private capacity, would be able to appreciate his worth, and would acknowledge that he was a thoroughly able and courteous gentleman. He had much pleasure in seconding the motion [*cheers*].

The motion was carried by acclamation.

The PRESIDENT said that he should not be going much out of his way in cordially thanking them, on behalf of Sir Robert Christison, for the manner in which they had carried the resolution. The absence