

not wish to speak disrespectfully of the power of the law, but he always felt that somehow or other things in England on the whole were carried out much more effectually eventually, and much more speedily, apart from the law. Many things he had seen in his day which seemed to almost defy the law had been overcome by the power of influence. There was in the English character a wonderful quality of sound common sense, though it might be a little difficult to arouse, and though there might be reluctance on the part of many to give up their old stereotyped prejudice, and adopt what were called new fangled ideas, yet sooner or later the good common sense of the English people, if they were convinced a thing was right and rational would accomplish great things without the aid of legislation at all. He illustrated his meaning by reference to the discontinuance of duelling in England, and to other social and moral reforms. Years ago it was thought that drunkenness could only be restrained by legal enactments, but the Temperance movement, which had made wonderful progress, had been carried on much better than would have been the case under legal enactments, and more happily apart from legal proceedings. While they did all they could to promote legislation, let them do all they could by their own influence and attention, and by their own efforts, to carry out reforms amongst themselves. There was, he thought, a certain amount of laziness in asking legislation to do everything for them, and he believed that if people would only study such matters as sanitary laws and regulations for themselves, and carry them into practice, a greater advantage would be obtained than by waiting for the work to be done by legislation. In conclusion, he asked them again to join him in heartily thanking Sir Spencer Wells for his admirable paper.

The LORD MAYOR OF YORK, in seconding the proposition, said the President had presented them with a remarkable array of facts, which it would be impossible for the most perfect listener to remember, however they might be impressed with that painstaking address. The subjects referred to would dwell upon their minds, and increase the interest that attached to the Sanitary Congress. His lordship acknowledged the beneficent work which had been done by the Sanitary Institute of Great Britain, and said it was gratifying that eminent scientific men should visit the towns of the Kingdom, and, by their influence, secure the recognition of the means they suggested for the promotion of the national health.

The proposition was carried with acclamation.

SIR SPENCER WELLS, Bart., the President of the Congress, in reply, said a vote of thanks carried in such a meeting as that was quite enough to repay him for any little trouble taken in preparing his address; and still more would he be repaid if anything he had said made them more in earnest in helping to promote the health of the people.

SECTION I.

SANITARY SCIENCE & PREVENTIVE MEDICINE.

ADDRESS,

BY PROF. F. DE CHAUMONT, M.D., F.R.S.

PRESIDENT OF THE SECTION.

It has been the custom, since our first Congress, and following older precedents of other societies, for the Chairman of each section to deliver a short address. I say advisedly a *short* address, for it is abundantly manifest that if he is to air his own eloquence and erudition in a long one, it can only be at the expense of others who have given much time to the preparation of papers, which they naturally are desirous of hearing properly if not exhaustively discussed. The time at our disposal is all too short for the work undertaken, and we are within measurable distance of a change in our arrangements, by which we must have the different sections sitting simultaneously throughout the entire duration of the meeting. This is what is done at the British Association, the British Medical Association, and other kindred institutions. The question of the utility of such addresses has been much discussed, and opinions thereon are divided. When the address is bad in matter and tedious in delivery, then it is an unmixed evil. But to suppose such a thing possible would be to pay but a poor compliment to the Council of this Institute, in whose hands the selection of the Officers of the Congress lies. And this reminds me of a duty which I have to discharge, namely, to thank the Council for the honour they have done me in placing me in this position, an honour which I feel all the more keenly that it is the second time it has been conferred upon me, the former occasion being at the Exeter Congress in 1880. I am quite sure that I was most successful on that occasion, at least in so far as brevity went, for I verily believe I gave the shortest address on record. This I trust will inspire you with

hope that I am not likely to inflict all my tediousness upon you. Before going further let me take the opportunity of welcoming you to this section, and of expressing a hope that we may have good and thorough discussions on the excellent papers about to come before us. Let me also point out that we do not expect silence from our lady friends; on the contrary, we hope they will take an active part in the proceedings,—for there are many points which are best understood and best explained by them, and we men, although naturally arrogant, are not always above taking a hint from the opposite sex.

The title of our section is that of "Preventive Medicine," or rather "Hygiene and Preventive Medicine." It may, perhaps, be well to consider what these terms mean, and what we are expected to do or to concern ourselves with. The meaning of Hygiene is now pretty well known as the art of preserving Health, although the origin of the term is rather obscure, few perhaps having cared to trace it beyond the fabled daughter of Esculapius, by which myth I feel pleased to think that a compliment is being paid to Medicine by making Health its daughter. It certainly has not always been thus in more senses than one, for health is very far from favouring those who are continually consuming drugs, whilst medicine has not infrequently been deprived of what it has been justly entitled to, namely, credit for the efforts its votaries have made for the preservation of health and the checking of disease, even when against their own material interests. But what, you may ask, is the meaning of "Preventive Medicine"? Is it preventing disease by physicking people? or, Is it to prevent the doctors from physicking people? Both of these proceedings might have their advantages, but they do not really explain our meaning. In the good old times, when the smuggler was a more common and (at this distance of time, at least) a more picturesque object around our coasts, the Preventive Service was in every one's mouth, and its duties were well known. Those duties consisted in preventing the introduction of contraband material into the country, material which it was believed would undermine the financial constitution of the country. So it is with our Preventive Medicine: it is a service the duty of which is to prevent the introduction, the slipping in (*einschleppung*) of contraband material into our bodies and undermining their constitution. Its functions are as old as, nay older than, history itself, although its development into systematic usefulness is a thing of yesterday; but so rapid has been its development that we even take upon ourselves to talk of the *science* of Preventive Medicine, hurrying up the question a little in our pardonable eagerness to progress. It must be

admitted that a science, rightly so-called, is a very serious thing; it means a state of knowledge of causes and effects, precedents and succedents, antecedents and consequences, such that we may, with given data, confidently predict a result that shall never fail us. Tested in this way, how much true science have we got? Of pure sciences we have only Logic and Mathematics; and of these probably the first is the only one that we can call absolutely true, in the sense that propositions may be stated so that there may be no loophole of fallacy or ambiguity—the quantification of the predicate has settled that. But in Mathematics, which are more concrete than Logic, we find here and there certain ambiguities, certain irregularities of result, not indeed of any practical importance, but sufficient to show that we have not got to the root of the matter yet. Certain formulae, which are sound for nearly the whole of a series, fail perhaps in one number, say the second, and are good for all others. Take again a case familiar, at least in name, to everybody, viz., the squaring of the circle. Very few people, not mathematicians, have probably any idea of the meaning of the expression. It means ascertaining the exact ratio that the circumference bears to the diameter so as to be able to determine the area with rigid accuracy. Of course we can get sufficiently near for all practical purposes, but the absolutely accurate determination is impossible. Professor de Morgan, in his amusing "Budget of Paradoxes," mentions that he was visited by a clergyman once, who remonstrated with him for taking up valuable time in discussing a subject that was so simple. "You want to square the circle," he said, producing from his pocket a piece of string with the ends tied together; "here you are, here's a circle, and," pulling the string into four corners, "there's a square; what more do you want?" But even more remarkable is what Pascal recounts of the Chevalier de Méré, who was the first to solve a problem in Probabilities. Pascal says of him: "if he had only known a little geometry he would have been perfect," but he never could be brought to understand the fundamental axiom that a line was that which had length without breadth. We talk of an all-round man, as expressed in Latin, "*Totus, teres, rotundus*," a character which in its highest perfection would be represented by a perfect sphere. But such perfection is ideal, and in all human spheres there are rifts and flaws, the existence of which, however, does not invalidate the abstract idea. We may, therefore, feel assured that in spite of all shortcomings on our part, partly arising out of inability to appreciate the essential points, but largely from actual ignorance of facts, we are entitled to speak of a science as existing, even although we may be most imperfectly acquainted

with its laws. This imperfection becomes all the greater when we have to deal with subjects which are more and more removed from abstract principles, and are consequently more and more complicated in their action. And when we come to consider a subject like Preventive Medicine, whose existence depends upon the previous existence of other sciences, themselves confessedly imperfect, the difficulty becomes greatly enhanced, and the effective working on sound scientific principles seriously hampered. It must be quite obvious that progress in this direction is governed by our previous knowledge of the nature and the causes of disease, and that while these remain obscure, their prevention must be obscure too, and at best be reached in an empirical and haphazard way.

People are inclined sometimes to reproach the medical profession for not knowing more on these subjects than they do; but this reproach is not very just. In the first place, the profession as a whole consists of men who work hard for their living, and have little or no time for scientific inquiry, although it may still be said to their credit that even some of the hardest worked have found time to add valuable contributions to the sum of medical knowledge. In the second place, the inquiries themselves are exceedingly laborious and difficult, such that no one man or set of men could possibly carry out; and it not infrequently happens that it is only after a long series of observations, which had apparently but little individual significance, that the truth is perceived at last, and some clear-headed worker steps into the inheritance and enjoys the renown which is the outcome of the conjoint work of a former host of obscure but earnest labourers. Often, too, the eye of genius can penetrate the future and see, as in a vision, what can be proved and reduced to concrete fact only by long years, if not generations, of work, requiring for its carrying out methods and appliances utterly undreamt of when the idea was first shadowed forth. It is thus that we can trace a perception of the principles of modern pathology and practice in the writings and speculations of men of former ages, whose genius seemed capable for a moment of lifting a corner of the veil which concealed the future from the common eye.

The germ theory of disease and the principles of antiseptic treatment, now so successfully applied in surgical practice, were floating in the minds of men long before Sir Joseph Lister so happily reduced the theory to concrete fact and was the means of revolutionizing surgical practice and rendering it possible to extend to suffering humanity, not only relief, but means of cure, which we had hardly dared hope for no long time ago. Again, with regard to the germ theory of disease, which seems

now to hold out fair promise, the recognition of its possibility was present to the minds of many, not only long before the days of Koch, but before the means of carrying out the investigation existed. We owe the discovery of the first *microbes* (as it is now the fashion to call them, the name meaning merely "minute life") to the genius of Leuwenhoek, in the 17th century; but it was not until well on in the present century that the improvements in the construction of the microscope permitted the inquirer to enter upon the vast field that seems now to lie open. Those who have followed the development of the question during late years know what extraordinary strides have been made, and yet we are as it were merely hovering about the gate, and have barely entered the field at all. Some who have got within the gate astonish us with their account, more or less confused, of the wonders to be found within, whilst others still stand outside on the beaten track, crying out that there is nothing in the field and that all is vanity.

There is no doubt that we are bound to receive with all caution statements on so important a subject as the causation of disease, but to take up a position, as some have done, and deny the possibility of such and such a phenomenon, or group of phenomena, being concerned with disease causation, is to assume an attitude of infallibility, not only ridiculous in itself, but antagonistic to true progress. Thus, although it is not yet possible to admit, as proved to demonstration, the connection between certain microbes and certain diseases in the way of cause and effect, yet the connection is so remarkable, in some cases at least, as to lend an air of verisimilitude to the view.

In 1879, at the International Medical Congress at Amsterdam, there was a discussion in the Hygienic section on the subject of the examination of drinking water. I maintained the necessity of supplementing the chemical by a microscopical examination in every case, in the hopes of obtaining in that direction information which chemistry seemed incapable of furnishing. Considerable experience had taught me what chemistry, in its existing condition as a science, could and could not tell us, and I felt that, whilst chemistry helped us a good deal, it was in all probability the microscope that would ultimately reveal to us, somehow or other, the germs of disease. I was interrupted by the author of the paper under discussion with the question: "A-t-on jamais vu un germe?" I was obliged to confess that I did not think any one ever had, or recognised it as such if he had seen one.

Now, as a test of progress in the seven years that have elapsed since then, it may be asked, "would my answer be the same to-day as it was then?" The same, yes, but with a difference. It is true

that we have the Bacillus of Anthrax and the Bacillus of Tuberculosis, the connection of which with these diseases is undoubted, but it still remains to be *proved* that each is "teterrima causa morbi." On the other hand the Cholera Bacillus and some others less generally known are by no means in the same position, for much has to be done and proved before they can be invested even with the comparatively established status of the two first named. Thus my answer would have to be something like this: "We cannot positively affirm even now that a germ has been actually seen, but certain microbes have been recognised as being constant in certain forms of malady. Our methods of observation have also been vastly extended and there is every reason for hope for the future." Since that time a powerful aid has come to the microscope, in the method of cultivations of minute organisms, "Reinculturen," as the Germans, who have done so much in this direction, have called them. By these means much information has been obtained, which neither chemistry nor the microscope unaided was capable of yielding, teaching us something of the life history of those remarkable organisms and their relations to each other, as well as to the more highly organised beings upon which they seem to prey. On account of the failure of the highest powers of the microscope to detect any signs of life in liquids, which later on gave undoubted proof of containing organisms, it was surmised that spores might be present, either so minute or with refraction differing so little from the media they existed in, that it was impossible to see them. Cultivation in nutrient media, aided by improved manipulation and methods of preparation and staining, has revealed quite a new world of living things. It has also shown that in this mikrokosm there is a reign of law as there is in the communities of our makrokosm, an antagonism of races as there is among men themselves, for some organisms which grow and flourish when cultivated alone, decay and perish in the presence of others, just as one race of men or animals seems to fade before the encroachments of another.

Taking advantage of this, attempts have been made, crudely and somewhat prematurely, to play off, as it were, one microbe against another, as in the proposal to fight the Bacillus of Tubercle by regulated inhalations of Bacterium Termo, the common microbe of putrefaction. These attempts have, up to the present time, resulted in failure, and this need not surprise us, for we do not know all the question yet, and we must creep before we walk. There seems, however, good reason to think that there is some foundation for the notion, and that the method may yield fruit hereafter. But these researches in this new branch of Bacteriology have led to still further considera-

tions, for they have shown that most of the activity of Nature is dependent on those minute organisms. This has long been known to be the case in ordinary fermentation and putrefaction, whilst the resemblance between the action of disease-poison and the process of fermentation gave rise to the term "zymotic" (from ζύμη, a ferment), as applied to diseases which seemed to proceed with a quasi-fermentative process. It was also reasoning from those more familiar cases that led Pasteur and others to the investigations which have brought out such surprising results. There seems every probability that processes which were formerly looked upon as purely chemical, such as nitrification, are brought about by bacterial agency, and indeed this has been positively proved in the case of nitrification by the exhaustive experiments of Schützenberger and Warington. But even in the case of our own bodies, it is probable that all the changes, physiological as well as pathological, are dependent upon those minute workers, so that the terms "vital action," "vital force," used by older writers, were not such misnomers, after all, even allowing that those who used them had very little notion of how the said actions or forces worked or were evolved. We must thus look upon this Bacterial or Microbial underworld not as an utter enemy, but as a mighty agency for good or evil, as the case may be: we see that we could not exist without it, nor can we in some cases continue to exist in company with all of it. Our cue would seem to be to help the friendly microbes, and to fight those that are our foes. A good general rule, but how is it to be carried out? Clearly the first thing to do is to learn to recognise friends from foes, a process that can only be the outcome of long and careful experiment, such as is now being carried out both abroad and at home, in spite of much opposition and difficulty.

But comes another crux: we know by experiment that by certain treatment a malign microbe may be converted into a benign or, at least, innocuous one; but, on the other hand, we also know that he is capable of relapsing, and further, that those ordinarily looked upon as benign may, under certain conditions, assume malignant qualities. It is therefore not enough to recognize the individual, but we must also know his habits and ways, his comings and goings, and the conditions which may alter his natural constitution for better or worse. We are also not yet sure that the recognized individual species are really completely differentiated. One form may pass into another, for all we know, or it may be a spore or larva of another form, to use expressions somewhat vague and doubtfully admissible.

Much has been said lately about the doctrine of evolution as

applied to disease, and my learned colleague, Professor Aitken, has lately published a most suggestive essay on this difficult but fascinating subject. Certain observed phenomena, which seem to point to possible hybridism in disease, have also an important bearing on the question. I do not wish to suggest that one form of disease may breed another form, now considered different, although, if we admit the possibility of certain changes in microbial development, it does not seem devoid of all possibility. On the other hand, we may rest pretty well assured of one thing, namely, that there is no such thing as spontaneous generation of disease. All attempts have failed to show a tittle of evidence that anything organised can arise from anything but a previous organism, and if organic life ever had a beginning no such fresh point of departure can be looked for in the existing dispensation. At the same time we may come from time to time upon strange and unexpected sources of disease, such as scarlet fever from the cow, as there seems strong reason to believe, since Mr. Power's elaborate inquiry. This is, however, a very different thing from a spontaneous origin,—it is merely an unexpected and hitherto unrecognised habitat of the particular pathogenic organism. We must be prepared to meet with the unexpected in this way, and it is only by such careful observation and inquiry that the weak points of our defence can be found out and strengthened.

The methods of enquiry by the cultivation of organisms, as regards drinking water at least, have not yet produced much practical result, although sufficient evidence has been obtained to show that we are likely to obtain important information in that direction. But until we can go further in the recognition and detection of different organisms, and establish their connection with particular forms of disease, we are working pretty much in the dark. In addition to the work being done in continental laboratories, I may refer to the paper by Mr. Percy Frankland, in the proceedings of the Royal Society, and to Mr. G. Bischof's paper read before the Society of Medical Officers of Health. The former is much the more sanguine paper, written by a young and rising observer, whilst the latter is from one of long and tried experience, who had hoped much from the method, but found that hope, for the present at least, somewhat disappointed. But, as they say in German, "*verschoben ist nicht aufgehoben*"; and we may hope that further experience will give us more knowledge and more confidence. It is a fortunate thing, however, that we are less dependent upon this knowledge for the carrying out of prophylactic measures than might be supposed, for, even if we possessed it, it would not materially alter at present our course of action.

It is shown that pathogenic bacteria (or what are believed to be so) propagate best under unhygienic conditions, light, fresh air, and pure water being inimical to them. It is also admitted, even by those who pool-pool the germ theory, or indeed any specific disease cause, that unhygienic conditions demand to be remedied, and that pure air, pure water, wholesome food, and the other conditions which make the sum of hygiene, are imperative if man or animal is to be maintained in health. The Committee at the India Office, which was assembled to consider the question of the Comma Bacillus and the report of Drs. Klein and Heneage-Gibbes, came to the conclusion that Dr. Koch had not proved the absolute connection of the Bacillus with cholera as an efficient cause, but at the same time they said that even if the contrary had been the case it would not in the meantime have altered things, in so far as to compel the authorities to make any material change of procedure in the measures taken for prevention. Quarantine of all kinds was condemned as useless, and not only useless, but as in every way pernicious. There remains for Preventive Medicine, until we have far more extended knowledge of pathology and etiology, the steady path that is being already trod in the direction of providing for the purity of all articles of food and drink, of dwellings, of clothing, of persons; the supply of fresh air, and the immediate and complete removal of all refuse and effete matter. If to this we add a proper mode of life, both physically and morally, we may practically snap our fingers at both Bacterium and Bacillus. In the meantime, there are diseases among us which those measures seem as yet powerless to prevent, such as small-pox and hydrophobia. Under these circumstances, we should be foolish not to accept such help as vaccination, for instance, affords, although it might be difficult, even if it were considered necessary, to induce the public to be inoculated with hydrophobic matter, except under the terror produced by having been actually bitten. These measures, however, are the adjuncts of Hygiene, which aims at operations on a wider scale, by so sterilizing the soil on which the malignant microbe seeks to flourish, that he shall no longer consider suffering humanity to be his rightful heritage.

Sir SPENCER WELLS (London), President of the Congress, said that it was not customary to discuss the addresses of Presidents of the Sections, and called upon the Very Rev. the Dean of York to move a vote of thanks to Professor de Chaumont.

The Very Rev. the DEAN OF YORK said that in the spirit of obedience which animated all there, he was sure, he rose to move that the thanks of the meeting should be given to Professor de Chaumont for his able address. The Dean remarked that he could only speak of the address they had listened to from the standpoint which he occupied as an ecclesiastic, and he did not presume to address a body of scientific men as of equal rank with them in science. There were two things which struck him as an ecclesiastic on listening to the address, and observing how it was received. In the first place, the matters brought before them in that address appeared to him to show that the more they studied science the more what was revealed showed the infinite wisdom and illimitable power of the Great Creator, and every step they took in scientific investigation displayed the marvellous wonders of His glory. The second point was with regard to the manner in which the statements are received by the scientific mind, the way in which they are examined, and the reluctance shown to jump to conclusions before the statements are established as facts, made him wish that in his own calling there was a greater spirit of investigation of statements, and more toleration of others' views displayed, for then, he was sure, there would be far more harmony than at present existed.

Captain DOUGLAS GALTON (London) seconded the motion, and said that this most interesting address was replete with practical suggestions for the promotion of sanitary science, and it was undoubtedly the fact, as Professor de Chaumont had shown, that it was quite within our power to resist the encroachments of insanitary evils by taking sanitary precautions. This, indeed, had been shown from the earliest times,—from the time, at least, of Moses,—and compliance with the laws of health, such as the adoption of prophylactic discoveries, the removal of refuse from the midst of the population, the purification of the air, and care in the water-supply, together with leading moral lives, were necessary to protect people from the attacks of epidemic disease.

The vote was carried by acclamation, and Professor de Chaumont, in acknowledging it, said that as the Institute endeavoured to bring all classes together in these congresses, he was compelled to frame his address for a popular audience, but that it was difficult to do so without using many technical names and expressions, for which there were no equivalents in ordinary language.

*On "The Economy of Cremation," by W. EASSIE, C.E.,
F.L.S., &c.*

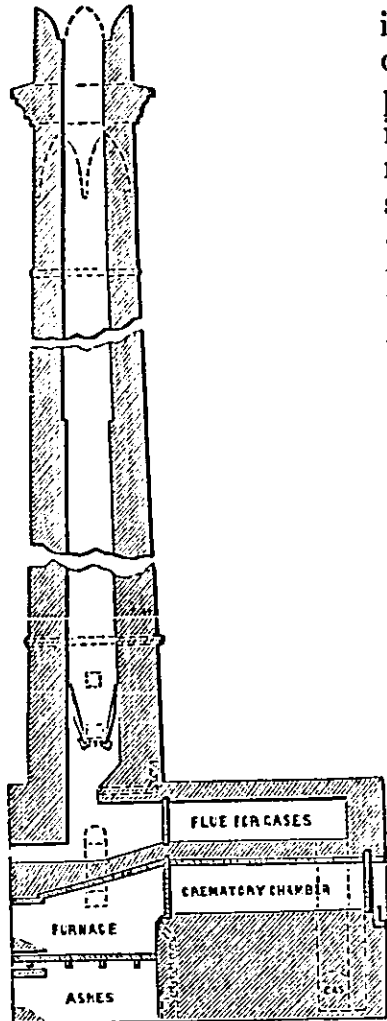
THIS paper, written at the desire of our esteemed President, Sir T. Spencer Wells, Bart., is not intended to set forth any of the arguments in favour of cremation as being necessary in order to obviate the evils which accrue from the pollution of air and water by overcrowded burial sites, because it may be taken for granted that the thinking community are perfectly satisfied that the crowded dead injure the living, and that if this source of danger be not removed, or, at least, abated, it will become more and more intensified until an ungovernable climax be reached. I will refer chiefly to the economical aspect of the question, and endeavour to show that cremation is preferable to Inhumation, and that, at all events, it should have, in national practice, in respect of its greater economy, a wide and extended observance. I am mindful that much has been done to reform the practice of burial in the earth by attempting to abolish imperishable coffins, and by seeking to reduce the cost of funerals, and all this with commendable intentions, but I cannot hide from myself that this reform became most active when the idea of reviving the rite of cremation was advocated, and one may admit that if the bare idea of its resuscitation has accelerated a reform in earth burial, cremation has already scored highly.

As there may be present some persons who do not understand the scientific process of modern cremations, and who might fancy it to be of a harrowing character, I exhibit the two chief systems of cremation extant in our time, viz., the "Gorini" system of reducing the body to harmless ashes, as practised throughout Italy, and in Paris a crematory on this system is now being erected, and the "Siemens'" system, mostly approved by the German people.

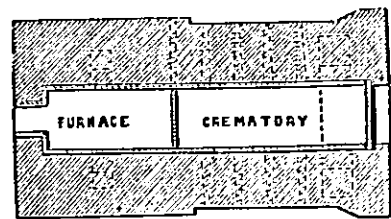
The Gorini system is here shown by a plan and section of the crematory belonging to the Cremation Society of England, and erected at St. John's, Woking, Surrey. The procedure may be shortly stated to be as follows: A fire is first lighted in the chimney close to its base, and through this all smoke and evolved gases are destroyed, thus precluding the escape of any deleterious products which may have escaped from the first combustion in the crematory chamber. A fire is then lighted in the furnace portion of the crematory, and this

is chiefly composed of wood faggots, with a sprinkling of anthracite coals, and the heat from this passes through flues under and above the crematory chamber where the body is placed.

THE GORINI SYSTEM.



LONGITUDINAL SECTION OF THE WORKING CREMATORY.



PLAN OF THE WORKING CREMATORY.

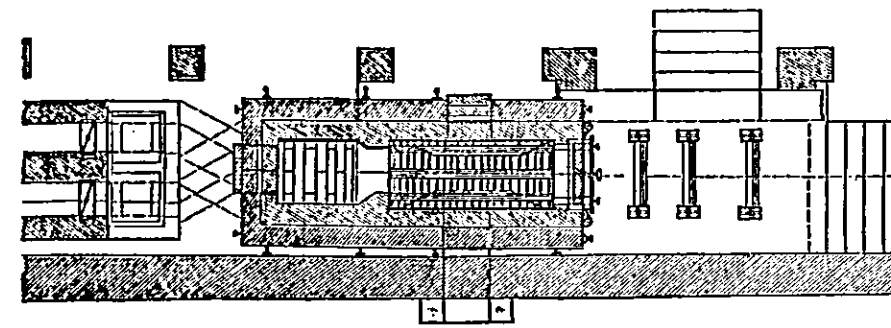
When the reception chamber has been sufficiently heated the body is introduced, and is consumed in little over an hour, the residuum being pure white ashes, such as are shewn in the glass vase before me, which represent the result from the destruction in the Working Crematory of the largest bones of a horse. The tray is withdrawn after the chamber has somewhat cooled down, and the ashes reverently deposited in a suitable receptacle. On the Siemens' system, which is also represented, the requisite amount of destructive heat is first of all generated by combusted fuel, the flame from which imparts most of its heat to the fire-brick, or regenerator, chamber, shewn to the left of the drawing, and when the apparatus has been in operation sufficiently long, this fire-brick and crematory chamber become of the usual white heat. The tray containing the body is then slid along the rollers, shewn on the right of the plan, into the crematory chamber, atmospheric air is laid on, and when the ashes have fallen into the receptacle below, they are inurned.

In both processes cremation is conducted without the body being exposed, and it is carried out in such a manner as to disarm sentimental objection. I may here mention that, after witnessing the second cremation at the Society's Working Crematory, the relative present was so satisfied of the grand concep-

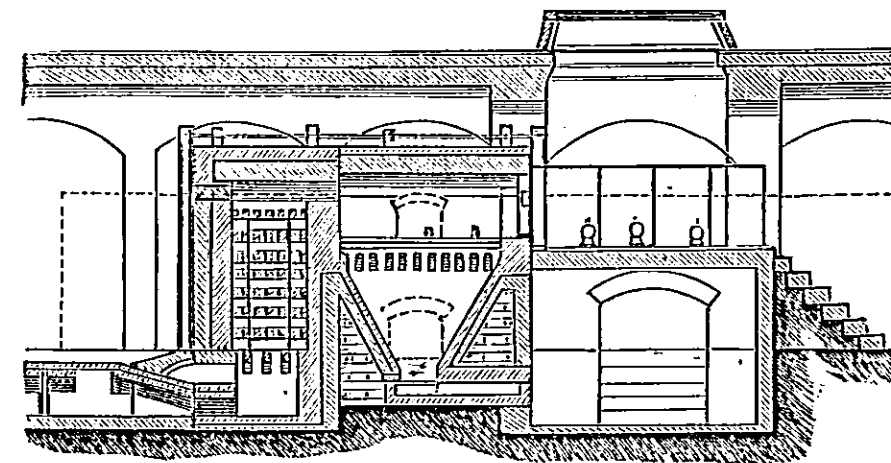
tion of cremation, as opposed to that of lingering putrescence, that he became a life member of the Society on the following day, and desired cremation for his own remains. I

may say, also, that at the sixth cremation the husband of the deceased expressed his regret that his daughter was not present, from both of which instances you may infer that cremation has been foully slandered in many quarters.

THE SIEMENS' SYSTEM.



PLAN.



VERTICAL SECTION.

Of the two systems of cremation, the cost of building a crematory upon the Gorini system would be about three-fourths cheaper than one built upon the Siemens' system. The Gorini system is also more suited for country places, because it will burn the poorest wood fuel. Both crematories will destroy bodies when they have been deposited in the thickest oak coffins; but this practice is reprehensible on account of unnecessary expenditure, as the remains, if not consumed in an approved shroud, should be placed in the thinnest shell of ordinary wood. I think that here, perhaps, could best be made serviceable the use of wicker baskets. I give the above information incidentally because, before any comparison can be made between two things, some knowledge of both is necessary.

Statistics are sometimes very misleading, but those referring

to burial may be taken as reliable, because they are mostly due to the labours of Mr. Edwin Chadwick, C.B., our veteran sanitarian, and vice-president of this Institute, Mulhall and others; and I may have occasion to apply some of their figures during the reading of this paper. First of all, as to the question of land. Taking the population of England and Wales at 27 millions, the number of now existing cemeteries for this population is about 11,400 for England, or at the rate of 45 for every 100,000 persons, and about 960 for Wales, or 71 for every 100,000 persons.

It is now usual to allow a quarter of an acre to each 1000 head of population where the soil is favourable, but this figure must be greatly enlarged where much embellishment of the ground is desired. I need not go into the statistics published in 1843, when it was discovered that the graveyards in London were sometimes forced to accommodate 1200 bodies, and sometimes as many as 2300 per acre, but I may state that at present London has 22 cemeteries with an aggregate of 2210 acres. For decennially renewed interments Whitechapel alone would require seven acres of cemetery accommodation for every 20,000 inhabitants. London will therefore appear to be at present well provided with cemeteries, if these were accessible to the population of each district. But the contrary is the case, and hence additional cemeteries are in process of projection for various districts where the existing ones are held as being too remote from some centres of the population. London must be taken as an exception when speaking of the necessity for extra cemetery space, because its population is dense and intermural interments are now forbidden. In the country the death-rate is different, and assuming the deaths for every 35,000 in the metropolis to be 1200 yearly, the deaths in a rural place like Hereford might be counted at about half of this figure. Thus, if Whitechapel would require over 7.4 acres of burial accommodation for every 20,000 inhabitants, Hereford would require 4.3 acres for the same number of persons.

We may safely assume that in a few years time the ground appropriated to the dead for the Metropolis alone will reach 3000 acres. The Metropolis has at present one acre of burial ground for every 1,700 inhabitants, which is much in excess of the quarter acre for every 1000 inhabitants recommended by the authorities. This recommendation, however, is sometimes doubled by various cemetery authorities in order to provide for the planting of suitable shrubs, and the laying out of ample roads. At the rate of one acre for every 4000 inhabitants, 6,750 acres would be required to accommodate the 27 millions of residents in England and Wales; and the more our cemeteries

are extended for embellishment, and the more their grounds are allowed a suitable rest by providing extended sites, the more these figures would be enhanced. The whole of this land is alienated, looking at it from an agricultural or mining point of view, and the misappropriation will go on increasing.

Our burial laws specify that each adult shall be entitled to four superficial yards of earth, and, accordingly, after allowing for the predominant death rate among children, this figure gives an average of 27 superficial feet. Taking the recommended depth of each grave to be 10 feet, this would show that 10 cubic yards of earth space are in process of allotment for each person. The average cost per acre for the land purchased for cemeteries was reported to the House of Commons in 1851 as being £123 per acre. This would be a fairly computed cost per acre outside the Metropolis, but the cost of land around London would be in excess of this. Taking, however, this low estimate, the cost of the cemeteries connected with the Metropolis would be nearly £272,000.

Were cremation practised by 50 per cent. of the population of the Metropolis, a piece of ground not larger than the Woking cemetery, or about 500 acres, would be sufficient ground to allot for their wants, and at the same average rate of purchase, this ground could have been bought freehold for £62,000, which would have been a saving of £75,000, and 605 acres would have been spared from pollution. To the calculation of 500 acres as being sufficient for the wants of the Metropolis and suburbs, if half of the population of say five millions practised cremation, it will be seen that an acre has been reserved for every 5000 persons; and considering that an urn would not require more accommodation than one cubic foot, it is easy to perceive that one-fourth of these 500 acres would be sufficient upon which to erect crematory temples and columbaria resembling those at Milan and Gotha, leaving 375 acres for roads and gardens.

This space of 125 acres would serve to accommodate the wants of a population of 2½ millions for more than 1000 years, even after according permanent space for each urn. But it is proved that a great number of persons have arranged for their ashes to be simply strewn over the ground; and as any custody of the ashes could not really be permanent—in Gotha the care of the urns are only for 20 years free—the urn spaces will in some cases be transferable. As for the cost of the erection of the chapels, crematories, and columbaria, this would be more than met by the cessation of the expense for buildings and maintenance now spent upon the 605 acres of ground which would be saved to the metropolis. As it would be with London, so

would it be throughout the country in a proper ratio, were only a moiety of the people to practise the reformed rite.

The expenses attending the total number of funerals in England and Wales in 1884 was given by statistical returns as amounting to £4,871,000, and it was reported that half of this could be saved if national cemeteries were erected by the Government. This saving was mainly to be achieved by the reduction of the expenses of undertakers. The average cost of each funeral, as given in Mr. Chadwick's tables for England, was 13s. for paupers, £5 for the working classes, £10 for the middle classes, £100 for the gentry, and £1000 for the nobility. This would be an average of £10 for each interment and make up the sum of five millions sterling just quoted. It was computed that in the metropolitan area a death takes place every ten minutes, correctly reckoning 114 funerals per day (which, however, might reach 500 a day during an epidemic); the usual attendance of some 2000 mourners can be reckoned upon. When these statistics were called for by Parliament there were some 730 tradesmen waiting for these deaths, which do not include those of paupers, and for providing the funeral. There were thus some 600 firms of undertakers, upholsterers, carpenters, builders, &c., biding their time for a chance of a lucrative interment in the metropolis alone.

The steadfast war now declared by some members of the upper circles against useless expenditure in funeral expenses, lead coffins, polished shells, with grand fittings, hearse fittings, feathers, heralds, ushers, and porters, is most hopeful for the interests of cremation, as laying the basis for a thorough reconsideration of the present method of the disposal of the dead. The sorrow of relatives who can afford the expenditure will possibly always be demonstrated by the hearse and pall, but between this decorum and useless expenditure a very broad line must be drawn.

Tombs are either allotted for perpetuity or for a number of years, or for single interments, and there are also pauper graves. In the first-mentioned category expensive ornamental tombstones are usually needful, and when the vault or grave is reopened this is a great corresponding expense.

If cremation were practised this would be saved to the family as all that would be required would be the removal of the slab in front of the chosen niche in the columbarium, which niche could be purchased at one-tenth the cost of a grave. If cremation were to replace inhumation, a safe calculation shows that the cost (including removal to a near crematory) might be safely computed thus:—For paupers, 10s.; for the working classes, £2; for the middle classes, £10; for the gentry, £50; and for the

nobility, £100, that is, provided there was no ostentatious display. The cost of cremation for fuel expended for the Gorini apparatus may be reckoned at about 7s. for each cremation, and as some ten cremations could take place daily in a single crematory, the attendance being reckoned at 10s. per diem, and the allowance for use and repair to the crematory and maintenance being computed at 2s. 6d. per diem, it is reckoned that in 310 working days in the year the cost of the actual cremation of the 3,100 dead might be performed for about 10s. 6d. each.

In reckoning the allowance for each funeral from 10s. for a pauper up to £100 for the highest classes, I have taken into consideration average cost of proper conveyance to the nearest cemetery, minister's fees, and the like.

At present there can be no realization of the above desirable state of things, as never more than one cremation has taken place in a day, and I have been calculating at ten per diem. The cost of cremation is consequently greatly enhanced.

I have endeavoured to prove, and I believe I have succeeded, that burial in the earth is a waste of land and of money, and that it should long ago have been largely replaced by cremation; and to bring about this desirable end, every cemetery should be compelled by law to provide a crematory within its precincts, with suitable accommodation for the ashes whether inurned or buried. This idea is held to be necessary by all who have studied the welfare of their kind and the good of the commonwealth. The depurating power of the earth has been overrated, and the lesson read to the nation by Sir Henry Thompson must be perpetually repeated. It has been a great pleasure to me to read this paper in accordance with the wishes of the President of our Congress.

[For discussion on this paper see page 86.]

On "Improved Method of Interment," by W. ROBINSON, F.L.S.

A FEW weeks ago a ghastly story came to us from Paris of graves being robbed of their dead by one whose duty it was to take care of them. The fact is only named here because it is typical of so much in our burial custom, which carries decency to the verge of the grave and then leaves the poor body to pollution always, and indignity often. It is typical of the

recking graveyards of Europe, from which nothing but ugliness, horror and danger can come. We pretend to respect the dead, and erect costly tablets to perpetuate their memory in graveyards, the contents of which in cities are often carted away as rubbish after a few generations have passed. With a proper system of burial disrespect to the ashes of the dead or danger to the living is impossible. In visiting in various countries, the cemeteries of large cities often spoken of as beautiful, I saw so many gruesome sights that the conviction was forced upon me that there is but one way out of the burial difficulty!

Many of the evils and difficulties with which we have to contend puzzle the wisest, but with urn-burial the way is so clear, and the gain all round so great, that nothing but custom and thoughtless prejudice can prevent a wholesome revolution in all that concerns the disposal of the dead.

The drawbacks to our burial-system would disappear when any inoffensive and prompt system of reducing the body to ashes were adopted; there will be no need to close even the city cemetery at any time, and urn-burial could be carried on for hundreds of years in a cemetery no larger than any of the present overcrowded London ones, without the slightest offence to the living. The space set apart for urn-burials need not be more than a fourth of the area of a large cemetery, and thus at the central or main part there would be ample space for gardens and trees. A cemetery for urn-burial must not only be a garden, in the best sense of the word, but the most beautiful and the best cared for of all gardens. The present mode of using the ground often leaves no room for either garden or planting, owing to the dismal regiments of stones that cover the soil. It is impossible to overrate the opportunities for improvement in beauty and art that would be secured by the continuous existence and use of a cemetery.

A permanent resting-place for the ashes of the dead is not possible under our present system: with urn-burial the simplest stone inscription may be in as good order a thousand years hence as to-day. The city graveyard being now only of temporary use, such monuments as it possesses share the fate of all the other materials when it is closed; and the frequent disturbance of the ground for interments is against any good work in such art as the place invites. Actually in Paris the foundations of roads are made of headstones only erected a few years ago, and though in London memorial stones to "perpetuate" the memory of individuals are not cleared away so promptly, the result, in the end, is very much the same. Pieces of broken tombstones, some of them bearing dates, were among the débris which

a contractor "shot" into Kensington Gardens a few years ago!

The adoption of urn-burial would at once place all that relates to the artistic embellishment of a cemetery on a very different footing. A cemetery which is now filled up in the space of an ordinary life would, on an improved system, provide accommodation for many ages. Neglect and desecration of the resting place of the dead would give place to an unremitting and loving care, for each generation would be as much interested in the preservation of the cemetery as were those that had gone before at any time in its history. With the establishment of a permanent resting place for the dead would come the certainty that any memorials erected to their memory would be preserved.

In old Roman cemeteries beautiful tombs may yet be seen, with the urns within them, in as good order as when placed there two thousand years ago. A single tomb, in such cases, served as a family burial place: the money now spent upon a variety of graves and headstones, and in the purchase of ground, would suffice to build a tomb that might endure for ages.

Urn-burial would give us everything we can desire for artistic taste: soft green, undisturbed lawns, stately and beautiful trees in many forms, ground undisturbed in the way of quiet beauty, a background of surrounding trees—no hideous vistas of crowded stones.

Urn-burial could be carried out to any extent in churches and city graveyards. For various reasons, many persons would prefer burial in churches or near them, but, as is well known, the evils of the present system of burial became so horrible and so evidently dangerous, in the case of city churchyards, that burial in cities was forbidden by law—and not too soon. But the evils from which we were then saved are again appearing in populous suburban districts, and soon the numerous family tombs and graves in our extensive suburban cemeteries must fall into disuse. Establish urn-burial, and people who have family tombs in neglected city churchyards would take a renewed interest in them—an interest that might save them from desecration. Our churches and even our cities would be more interesting, for there is a certain fitness in men resting in death near the scene of their life and labours. The ashes of those who had deserved well of their country might be brought home from any distant place, where they had perished, and receive a place of honour in our national churches and buildings. Vaults, passages, niches and walls in churches would form suitable places for urns and their inscriptions.

Though I have in these few words spoken only of the great advantages which urn-burial would give the gardener and the artist, one aspect of the question from a purely sanitary point of view deserves a word. It is on the utter futility of the earth-to-earth or coffinless burial as a remedy for the great and what will soon be the intolerable evils of our burial system. Coffinless burial in no way frees us from polluting earth, air, and water! This is easily proved by burying even a small animal and turning up the soil a year afterwards!

There is not, and there never can be, any satisfactory way of disposing of the dead, which does not do, promptly and inoffensively, what is now done in the slowest and most odious manner. Until some better system is devised, cremation is the only method which will rapidly resolve the body into its harmless elements by a process which cannot offend the living, and which will render the remains of the dead innocuous. This system is also that which gives us the amplest opportunity for making a cemetery a blessing instead of a danger to its neighbourhood; by its means we may have memorials preserved from decay; ground from sacrilege; soil and water from impurity; art not unworthy of its aim; church burial for all who desire it; space for gardens and groves in our cemeteries; the mindfulness and care of each successive generation; deliverance from the undertaker, and his "effects"; many precious open spaces in cities, free from dread or danger; age-enduring cemeteries, in which efforts towards "perpetuation" of the memory of the dead need not be so delusory as they now are; quiet places where the ashes of the dead should never be dishonoured, but might find unpolluted rest.

[*This discussion applies to the two preceding papers by Mr. W. EASSIE and Mr. W. ROBINSON.*]

SIR SPENCER WELLS, Bart. (London), remarking that his views were well known, said that there were some points he could add for the notice of those who lived in such large ecclesiastical centres as York. If cremation were adopted such places as the glorious Minster of York could still be used for the perpetuation of the memories of the dead who had lived worthily in the estimation of their generation, and such dead would not poison the living, as was now the case in the present burial system. The dead, by the occupation of useful land for burial places, were crowding out the living, and injuring the living by polluting the air and water. If the dead were subjected to

fire, and the remains converted at once into innocuous elements, they could be reverently preserved in the great temples of worship, without being a danger to the living as at present. No religious doctrine was affected, and public sentiment, when educated, would prefer a purifying to a putrifying process.

H. E. SPENCER (York) remarked that he had given much time and attention to the subject, and a pamphlet had been compiled by a local body with which he was connected. A study of the facts had led him to the opinion that the arguments in favour of cremation were unanswerable, for the benefits it conferred were unquestionable, while, on the other hand, the arguments against it were scarcely worth discussing. He asked the medical members of the Congress to say "Yes" or "No" in regard to cremation; but those who said "No" would have to give reasons for their views. For his own part he could not understand why cremation was opposed by any class in the community.

The Rev. F. LAWRENCE (York), (Secretary of the Church of England Funeral and Mourning Reform Association) addressed the Congress on behalf of the objects of that Association, and in support of burial in perishable coffins, on the so-called "earth-to-earth" system in preference to cremation. The arguments in favour of cremation, he submitted, took their rise not from burial itself, but in the abuse which had arisen in the mode of burial. He contended that by a judgment of Lord Stowell, heavy coffins could not be used, and by the rubrics of the Prayer Book "the corpse" must be met in burial by the clergy. He insisted that all sanitary requirements were met by the use for each corpse of a perishable coffin, and the separate grave, which could be used again and again for all time. He appealed to the members of that Institute to help on the work of the Association, as one of a scientific character.

Mr. NORTH (Medical Officer of Health of York) said that, with all the respect he had for his friend the last speaker, he had for himself still to learn what were the elements of public health in the proposals of the Funeral Reform Association. Mr. Eassie, or any practical man, for that matter, could say what would be the condition of land in which one grave was used generation after generation for burial. The revelations of the sexton, under the present system, were horrible; but under such a system as that propounded by the Funeral Reform Association, he feared there would be an increase of the evils. As a Health Officer he protested against the practice of carrying the body into places of worship among the living while a religious ceremony was performed. It was time the question of the disposal of the dead was dealt with, for by the growth of the population the towns were overtaking the country, and thus the cemeteries were becoming parts of the towns. It must be remembered that the dead must always be more numerous than the living, and if the method was continued of preserving

the dead, there would in time be no place for the living. There was talk about "respect for the dead," but when it became necessary to widen streets in places where the dead were buried, to drive a railway through any place where there was a cemetery, or to do any other public work, where was the regard for the dead? Was there any regard for the sacred places of burial then? No, the sacred character of the dead had to give way to the necessities of the living, and it was certainly time, in the interests of the public health and of respect to the dead, that the public woke up to the necessity of removing all decaying matter from the midst of our populations. We could rightly only look upon our dead friends as so much decaying matter, and the more we hold these dead friends in honour the more were we sinning against decency and respect for them, and against sanitary science in keeping their decaying bodies amongst us to create disease, and to associate them in our minds with that decay which was shocking to contemplate. He knew no way out of these evils except the purification by fire. If people had seen bodies as he had seen them, they would have said "Burn them: do not let the children of these dead parents see under these shocking conditions those whom they loved." He was convinced that if the two methods of disposing of the dead—by burial and by cremation—could be seen side by side, and considered by the population in all aspects—the light of respect to the dead, of decency to the dead bodies, of the duty to the living: alike on the score of sentiment as well as of sanitary science, cremation would commend itself to others' as it did to his judgment.

Mr. WYNTER BLYTH (London) did not oppose cremation, which he thought should be tolerated only—that was to say that all those who desired to be cremated, or to have their friends cremated, should be allowed to have their desires carried out; but he was opposed to Mr. Bessie's views that the cemeteries should be compelled each to provide a crematorium. It was unquestionable that reform was needed in the present system of burial, from the points of view which had been stated. He thought it would be a sufficient reform if one body were buried in one grave, that no tombstone should be allowed, and that in say twenty-five years the ground should be allowed to revert to secular uses. By such a system all the advantages which could be derived from cremation would be given, and this without trenching upon the sentiment created by long custom. Looked at from some points of view, cremation would certainly be the best method to adopt; but then there was the sentiment of the population, and the question of safety in regard to crime. After all, the evils which were making themselves felt in respect to the present system were the outcome of an abuse of the churchyard burial; but he could not say the Church Burial Reform Association's method would correct all the evils which were presented, and he referred his hearers, for details of his own views, to published statements of those views; but he would add, that his opinion was that what was needed was a reform and not a revolution. Much was said about "the decomposing

matter" of the human body; but then the earth was full of "decomposing matter," and he held that so long as the body was put at a proper depth its decomposition would not matter. He appealed to those who walked through cemeteries to say if the evils of the present system as now carried out were of any magnitude. The question would also come before them as to the quantity of land which was to be taken for burial purposes—and that was really the serious question. If it was to be declared that a piece of land once taken for the disposal of the dead was never afterwards to be used by the living for secular purposes, it would be a most serious thing, but as a matter of fact, lands once consecrated to the dead, were constantly reverting to secular uses. Some bishops held strong views against this, and it was difficult to get this reversion to secular uses in certain dioceses of lands once consecrated to the use of the dead; but he hoped that the church would look upon the future reversion of such lands in a more reasonable light than hitherto, and not attempt to withhold land from the living for ever because it had been in use for burials.

Mr. WASHINGTON LYON (member of the Corporation of the City of London) considered that it would be long before the nation would adopt, for the disposal of the dead, this system of cremation; but he presented a system of cremation of his own, a system, he said, which could be carried out without interference with the present system of burial. He presented to the chairman's notice a mouse he had cremated under his system, and this mouse, he said, was cremated fifty feet from the fire, by a system which burnt out the noxious gases, and left the body in its usual appearance. This system (particulars of which he did not make public) would meet, he held, all views—those of sentiment, and those who advocated cremation on sanitary grounds.

Surgeon-Major PRINGLE (London) described the systems of burial and cremation he had seen in various parts of India, and he pointed out that the burial of bodies in some parts of that country would ultimately seriously affect the water-supply of the population. He said he had been shocked to see the unceremonious manner in which bodies were treated in this country, when they were in cemeteries which stood in the way a railway was intended to pass, when he knew of cases in India where the Grand Trunk Road was diverted to leave untouched the tomb of a Mahomedan saint, so that the upholding in this country the present system of burial on the score of respect for the dead had no footing, seeing that respect for the dead was not allowed to interfere with the necessities of trade and commerce. If cremation had not been carried out in India at places subject to annual fatal epidemics, the locality would have been uninhabitable.

Mr. BALDWIN LATHAM, M.Inst.C.E. (London), called attention to the unsuitable character of some soils for use as burial grounds,

and gave his experience of a churchyard on a clay soil, where the heat of summer made so many fissures in the ground that the place had to be kept sweet by the use of disinfectants, and he spoke of the evils of burial on porous soils by the percolation of the decaying matter into the sources of water-supply. Dealing with the Rev. Mr. Lawrence's exposition of the principles of the Burial Reform by adopting a system by which the bodies would decompose more rapidly than by the present system, he said he could not understand what advantage would arise to the community by this method, and indeed he, for one, could give practical examples against the proposal. He explained, by means of the blackboard, the carrying out of some works at Merton, Surrey, near the river Wandle, and adjoining the Lambeth parish cemetery. While there engaged in cutting a sewer, not far from a spot where paupers were buried in thin coffins of a like character to the "earth-to-earth" ones, the work of the men was interrupted by a black putrid stream which ran from these graves. Every one of the men engaged there was afterwards taken ill, the cause being the evil effects of the putrid ichor from dead bodies exposed to rapid decomposition; and such would be the result of the system proposed by the Burial Reform Association. It was impossible to conceive how the present system of burial would be improved by merely hastening the decomposition of the bodies committed to the grave. On the question of the water-supply being affected by the present system of burials, he said it was to him a matter of regret to see new cemeteries planted at places where they would affect the watersheds which gave supplies to large populations, and he could say that if the people did not suffer from this action now, they would in the immediate future. One objection made to cremation was that it was apparently new; but this was not so, for it was an exceedingly old system, and unless measures were quickly taken to revert to this or some other system of dealing with the dead in a manner which would have regard to the feelings of the living, the dead would overcome the living. The Congress should thank Mr. Eassie for his thoughtful paper, and for the trouble he had taken in showing the economic side of the subject. As to the present system of burial being detrimental to the living from an economic point of view, cremation was greatly to be preferred. There were other points of view, and one which came before his own mind at that moment was, that the living could respect the ashes of the dead when presented in an innoxious form. He had, some time since, to stand by an open grave in which, some months previously, a member of his family had been interred, and the effect was very unpleasant. How could it be said that one could have respect for dead bodies under such conditions? He could not understand how there could be any respect for remains which created repugnance to the senses. When remains were cremated there was no such sense of repugnance, and he earnestly hoped that the drift of public opinion would be in favour of the plan best suited to our necessities, to decency, and to respect.

Dr. EWART (Brighton) recognised the absolute value of cremation,

and would give it a fair field, but no favour. The exception he would make was that he would return the ashes to the soil. He thought Nature intended it. It was necessary to give back to the earth that which had been received from it in respect to mineral matters contained in the ashes.

Dr. TEMPEST-ANDERSON (York) urged that if they cremated the dead, they must, to be consistent, say that other organic refuse must be treated in the same way; that their sewage should be similarly treated, because it was organic matter of a decomposing nature, and was equally as dangerous as the small quantity of organic matter that remained after they departed this life.

Dr. A. HILL (Birmingham) remarked that Mr. Eassie's paper had brought up, in the discussion, some few of the old type of objections which were of the weakest possible character. Dr. Ewart, for instance, had stated that the saving of the ashes of the cremated bodies would rob the earth of the matters which should go to fertilize the soil, and the same speaker seemed to think that the burial of bodies under the present system added to the fertility of the earth. It might have been supposed that Dr. Ewart would have known that the surface of the earth was never fertilized by the ashes of the bodies which were buried deeply in the ground, and that vegetation was never thus benefited, so that the argument in favour of earth burial, derived from the supposition that the decaying matter formed manure, fell at once to the ground. Then as to the waste of ashes stored in urns being a withdrawal of mineral matters necessary to the soil, Dr. Ewart was equally at fault, for we have in the bowels of the earth vast stores of phosphatic minerals ready to be used in agriculture, without waiting for the ashes of the dead. The speaker could corroborate Mr. Baldwin Latham as to the fearful character of the matter which flowed in blackened streams from graveyards into water courses, poisoning the air and all who came into contact with it, and it was simply absurd for any person to talk about the "purifying power" of the earth in connection with the earth system of burial. Those who talked about this purifying power of the earth ought to be acquainted with the elementary fact that the oxygenising of the dead body, and the reduction of it into elements of a fertilizing character could only go on near the surface; but that when the body was buried deeply in the earth the fertilizing qualities had no effect upon the earth. Then another class of objectors, or very often the same, talked about the "sentiment" of the people, as if the "sentiment" was to weigh against the health and well-being of the whole nation, especially when that "sentiment" was founded upon prejudice and ignorance. Instead of bowing to this prejudice and ignorance, as some seemed to imply should be done in this matter, an endeavour should be made to educate people up to better sentiments, and sentiments more in accordance with the benefit of the nation. Appeals should be made to them to bring their sentiments into conformity with the means of disposing of the dead which would be beneficial to the

living. It would be a sentiment of a right character if it were in accordance with principles of right to mankind and the necessities of the living; but if people would not do that which was in accord with the public health they could not expect to have their sentiments respected. What struck him as peculiar, after listening to the speeches of Dr. Anderson and Dr. Ewart, was that gentlemen should seize and repeat the one or two things which could be said against a proposal such as cremation, and overlook the ninety-nine points in its favour. It was said by Dr. Anderson: "What is to be done with other decaying matter, the refuse of our large towns? Why should that not be cremated?" Well, as a matter of fact, that was what was being done with much of that refuse which could not be advantageously used in other ways, and Dr. Anderson might see "Destructors" at work cremating this refuse, and rendering it harmless to the public health, as the crematorium would render the dead bodies harmless to injure and disgust the living. Another asked, "What should be done with the sewage?" But he forgot that this was not allowed to decompose in a mass in the midst of populations in the same way as the dead bodies were allowed to decompose in the churchyards; and that the sewage matter, when used upon the land, fertilized the soil. The facts shown by investigation should convince the minority who had spoken against cremation, that they were wrong in their views, and that they were in opposition to what was approved by common sense and by science.

Mr. WHITAKER (Southampton) brought before the meeting the fact that cremation by lime had been applied in the case of criminals buried at Newgate prison, and contended that a false sentiment had been too long allowed to rule the public mind in this matter.

The DEAN OF YORK said that the clergy wanted scientific men to make up their minds about the question of the disposal of the dead. Incidentally he mentioned that at Easingwold, near York, there was a parish coffin, which had been in existence for several hundreds of years, whereby bodies were conveyed to the grave, and there consigned without enclosure to the earth. The question of sentiment ought to be regarded on any subject, especially on such an one as the burial of the dead. He believed, however, that the English people were highly gifted with common sense, and if they could be convinced that the exigencies of the time did demand an alteration in the system of disposing of the dead, they would not be slow to adopt an improved mode.

Mr. W. EASSIE (London), in reply, remarked that the great majority of the speeches required no answer from him. He reminded them that he dealt with the economic side of cremation, and upon that matter little had previously been said. It had been urged that it would be an economic loss to the earth if the ashes were inurned. It had been pointed out that the minerals in the ashes of the dead at present buried did not come to the surface of the earth, and that,

therefore, by inurning, there would be no loss of mineral matter which the earth now received. The objection was raised on the supposition that all ashes were inurned, when, as a matter of fact, some adherents of Cremation had desired that their ashes should be spread upon the earth, and not inurned. He added that the Society published, from time to time, papers upon the subject of cremation, and that these could be obtained by the public.

On "Milk and Disease," by LOUIS PARKES, M.D., Pub. Health Cert. London University.

Of all foods derived from an animal source, cows' milk brings us into the closest relations with the animal supplying the food. Milk is very generally consumed uncooked, *i.e.*, unboiled, whilst every kind of meat is subjected to cooking by heat before being consumed—cooking being considered necessary not only to improve the nutritive qualities of the meat, but to preserve it from, and to destroy, if present, putrefactive or other injurious organisms. Milk, as being derived from the living animal, must be also to a great extent a reflection of the animal's state of health. But we may go further than this, and say that milk is, for a certain period, derived from an animal in the puerperal condition consequent on parturition—a condition known to be liable to certain disorders, chiefly inflammatory, and particularly prone to take the infection of contagious disease. Again, we know that milk has a remarkable power of absorbing gases and vapors, organic and inorganic, and is besides a fluid which possesses all the properties necessary to constitute it a suitable cultivating medium for low forms of life, fungoid or bacterial. So that it is not too much to assume that specific disease germs which have gained access to milk, may so grow and multiply in this fluid as greatly to increase its powers of infection with the lapse of time. From such considerations as these, we perceive that if cows' milk is a perfect food, containing, in the right proportions, all the dietary constituents necessary for healthy growth and nutrition in the young, yet its use—in an uncooked state—is attended with very serious possible dangers, derived partly, may be, from the animal source of supply, and partly from causes which may operate on it between its origin from the cow and its consumption by the individual.

The greatest consumers of cows' milk are young children,

and, I might add, infants, for hand-feeding amongst all classes has enormously increased, and from various causes seems likely to go on increasing. The use of cows' milk amongst adults is also increasing, but it is to children that we must principally look for evidence of disease caused by milk, as they are by far the largest consumers of it in an uncooked state, and their susceptibility to all kinds of infection is so much greater.

In this paper I propose to confine my remarks principally to one aspect of the question—an aspect which is now receiving the attention its importance deserves, viz.: the transmission of disease of the cow through its milk secretion to human beings, and to summarize briefly our knowledge of the facts and the inferences to be drawn from them in this connection.

Of causes operating on cows' milk to impart to it an infectious quality after being drawn from the cow, we already know a good deal from numerous recorded cases of milk epidemics of enteric fever and scarlatina, and a few of diphtheria, commencing with an epidemic of enteric fever due to infected milk, in Islington, 1870, which was investigated by Dr. Ballard. In 1881 Mr. Ernest Hart, in a paper read before the International Medical Congress, gave tables with particulars of 50 epidemics of enteric fever, 15 of scarlet fever, and 6 of diphtheria—4800 cases of infectious disease in all—which had been traced to an infective or a supposed infective quality of the milk supplies, and since that date there have been numerous other milk epidemics recorded. The importance of sparing no pains in extending our knowledge of the ways in which milk comes to be such a potent agent of disease is at once evident on scanning these figures.

Enteric Fever.—In the case of this disease, the most usual means by which the milk obtains its specifically infectious quality, is the washing of the milk-cans with water polluted by typhoid dejecta. This phrase, "washing the milk-cans," has no doubt included some cases where such polluted water has been surreptitiously added to milk which had been creamed, in order to restore to it its proper specific gravity, or merely to dilute a rich milk in the ordinary way of business. Wells, ponds, or ditches which drain privies or cesspools, are the usual source of such water; and it is a fact that such water, liable at any time to contamination, is still used in many farms and dairies. In other cases, where the water has been absolved from suspicion, the milk has been kept in rooms or dairies the air of which was poisoned by emanations from a drain or sewer, presumably containing the specific poison of the fever, or the person who milked the cows was himself in active attendance on members of his family suffering from the disease. The readiness with which milk will absorb foul gases has been already alluded to.

In almost all the recorded epidemics of enteric fever due to milk, such have been the means by which the milk obtained its infectious quality, and such no doubt will they continue to be found in the future. A most remarkable simultaneous outbreak of enteric fever in St. Albans and London in June and July, 1884, amongst the customers of a particular farm at St. Albans, was investigated by Mr. Shirley Murphy,* and here there was complete absence of any evidence that the milk had become infected in any of the commonly believed ways. But this case may probably be regarded as one of the exceptions that prove the rule. As far as our English experience goes, enteric fever is not a disease which can be communicated to cattle; but in Germany it is stated by Walder that he has examined calves dead of a disease bearing a very strong resemblance to enteric fever, if not actually identical; and a sudden and severe epidemic of this disease at Kloten† was attributed to the consumption of veal from a diseased calf. Those who know how veal is eaten in Germany, in a semi-raw state, will not be surprised at indisposition or serious illness following the consumption of diseased meat; but it seems doubtful whether the disease was in every case true enteric fever. Further researches on this subject, as on the whole question of the transmissibility of bovine disease, are highly desirable. The poison of enteric fever is contained in the alvine discharges, and we know how very readily the milk may become mixed with such discharges by a careless operator.

Scarlet Fever.—In those epidemics of scarlet fever which have been traced to milk, it has been usual to find that the milk was infected in the ordinary way by a previous case of the disease at the farm or dairy, or there has at least been so strong a suspicion of a pre-existent case as to amount to a moral certainty. It is perhaps hardly necessary to point out that the ordinary method of infection is the milking of a cow by a person who is attending on a scarlet fever patient, or who has the disease amongst his family, or is himself suffering from it, probably in a mild or disguised form; occasionally the milk appears to derive its infective quality from being placed in a room or dairy in which clothes or refuse matters from the sick room are lying. It does not follow that because such methods of infection have been provided against in orders of the Privy Council that they do not occur. Inspection of dairies competent to prevent such gross carelessness, has up to now been almost non-existent. But besides such easily understood methods of infection of milk, it would now seem certain that cows are liable to a disease

* Report of the Medical Officer of the Local Government Board, 1884.

† Berliner Klinische Wochenschrift, 1878, 39, 40.

identical with or very closely resembling human scarlatina, and that the milk from animals so suffering has been the cause of epidemic outbursts of scarlatina amongst those who consumed it. The first of such evidence is forthcoming in a Report by Mr. Power,* on an outbreak of scarlatina in parts of St. Pancras, Marylebone, and Peckham, at the commencement of 1882, which was traced to the milk supplied by a farm at Farnham, Surrey. Mr. Power satisfied himself that it was "practically out of the question that the milk at the farm had become infected in any of the commonly believed ways that require a human subject as the source of infection," and he came to see that "a hypothesis of cow-causation would fit the facts that needed explanation as well as, or even better than, any other hypothesis." The only facts, however, which came to light were, that about a week before the outbreak of scarlatina in London, a cow which had calved three or four days previously, came into milking for business purposes. Nothing could be learnt as to the state of health of this cow at that time, but some time subsequently it was found that she had "here and there lost portions of her coat, and that her buttocks and posterior udder were fouled and stained by excremental matter and perhaps by vaginal discharge as well. In this respect she presented a rather strong contrast to most of the other cows." The other case, which has recently attracted a large amount of public attention, was an epidemic of scarlatina in December 1885, in various parts of Northern and Central London, which was definitely traced to the consumption of milk from a farm at Hendon, and which has formed the subject of a report by Mr. Power, of the Local Government Board, who, in conjunction with Dr. Cameron and Mr. Wynter Blyth, fully investigated the circumstances. The case and the Report on it are so recent as to be fully within your knowledge. It is sufficient to remind you that the cows which communicated the disease were suffering from vesicles and ulcers on the teats and udders, and that this affection was contagious and spread from cow to cow in the sheds. The affected cows continued to take their food well, and gave an abundant supply of milk all the time of their illness. The disease, further studied by Dr. Klein, is shown to consist of small vesicles making their appearance on a greatly swollen and red teat, in the course of a couple of days assuming the character of an ulcer covered with a brownish scab, having a slightly indurated base, the margins of the ulcer not being perceptibly raised or reddened. The ulcers affected chiefly the teats, but in some the udder also, and in these cows patches of skin denuded of hair were noticed on

* Report of the Medical Officer of the Local Government Board, 1882, p. 63.

the back and tail, the epidermis being scaly and the cutis more or less thickened. The milking power and body temperatures were normal.

Experimental researches, founded on Mr. Power's first cases—the outbreak of 1882—and conducted by Dr. Klein, have shown: (1) that the lochial discharges of a reputedly healthy cow did not, when inoculated into or administered along with food to certain other animals—as pigs, rabbits, dogs, and guinea pigs—produce in them any obvious illness; but (2) that a form of illness, viz., an abscess, could be produced in a healthy milch cow, recently calved, by inoculating it with muco-purulent throat discharge from a scarlatina patient, and that this disease was transmissible to dogs by inoculation after a short period—four days—of incubation; and (3) that the lochial discharges of an unhealthy—probably tubercular—cow, recently calved, when mixed with its milk, was capable by inoculation of producing inflammation and abscesses at the seat of inoculation in other animals, as dogs and pigs. Subsequent researches, however, led to the belief that this animal was in reality suffering from bovine scarlatina.

Researches conducted by Dr. Klein on cows from the Hendon Farm, which were the cause of the recent epidemic, have shown (1) that matter from the ulcers on the teats inoculated into the corium of calves produced a definite local disease allied in character to that from which the cows suffered; (2) that inoculation with sub-cultures of a strepto-coccus—a micro-organism contained in the discharge of the ulcers—into the sub-cutaneous tissue of calves, was capable of producing a general disease characterised by changes in the kidneys—glomerulo-nephritis—and other organs, bearing a close resemblance to human scarlatina. The milk of these cows did not appear to contain any virus, but as Dr. Klein points out, the milk, during the act of milking, is pretty sure to become contaminated by the fingers of the milker bringing down into the milk particles from the ulcerations on the teat. The organisms contained in these particles would find in the milk a good medium in which to multiply, and the milk would then correspond to an artificial culture of the strepto-coccus. Whether such milk can produce the disease in calves by feeding as it can by inoculation remains to be determined. The teaching of the recent epidemic would seem to show that as regards human beings, consumption of the infected milk alone is sufficient to produce the disease scarlatina.

Diphtheria.—Milk epidemics of diphtheria have not been so numerous as those of enteric fever or scarlet fever, and unlike these too, it has not been possible, in a large percentage of the

total cases, to trace the actual source from which the milk derived its infective quality. This is not to be wondered at, for, in the first place, our knowledge is not yet sufficiently definite to enable us to exclude diphtheria from the class of diseases which are not necessarily dependent on a pre-existent case, and which, possibly arising from ordinary insanitary conditions, may be said to have sometimes a *de novo* origin; and in the second place, slight cases of diphtheria are very difficult to trace, the diphtheritic character of a sore throat not being always recognizable even to a medical attendant. There is but little evidence tending to show that diphtheria, like scarlet fever, may be a cow disease transmissible to human beings. Calves have been known to suffer from a throat affection, presenting post-mortem appearances very similar to those found in human diphtheria. But this disease of calves—even if it were more general than it is—would not account for diphtheria appearing amongst the customers of those establishments—the large majority in or near large towns—where the calves are sent away as soon as born, and the cows come after three or four days into regular milking. The question has been raised whether garget or mammitis in cows is capable of producing diphtheria in the consumers of milk taken from gargety udders.

An outbreak of diphtheria at Hendon, in the winter of 1882-83, was investigated by Mr. Power,* and was attributed by him to a ropiness of the milk supplied from a particular farm, possibly due to garget in the cows, although no evidence was obtained of this or any other disease being prevalent at the farm amongst the cows prior to the outbreak. Dr. Vacher, of Birkenhead, asserts† that garget, or mammitis, is a purely local non-specific disease, not communicable to other cows, but produced by cold, high feeding, or bruising of the teats by bad milking, and capable perhaps of producing indigestion and diarrhoea, when gargety milk is mixed with good milk—as it often is—but without the power to produce erysipelas, tonsillitis, or diphtheria in the human subject. It certainly seems, from the evidence we possess, as if diphtheria is capable of being transmitted in milk from farms and dairies which are carefully kept and in good sanitary condition, and where apparently there has been no pre-existent case of the disease. Under such circumstances, it is only natural to look to the cows themselves as the cause of the disease. Unfortunately, the skilled investigations have usually followed an epidemic at such a long period after the first case of the disease, as to have given sufficient time for the cows to have recovered from the disease, whatever it may

* Report of the Medical Officer of the Local Government Board, 1883.
† Sanitary Record, February, 1882.

have been, which gave rise to the epidemic. Such a disease, too, may be of a very mild character in the cow, running its course in a few days. We may expect considerable light to be thrown upon this subject shortly, from the researches now being undertaken by Dr. Klein for the medical department of the Local Government Board.

Tuberculosis.—Tuberculosis of cattle is extensively prevalent in the cowsheds of large towns and cities. From an Australian Parliamentary paper lately published, it appears from investigations recently made that at least 10 per cent. of all the cattle sold in Melbourne show unmistakable signs of the disease. In Germany 15 per cent. of all cattle are said to be affected with tuberculosis, and in some districts as much as 50 per cent.; whilst Prof. Fleming asserts that at least 25 per cent. of all dairy cows kept in towns are the subjects of the malady. In his work, "Veterinary Sanitary Science," the same authority says: "Cattle kept solely for dairy purposes, and particularly in large towns, suffer by far the most severely from this affection. Constantly confined in stables which are not always well ventilated and clean, deprived of exercise, drained of milk in large quantities, and fed on the kind of aliment which most favors the increase of that fluid—though it may not enhance its quality—it cannot be wondered that the nutritive functions of the cattle so treated must suffer to a serious extent. Indeed, it is a matter of daily observation that the cows which are abundant milkers are most liable to this disease." The practice of rearing store calves on milk deprived of its fat, must also largely favor the early onset of tuberculosis. The first signs of the disease are said to be very obscure, and an animal may be suffering for months before any illness is noted. The udder is one of the glands not unfrequently involved in tuberculosis, and this fact has an important bearing on the subject of the transmissibility of the bovine disease to man, for it is said that the disease is most readily communicated by the milk when the affection in the cow is general—not localised in one or two organs—and when the mammary glands are involved by tubercular deposits. The milk, too, is altered in quantity, more watery, bluish-tinted, and contains a larger proportion of alkaline salts, but is less rich in nitrogenous matters, fat and sugar, than in health, proving that assimilation is defective. Six months or a year may elapse before the symptoms become well marked.

As regards evidence of the transmissibility of the bovine disease to other animals and to man through the milk, Klebs, Gerlach, and others, have shown that the milk of tuberculous cows, given as food, produces tuberculosis in rabbits, guinea pigs,

and dogs, and Klebs asserts that tuberculous virus exists in the milk of phthisical cows, whether they are slightly or seriously affected. Cases too have been recorded in America, where the onset of tuberculosis in children was attributed to the consumption of the milk of diseased cows. On the other hand, there are some who do not believe in the transmissibility of the disease, and regard the diseases, as manifested in men and cattle, as being analogous only and not identical. This view can hardly be maintained now, when we know that the bacillus of tubercular deposits in cattle is the same as that found in the human disease. The subject is one of very great importance and interest to the whole community, and requires further elucidation by observation and experiment.

Cattle Plague or Rinderpest.—Of the milk in this disease, Prof. Fleming says: "There is no evidence that its use is likely to prove hurtful, and were it otherwise, the diminution and suppression of this fluid at a very early period of the disease must effectually prevent any accidents, were they likely to occur."

Contagious Pleuro-Pneumonia.—The same authority says: "We have no evidence that its use as food has ever caused any injury to those consuming it." Loiset states that at the public abattoirs at Lille, the employés of the cattle dealers and salesmen have consumed the milk obtained from diseased cows for a large number of years, without the slightest inconvenience.

Cow Pox or Vaccinia.—The milk is said to be altered in quality, coagulates readily, and is more watery; the secretion is sometimes diminished or suppressed.

Anthrax.—The secretion is quickly suspended, or if it continues is of a dirty bluish color, streaked with blood and soon becomes putrid. Chisholm mentions the case of a girl three years old, who presented all the symptoms of anthrax from drinking the milk of a diseased cow. Anthracic milk has also communicated the disease to other animals.

Rabies.—Prof. Fleming says: "There is no evidence to show that there is any danger in utilizing the milk before symptoms of the disease appear. People have continued in good health who have used the milk even at the commencement of the disease."

Foot and Mouth Disease, Aphthous Fever, or Epizootic Eczema.—This is a contagious disease, characterised by an eruption of small vesicles, either confluent or isolated, on the lining membrane of the mouth and the interdigital spaces of the feet; the vesicles not unfrequently appear on the udder and teats in cows. The symptoms are fever, gradual diminution in the secretion and yellow color of the milk, whilst in the majority of cases it is nearly or altogether suspended. The udder becomes red and

tense, and the teats swollen and painful when they are involved, vesicles frequently forming on them. After a few days, the ulcers resulting from rupture of the vesicles are healing, and the secretion is restored. The course of the fever in ordinary cases is from eight to fifteen days. In the milk, large granular cells or white corpuscles, having the general character of pus globules, are present throughout the whole course of the disease, and even for some time after recovery. The specific gravity is lowered, and the milk rapidly decomposes. The contagium exists in its most concentrated form in the lymph or serum of the vesicles and in the saliva, but it exists also in the secretions, milk, and blood of diseased animals as well. The contagium possesses a long vitality and is very enduring.

The French Scientific Commission concluded that the milk in Epizootic eczema was harmless, and in 1810, 1811, 1834, 1835, when the disease was very prevalent in Paris, no precautions were taken with regard to the milk and yet no epidemic prevailed. That the milk in Epizootic eczema is always harmless is very far from being the case, numerous epidemics of a peculiar illness having been traced with much certainty to the use of such milk. One of the most striking of recent epidemics of such a disease occurred in Dover and its neighbourhood in 1882, the circumstances of the outbreak being investigated by Dr. Robinson. The illness from which a large number of people suffered was severe, there being high fever, vesicular eruptions on the throat and lips, and marked swelling of the lymphatic glands of the neck. It was clearly traced to the use of milk from cows with foot and mouth disease. In 1869, Dr. Thorne Thorne investigated the circumstances of a number of epidemics of foot and mouth disease, and the effects produced on the human subject by the consumption of milk from cows so suffering. The conclusions given in his Report* have been fully borne out by more recent experiences, and accurately summarize our more recent knowledge of the subject. They are as follows:—(1) "That a disease appears sometimes to have been produced in the human subject, when the milk of cows suffering from foot and mouth disease has been freely used without being boiled. There is no evidence to show whether this affection is of a specific nature or not; but it seems to consist in a derangement of the alimentary canal, accompanied by febrile disturbance, the presence of vesicles on the mucous membrane of the mouth and tongue, which, having ruptured, leave superficial ulcerations, and at times an herpetic eruption about the exterior of the lips."

* Twelfth Report of the Medical Officer of the Privy Council.

(2.) "That in a very large number of cases the milk of cows undoubtedly affected has been used without producing any noticeable morbid effects. This absence of result may, though only to an inconsiderable extent, have been due to the smallness of consumption and the boiling of the milk." Or, as I consider probable, it may have been due to the udders and teats of the cows supplying the milk not being affected. When there are vesicles present on the teats, it is probable that they are ruptured in the operation of milking, and the virus in its most concentrated form gains access to the milk. Whilst, if the teats are unaffected, to communicate the disease the virus must be present in the milk as a secretion. If such be really the case, it is probable that its presence is limited to a short period of the disease, consequently the milk may be contagious only for a short period of the disease.

By the Contagious Diseases Animals Act, 1886, the powers formerly vested in the Privy Council to make orders with regard to dairies, cowsheds, and milkshops are transferred to the Local Government Board, and outside of the metropolis, the local authorities under the Act are now the local sanitary authorities under the Public Health Act, 1875, whilst in the metropolis the Metropolitan Board of Works retains its position as local authority. This transference of power from the county magistrates to the local sanitary authorities should effect a great improvement in the regulation and management of dairies, cowsheds, and milkshops. The police constables, who were the officials appointed by the county magistrates to carry out the working of the Milkshops Order of 1879, were utterly incompetent, and the order was practically a dead letter. A new order by the Privy Council came into force in 1885, and this will now be carried out by local sanitary authorities acting under the Local Government Board. Thus country and provincial medical officers of health will at last have the control of dairies—so long denied them, and still denied to their metropolitan brothers—and we may expect a fairly efficient control and regulation of the milk trade. It will be necessary, under the light of recent experiences, for medical officers of health, who desire to perform their duties thoroughly, to acquire some veterinary knowledge, and to keep themselves cognisant of all that is now being learnt of cow diseases in relation to the spread of epidemics. It is one of the most serious aspects of the question, that cows which are suffering from any disease require—as part of the treatment—to be regularly milked, and that the farmer believes that mixing such milk with a large quantity of healthy milk is a harmless proceeding. This belief will have to be strenuously combated. It will be necessary in the future

to quarantine cows that are suffering from even slight and undefined illness, until our knowledge is more definite; to prevent cows coming into regular milking for business purposes, until sufficient time has elapsed after parturition for the lochial discharges to have ceased and for the animal to have recovered its health; to have an eye to cleanliness in milking operations, and generally to exercise throughout the country such a supervision that the existence of disease amongst dairy hands and their families, or amongst the cows themselves, may no longer pass unrecognised. The Milkshops Order of 1885 contains the necessary powers to prevent and control any and every kind of disease which may arise in farm or dairy; it remains that an enlightened public opinion should insist on their proper enforcement.

Mr. WRIGHT NEESOM (Hull) in opening the discussion remarked that reference had been made to tuberculosis. Cows which were affected were usually the best milkers, and from experience he had found that the best milkers were usually the best bred animals. It was suggested in the paper that Officers of Health should possess sufficient knowledge of cows and their diseases to enable them to make an inspection of them. He thought, however, that it was highly important that the urban districts should appoint their own officers—men thoroughly competent to inspect cow-sheds and dairies. Tuberculosis was a disease which he had had no difficulty in recognizing when it appeared. He thought it was highly important that the urban authorities should appoint for the inspection of cow-sheds and dairies men who possessed knowledge of cattle which qualified them for the position. He trusted that sooner or later tuberculosis would be included in the schedule of diseases dealt with by the Contagious Diseases (Animals) Act.

Professor W. H. CORFIELD (London) thought the section owed a debt of gratitude to Dr. Parkes for the able paper he had read. When they considered what an important food milk was, not only to children, but to adults, they saw at once the importance of considering the possibility of such diseases as scarlet fever—a disease which caused about one-fourth of the deaths from fevers—being spread by it. He referred to a large outbreak of enteric fever spread by polluted milk in Marylebone, and described how it was traced to its source, a work in which he had himself taken part. Referring to the supposition that diphtheria was communicated by infected milk, he said there was no direct evidence that the disease had ever been communicated in that way, but as it had been shown that it could be spread by means of polluted water it was evidently possible that

such water might be mixed with milk and contaminate the latter. The suggestion which had been made that diphtheria arose from a disease among cows known as "garget" was a mere guess.

Mr. S. W. NORTH (York) said when they considered the consumption of milk and the various conditions with which they were surrounded, the wonder was, not that there was disease arising from its consumption, but that diseases were not more prevalent. He had all his life been of a strong opinion that a large amount of the disease from which they were suffering arose from the milk supply.

Dr. J. F. J. SYKES (London) drew attention to the fact that what they had heard in the paper just read, showed the importance of all milk being boiled. That was a great improvement of cow's milk before using it as food. If quickly boiled it would be much more easy of digestion than when uncooked. Boiling was such a simple preventive of disease that everybody ought to adopt it. The flavour was rather altered, but it was afterwards enjoyed quite as much as raw milk. The taste in either case being an acquired one.

Dr. A. HILL (Birmingham) spoke in favour of veterinary surgeons inspecting the cowsheds and animals. One point of the subject that had not been referred to was the adulteration of the milk with water. He regarded that as a more serious offence, but he was sorry to say that in many cases, although so much disease might arise from it, magistrates regarded it with a considerable degree of indulgence. He quoted a case in which 60 per cent. of the milk sold was "added water," and the magistrates inflicted a nominal penalty. He thought Dr. Sykes went to the root of the whole matter when he said that they should boil the milk, and he believed that if every household took the trouble to boil the milk no danger would arise from drinking the milk from infected animals.

Mr. H. H. COLLINS (District Surveyor of the City of London) congratulated Dr. Parkes on his paper, and on the fact that he had an audience which included a large number of ladies who were likely to give effect to the practical suggestions in the very able paper read by him.

Dr. LOUIS PARKES (London) in reply to the various observations, said he approved of boiling the milk, but the difficulty which arose was to compel people to boil it. They could not compel the general public to do so.

On the motion of the Chairman, a vote of thanks was accorded to Dr. Parkes.

On "The Prevalence of Defective Eyesight," by JOHN OAKLEY,
M.R.C.S.

So much has been written on the subject of the prevalence of short and long sight, eyesight in schools and in workshops, it would seem to be superfluous to again bring forward the subject. But as long as the evil exists and is increasing, and as long as the causes, which are removable or can be ameliorated, are allowed to exist, I think it is the duty of every observer to add his testimony to such growing evil; and as far as it is in his power to point out what measures should be taken to stay this progressive mischief. Deafness, on the other hand, has not received that attention which it deserves; it is both to the affected and to the friends a great calamity. The child that has either been born or has become deaf is debarred from all interchange of thought, he is backward in mental development, and in his progress through life he is handicapped all round.

To the poor man deafness means want of employment and poverty.

The possession of good vision and hearing is of immense importance in the early years of life. The receptive faculties of the brain are then in their highest state of activity. Impressions are then received and images stored up which are never acquired with equal clearness in after years; and if the vision or hearing at this period be seriously impaired, the whole system of education is practically stopped.

The blind and deaf child's education in one or other of the numerous schools for such is systematic and continuous. But this is not the case with the child who has only impaired vision or hearing. Months and years are often allowed to elapse in hopes that improvement will take place—that the child will some day be able to receive an ordinary education and acquire the common information that children possess, and, in the meantime, left to himself and neglected at the most critical period of his life, he grows up ignorant of the rudiments of knowledge, and, if in time he should recover any useful vision, he will find himself placed at an immense disadvantage as compared with those around him who can see and hear well.

The causes of defective sight and hearing are many, but hereditary predisposition must always come first, although on this point there is much difference of opinion. But there is not the least doubt, that under similar circumstances the children of parents who have defective vision and hearing are

more likely to acquire the same faults. How or in what manner, these transmitted tendencies affect the different tissues of the eye and ear, is not yet positively known.

The most important cause of defective vision in new-born infants is injury to the retina by exposure to intense or dazzling light, which not only may produce temporary or permanent diminution of the sensitiveness of the retina, but may also partially or completely destroy the power of vision. Add to this, want of cleanliness, impure air, exposure to cold either by draught upon the face, or by the subjection of the whole body to a sudden change of temperature, and a chill of the whole body may be occasioned by putting on damp garments.

But the greatest damage is done to infant's eyes by ophthalmia—the ophthalmia neonatorum, commonly called purulent ophthalmia. This disease is most contagious; when in Paris, in the year 1866, in the Hôpital des Enfants Malades a severe epidemic occurred and M. O. Reveil, a well-known practical chemist analysed the air of the wards and he found that it contained globules of pus, together with scales of skin which were so dry and light that they floated about on the slightest disturbance of the dust or the admission of a current of air, and the admission of one of these dessicated scales into the eye was sufficient to reproduce the disease.

This disease has been the cause of blindness to 37 out of 89 pupils in the Wilberforce School for the blind; 70 out of 217 recorded cases at the Deaf, Dumb and Blind Institution at Belfast. And according to Dr. Haltenhoff it has caused the blindness of 33 to 50 per cent. of the total number of blind in various countries. These statistics only give you the blindness of both eyes. But I wish to draw your attention particularly to those instances in which only one eye has been lost, and of those in which there has been permanent impairment of the vision of either one or both eyes; or in which with no visible sign of impairment there has been such an alteration in the tunics and tissues of the eye as to materially alter the natural curvature of the front of the eye.

There can be no doubt that the number to be classed under the head of permanent impairment of one or both eyes would far exceed the number of those totally blind.

When the period of infancy is passed, and as soon as children begin to use their eyes more closely, the time has arrived when defects arise which point to errors of refraction.

It is well known that the difference which exists among adults in respect to the distance, the acuteness, and the duration of vision are exceedingly great.

One person, who reads the finest print near to the eyes, will

scarcely recognise friends when they are two or three yards away. This, in scientific language, is called "*Myopia*." While another, who can see the hands of a clock far off, requires spectacles to read at all, "*Hypermetropia*." There are others who cannot see lines horizontally or vertically, "*Astigmatism*."

Myopia is, without doubt, increasing, and in the presence of an increasing educational pressure it is of great importance that we pay much attention to it. The causes which contribute to the production of myopia are complex. We have first the hereditary predisposition, then there are exceptional causes connected with the abnormal conditions of circulation and nutrition in the eye, the excessive use of the eyes on near objects involving excessive conveyance with traction on the coats of the eye, accommodative strain and congestion due to the bent position of the head. And there is no doubt that close application in early life with strong mental effort is the main cause of the prevalence of myopia.

The chief causes of deafness are exposure to chills and to the shocks of loud sounds. The auditory nerve of an infant is much more sensitive than that of an adult, and can therefore ill bear the shouts and noise it has frequently to endure during the first few hours of its existence, and certainly I have found that much harm has been done to the sensitiveness of the nerve during the first few days of an infant's life. Exposure to wet, damp feet, neglect to change damp clothes, washing the head too frequently and then imperfectly drying it. Measles, whooping cough, scarlet fever, mumps, are the diseases which cause much impairment in hearing. The ear is much more liable to be affected by a succession of slight attacks of cold than by a single severe one.

Catarrhal deafness is very common, and although amenable to treatment when attended to, yet if neglected leads to deafness of a usually severe and intractable character. The friends of a deaf child have not the slightest notion that it is hard of hearing, and they are too apt to think that he is careless and obstinate, and the disease is often increased by frequent boxes on the ear for inattention.

Debilitated children with enlarged tonsils are very liable to repeated attacks of slight catarrh at the back of the nostrils and the throat, which gradually extending up the eustachian tube to the middle ear, sets up inflammation which, if neglected, ends in more or less deafness.

Most large schools are heated by hot water, and without very good management the rooms vary much from time to time in temperature. As a rule they are generally too warm, then the children are turned out into the playground in all weathers

with insufficient clothing and no covering to the heads, and the weakly children are as a result frequently suffering from catarrh. There is no doubt that this is one of the chief causes of slight deafness. Much of what I have said must of necessity be a reiteration of matter well-known to many of you, and most probably has from time to time been brought before this society, but as there is still much to be done to arrest the advance of preventible diseases, both to the eye and ear, in young children, it is well to keep these subjects before a society which is striving with might and main to spread all necessary knowledge in preventive medicine.

Seeing that every year there is an increasing educational pressure, it is most important that every attention should be given to the prevention of defects of sight and hearing, for when there is any impairment in these two senses, the education of the child is conducted under very great difficulties, and the child's knowledge of the outside world is frequently most erroneous.

Whenever parents possess the knowledge of the existence of any hereditary predisposition, it is always well for them to consult their personal medical adviser as to the measures necessary for its eradication or amelioration in their children.

It should be the duty of every medical man on the birth of a child to see that the eyes are immediately and properly cleansed, then to drop into the eye a drop or two of a very weak solution of nitrate of silver, and then to explain to the parents and nurse the measures to be pursued to secure cleanliness and protection from any sudden or dazzling lights, and the conditions under which the child should be placed to secure it from draughts and colds. The Obstetrical Society of London have published a code of rules as to the management of infants, and Professor Fuchs, in his classical work for the prevention of blindness, has laid down rules which should be in the hands of all who have the care of infants.

It has been suggested that those rules should be published in a form that could be distributed through the medium of the Poor Law and Birth Registration Organisations, but in my opinion this would not suffice, for parents rarely register the birth of their children within the month.

The only efficient manner in which such pamphlets could be distributed, would be for the person who attends a woman in confinement to distribute them.

There are no doubt cases in which in spite of everything the result may be unfortunate, but they occur so seldom that they need hardly be taken into account. Surgeons are however all agreed on this point, that the present resources of medical

science are, "*if availed of in time,*" sufficient to prevent the ravages arising from ophthalmia, which occur in infancy. I have myself attended some thousands of confinements, and have been able to follow up the cases of children who have been more or less affected in infancy; and there is no doubt that very slight inflammation of the eyes, and especially where there is some specific disease, does affect its curvature, and so produce that defect which is so very difficult to remedy. I speak of astigmatism.

As soon as the child begins to observe with intelligence the time arrives when it is the duty of all parents to examine the condition of the sight and hearing of their child, and finding any deficiency to see that it is either corrected or measures taken to prevent the advance of the defect. Much may be done by the parents at this period of the child's life to educate the senses of sight and hearing. The proper use of the eyes is a matter of education, and although this is generally an unconscious process, it is, nevertheless, one which parents may promote by judicious interference. The trouble that they take in order to guide the child towards the acquirement of habits of careful visual observation will be well repaid when they find that later on the child having acquired the habit of close attention is able to acquire knowledge in much less time than he otherwise would do. And this, in a myopic child, is of great importance. The child should never be allowed to read or write, or even to draw by an insufficient light.

Most important of all, the child should not be overburdened with tasks which call for close application of the eyes, and he should be early taught in reading or writing to maintain a position in which the head is not suffered to fall too far forwards.

As soon as the child enters school-life, the teacher should examine into the condition of the sight and hearing; for this purpose specially prepared test types should be supplied and a tuning-fork; and if he finds that there is any impairment, he should at once communicate with the parents, and the responsibility of seeing that it is corrected or relieved should rest with them.

Such a systematic examination, although it would give a little extra trouble to the teacher at the beginning, would, later on, be the means of saving him an immense amount of time in their education; and knowing the children who were defective either in vision or hearing, he would be able to place them under the best conditions for work and for the special defect under which they suffered.

Children who are defective in vision should have special

attention given to the postures in which they work. The desks should be so constructed that the child can sit with shoulders square, the work exactly in front, and the eye at least twelve or fourteen inches away. The light should be good and, if possible, proceed from the left side.

Professor Snellen, in a paper on the subject of desks and seats, has described a systematically graduated series of desks, the measures are given in the metrical system and are most complete. The exhibition this year, no doubt, will shew a great improvement in the construction of seats and desks, and if only they can be made at a low cost they will soon displace those made under the old system. The books should be of large clear type and should be printed on good paper, and the books should not be too large and heavy, and the lessons should not be so long as to exhaust the power of attention. Children should not be burdened with serious study in the evening when the whole system is exhausted. Home lessons are a great evil, more especially to the poor children who have to do the work under bad hygienic conditions, with a poor light, and the noise of the children greatly interferes with their attention, and thus makes the work still more difficult.

During the last ten years I have carefully examined the conditions of the defects of these two senses, and within the last five years there has certainly been a marked increase, and that more in the hearing than the sight. The reason may probably be that more attention has been given to the sight.

When a child has shewn complete deafness there can be no doubt, but where it is incomplete or slight it does escape notice, and as the causes which started the evil are still in existence, the disease advances with slow and sure progress.

It is most important that parents should give more attention to the slight ailments connected with the ear—they are too much neglected under the impression that they will get well of themselves, or that any interference will make them worse.

Scarlet fever, of all the Febriculæ, is the great cause of deafness among children, and the ears in this disease should be watched most carefully.

To prevent the catarrhal deafness, mostly caused by a succession of slight colds, it is absolutely necessary that more attention be given to the clothing of children, that they have the means of changing their damp clothes, boots and stockings before sitting down to their school work, and that when they are turned out into the playground that they are suitably clothed, and more especially that they have some covering for their heads.

There is one point to which I would especially draw your atten-

tion, and that is that when a child of five or six years of age or upwards loses its hearing, if it is able to read, it should be made to do so several times during the day, by such exercise the child will retain all words that it has previously known, and so the child will be prevented from losing speech; of course the rest of its education will have to be conducted under the new method of lip reading.

To have filled my paper with statistics would have taken up too much of your time. They can easily be obtained from works on these subjects. As far as possible I have confined myself to my own personal experience of eighteen years practice in the large town of Halifax and its neighbourhood, and if my communication to you to-day may help, however little, to lessen the advance of these defects in sight and hearing, I shall feel that my work has not been in vain.

In answer to a question, Mr. OAKLEY replied that the solution recommended was made of two grains of nitrate of silver to one ounce of water.

Dr. J. H. BUCHANAN (Thirsk) remarked that to drop into the eye of a new born infant a solution of nitrate of silver seemed like a meddlesome interference with nature. He did not think that even nature intended two drops of nitrate of silver to be dropped into the eyes of a babe so soon after birth. If there were evidence of disease, or if the sanitary conditions surrounding the house rendered it necessary, then by all means do so; but to recommend it as an ordinary point of obstetrical attention, seemed to him like a piece of meddlesome interference, and might provoke the very mischief it was intended to prevent.

Mr. J. OAKLEY (Halifax), in reply, said prior to 1874, he had several cases of ophthalmia, but since he adopted the practice, although he had had thousands of confinements, he never had had a single case, and the children did not suffer pain from it. Since its adoption in Vienna, the number of cases had reduced about 75 per cent.

The CHAIRMAN, Professor de Chaumont, said that in the Maternity Hospital in Paris the number of new-born children who suffered from ophthalmia was large, and there was hardly a case of recovery.

the eyes were generally destroyed. A large number of cases were shown to have arisen from the pollution of the atmosphere.

On the motion of the Chairman, a vote of thanks was accorded to Mr. Oakley for his excellent paper.

On "Sanitary Associations, their Mission and Methods of Action," by J. MALET LAMBERT, M.A., LL.D., Vicar of Newland, Hull, Member of the Hull School Board and Hon. Sec. of the Hull Sanitary Association.

IN asking your attention for the subject of this paper, I feel it necessary to define what seems most properly to be the position it occupies in the work of a Congress of so important a character as the present one.

If the object of the Congress were purely the advance of sanitary science into regions of knowledge yet unexplored, then it would, I confess, have no place. But the objects of the Sanitary Institute are not only "the advancement of sanitary science," but also "the diffusion of knowledge relating thereto," and, carrying the application of this knowledge into practice, also the realisation of this diffused knowledge in improved sanitary arrangements for our population.

It is especially in these two last departments that the work of Sanitary Associations claims a recognition in the deliberations of this Congress.

It is sometimes a long journey to travel from the certain discovery of a scientific truth, through its gradual admission by the educated world, to its incorporation into the beliefs of the mass of the people and its final fruitful result in wide-spread benefit to mankind. The hand that laboured and the brain that strained for its first proof often lie in deep silence before their work is recognised and bears fruit. Evils which plague the world often prolong their baneful course while the slow process of the diffusion of knowledge is taking place. In no department of science is this more true or more striking than in sanitary science. Had the laws of sanitation, as known a generation ago, been acted upon, the social condition of Great Britain would in many respects be different from what we know it to be. Of those who are living to-day, many thousands

would be healthy and strong who are now dragging on a life of stunted capacities and lingering disease.

The knowledge was there among scientific men, but it was powerless. Before it, barring the way to its progress, stood the existing habits of society; institutions, the growth of centuries, in accordance with those habits, vested interests in dirt of all kinds, even superstition, as if the worship of Beelzebub, the great God of flies, were rearing its long-forgotten front under a modern form. So the sacrifices of comfort and decency and health and life went on as if the great truths of sanitary science had never been known to man. Happily, the diffusion of such knowledge has now proceeded far beyond the limit it has reached at any previous time. The International Health Exhibition was in itself a national education. But the work falls very far short, even of that portion of the laws of health which may be said to be now proved as clearly and certainly as demonstration and experiment can effect. When we regard also the rapid increase in knowledge, which is being made from our present vantage ground, it becomes more than ever necessary to adopt whatever means of communication offer themselves between the world of science and the millions for whom science works. Let us not mistake our position. There are facts regarded by educated men as truisms, which are known only to be silently disbelieved by large numbers of others. Only a few months since a letter appeared in one of the Hull papers, advocating the view that decaying manure in the middle of a dense population was conducive to health and longevity.

What now are the means at our disposal for realising in practice the precious knowledge which is placed in our hands as to the origin and preservation of health? We have in the first place the means of influencing individuals by convincing them of the existence of natural sanitary laws, and by persuading them to adopt habits of life in accordance with these. But we have fortunately also other and swifter methods of action. Sanitary provisions have found their place in the Statute Book; and in the Public Health Act, the Artizans Dwellings Acts, and other legislation of a more local or partial character powers of a most sweeping kind are placed in the hands of local authorities. But it is well known that to procure the passage of bills of this kind through Parliament, is only a part of the work of carrying them into effect. To some extent their provisions are only permissive, when they go further and use the imperative, no sanction or penalty is attached to the neglect of their enactments. Hence it comes to pass that in many places they are in most important particulars a dead letter.

It may be thought that the Local Government Board super-

intends the carrying out of the acts, but with medical officers of health in country districts whose salaries are so nominal that they are not expected to attend to their duties, with the exercise of that remarkable ingenuity in obstruction and clever dulness of perception which local authorities are capable of developing, the superintendence of local effort from the Home Office falls very far short of efficiency. The manifold confusion of county government at the present time, and the lack of any continuity or unity of system in these matters in neighbouring districts, or between town and country, adds to the momentous shortcomings of the whole.

It is right, however, to state that the boroughs stand on a different basis from the counties, and that in the former we have struggling into existence a number of officials under competent medical officers who are making great progress towards efficiency. Here, too, the local government being in the hands of elective bodies, the latter are most amenable to public opinion.

I have now traced in outline the relative position of the various agencies at our disposal for the dissemination of sanitary advice, and the achievement of sanitary reform. I have done so at some slight length in order to bring into clear prominence the agency which is most lacking to give greater effect to what has been conceived by institutions such as this one, and to what has been intended by the Legislature. What is needed, is clearly organised voluntary local effort. We sometimes are justly severe upon the town council of some borough which has neglected its duty and sacrificed the lives of its constituents, but we should go further and analyse the causes of this neglect. The members of the town councils or local boards are elected chiefly for other purposes than those purely sanitary, nor have they, as a rule, had any training specially fitting them for sanitary work. They are individually subject to the influence of those vested interests in disease which are the great enemies of reform. The offenders are often not the poor, but some influential manufacturers or property owners. Medical officers hold office during the pleasure of the town council or local board in almost every case, and when anxious for reform are not allowed to undertake it. Under circumstances such as these proper action is almost impossible.

What is needed is a voluntary association of men of all classes, creeds and politics, whose motives are above suspicion, and whose business it shall be to ascertain clearly the actual position of affairs, to make it public, and then to put in motion the forces most calculated to bring about improvement. The rules of such a sanitary association need be only few and

simple, the demands it makes upon the time of its members not excessive, and the good it may effect is very great. Let me give a few plain hints as to the mode of action. In the first place the assistance of the local Press may be sought, and will generally be freely given. Public opinion may be stimulated by lectures couched in popular form, and by the distribution of leaflets and other literature. Supposing now that some grossly unsanitary area is reported to the association. A full and truthful description may be made public, and a complaint lodged with the authorities. Supposing further that the matter is passed over at the next meeting of the town council, let public attention be again called to it in proper terms; let the honorary legal adviser to the association, if it be fortunate enough to include such a gentleman among its members, point out the duties of the authorities, and let the description of the nuisance and the legal remedy be again forwarded to the authorities. If still neglected, other weapons are at hand; possibly a municipal election draws near, and the support of members of the association may be valuable. If other measures fail and the health and wellbeing of the people are jeopardised, stronger measures may be justified. Let the obstructives be proclaimed in the Press, denounced from the platform, even gibbeted in the pulpit, until the force of public opinion rouses them to action. When once the consciousness of the real issue at stake dawns upon the working-classes, they will insist on its being rightly decided; or, as a last resort, the mode of action provided by law of appeal to the Local Government Board on behalf of the ratepayers may be adopted, and the central authority be called upon to exercise its powers of control.

It will not, however, in most cases be necessary to adopt the extreme measures here described. The sanitary committees of the various corporations and their medical officers will be often really glad of the increased force of public opinion raised by such an organised effort as I have spoken of, and the two bodies may carry on their work without coming into collision, but it must be one of the duties of the sanitary association to watch the action of the public authorities, to endeavour to guide it aright when swayed from its pursuit of health by other considerations, and to supplement its work by voluntary effort. It cannot of course be expected that such action will answer all the expectations of reformers, but that it will be able, if well directed and persevered in, to show considerable results cannot be doubted. Such has been the case in Hull, where a sanitary association has been actively at work for three or four years. We are far from agreeing with one member of that town council, that we have now sanitation to perfection in Hull, and

that the poor are as well housed there as in any town in the kingdom, for there are areas which are still a disgrace to the town which contains them, but much has certainly been done in awakening public opinion, notices to abate nuisances have been served and acted on in the case of many hundreds of labourer's dwellings, and the general verdict is that the extraordinary decline in the death-rate during the last three years, a decline which has attracted notice throughout the country, is in no small degree owing to our initiative.

If this be the case in a town like Hull, where sanitation must be carried out under many natural disadvantages, what must be the duty of those boroughs which still suffer under rates of mortality varying from 25 to 30 per 1000? It is not too much to say that no English borough which does its duty can possibly go on shewing such results. Lives are being sacrificed to ignorance and perversity, and those who might be enjoying the elastic strength of perfect health are wasting in the fetid atmosphere of overcrowded and malarious courts.

It is the glory of the science of to-day that it places in the hands of men the means, not of doing only isolated acts of good, but of acting directly on the sources of good and evil. The hydra-headed enemy, disease, can be attacked while in the germ. If there be no lack of men and women who will go forth to relieve suffering and give comfort in sickness, will there be a lack of those who will stand in the narrow pass where the invading host can be withstood and turned back ere it spreads its vast destroying forces over the land? Surely not. Such a work is in the highest sense Christian. Over multitudes of the poor unhealthy surroundings hang like fate. To know their danger is for them to know also that it cannot be escaped from. It is for others to dispel the dark cloud that shadows their weary lives, and to admit the gleam of the sunshine of health into every English home.

Mr. R. H. B. NICHOLSON (Hull) had great pleasure in supporting the reader of the paper. They had met that day as a protest against the unsanitary conditions of many of the surrounding towns and county districts. Sanitary associations, such as that at Hull, were independent of any central authority—they were a self-formed association, with no selfish object. At Hull they had met with the support of Clergy and Ministers of all denominations, and had the Archbishop of York as their president. Many members of the sanitary authority were glad of their assistance. He hoped sanitary associations would be formed all through the kingdom; their desire was not to obstruct

but to assist sanitary authorities by the diffusion of knowledge by means of leaflets, lectures and the press, so as to instruct the public at large on the importance of sanitation.

Surgeon-Major PRINGLE (London) referred to the "sweating system" adopted by owners of property in London, and hoped it was not carried on in Hull. The principle of the system was to allow the property at the close of a lease to fall into an unsanitary condition, to refuse to repair it, and to let it to the tenant who wanted nothing done. A sanitary association could protect the poorer classes from being compelled to live in such property, and societies which were independent and above suspicion could help the poor by boldly stepping forward and taking action against the owners of such unsanitary property.

Mr. J. OAKLEY (Halifax) thought that until something was done to establish a centre in London, and to appoint a Minister of Health, the system of sanitary associations could not work as satisfactorily as it ought to do.

Dr. J. F. J. SYKES (London) said sanitary associations, as referred to, might be very good and had a very excellent object in view; but sometimes their action, or the action of some who were very zealous, but having a limited knowledge of sanitary matters, worried the medical officer of health. He suggested that wherever such associations were formed they should take into their confidence the medical officer, who would always be ready to assist them, and welcome their support.

Prof. W. H. CORFIELD, M.A., M.D. (London), who now occupied the chair, Prof. De Chaumont being obliged to leave the meeting, remarked that at present inspecting officers had not the power to make an inspection of houses against the wish of the tenant, and about which there had been no complaint. But, although that was so, for 33 years there had been medical officers of health and inspectors of nuisances going about London and continually preventing the spread of disease. Although the metropolis was the largest city in the world, yet owing to these exertions the death-rate was extremely low.

Dr. J. F. J. SYKES (London) remarked that in his district three inspectors were engaged in house-to-house visitation all the year round. They did not wait until complaint was made to them of nuisances that existed, they sought the nuisances out.

CONFERENCE OF MEDICAL OFFICERS OF HEALTH.

On "The Appointment and Tenure of Office of Medical Officers of Health," by R. BRUCE LOW, M.D. Edin., S.Sc. Camb.; Medical Officer of Health for the Helmsley Rural District.

IT is generally admitted that the post of medical officer of health is a responsible one, requiring special knowledge, special tact, and special zeal. The state, for its own sake, has a considerable interest in securing for this appointment men of the best quality, and having secured, to retain them, so long as they continue to do good work. During the last ten or twelve years, men of high attainments and of good professional position have joined the preventive medical service. Many of them however have now abandoned it, disappointed and disgusted with the treatment they have received at the hands of the local authorities who appointed them. Some however still stick to their posts, restrained from desertion by a high sense of duty, and a deep desire to carry on the work they have begun, hoping against hope for some alteration in the tenure and appointment of their office. The public health service of this country does not at present attract men of mark to it. There are few medical men of average ability who would care to exchange, under existing circumstances, the independence of a fair private practice, for the bondage of a public health appointment, let us say, in a large combined district, where the component authorities are fighting among themselves and threatening secession at every turn. The instability of these combinations leaves the medical officer of health at their mercy. The uncertainty from year to year of maintaining his position must interfere with the proper discharge of his duties. With a large proportion of persons, sanitation is unpopular. The medical officer of health who conscientiously pushes forward unpopular measures is liable to meet an undeserved fate, when his time for re-election comes round. The representatives of the ratepayers regard him as one who is constantly raising the rates. He is supposed, in the popular belief, to receive a large salary for doing "next to nothing." They look upon him as an expensive official, whose work anyone could do; in fact, I have known of a case where it was gravely proposed at a meeting of guardians, sitting as the sanitary authority, that each guardian should act as health officer of his own village, and thus save the rates a considerable sum annually. If a medical officer of health be active, many of these misguided representatives make it their aim to get rid of him, and replace him by one who will be less obnoxious, because less active. If they

cannot get rid of him, they can at least reduce his salary and force him to resign in self-defence, driving him back to private practice to earn his living. Can you wonder that the temper of the sanitary worker becomes soured, his zeal diminished, and his enthusiasm destroyed. If his salary be his sole source of income, the uncertainty of his livelihood must disturb his peace of mind and hamper his important work. The day of his re-appointment always attracts the foes of sanitation, who fight over again the battle year after year. Much malignity is often displayed on these occasions.

The medical officers of health in the large towns are much better off than their rural brethren. Public opinion is better educated in health questions. The comments of an enlightened public press keep down displays of ignorance and paltry prejudice, if they exist. It is not common to hear of gross injustice committed by the larger corporations towards their sanitary advisers. This better state of feeling between the sanitary authorities and their officers, is doubtless one reason why the cause of public health makes greater strides forward in the large towns than in the rural districts. Another reason why country places are behind the towns in sanitation, apart from the dissatisfaction which exists in combined districts, is the fact, that frequently the rural medical officers are engaged in private practice, and consequently find little time to devote to their duties as preventers of disease.

Opinions are divided as to whether a medical officer of health should, or should not, be debarred from practice. The majority are in favour of separating public duties from private practice. The minority, who believe that sanitary work can be satisfactorily carried out by general practitioners, argue as follows. The medical officer's district would necessarily, for the sake of his practice, be limited in extent, and he would therefore be able in his daily rounds to observe closely the incidence of preventible disease, and to discover any dangerous defects in the dwellings or surroundings of those with whom he was in constant contact. From his position as confidential adviser and family friend, he would be able to press forward his recommendations to rectify the sanitary shortcomings of the household. Being thus "in touch," so to speak, with the public, he would be able gradually to effect more good from a public health point of view, than if he had the supervision of a large area, and resided at a distance from many parts of his district. Unfortunately this picture has never been realised. Sanitary duties clash with private practice, and few men are found rash enough to peril their private practice for the sake of public sanitation.

The general practitioners who are engaged in public health work, may be roughly classed under three heads. *The first* includes those who accept the appointment, but who only do nominal work. They constitute what are known as the dummies of sanitation. They are sharp enough to see that it is against their own interests to press forward measures which are unpopular. Sanitary improvements always mean money, and the tenderest part of the average ratepayer is his pocket, and he naturally refuses to consent to the expenditure of money upon measures whose utility or object he does not recognize. The man who is in practice, and wishes to succeed must consult public opinion. Anything which damages his popularity, damages equally his practice.

The general practitioner who holds a sanitary appointment is handicapped, and unless he avoids, as far as possible, his unpopular duties, he is almost sure to suffer in the struggle for success. This sanitary salary is usually inadequate, and the temptation, therefore, is great to consider his private practice first, and his public duties last. It is unfair that he should be submitted to this temptation. The result of letting his sanitary work alone, is found often in the reports of the Medical Department of the Local Government Board, who have been compelled to send a skilled inspector to assist the authorities in freeing the district from the devastations of some epidemic disease. The valuable time of the skilled staff of the central authority should not be spent in doing the sanitary surveys, which every competent health officer is able to do for his own district, but should be reserved for the higher work of solving the obscure and important problems in public health, which puzzle, as yet, the whole profession. The consequences which result from neglected duties are far-reaching, extending beyond the locality itself, often involving other districts.

The second class of which I spoke, includes those practitioners who really do their sanitary work, but at the expense of their private practice. When such large questions as new drainage and water-supply come to be discussed, and the probable cost intimated, the taxpayers are appalled, and would risk cholera, typhoid fever, or any other disease, rather than pay their proportion of the expense. I am stating no imaginary case when I say, that the successful introduction of a new scheme of drainage or water-supply has cost many a health officer a slice of his practice. Is it just that medical practitioners should be called upon to make such sacrifices for the good of those who do not either acknowledge or appreciate their work? In addition to losing his patients, he is sometimes called on to suffer in another way. When the time of his re-election arrives, he is mortified

to find that his opponents have obtained a majority against him, and that a less scrupulous rival is appointed in his place, on the understanding that the less he meddles with sanitary matters the more satisfaction will he give to those who appoint him. The conscientious worker in this way loses the small prestige which attaches to the public office, and suffers the deeper humiliation of seeing a less competent man promoted to his post. With instances like these before them, the timid or the easy going are tempted to follow the pleasant primrose path which leads to favour and fortune. Even with men of a higher type there must always be a struggle when the path of duty leads to unpopularity and possible poverty. *The third class* is comparatively a small one, and includes those practitioners who are as successful in sanitary work as they are in private practice. They are usually men gifted with peculiar personal powers, and achieve success which, to men of moderate ability, seems impossible.

Before leaving the question of private practitioners in relation to public health appointments, I would just add one word about the friction which arises sometimes between the sanitarian and his medical brethren. When he is investigating the origin of an outbreak, he is brought into contact with the patients of other medical men. And although I am loth to believe that any member of our profession would demean himself so far as to make use of his official position to obtain the patients of others, yet this accusation is made, and a certain suspicion and jealousy does arise when the local health officer is a rival in practice.

The exclusion of medical officers of health from private practice would tend to prevent this friction in the discharge of their difficult duties, when brought into contact with practising medical men. This is an additional argument, if one were needed, for separating sanitary work from private practice. Further, it is impossible that any great contributions to the general stock of knowledge can be made by busy practitioners, whose time is entirely absorbed by their patients. The progress of preventive medicine is retarded for the want of a sufficient number of men who study and practice sanitation as a speciality. If the health officer be debarred from private practice, and if he have assigned to him a suitable area and population to occupy his whole time and furnish him with a reasonable salary, it is absolutely necessary, in the public interests, that he shall first obtain, before appointment, a special license or diploma in sanitary science. This would be a guarantee to the public that his knowledge of his special subject reached up to a certain standard. In addition to special knowledge and qualification, the medical officer of

health requires special tact and enthusiasm. Without tact men of the highest attainments have failed as medical officers of health. Without enthusiasm for his work he will be unable to withstand the assaults of his enemies, or to remain patient under the constant thwarting of his plans, and the unreasonable delays which the opponents of progress throw in his way. He needs much patience to persevere in spite of the dogged opposition with which his proposals are often met. To acquire tact, a large experience of the world, and much close contact with "all sorts and conditions of men," is needed. It must, however, be admitted that the man of tact, like the poet, "nascitur non fit."

To obtain enthusiasm for sanitary work, something more than mere scientific study is required. A practical acquaintance with the sorrows and sufferings of humanity must be obtained. The anguish that might be avoided, and the wrongs that might be righted must be seen and studied on the spot. The misery, grief, pain, vice and crime, which the sanitarian of the future is to prevent, must all be known and noted by his own eye: and if he have within him the materials for making a medical officer of health, his soul will burn within him to be up and doing, to drive such sorrows from the face of the earth. The recollection of the sufferings which he has seen, will help to rekindle his enthusiasm, should it ever grow cold. He must, with serious intent, mix with the poor and wretched, and note their needs. He must listen for "the voice of the people," and when he has once heard its sorrowful sound, his education will be complete, and his work is ready to be begun. To secure a thorough knowledge of the wants of his fellow men, it is necessary that the candidate for a health appointment should have seen some practice. In addition to acquainting himself with the human sorrows that can be prevented, he would acquire a better understanding of the feelings and wishes of his brethren in the medical profession, without whose co-operation the medical officer of health cannot hope to achieve much success. Besides this, he would obtain an experience in recognising the various kinds of disease, which he has afterwards to investigate. For example, much often depends upon the diagnosis of a zymotic. In this period of probation in practice, he would train his powers of observation so as to detect the smallest traces of those diseases, which he has to stamp out before they do injury to the population. Mere book learning, and hospital training alone, valuable though they be, cannot give him so good an experience as can be got in private practice, where zymotics, mild and severe, incubating and convalescent, can be seen and studied, alas, too often.

Having ascertained that candidates for the post of medical officer of health are duly qualified in sanitation, and are men of tact and zeal, who have gone through a thorough training, there could surely be no hesitation in placing their tenure of office on a satisfactory basis. No official is likely to do his unpopular work well, if his post be uncertain and at the mercy of agitators. It has been pointed out that the poor-law medical service offers a precedent as regards tenure of office. No one can say that this security of tenure has worked badly for the sick poor or for their medical attendants. The interests of both have been equally safeguarded, and although there may be something still to be desired, yet the position of a poor-law medical officer is properly protected, and gives satisfaction to the poor as well as to the profession. He cannot be removed by the caprice or resentment of the guardians, nor can his salary be reduced except with the consent of the Local Government Board. There must always be a full official investigation made before any change is permitted, so that practically his tenure is for life or good conduct. In reply to a deputation who waited on a previous President of the Local Government Board, asking for some alteration regarding the tenure of office by medical officers of health, the Right Honourable gentleman replied that the uncertainty of tenure was retained to serve as a stimulus to work, so that there would be no chance of health officers becoming indolent or neglectful of duty. You will agree with me that this reply conveyed an insult not only to health officers, but to the whole medical profession. If there are lazy and idle officers in the poor-law service, can they not be removed after due inquiry? Could not idlers and incompetents be removed from the sanitary service in the same way? The sooner the black sheep are removed, the better for the service and for the country. But to permit a sword to be held over the heads of conscientious workers is, in my opinion, unwise and impolitic in the extreme. The only shadow of excuse that one can call to mind for allowing a continuance of this injustice, is the fact that local government is "in the air," and that, since the whole service is to be re-constituted and re-modelled, it is not worth while to meddle with any particular part of it till the grand scheme, which has been talked of so long, is unearthed from its pigeon-hole at the office of the Central Authority. Whatever may be the reason for this continued neglect of our just demands, it is high time that medical officers of health should unite in self-defence, to protect their brethren and themselves from unjust treatment; to prevent able and deserving men from being driven from their appointments for doing their duty too well; to prevent combined sanitary districts from crumbling to pieces; and to

prevent injury to those able men who have given up good practices to labour for the well being of their localities. Shall we not be heard by reason of our importunities? Can we not once more try the effect of a powerful deputation to wait on the present President of the Local Government Board, with a memorial, embodying our reasonable demands? It is strange the apathy and neglect with which politicians of every party treat the public claims of sanitation. It cannot be made a political lever to help any particular party, and this I fear is the reason that they all turn a deaf ear to our representations. Governments say they have enough to do nowadays to keep themselves in office, without troubling with difficult and unpopular problems such as sanitary reform. Their motto evidently is, "Let us eat and drink, for to-morrow we die" (or go out of office). We need more sanitarians in parliament to educate and enlighten our legislators in this special subject. Our demands, if granted, would not only satisfy us, but would give a great impetus to our life-saving work. How can sanitary progress move forward if the great body of workers are discouraged and discontented? The solution of many of the great social questions of the day depends, in a great measure, on the health and happiness of the masses. Without comfort and contentment, there is always danger of revolution and rebellion against authority. Bad health often leads to poverty, vice, and crime.

The sanitary service has received as yet very little encouragement from the State. We do not at present ask for honours or rewards, although some of our brethren have well deserved them. We ask that an unjust and unwise system should be altered, so that the work of the health officer may be carried on in peace. We ask that in all future schemes of local government, the appointment of medical officer of health may be taken from the local control of petty agitators, who do not recognise the utility or importance of sanitary measures. We ask to have the election to this office freed from the influence of all party prejudice. We ask that all sanitary authorities be kept up to a certain definite standard of efficiency, and that the present system be abolished, where one district is well looked after, and the next one to it neglected, to the serious danger and detriment of its neighbours. For, after all, the sanitary condition of each district does not alone concern itself or the locality in which it stands, but it may be a source of danger to the nation, by acting as a focus of infection to foster and disseminate disease to the rest of the country. It is evident, then, that it is of national importance that every district should be well cared for and kept up to a given standard of healthiness. To attain this it appears that there must be an inspection, by

representatives of the central authority, of the work done, and part of the grants given in aid of local expenditure might be made conditional on a satisfactory report being given. To do this would necessitate an increase in the number of the medical inspectors of the Local Government Board. This increase in the staff would create expense, and much opposition would doubtless be excited. But if the Government of the country could only become impressed with the fact that this money was needed for a national defence against disease and premature death, the necessary vote would be obtained. There appears to be very little difficulty in getting money for expeditions to the Nile or to the North Pole; why, then, should the nation grumble at a vote which would confer upon it such enormous advantages. The present undermanned and overworked staff of government medical inspectors could be doubled without entirely overtaking the work. The extra expense would be returned to the nation in the increased efficiency of the sanitary work throughout the land. The wage-earning classes would obtain a larger fund of health and strength, which is their wealth and capital. The rate-paying classes would have less to pay for paupers and police. Efficiency and economy would go hand in hand. Will not the country and its rulers recognize sanitary workers as patriots, striving for the welfare of every citizen, and not for their own gain or glory? These efforts not only save the country from much avoidable sorrow and suffering, but also conduce towards prosperity and peace. If this be so, do not these workers deserve some consideration from the State? It is the lot of all great movements, meant for the benefit of mankind, that they must pass through periods of trial and persecution before they arrive at any pitch of perfection. Sanitary science has had its martyrs, who have lost in its service life, or health, or livelihood. But now we trust the persecution period is past, and that the golden age of preventive medicine is dawning, when the apostles and teachers of sanitation will be regarded as the benefactors of the nation. In that case the medical officers of health of the future may hope to fare far better than their representatives of the present day have done.

Dr. VERNON (Southport) considered that the duties of Medical Officers of Health did not require much special training, and that general practitioners were perfectly able to undertake the duties, and that no certificates of efficiency were necessary or required. He held that practising medical men were in touch with the population, and were, therefore, proper persons to have the duties entrusted to them.

Dr. BRITTON (Harrogate), speaking from experience, considered that no local practitioner could undertake the duties of Medical Officer of Health and carry on his practice. He considered the Medical Officer of Health should have more support from the central authority than he usually received in matters where he came into collision with the local authority. He maintained that the office would be worth more, and good men would be retained in the sanitary service if its tenure were made more secure; whereas at present all the best men were being driven out and replaced by inferior ones at lower salaries.

Mr. S. W. NORTH (York), speaking from an experience of twelve years as the Medical Officer of Health of York, contended that it was not for the public advantage to exclude men engaged in private practice from holding the appointment of Officer of Health. He considered it more important for Medical Officers of Health to have acquaintance with municipal affairs than to hold certificates in sanitary science.

Dr. GOLDIE (Leeds), speaking from an experience of fourteen years, said he felt it was impossible that the two positions of Medical Officer of Health and of a private practitioner could be properly combined.

Mr. H. E. ARMSTRONG (Newcastle), considered that, as a rule, there should be a regular curriculum of teaching for those who were candidates for appointments as Medical Officers of Health, and diplomas given on proved efficiency in the subjects taught. He pointed out that this teaching was being carried out in some of the universities. The University of Durham had just instituted a license in sanitary science to medical men, after a course of special study in their College of Medicine at Newcastle-upon-Tyne. This qualification would be registrable.

Mr. WASHINGTON LYON (London), as a London vestryman (Camberwell), deprecated the idea of the Local Government Board interfering with the local boards and their appointments, as suggested by some.

Several speakers informed Mr. Lyon that it was very common for guardians of urban districts to have these appointments in their hands.

Dr. J. W. TAYLOR (Scarborough) held that the Medical Officer of Health should not be severed from his private practice, inasmuch as if he gave up his practice he would be dependent upon a broken reed in supposing that the Local Government Board would support him in his appointment while he did his duty. At the same time he quite agreed in the *principle* of Medical Officers of Health devoting the whole of their time to the duties of the office; but their tenure of appointment must be fixed on a sounder basis than at present.

The Chairman, Prof. F. DE CHAUMONT, agreed with the opinion of those who held that the duties of medical officers of health were incompatible with private practice. He took exception to the views held by Dr. Vernon and Mr. North with regard to medical officers of health not needing sanitary certificates. Their view seemed to be that it was unnecessary. In the case of those gentlemen there could be no doubt they were not required. He had now been an examiner for three Universities for a number of years, and although a considerable number of medical men who came up for examination in sanitary science passed with *éclat*, there were a good many who certainly did require certificates of competency. In that Capt. Galton, who had been his colleague at times, could bear him out. The Chairman agreed with Dr. Armstrong that it was advisable not only to have a certificate, but also a regular curriculum.

On "*The Notification of Infectious Diseases*," by EDWARD SEATON, M.D., Lond., F.R.C.P., Medical Officer of Health for Chelsea, Lecturer on Sanitary Science at St. Thomas's Hospital.

IN deputing me to open a discussion at this Conference upon the important subject of the Notification of Infectious Diseases, you have doubtless been influenced by the consideration that Nottingham, for which town I was formerly Medical Officer of Health, was one of the first of the large provincial towns which followed the example of Bolton, and which obtained statutory powers requiring the notification of infectious diseases, and that I was among those who took an active part in promoting the adoption of this measure. Having learnt by experience that the medico-sanitary subject we are now about to discuss is complicated by many difficulties, I am anxious to treat it in as careful and impartial a manner as possible, though I am fully conscious of my own inability to do it justice. It may however be interesting to you to hear the observations of one who has paid attention to the subject for several years, and I myself shall have the satisfaction of knowing that however imperfect may be my method of treating it in my opening remarks, ample amends will be made by the exhaustive and instructive discussion which they are sure to give rise to, and which I hope will be shared in by those who, like myself, have had practical experience in the work of Urban Sanitation.

I will not occupy your time by re-capitulating the reasons

which are usually advanced in favour of making known the existence of infectious disease to sanitary authorities. They are based upon the dangers which are known to result from the secrecy which is frequently maintained with regard to the existence of contagious diseases. In such an assembly as this it would be quite as superfluous to argue in favour of the principle of notification as to adduce reasons for the establishment of Public Sanitary Authorities, or the appointment of Medical Officers of Health. We, as officers connected especially with the preventive side of medical work, have urged the importance of systematic notification. In so doing we have been, and are now, supported by the main body of the profession. There are indeed some medical men who argue against the desirability of any kind of notification, but they form only a very small section of the main body of the profession, to whose opinion upon questions connected with the preservation of health the public is accustomed to look for guidance. But the medical profession declines to do more than sanction the abstract proposition that notification is desirable. In proposing a practical measure for its adoption, the questions immediately arise—Who is to notify? to whom is the notification to be made? what is to happen when notification is made? Upon these points medical practitioners and medical officers of health have much to say. The prevailing opinion among ourselves is that reliable and systematic notification can only be secured by statutory obligations imposed upon medical practitioners. On the other hand, the profession generally declares that it is only necessary to impose statutory obligations upon the householder. Local acts have been opposed because they impose statutory obligations upon medical practitioners. The practical difficulties connected with notification are represented as formidable, and the advantages of compulsory notification are directly called in question. As a result of the opposition, no progress seems to have been made of late in putting the principle of notification into practical operation.

In approaching the subject at present it is desirable to begin by asking, What are the advantages actually derived from compulsory notification? and then to consider the practical difficulties arising from notification; after which little need be said on the question of statutory obligations.

What are the advantages derived from notification? Notification is only a means to the end. It is an essential part of the machinery for the prevention and control of certain infectious diseases which experience has shown to be amenable to control. Unless there is in existence a proper sanitary service, but little good can be derived from notification, and statutory

powers for its enforcement cannot reasonably be required. It is necessary to make this statement very clearly and emphatically at the outset, for I believe that much of the opposition to notification is based upon the knowledge that in many towns and districts there is no efficient sanitary organization. In a town, parish, union, or sanitary district, the representatives of the ratepayers may be ignorant or prejudiced men—perhaps influenced by notions of supposed self-interest—who have no desire whatever to promote sanitary work. An authority largely composed of such members may appoint as inspectors to carry out the Sanitary Acts incompetent men who have failed in other occupations, and who consult the wishes of their employers as well as their own by doing as little work as possible. In such a district there may be no hospital accommodation or machinery for controlling contagious diseases, and the medical officer of health may be a hard-worked general practitioner, who is paid some trifling sum to enable the authority to say that it has complied with the law, which requires such an appointment to be made. Now I apprehend we should all agree that under such circumstances very little, if any, advantage could be derived from notification.

In the metropolis there are special difficulties in the way of forming an effective sanitary service, arising from the absence of a central sanitary administration. I need not describe here the kind of service which exists in most of the large provincial towns, and which is so effective in the control of small-pox and other contagious diseases. It has not inaptly been compared to a service for fire extinction in large cities. Nothing of the kind exists in London, and it would be difficult to form an effective organization without some radical change in the constitution of its authorities. The masterly system of dealing with contagious disease in some of the large provincial towns is in striking contrast to the comparatively aimless method of procedure in London. You are no doubt aware that there are forty parishes or districts for London, and that each of these has its separate authority, and that there is no sanitary authority for London as a whole, in the sense that Glasgow, Liverpool, Manchester, or Birmingham has an authority. The sanitary work of the vestries, like that of the town councils, includes the suppression and removal of nuisances injurious to health, the supervision of food supplies, &c. In these important departments of sanitary work it is recognized that excellent work is being done; and we, whose public duties are in the metropolis, could not admit that in these respects the Sanitary Acts are less efficiently administered than in the best of the provincial towns. But in dealing with diseases which are contagious and in which both

unity and uniformity of action are required, the vestries are necessarily at an immense disadvantage. The Metropolitan Asylums Board was made the authority some years ago for providing and maintaining hospitals for the infectious diseases. This Board includes gentlemen of high administrative ability. As far as the provision of hospitals is concerned, this has been, as you are aware, carried out on a very extensive scale and at a very heavy cost: but so far as the prevention of epidemics of small-pox is concerned the action of the Board, which is composed of representatives of the Poor Law, and not of the Sanitary Authorities, has been attended with a lamentable want of success. Indeed of late years the excessive amount of small-pox has been quite a scandal to the sanitary organization of the metropolis.

The advantages of a good sanitary organization with compulsory notification is strikingly illustrated by comparison of some of the large provincial towns with London, in respect of the mortality from this one disease, small-pox. In a report which I have lately made to the Chelsea Vestry, I have published the statistics of small-pox mortality in London and the large towns of England during the last six years. The average yearly mortality for London per 100,000 of the population is twenty-six (the deaths at Darent and the hospital ships occurring in 1884-1885 being taken into account). This far exceeds the rate of mortality in most of the large provincial towns, showing that a good sanitary organization alone—as at Birmingham—without compulsory notification, is a great safeguard against the spread of small-pox. But in some of the towns the mortality has been but a very small fraction of that in the metropolis, and Leicester presents a most remarkably favourable return. The death-rate in that town from small-pox would appear to be at zero, but a slight correction has to be made for the deaths which have taken place among the cases removed to the Isolation Hospital, which it so happens is just outside the limits of the Borough. The rate of mortality of that town compared with London is as one to twenty-six.

To me it appears that the experience of Leicester affords striking proof of the advantages of notification with a good sanitary organization.

Notification, combined with a good sanitary service, has limited the centres of infection. The infected persons have been secluded as speedily and completely as possible. By means of vaccination and re-vaccination all who are brought immediately within the sphere and risk of small-pox are rendered insusceptible to the disease. Leicester is a town which has become notorious of late years by its opposition

to the vaccination laws. Sooner or later the defences against small-pox may break down, and the probabilities are that a very heavy mortality will ensue as the consequences of neglect of primary vaccination. But if, in the future, the town should suffer from a severe epidemic, it will not furnish an argument against notification, it will only illustrate the folly of the people in having neglected primary vaccination. It cannot be too widely known that it is to vaccination that Leicester chiefly owes its protection from small-pox. The seclusion or isolation of the sick may be as complete as possible, but there are nurses and others who must be exposed to infection, and unless they were protected some of them would fall ill and the centres of infection become multiplied and uncontrollable. It is the cordon of re-vaccinated persons that protects the town from small-pox. Without the cordon an epidemic would have arisen long ago. The experience of Leicester shows one of the great advantages of notification. It enables vaccination to be provided and adopted *when and where it is most required as a protection against small-pox*. If the same practice could be carried out in London, I believe much of the mortality from small-pox and a vast amount of expenditure would be saved.

This leads me to speak of other advantages derived from notification, which is useful for many purposes besides that of securing the isolation or seclusion of the sick. We know how much the spread of Typhus is controlled by the cleansing, purification, and ventilation of the dwelling in which it has appeared. Dr. Russell, of Glasgow, described, in a popular lecture some years ago, the sanitary measures adopted by the authorities in houses where typhus is reported. It is impossible to question the advantages that must ensue from the systematic notification of cases of this disease which come under medical notice in the towns where it prevails.

Enteric fever is a disease which all of us have to cope with. If a sanitary authority has appointed a skilled medical officer and a skilled surveyor or engineer, and if it has provided a staff of inspectors to act under their directions, the early notification of this preventable disease is necessarily of great advantage. By this means defects in the drainage of the dwelling are discovered, pollution of the water supply, and contamination or infection of the milk supply is immediately brought to notice, causes of disease are removed, and channels of infection are stopped at their source. I do not of course mean to imply that in towns where no systematic notification is in operation, preventive measures of this kind are not actively in progress. A vast amount of work has been promoted by medical officers of health of late years, and it has been accomplished in spite of

great difficulties and prejudice. A knowledge of the existence and habitats of disease is recognized to be of great assistance in promoting structural works for improved drainage and water supply. I have always found it much easier to secure the adoption of sanitary improvements where it has been possible to point to cases of illness resulting from sanitary defects. I doubt not that your experience is the same as my own, and if it be so, surely we, as medical officers, from our practical knowledge, are entitled to speak with great authority. The stoppage of epidemics traceable to polluted milk or water can only be accomplished by the help of early notification of the cases of illness.

Diphtheria outbreaks need also to be inquired into with reference to the milk supply, and the possibility of their origin in ways that may be preventible makes their notification necessary for sanitary purposes. Those who are of opinion that this disease is due to defective drainage, will be able to make use of their knowledge to promote improvements in house sanitation. Opportunities are also afforded by notification to advise measures of isolation, which is too frequently neglected in the case of this disease.

The evidence of the benefits derived from the notification of scarlet fever is not so apparent as that which relates to small-pox. In Leicester, where the authorities have been so successful in keeping off an epidemic of small-pox, the notification of scarlet fever does not appear to have produced any good result. As comparison has been made between Leicester and London in respect of small-pox mortality, it is only fair that comparison should also be made with respect to scarlet fever. Let us take the mortality of the five years (1876-80) and compare it with that of the last five years (1881-5). The latter period is included in the time during which notification has been in operation in Leicester, whereas in London there has been no systematic or compulsory notification. The rate of mortality per 100,000 is as follows:—

		Period, 1876-1880.		Period, 1881-1885.
Leicester	...	68	...	69
London	...	62	...	42

Thus in Leicester, with notification, there has been a rise in the mortality from scarlet fever of about 2 per cent., and in London, without notification, there has been a fall of 32 per cent. Dr. Johnston has written at length upon the prolonged prevalence

of scarlet fever in Leicester. He has taken four scarlet fever epidemic periods, 1, (1857-1859); 2, (1862-1864); 3, (1869-1871); 4, (1874-1877), for comparison in respect of mortality with the epidemic period No. 5 (1879-1882), which has occurred since notification commenced, and he shows that the 5th (notification) epidemic period compares favourably with the epidemic periods 1, 2 and 3, while the excess in the rate of mortality over that in the 4th period "is but fractional in amount." This excess may have been due to a particular quality of scarlet fever prevailing in the district during the last epidemic period, and without notification it might very likely have given rise to a much higher mortality. Still, the figures are disappointing as regards Leicester. This is also the case at Warrington, which deserves particular notice on account of the stringent powers for the compulsory isolation by removal to hospital of persons suffering from scarlet fever, which were obtained at the same time as the notification powers. Mr. Gornall, in his 1882 report, points out that complete stamping out of such a disease cannot be immediately expected as the result of notification. In the account given in the "Practitioner" for 1884 of the Results of the Notification of Infectious Diseases, the following passage occurs:—

"The subject of the continued prevalence of scarlet fever in Warrington, notwithstanding the notification and the hospital provision, is dealt with in Dr. Thorne Thorne's Government Report on the Use and Influence of Hospitals for Infectious Diseases; and coupling the statistics there given with those since published, it would appear that notification with isolation had checked so rapid a growth of the disease as had been experienced in some former years, but that a very large total mortality still tended to spread itself over a series of years. The experience available is however too limited to warrant any final inference being drawn."—*Practitioner*, 1884.

The last sentence of the above quotation indicates the difficulty in arriving at any satisfactory conclusion with regard to the beneficial results of notifications in the case of scarlet fever. The Local Acts have been in operation a comparatively short time, and the amount of available experience is consequently very limited. Nevertheless, we may learn something from that experience. During the last ten years there has been a general decline in the scarlet fever death-rate. Amongst the twenty large towns, with regard to which statistics of mortality from scarlet fever have been tabulated by the Registrar-General, there are nine "notification" towns and eleven "non-notification" towns. Out of the nine notification towns, seven have showed a decline in the scarlet fever death-rate. Out of the

eleven non-notification towns, eight have showed a decline in the scarlet fever death-rate. But of the two exceptions amongst the notification towns, one is Leicester, to which I have already referred, and the other is Nottingham. In the latter town notification was only commenced in the middle of 1882, and therefore it belongs as much to the list of non-notification as to that of notification towns. Indeed, if the statistics of Nottingham are examined closely they appear to be very much in favour of notification. Dr. Whitelegge has devoted a considerable portion of the Annual Health Report for 1885 to a consideration of the results of notification in that town, and I reproduce the portion of his report which refers to scarlet fever.

“SCARLET FEVER,” (FROM TABLE Q.)

	Deaths.		Known cases.		Rates of known cases to deaths.
1878.	72				
1879.	180				
1880.	134				
1881.	353				
1882.	280	.....	1029	.....	3.7
1883.	59	.....	428	.....	7.3
1884.	37	.....	384	.....	10.4
1885.	31	.....	390	.....	12.6

“As far as the evidence to be derived from these figures goes, compulsory notification has been followed by a decided, and up to the present time lasting, reduction of mortality from the disease in point. In endeavouring to ascertain how far this reduction was due directly or indirectly to notification, it must be remembered that scarlet fever was epidemic in 1881-2, and that the death-rate from scarlet fever is steadily declining in England. The experience of previous years also shows that scarlet fever becomes epidemic every few years, while it always contributes its quota to the annual mortality even in non-epidemic years. Quite apart from any new system of prevention it was to be anticipated that scarlet fever would for a time decline in fatality to its usual level in non-epidemic years, or somewhat below it, seeing that every decennium shows a diminished scarlet fever death-rate.

“Making due allowance for these considerations, we have the following reasons for attributing to the system of notification an important part in the result.

1. “The decline commences with the commencement of compulsory notification. The consideration suggested above with regard to scarlet fever, viz., that it may have been taken at the crest of an epidemic wave, does not hold good in the case of enteric fever, which had been slowly gaining ground for several years previously, without any special epidemic.

“2. The decline is continuous. In scarlet fever we have an uninterrupted fall for four years, the notifications meanwhile becoming more and more numerous in proportion to the deaths—that is, the system has gradually come into full operation.

“3. The decline is not merely to the usual level of non-epidemic years, but to a point considerably below it.

“4. The decline in the scarlet fever mortality is greater than can be accounted for by the general diminution throughout the country. The death-rate from scarlet fever in 1885 was in Nottingham 0.13 per 1000, and in 28 large towns 0.24.”—*Nottingham Annual Health Report, 1885.*

I think, therefore, there is good reason for transferring Nottingham to the list of notification towns, which show evidence in favour of the system as regards scarlet fever. This leaves only one town out of nine in which a rise of the death-rate from scarlet fever has to be accounted for, and that town is Leicester, in which the increase has been only 2 per cent. On the other hand, out of the eleven non-notification towns there are three which show a rise. Brighton, to the extent of 5 per cent.; Leeds, 29 per cent.; and Hull, 315 per cent. Turning to the towns in which a decline of the scarlet fever death-rate has taken place, we find among the notification towns seven, or including Nottingham eight, out of nine, or 89 per cent.; among the non-notification towns with a much larger population eight out of eleven, or 73 per cent., so that here again the evidence is in favour of notification. But the most important point in the comparison is that the fall in the case of the notification towns is much more marked than among the non-notification towns. Amongst the former more than half have shown a decline of over 60 per cent.; amongst the latter only one out of eleven has shown so marked a decline.

As far as the evidence goes, I submit that it is in favour of notification.

TABLES showing the Decline and Rise of Scarlet Fever Death-rates in the Notification and the Non-notification Towns; the figures being taken from the Registrar-General's Official Returns at Somerset House.

Towns in which there has been a RISE in the Death-rate.

NOTIFICATION TOWNS.

	Mortality from Scarlet Fever per 100,000 persons living.		Rise in the Death-rate.
	Period 1876—80.	Period 1881—85.	
Leicester	68	69	1 per cent.
Nottingham	62	79	27 "

NON-NOTIFICATION TOWNS.

	Mortality from Scarlet Fever per 100,000 persons living.		Rise in the Death-rate.
	Period 1876—80.	Period 1881—85.	
Brighton	38	40	5 per cent.
Leeds	77	99	29 "
Hull	34	141	315 "

Towns in which there has been a DECLINE in the Death-rate.

NOTIFICATION TOWNS.

	Mortality from Scarlet Fever per 100,000 persons living.		Decline in the Death-rate.
	Period 1876—80.	Period 1881—85.	
Salford	119	46	61 per cent.
Portsmouth	86	15	83 "
Norwich	86	19	78 "
Manchester	100	42	58 "
Oldham	130	37	72 "
Bradford	89	31	65 "
Newcastle	107	65	39 "

NON-NOTIFICATION TOWNS.

	Mortality from Scarlet Fever per 100,000 persons living.		Decline in the Death-rate.
	Period 1876—80.	Period 1881—85.	
London	62	42	32 per cent.
Plymouth	32	6	81 "
Bristol	70	31	56 "
Wolverhampton	105	48	54 "
Birmingham	97	44	55 "
Liverpool	98	57	42 "
Sunderland	179	84	53 "
Sheffield	135	87	36 "

The benefits derived from the notification of this disease are not confined to the seclusion of the sick at hospitals. Formerly the disease was spread broadcast by the school attendance of children in the "peeling stage," by clothing, provision shops, and infected milk. Measures have been taken to check the spread of epidemics by these channels in all towns, but by means of notification they have probably been more effectual in some towns than others. In the evidence which I gave to the Liverpool Commission in 1882, I insisted upon the importance of compulsory notification as a means of checking the spread of scarlet-fever by compulsory school attendances. In the absence of a proper system of notification children may be compelled to attend school when they are in an infectious state.

In this City of York a most admirable system has been devised by Mr. North for immediately utilizing the information afforded by notification, and checking this fruitful source of the spread of the disease. The regulations which have been drawn up for this city will probably serve as a guide for many other towns. There is a general testimony that whenever notification has been adopted the work of disinfection has been largely increased. The study of scarlet-fever in relation to milk supplies has assumed great importance since the recent epidemic in Marylebone was traced by Dr. Wynter Blyth to an infective milk supply. If it is possible that a disease of the cow can give rise to scarlet fever, many outbreaks of the disease must be due to milk, and for the purpose of investigating this question notification to a proper authority is required.

I must not dwell any longer in these opening remarks upon the benefits derived from notification when a good sanitary service is provided. I should like to have referred to the collateral advantages to medical knowledge derived from notification, and

I may specially mention the useful returns which are given every month in the "Sanitary Record." Considerations of time, however, warn me that I must proceed at once to a discussion of the difficulties attending systematic Compulsory Notification. That there are serious difficulties is not to be denied; if it were not so the main body of the profession would not oppose the promotion of Local Acts. At the same time it must be specially mentioned that in towns where notification is in operation the difficulties that were anticipated have been successfully grappled with, and that after the first friction has been overcome the Acts seem to have worked smoothly enough. Nevertheless, the difficulties exist, and it is better they should be fully recognized by ourselves and understood by the public.

Here let me say that in my own case these difficulties were made light and trivial, because I always felt that I had the firm and steady support of the Health Committee that I served at Nottingham. This Board was presided over by my kind and good friend Mr. Alderman Ford, a gentleman who personally knew the risks and inconveniences entailed by work amongst infectious diseases; and who still, now in the evening of his life, continues at his post of danger and responsibility.

The first difficulty arises from the anxiety which physicians and medical practitioners necessarily have for the interests of the individuals under their care—the patients for whose treatment and cure they are primarily responsible. The position of the main body of the profession is unassailable at this point. Whatever action the public interests may demand, it must be carried out with a tender regard for the safety and welfare of sick persons. If it is necessary that a person suffering from an infectious disease, such as small-pox, should be transported several miles into the country, the long journey should be planned so as to involve the smallest possible amount of risk to the patient's recovery. If cases of infectious disease must, in the public interest, be removed to a hospital, proper and comfortable accommodation, medical attendance, food, and nursing should be provided. In many towns and districts the hospital accommodation is of a wretched character.

This leads me to speak of another difficulty which may be called "the hospital difficulty." I refer now to the fact that small-pox has been found to be most prevalent in the neighbourhood of the large London hospitals, and to the belief which is held by some high authorities, that this prevalence is due to the dissemination of the particulate matter of small-pox in the air. This has caused a most unreasonable fear of the dangers which may arise from an infectious hospital, and is one reason why

proper hospitals have not been provided. It is also one reason why authorities have been slow to move for powers of notification. But it has been shown that the experience of the country towns is altogether opposed to that of London, where, as I have already pointed out, the whole system of small-pox prevention is very imperfect. In the provinces it is not so difficult to obtain sites for hospitals at a distance from populous neighbourhoods. If there is a proper system for small-pox prevention by re-vaccination as well as isolation, large hospitals for this disease are not required, and there can be no appreciable danger from small hospitals situate outside the towns.

These difficulties which arise from the health interests of the public as well as of private individuals I place first. But there are other important difficulties arising from the business or trade interests of the community or of individuals.

We all know the reasons which led the authorities at Marseilles in 1884 to keep secret the existence of cholera in their town. It was the fear that their commercial interests would suffer. In France, the "ostrich policy" can be carried out even in the case of cholera. In this country public opinion is more advanced, and the concealment of Asiatic cholera would be impossible, though the existence of small-pox and other dangerous and infectious diseases in a town may be kept secret until they become known by the death returns. There is no reason for giving publicity to the existence of these diseases in a town if the community can be satisfied that efficient measures are taken for their prevention. But a desire to suppress the facts with regard to an initial outbreak of disease is generally accompanied by a neglect of effective action until all action is too late to be of use. In the case of private individuals, the difficulty arising from making public the existence of dangerous infectious disease is most conspicuous. A shopkeeper may be ruined by its having become known that he has cases of scarlet fever at his place of business; an artisan may be thrown out of employment for an indefinite time through his employer having been informed of the existence of a badly isolated case of small-pox at his house. In such cases a hardship is often inflicted upon individuals, and it is none the less a hardship on account of its being needful for the public good. This is one of the strongest motives to the concealment of disease, and it will never be overcome until the practical common sense of the people has provided a remedy. The Trades Union Congress which met at Nottingham, in 1883, passed a resolution in favour of notification, but coupled with the provision that compensation out of the rates should be afforded to those who were thrown out of employment in consequence of the existence of infectious disease in their households having been

made known. It is very doubtful whether this principle would ever be adopted, and it is still less likely that compensation would ever be paid to shopkeepers or those who lose business in consequence of the existence of infectious disease at their establishments becoming known. The proper remedy for this hardship arising from notification is by the establishment of the principle of insurance against loss or risk from infectious disease. Shopkeepers and others insure themselves against a pecuniary loss arising from fire. Why should they not also insure themselves against pecuniary loss arising from infectious diseases? The difficulty attending notification, to which I now refer, does not appear to have been found insuperable in the towns where the system is in operation. This no doubt is due to the extreme care and discretion of some medical officers who have been most desirous of making the notification a success, and who have exhibited an amount of thoughtful regard for the interests of shopkeepers which cannot always be expected. In other instances in which this difficulty does not appear to have assumed much prominence, I suspect that so great has been the regard for individual pecuniary interests by the authorities and their officers, that little or no action has followed upon the notification, and consequently much of the public good which should result from the system is lost.

The third difficulty to which it is necessary to allude is of a different kind to those as yet referred to. It affects us personally as medical officers of health, and I would therefore prefer to ignore it, if it were not that my paper would be obviously incomplete by the omission. It has already led to misunderstandings between private practitioners and those members of the profession who act as medical officers of health, the latter sometimes being placed in such a trying position that there is no wonder that they feel lukewarm in advocating a measure which must entail a vast amount of trouble and responsibility to themselves, and which may bring them into collision with those with whom they would most like to be on friendly terms. One of the sources of all this friction and irritation is the unsatisfactory nature of the appointments of medical officers of health. I am not now referring to the appointments for great cities, for counties, or parts of counties, in which sanitary districts have combined to appoint a medical officer of health. I allude now to the great majority of separate sanitary districts, the small boroughs, parishes, and unions in which the areas of local government are much too small to admit of satisfactory medical public health appointments being made. Here the choice often practically lies between the appointment of a junior member of the profession debarred

from private practice, and appointed upon the whole service system, or a member of the profession engaged in ordinary medical practice in the district. In either case there must frequently be prejudices and objections on the part of the private medical practitioners, which are not easily removed. On the one hand, there is a feeling amongst practitioners against being required, under penalty, to notify the existence of cases of infectious disease amongst their patients, to one who is much junior to them in the profession; on the other hand, there is a dislike to notifying cases to a "rival practitioner." I do not intend to open the question "whether it is desirable that medical officers should be debarred from practice," but I may observe that the Liverpool Commission, appointed to visit the towns where notification was in operation, appeared to be in favour of medical officers being engaged in the practice of their profession. You are also no doubt acquainted with Dr. Gairdner's views on this subject. On the other hand, the expressions of opinion which I heard from most of the speakers at the Worcester meeting of the British Medical Association, in 1882, were decidedly against the appointment of private practitioners as medical officers of health. The difficulties would be overcome if sanitary authorities would recognize the importance of combining together for the purpose of this appointment. It is a mistake to suppose that the duties of a medical officer of health require that he should be always on the spot. The "combination appointments" have as a rule worked exceedingly well, and the arrangement appears to be most satisfactory to employers as well as employed. But as long as sanitary districts remain separate, no general rule can be laid down for medical sanitary appointments; and if public opinion demands that notification of infectious disease should be made, medical practitioners and medical officers will have to reconcile these differences for the public good.

It remains only to consider very briefly who is the proper person to make the notification; should it be the householder or the medical attendant? Further, is it possible to rely upon voluntary notification by medical men for a fee, and thus avoid the objectionable penal clause?

If there is provided a good sanitary service for a district the authorities have a right to demand that notification should be as early and complete as possible. I believe that there is a decided opinion amongst us that notification by the householder is insufficient for the purpose. Greenock has tried the plan, and there it has failed. The Notification Clause, obtained for Nottingham in 1878, placed the statutory obligation to notify upon the householder, but this did not meet the objections of

the medical men. About two years after it was put in operation I had experience of its working, and during that time the notification almost always came direct from the medical man. So that it appears to me that the clause, which at one time had the approval of the British Medical Association, does not present any advantages over that which places the responsibility of notifying upon both the householder and the medical attendant—"the dual method," as it is called. This is the method which, we are informed, is approved of by the Local Government Board. A copy of the Manchester Provisional Order is given as an Appendix to the Report of the Board on the subject of Notification, and the terms of this order are held up as typical of those which sanitary authorities might most usefully adopt. The diseases included in that list are the following: small-pox, cholera, typhus, enteric, scarlet, relapsing, continued, and puerperal fever, scarlatina and diphtheria.

As to voluntary notification I need only quote the remarks of Dr. Hill, of Birmingham, the President of the Metropolitan Society of Medical Officers of Health, who thus expressed himself in an address which he gave at the Health Exhibition in 1884:

"The objection to voluntary notification is that it is incomplete and, as human nature is constituted, probably ever must be, but unless complete it is useless for the prevention of epidemics; it is only because of its incompleteness and, therefore, uselessness under the voluntary system, that it is necessary to resort to compulsion. The value of complete notification was well seen in Birmingham during the early days of the present visitation of small-pox. This disease is one which from its rarity and from the dread of it in the minds of the public is more likely to be spontaneously notified than any other ordinary zymotic; the consequence was that for many months the disease could get no footing in the town, because under the influence of fear every case was notified to me directly on its nature being made out; over many months 77 sporadic cases were reported, with the result that the disease was prevented spreading by means of isolation, disinfection, &c.; but in time cases occurred which were not reported, and then the disease, liberated from control, rapidly became epidemic; as long as every case was reported the epidemic was prevented, but no longer. The voluntary system answered for a time, but soon broke down, as it always will do, and as it always has done from time immemorial to the present. The experiment has been made so long that it is unnecessary to continue it; it has indeed lasted too long, and to continue it still is altogether unjustifiable. Of the nearly 300 practitioners in Birmingham only 113 have ever voluntarily notified. In saying this much, I do not mean that

these 113 have all notified in each year, but only last year. Nor is it to be understood that they have notified all their cases, but only such as they pleased, and probably only a small proportion; or that they have notified them early, when alone notification is of much value.

"Does any person believe that such a system of notification can achieve a real advantage in the way of protecting public health, or lead to any result except the waste of public money?"

"The voluntary system answers very well in the case of cholera, because so great is the alarm and even horror excited by the disease, that it is practically compulsory; in other words, that result is effected by fear which is denied by reason. But in the case of a disease of which there is no fear, such as scarlet fever, although it is a thousand times more destructive to life, the voluntary system breaks down altogether. Instead of the medical man reporting every case of preventible disease, he reports only such as he chooses; he will report, for instance, the case of a domestic servant whose presence in a large and respectable family is considered objectionable, and whose removal is therefore desired, and she is removed to the hospital accordingly, but the next case he may for special but insufficient reasons decline to notify, although the danger to the public may be as great in the one case as in the other."—*Transactions Society Medical Officers of Health, 1883-84.*

In conclusion, I beg to submit to this conference that there is ample proof of the benefits derived from notification where there is a good sanitary service, but that without a good sanitary service the full advantages are not to be obtained. That the difficulties associated with notification are considerable, but that experience has shown that they are not insuperable.

[For discussion on this paper see page 161.]

On "Organisation and Administration for the control of Infectious Diseases," by JOHN F. J. SYKES, B.Sc. (Public Health), Medical Officer of Health for St. Pancras.

In endeavouring to sketch the lines upon which, as far as our knowledge at present extends, we should proceed to prevent the spread of infectious diseases, I will commence by making it

clear how it is intended to deal with the subject, although I trust the title of the paper conveys as nearly as possible its limits. The hospital will be treated only from the point of view of isolation, but the details of construction and management will be beyond its scope, also the question of vaccination except in so far as it forms part of the system in allowing that efficient vaccination may reduce to a minimum the provision for small-pox accommodation. Further, the details of treatment and the precautions to be observed in infectious cases will not be touched upon, although the provision of nurses amongst the extreme poor, and the prohibition to drink fresh cows' milk in the raw state, may in the future, if adopted, materially control infectious disease.

In contra-distinction to the precautions which can only be advised in individual cases, those measures will rather be considered which with a proper organisation can be actually carried out in a systematic manner and on a comprehensive scale by the medical officer of health.

It would be well to commence by briefly considering the Infectious Diseases, then the materials for their control, the staff to deal with them, and lastly the method to be adopted.

In dealing with Infectious Diseases, man early recognized his powerlessness to combat them. He fled. Thus, in times of epidemic, cities were deserted, and from dread of returning many became ruins. Such fearful results can scarcely be realized in the present day. Under less influence of panic, and as man grew more civilized, instead of the healthy fleeing from the infectious sick, the sick were cast out as unclean. It remained for the present age to perfect a system of separation for protecting the healthy whilst tending and nursing the infectious sick, the system of isolation.

Thus we have passed through three stages:—

1. The healthy fleeing the sick.
2. Casting out the sick and more or less neglecting them.
3. Isolating and nursing the infectious sick.

So much for the development of organisation then as to purely medical treatment. In very early days also it was observed that one zymotic attack appeared to procure immunity from a future attack; this was the germ of idea for treatment which, commencing in ignorance, resulted in designedly avoiding to separate the children from the infectious sick, and even in putting them to sleep together, so that early in life they might contract the disease and procure future immunity, regardless of present consequences. I am not quite sure that the custom is entirely abandoned. (At the International Medical Congress at Amsterdam in 1879, the method was seriously advo-

cated for scarlet fever, and cases even quoted). Later, the more advanced and ingenuous people in the East, finding the system or want of system in the case of small-pox proved fatal or produced incurable affliction, conceived the idea of inoculating the disease, making sure of an attack under favourable circumstances and in a benign form. Compared to the former state, this system was wonderfully successful, but produced fresh centres of contagion, and occasionally untoward effects. Again, it has remained for this later era to discover the means of pursuing a system of inoculation which, whilst still affording protection, robs the disease—1stly, of its power of infection, and, 2ndly, of its power to kill, maim, or disfigure. This is vaccination. There is some hope that a like discovery may, before long, similarly protect us from Scarlatina.

Here again we have passed through three stages of protection by—

- 1stly, Contagion.
- 2ndly, Inoculation.
- 3rdly, Vaccination.

We are now armed with two powerful weapons, which promise to become yet more perfect, viz., vaccination and isolation. With isolation, we are at present more particularly concerned. The following, although not a complete list of all infectious diseases, are those with which we have more frequently and more especially to deal, excepting cholera.

INFECTIOUS DISEASES.

Temporary Provision	{ Cholera }	Special Epidemic Disease.
Hospitals	{ Small-pox Scarlatina Typhoid Fever Typhus Continued " Diphtheria "	Major Infectious Diseases.
Homes.	{ Measles } { Rötheln } { Whooping Cough } { Mumps } { Chicken-pox }	Minor Infectious Diseases.

All these diseases should with advantage be excluded from general hospitals, and come properly within the scope of isolation hospitals.

In order to clear the way cholera and the minor infectious

diseases may be first briefly referred to, and then the more important or major infectious diseases taken together, with suggestions as to isolation.

Cholera will demand such special arrangements and precautions, if unfortunately it should visit us, that to enter fully into them would require a monograph to itself. It is introduced here for the purpose of bringing out two points. Firstly, that whatever form of structure is adopted for the treatment of cholera patients, it should, contrary to what applies by general acceptance to fever hospitals, be in the midst of the infected area, for cholera is a rapid disease and the sufferers will not bear transit. Secondly, that buildings intended as fever or general hospitals should not be used for cholera patients.

THE MINOR INFECTIOUS DISEASES are very destructive to infant life, extending into childhood and occasionally affecting adults. They are introduced partly to make the list more complete, and the relative position of infectious diseases clear at a glance, and partly to offer a suggestion. When the more serious infectious diseases have been brought under effectual control, possibly our humane feeling, or social welfare, will prompt the extension of some form of isolation as homes of refuge to sufferers from these diseases, amongst our poorer fellow-citizens, who do not possess the means of separation and of nursing, and so subject whole families to run the gauntlet of these maladies less dreaded but yet injurious, the first three often fatal. Of the nine principal zymotic diseases, two, viz., measles (German measles, or r otheln is classed with measles in the returns) and whooping cough are included amongst these minor infectious diseases. Diarrh ea, although one of the nine and liable to become epidemic under seasonable influences, is not strictly an infectious disease. It may be due to so many varied causes, that to treat the symptom—for such only diarrh ea is—of many different diseases in one hard and fast manner is neither necessary nor desirable.

THE MAJOR INFECTIOUS DISEASES, which constitute the remaining six of the nine principal zymotic diseases, urgently demand measures for their control, and are those with which we are more immediately concerned.

Small-pox: There is no doubt that Small-pox Hospitals are a source of danger to the inmates of surrounding dwellings, without entering into the question whether the infection is transmitted aeriaily from the Hospital itself, or diffused by the transport, or whether it is spread by convalescents, the staff, or persons supplying the Hospital. Hence, Small-pox Hospitals should be removed from dwellings and not be too easily

accessible. If forming part of a complete Fever Hospital, the Small-pox building should be removed a convenient distance from the rest, and access restricted within narrow limits and rigidly supervised.

Scarlet Fever: The infection of Scarlet Fever, although not so far reaching as that of Small-pox, is nevertheless easily spread, and this disease would be more advisedly treated in a building separated somewhat from the general Fever Building, or in a separate wing.

The General Fevers: Under this head would come Typhoid, Typhus, and suspicious continued Fever. It is obviously desirable that Diphtheria should also come under this category, and relapsing fever, which is now of rare occurrence, may be classed with typhus. These might, with advantage, be treated in a single building, possibly in separate wards. This outline can be enlarged upon to any extent, but I confine myself to a minimum, for the sake of lucidity and brevity.

The complete institution would be constituted somewhat in this manner, and may be called a sanatorium or by some other soothing name, to allay the fears and prejudices of the public.

Sanatorium.

- | | | |
|-----------------------------------|---|--|
| Hospital
buildings. | } | I. Small-pox building. |
| | | II. Fever building :
1. Scarlet fever wing.
2. General fever wing.
Typhoid fever.
Typhus fever.
Continued fever.
Diphtheria, &c. |
| Adminis-
trative
buildings. | } | III. Residential building :
Staff, &c. |
| | | IV. Service building :
Disinfecting chamber for
hospital use.
Ambulance, &c. |

Isolation of the whole hospital or sanatorium must have regard to two points: firstly, that it should be removed from dwellings, but not so far as to render transport unnecessarily long; secondly, that it should be out of the track of ordinary traffic; in fact, difficult of access to the public, and yet easily communicated with from the central office.

The first condition is not difficult to comply with, but the second involves a paradox, for if it be difficult of access to the

public, it must be equally difficult for the central authority to communicate with. Another modern introduction renders this possible, which would have been worked with difficulty only a few years back. I refer to the telephone, which, firstly, allows the hospital to be isolated more effectually, since communication can be maintained with facility; secondly, facilitates enquiries by patients' friends, renders visits and exposure of officials from the sanitary department unnecessary, and reduces to a minimum the occasion for resident officials to quit the hospital except on leave, when a regular system of disinfection can be adopted; and, thirdly, requires no skilled labour, is rapid in its action, and in larger towns, forming part of a general system, the instrument can be used for general purposes, and in smaller towns to hold communication with outlying districts and townships—additional encouragement for local authorities to adopt it. The highly organised system of the Metropolitan Asylums Board owes much to the telephone, and I venture to doubt if it would work as efficiently without it. The central circuit would be more complete if all the hospitals, &c., were in communication with the central office of the Board, and the secondary circuit should be completed by all the London parishes through the central telephone office being placed in communication with the central office of the Board, instead of scarcely one-half of them as at present.

The main point, therefore, to be considered, is to isolate the hospital as much as possible. The best positions for isolation, if available, are either upon a hill or upon a ship or an island, or on the other side of a water-way, just beyond the town. Thus unsightly and repellent brick walls may be wholly or in part dispensed with to secure isolation, and, at the same time, the distance of transport may be reduced. The open sea-coast is of no advantage for site. A town may be placed under three different circumstances:—

1. With a water-way which would enable it to isolate—
 - (a) A floating hospital upon a harbour or river;
 - (b) A land hospital upon an island or opposite shore.
2. With a hill.
3. Without either.

In the last instance there is no choice, and the hospital could not be placed so close to the town with impunity as in the two former cases. Water carriage as well as land transport would be necessary for a floating hospital, an advantage to a number of townships upon a river, but to a hospital upon an island or upon the opposite shore a ferry could transport the ambulance without disturbing the patient.

I have dwelt upon the hospital because without it any system

of control is incomplete, and also in order to draw attention to the advantages of the position of a town being turned to account for isolation. The 131st Section of the Public Health Act should have made hospital provision compulsory, not permissive. Medical officers of health should urge this question upon their sanitary authorities, and not wait till times of panic to obtain a hasty temporary erection ready just in time to be too late.

Supposing that the authority is public-spirited enough to have availed itself of permissive clauses, and possesses an infectious hospital with an ambulance, in telephonic communication with the central office, a public disinfecting apparatus, and a public mortuary for infectious cases, how will the system work?

The well-to-do, and those who possess facilities for proper isolation and nursing, will care for themselves. There is a large class who are not well-to-do, not even comfortably housed, and yet not absolutely paupers; but take as example a pauper infectious case, because it simplifies the points and omits the financial question.

The relieving officer gives an order for medical attendance, the district medical officer finds the case can only be treated under difficulties, and may become a possible centre of infection. To relieve himself—and rightly so—of the onus attaching to improper nursing and the spread of contagion, he notifies the case to the medical officer of health, but he is not bound to do so. The patient is willing to go to hospital, from the central office the ambulance is "called," the patient is removed to hospital, and the arrival is "called" back to the central office. The sanitary inspector makes enquiries, and inspects the sanitary arrangements of the infected house. The disinfecter (who may also be the sanitary inspector) disinfects the room, and removes the infected articles to the apparatus, disinfects them and returns them, or burns them.

In such a case all goes smoothly, but it will break down if, firstly, the medical attendant does not notify to the medical officer of health; secondly, the patient refuses isolation. The first involves the question of notification of infectious diseases, and the second the power of removal.

To briefly put the question of notification. It is the primary duty of a medical officer of health to protect the community against an epidemic of infectious disease, that duty obviously cannot be carried out unless he is informed betimes of its presence. How does notification enable the medical officer of health to do this duty to the public?

1. By watching the approach of an epidemic, to make timely provision.

2. By ascertaining the cause of the epidemic, to prevent its continuance or its recurrence.
3. By disinfecting, to prevent the house, etc., being a constant source of infection.
4. By removing those patients certified by the medical attendant to be without proper nursing or isolation, in order to prevent them becoming centres of infection.

What are the objections raised to notification? It will be observed that they overlook the first two and most important objects above mentioned.

They are briefly that it:—

1. Disturbs the relations of doctor and patient.
2. Leads to concealment.
3. Disturbs the relations of medical attendant and medical officer of health.
4. Does not diminish infectious disease.
5. Is liable to lead to unnecessary removal of patients.

We must remember that the medical attendant's first duty is to his patient, his next to the patient's family, but the public comes last, and that the duties of a medical officer of health are in the reverse order.

By whom should the notification be made? I am inclined to put it in this manner: a certificate of the cause of sickness to be given by the medical attendant, in the same manner as a certificate of the cause of death, to the nearest relative, friend, or person in charge. That person, in like manner, to be held responsible for ascertaining the cause of sickness and for giving information if infectious, by sending in a medical certificate to the proper authority.

In answer to the objections raised:

1. I fail to see that a certificate of sickness would have any more effect upon the relationship of doctor and patient than a certificate of death.
2. Nor can I conceive how it would be any the more likely to lead to concealment than in the case of death, if placed under similar conditions. The rectification of sanitary surroundings and disinfection confers a benefit on the family and the community, which by right-minded persons is sought after rather than avoided by concealment, and the medical attendant is relieved from the responsibility of improper disinfection performed by incompetent persons.
3. It is no part of a medical officer of health's duty to visit the cases of infectious disease reported to him by a medical man already in attendance, unless requested to do so or special circumstances should arise. Therefore there can be no cause

for friction between the medical officer of health and his professional brethren.

4. That notification should have only a trifling effect in diminishing endemic infectious disease seems probable, from the accounts of the thirty-eight or thirty-nine towns that have adopted it in a compulsory form. But it should be remembered that the object of notification is not so much to annihilate infectious disease as to prevent endemic infectious disease from becoming epidemic, and to enable us to control it before, and not after it has assumed epidemic proportions. We are not so utopian as to expect to eradicate infectious disease in a twinkling.

5. As to removal, it is only advocated in those cases which can be no credit nor profit to the medical attendant. His certificate would convey the necessity or not for removal. One advantage must be added—the moral effect of the duty falling upon the medical attendant to represent that removal may be necessary, if nursing and isolation cannot be carried out according to instructions, would strengthen his hands immensely in obtaining proper treatment for his patients. Unnecessary removals by a medical officer of health would soon procure a fatal unpopularity. That brings us to the question, *when is removal necessary?*

It will be agreed that no infectious case should be allowed to remain in any public institution where it cannot be efficiently isolated. I believe also that the medical profession has accepted the following aphorisms. Firstly, children coming into contact with an infectious case should be withheld from school; secondly, adults coming into such contact should be withheld from workshop, factory, or offices; and thirdly, clothing or food should not be allowed to issue from premises where it is liable to have become infected. In the case of children no harm is done, but in the case of adults this arrest of occupation is a vital matter.

Three methods of isolation are open to us for preventing the spread of infection:—

1. Removing the infectious case from the healthy.
2. Removing the healthy from the infected.
3. Boycotting the family or household.

The third course is the logical result of acting upon the aphorisms above quoted; it is also the course recommended by the Privy Council in the case of dairies, etc.; you may stop the sale of milk, but you cannot remove the infected milkmaid. It may be of indirect assistance in promoting removal, and possibly the legislature prefers this indirect pressure, but compulsory arrest of persons' occupations by closing workshop,

factory, office, or any other workplace against them is ruinous and iniquitous, unless compensation be allowed. Local bodies are not given to generosity, and compulsory compensation would lead to endless difficulties.

The second course may be adopted under better circumstances by the healthy betaking themselves betimes elsewhere.

The first course, namely, removing the case to hospital, is the kindest one to adopt under these circumstances.

But you have, what occurs now and again, an obstinate employer or employé that refuses removal; this brings us to the question of compulsion, and without this power as a last resort in exceptional cases the control is incomplete.

The power of compulsory removal is looked upon as a horrible bogey, but it is not at all terrible if looked at in an unprejudiced light. Patients are very willing to go to hospital, and it is very rarely necessary to exercise such power. Dr. Littlejohn reported of Edinburgh in 1882, that there were 7063 notifications, that £882 17s. 6d. was paid in fees, and that in not one of the instances was it necessary to use the compulsory powers possessed for the removal of patients.

Similarly, Dr. Thorne reported to the Local Government Board in 1880, the rare necessity for compulsory removal.

But that it should be only occasionally necessary is no reason for obstructing or encumbering it with formalities which may cause serious delay in an urgent case. It is true that by Section 142 of the Public Health Act the infectious dead may be removed to a mortuary by order of a Justice, and by Section 124 an infectious case without proper accommodation or in a room occupied by more than one family, or upon a vessel, may also be removed by order of a Justice. But what is "proper accommodation?" Observe the standard by which it is gauged by the legislature, and upon which the Justice founds his opinion "several families occupying one room." Do all Justices readily accede to the plea "Salus populi suprema lex?"

The only power left to the sanitary authority is the power to remove a case from a common lodging-house. Was the legislature afraid that the sanitary authority would exceed its powers in sanitary matters? This is not borne out by experience.

You may directly ruin a milkman or an inn or lodging-house keeper, and indirectly many others, through their employers, but you cannot compel removal of the infectious case.

The legislative misconception that encourages obstinate persons in their own ruin, and frequently in the ruin of others, for the public good, is incredible; space will not allow the quotation of instances.

Let us have the lesser of the two evils, viz., the power of compulsory removal.

One other point: means are amply provided to prevent the spreading of infection by the person or clothing of the sick by exposure in public, in Section 126 of the Public Health Act, or by public conveyance in Section 127, or by public lodging in Section 128. I have not considered it necessary to mention in this paper the corresponding clauses of the Sanitary Act of 1866.

In conclusion, this condensed account of the principles underlying the bases of the system for the control of infectious disease will, I trust, demonstrate:—

Firstly.—That every sanitary authority should possess an infectious hospital and the necessary appurtenances.

Secondly.—That all cases of infectious disease should be notified to the authority.

Thirdly.—That the power of compulsory removal should be amended, and transferred from the magistrate to the sanitary authority, with power of appeal to the magistrate in case of refusal or obstruction.

Local efforts have achieved something, but the time has now come when the duties of sanitary authorities in the control of infectious disease should be systematized and extended compulsorily to all urban and rural districts by a general act of the legislature.

[For discussion on this paper see page 161.]

On "Hospitals for Infectious Cases—should they be free, or a charge made for maintenance?" by FRANCIS VACHER, F.R.C.S., F.C.S.

IN the Public Health Act, 1875, some previously existing powers relating to hospitals for infectious diseases were re-enacted, and additional powers with the object of preventing the spread of infectious cases provided. The previously existing powers I refer to were mainly in the Sanitary Act, 1866; and prior to the framing of this measure, very little accommodation for patients suffering from infectious diseases was furnished, except as the result of private charitable effort. Most of the hospitals for infectious diseases throughout the

country, the utility of which is now universally recognised, are the outcome of the Public Health Act, 1875; and any increased accommodation about to be provided by local authorities will probably be under powers conferred by this Act. I propose, then, to open the discussion of the question which has been selected, by referring to this enactment. The exact terms of the powers of local authorities to provide hospitals are in Section 131; and exact terms of the power to recover cost of maintenance of patients in hospital are in Section 132.

131. Any local authority may provide for the use of the inhabitants of their district hospitals or temporary places for the reception of the sick, and for that purpose may:—

Themselves build such hospitals or places of reception; or,
Contract for the use of any such hospital, or part of a hospital, or place of reception, or,

Enter into any agreement with any person having the management of any hospital, for the reception of the sick inhabitants of their district, on payment of such annual or other sum as may be agreed on.

Two or more local authorities may combine in providing a common hospital.

132. Any expenses incurred by a local authority in maintaining in a hospital, or in a temporary place for the reception of the sick (whether or not belonging to such authority), a patient who is not a pauper, shall be deemed to be a debt due from such patient to the local authority, and may be recovered from him at any time within six months after his discharge from such hospital or place of reception, or from his estate in the event of his dying in such hospital or place.

Thus it is plain that a local authority may alone, or jointly with another local authority, or more than one, do three things:—

1. Build a hospital.
2. Contract for the use of a hospital, or part of one.
3. Contract with hospital management for maintenance and treatment of sick inhabitants of the authority's district.

Any local authority may make provision in one or all of these three ways, or they may do what was done in 1875 by the authority I serve—alter and adapt houses for the purposes of a hospital. It is interesting also to note that in the section of the Public Health Act quoted, and in the corresponding section (37, I believe,) of the Sanitary Act, 1866, the inhabitants for whom provision may be made are simply "the sick." If the term "infectious sick" had been used, disputes might have arisen as to whether patients suffering from typhoid

fever, cholera, pneumonia, &c., could be properly received into a local authority's hospital. As regards the expression "may," in the section quoted, it has been the subject of much debate, but there is no doubt the powers here given were meant to be used, and that local authorities *are under an obligation* to provide hospital accommodation. The old sewer authority acquired the rights possessed by Local Boards of Health under the Sewage Utilization Act, 1865, and in the following year the sewer authorities were responsible for making hospital provision in the provinces, just as their successors, the local authorities, are now. Still, the word "may" is not synonymous with "must," and local authorities, not making hospital provision for their sick, are not subject to pains and penalties, and cannot be fined and coerced.

The section providing for the recovery of cost of maintenance of patients in hospital is very explicit and complete. Any expenses incurred by a local authority in maintaining in hospital, &c., a patient who is not a pauper, shall be deemed to be a debt due from such patient, and may be recovered within six months after his discharge; or should he die in hospital, from his estate. "Any expenses" may be taken to mean any reasonable expenses, and "maintaining" includes medical attendance, nursing, drugs, &c.—there is no difficulty in interpreting the clause so far, nor till one comes to the word "pauper." It is only expenses incurred in maintaining a non-pauper patient that can be recovered from the patient; thus, wherever it has been sought to give effect to this clause, the question has arisen, who is and who is not a pauper? A pauper may mean simply a poor person, or it may mean a person actually in receipt of parish relief. If the former, then very few of those treated in a local authority's hospital are liable for maintenance charges; if the latter, then an overwhelming proportion are liable. It is perhaps unfortunate that the word "pauper" comes to be used, yet one can easily understand how this happened.

It was doubtless the intention of the legislature that any expenses incurred by a local authority in treating patients in hospital should be recoverable—from the patients if they could pay, if not, from the guardians of the poor. The scheme of the clause is really beautiful. Powers had been given in the previous clause to local authorities to provide accommodation and treatment for their sick inhabitants, and it was foreseen that such powers would not be largely used unless the authority could hope to be reimbursed for outlay on patients. Clause 132 then comes to the support of Clause 131, and says to local authorities, "Any expenses you incur you can recover from the patient, unless he be a pauper, and in that case of course it is

the duty of the guardians of the poor to arrange for his proper treatment, and pay all charges for the same."

No doubt this ingenious clause has had the desired effect, and many a local authority has provided a hospital under the impression that it would be a self-supporting concern, any expenses incurred being recoverable. The experience of a few years suffices to put to flight this delusion. The medical officer is asked to estimate the cost of maintenance, nursing, &c., and he finds it about 4s. per day per patient—this will be the actual expense incurred, exclusive of allowance for wear and tear, and interest on capital sunk. Possibly a start is made by attempting to recover from each patient this charge, the result being that the hospital remains nearly empty and the actual expenses of each patient *per diem* run up to double the estimate. Then wiser counsel prevails and the maintenance charge is fixed at 2s. or 1s. 6d. *per diem*. The authority submits to an annual expenditure, not merely in respect of interest on prime cost, loss by wear, &c., but also in respect of half, or more than half, of maintenance expenses incurred. Even the reduced charge cannot be met in respect of many patients, who are yet not paupers.

Let me cite a case in my own district—three persons belonging to the family of a working artisan, earning 28s. a week, were stricken with an acute infectious disease; without savings and living on his weekly earnings, it is quite obvious this man could not afford to pay 10s. 6d. per week in respect of each of the three persons it was proposed to him to remove to hospital, still he and his could scarcely be termed paupers. Or take the familiar case of a clerk living in lodgings; he may be unemployed for weeks, at all events unemployed during his illness—how is such an one to pay even a moderate maintenance charge? The truth is a large proportion of those received into local authorities' hospitals are too indigent to pay even half the cost of their maintenance, and nevertheless do not deserve the stigma of pauperism. The voluntary support given to hospitals and dispensaries throughout the country is in recognition of the fact that there is a large class who, though not paupers, are unable to pay doctors' fees or for maintenance in hospital. Why should there be this distinction between general hospitals and infectious diseases hospitals? What proportion of patients in general hospitals pay maintenance charges? A very small number. What justification is there, then, for exacting these charges from all patients in infectious diseases hospitals? Really, it would appear as if the general hospital had better warrant for the practice than the infectious diseases hospital. The former may often be short of funds and almost driven to charging its inmates

for maintenance; the latter, on the contrary, meets any deficit by carrying over the sum required from the rates. If a charge be made, though it be but 1s. 6d. a day, it will almost necessarily have to be remitted in many cases; and the disagreeable duty of deciding who is to pay, and who is to be let off, falls on one of the officers of the authority. This is an invidious task, and, however conscientiously undertaken, some injustice will be done—the patient skilled in the arts of the beggar, the best whiner, will escape, while it may be the most needy will borrow the money from the pawnbroker to pay.

I would remark also that the clause throws the burden of the maintenance charge on the patients only. Of course, if the patient be an infant, it falls upon his parents or guardians; but if the patient is in service it does not (as in equity it might have done) make the master liable. I have twice tried to recover from a master, and on both occasions failed. Once the master brought his domestic servant, a minor, in his trap to the hospital, and I thought I could recover from him as her guardian; on the other occasion the patient was a seaman under articles, and I thought the large shipping firm, his employers, would be liable, but they were not. Thus, in the very cases where the hospital really does a service to well-to-do people or firms, the hospital has no claim as against the people served. For surely it is the master who is the most benefited when a hospital relieves him of the danger and the burden of a domestic servant stricken with fever. Had there been no hospital ready to receive her the master would have had to pay for medical attendance and nursing for her at his house.

Then the dividing infectious patients into two classes, and making the sanitary authority responsible for one class and the poor-law authority responsible for the other, is not a wise arrangement. It may be urged that it is an arrangement which existed before the clause under review was thought of. Such a division of infectious cases, no matter how old it is, has little to commend it, and had there been no power enabling a local authority to recover costs of maintaining non-pauper patients in hospital, the questions, What is a pauper? and What class does this or that patient belong to? would never have arisen in connection with the removal and treatment of infectious cases.

Expenses incurred for a non-pauper patient only being recoverable from him, the local authority on receiving notice of an infectious case is tempted, instead of promptly removing it, to enter upon an enquiry as to the patient's social position and means. Indeed, this is just what is commonly done. A case is reported—perhaps an initial case of typhus—the patient's

parents or friends are asked, "Are you content for the youth to be removed to hospital?"

"Yes."

"Can you pay 1s. 6d. a day for his maintenance while in hospital?"

"No—he is an apprentice, earning but 6s. a week, and that will not be paid him while he is ill."

"Can you pay on his behalf?"

"We should like to, but wages are low, and we have many little ones to feed."

"Will you sign this undertaking?—*I agree to pay maintenance charges, at the rate of 1s. 6d. per day, in respect of A.— B.—, during such time as it may be necessary to retain him in the fever hospital.*"

"We are not willing to sign it."

The outcome of this conversation is that the patient's friends are referred to the relieving officer, who, in due course (that is after some hours delay), makes his enquiries.

"Where do you work?" he asks the head of the house.

"At —'s yard."

"What are you earning?"

"24s. a week."

"And the sick lad?"

"He works at the same yard, and has been earning 6s. a week."

"How many children have you?"

"Five, and I have school fees to pay for three of them."

"You have a separate room for the sick lad, I see, and I suppose the mother can nurse him?"

"His mother will take good care of him."

"Have you a doctor?"

"The doctor from the dispensary is seeing him."

"Then I don't know what you want," says the relieving officer. "You're not a pauper. The lad's got medical attendance and nursing, you get his medicine for nothing, you've a separate room for him, and you can pay for food for him out of 24s. a week, I hope."

Accordingly the lad is *not removed*, and remains a source of infection in what may be a crowded district. Other members of the family catch the disease, neighbours catch it, and so it spreads; and ultimately the local sanitary authority and the poor-law authority are both put to a considerable expenditure in vainly endeavouring to check an epidemic that might have been stamped out at the outset for a mere bagatelle.

Or suppose that after the local authority's representative has interviewed the sick man and abandoned him, the relieving officer finds that the patient does come within the definition of

a pauper and sends the parish doctor to him, and the parish doctor has the patient removed to the fever ward at the work-house; the removal is probably not effected till a day or more later than it might have been by the local authority, and this delay means probably increased risk to the patient, and certainly the further exposure of many to infection.

But, some one may say, the Government do not now encourage the guardians of the poor to provide hospitals for infectious cases. It is now recommended that all such hospitals should be furnished and controlled by local sanitary authorities, and that the guardians should arrange with the authorities to receive pauper cases, and pay for their maintenance out of the poor rates. In districts where this official advice has been followed, there will be but one hospital for infectious diseases, and there will be no object in discussing the status of a patient, if the destination of paupers and non-paupers is the same.

My answer is that even in these happily circumstanced districts, the same interminable debate goes on.

The rule as laid down officially is that it is the duty of the guardians to arrange for the proper treatment of every person suffering from infectious disease who is without the means of obtaining such necessaries (including medical attendance and nursing), as he may require, and only when the removal of a patient is merely necessary for the purpose of isolation, and the person is not destitute either wholly or to the extent above referred to, that it devolves upon the sanitary authority to deal with the case. The sanitary inspector calls and practically applies the rule by asking the question—Can the patient or those in charge of him pay 1s. 6d. or 2s. a-day maintenance while in hospital? If the answer is in the affirmative the patient is at once removed; if in the negative those in charge are instructed to make application to the relieving officer, as the guardians will only pay for cases sent in by their own officer. When the application to the relieving officer is successful the patient is sent to hospital, though not till some hours later than he would have been; when it is not successful (as often happens), the patient's friends come back to the sanitary inspector, and the representatives of two public authorities squabble about the patient till advice is received that he is dead—then "the last scene of all," the sanitary officer buries the hatchet while the relieving officer buries the body. Meanwhile, the disease has spread and both authorities are put to charges a hundredfold greater than the few shillings they were unwilling to risk.

Man is only too prone to fight about trifles, and sanitary and poor law authorities and their officers are no exceptions to this

rule; but this unfortunate clause in the Public Health Act (the 132nd) seems specially designed to embroil those who have to give effect to it. What shall we say of it?

"It tutors nature: artificial strife
Lives in these touches, livelier than life."

And how wholly unimportant is the matter in dispute. So long as initial cases of infectious disease are properly isolated, of what consequence is it who bears the cost of their maintenance for a few weeks? Whenever isolation is not practicable at home, get the patient removed as soon as reported—the safety of the community demands this. The question as to who is to pay may be discussed at leisure, i.e., never till after the removal of the patient. If the patient or his friends are willing to pay, there can be no objection to the sanitary authority receiving the money proffered; but there should be no dunning of a patient, or seeking to recover maintenance charges by any legal process. Again, if the guardians object to pay for patients who are obviously paupers, there is no occasion for the sanitary authority to grieve or wax indignant. The whole action of sanitary authorities is taken in the interest of the public health, quite as much when the authorities isolate infectious patients as when they flush sewers or remove garbage. Why should not the cost be discharged from the public rates in one case as in the other?

Truly it is a melancholy spectacle health officers have been called to witness for years past. Here is one of the most beneficent and necessary provisions for checking the spread of infection rendered almost nugatory, just because two authorities have been set by the ears and cannot agree as to which of two accounts certain small payments are to appear in. In my own town the overseers' assessment is accepted as the rateable value by those who gather the borough rates no less than by those who gather the poor rates, and though the districts covered by the two levies are not quite co-terminous, practically both rates come out of the same pockets in the same proportions. Elsewhere, I apprehend, it is not usual to have two assessments, and if it were they would not differ materially. Thus the matter in dispute is commonly a question whether the householder shall pay an $\frac{1}{8}$ of a farthing less poor rate and an $\frac{1}{8}$ of a farthing more borough rate, or *vice versa*. Rather than this scandal shall continue, let the simple rule be adopted of having all public hospitals for infectious diseases free, as surgical and general hospitals usually are. It is doubtless for the advantage of the patient to be comfortably lodged and nursed and treated in hospital, but it is primarily in the interest of the community that the *infectious* patient is

removed to hospital. It would be really profitable to any local community to pay an infectious patient a pound a week to permit himself to be isolated in hospital; and yet when he is willing to go to hospital, and his family are willing to let him go, all sorts of obstacles are placed in his way; and the local authority, in the spirit of a petty tradesman, worries him to pay for his bottle of physic, his bread and milk, and his beef tea.

[This discussion applies to the three preceding papers by Drs.
E. SEATON, J. F. J. SYKES, and F. VACHER.]

The discussion was opened by Dr. GOLDIE (Leeds), who held that it was frivolous to fight about the eighth of a farthing as to who should pay for removal, the Board of Guardians or the Local Authorities. He had given it as his opinion to the Local Authority that it was their duty to remove all cases of infectious disease and discuss the question of payment afterwards.

Dr. A. HILL (Birmingham) stated that in Birmingham they had a voluntary system of notification, and they were liberal enough to offer 5s. for every case that was removed to the hospital, and 2s. 6d. for every case notified to them but not removed. Still that bribe was not sufficient to induce medical men to report cases. He admitted many in the profession made sacrifices, but that was not the case all through. There were some very right-minded men in the profession, but there were some it must be acknowledged who were anything but right-minded.

Mr. H. E. ARMSTRONG (Newcastle) argued in favour of powers being granted for compulsory isolation, and for the compulsory disinfection of houses.

Dr. VERNON (Southport) said that at the town from which he came there had been no difficulty such as that alluded to by Dr. Vacher. He was perfectly at liberty to send any patient suffering from an infectious disease to the hospital, the payment for the case being settled afterwards. Those who could pay, and would pay, were allowed to pay, and those who could not pay were paid for out of the rates. With regard to the question of compulsory notification, he might say that there had been two or three battles royal on the question, and in each case the sanitary authority had been, he was sorry to say, beaten by the medical profession.

Dr. J. W. TAYLOR (Scarborough) took serious objection to the medical practitioner being the one who was compelled to notify infectious

cases, and was of opinion that the householder should be compelled to notify in conjunction with the medical man. He also drew attention to the ignorance of laymen as to the nature of scarlatina, and pointed out that it was the same as scarlet fever. As to disinfection, he mentioned that in Scarborough one of the best known forms of disinfectors is used, and all infected articles are disinfected *free of cost*.

The CHAIRMAN, Prof. F. DE CHAUMONT, mentioned that with regard to the notification of disease, the practice on the Continent, especially in Holland, was to make it compulsory from both householder and medical man.

Dr. MALCOMSON (Middlesboro'-on-Tees) stated that at that town all the ratepayers and their families and servants were admitted free to the fever hospital, and that the Guardians of the poor paid 35s. per week to the Corporation for pauper patients. The fact that a person had had the Union medical man was taken as a proof that the person was a pauper, and the amount was paid cheerfully, because it was felt to be cheaper to carry this out than for the Guardians to have a hospital.

SECTION II. ENGINEERING AND ARCHITECTURE.

ADDRESS

BY BALDWIN LATHAM,

M. INST. C. E., F. G. S., F. S. S., F. R. MET. SOC., &c.

PRESIDENT OF THE SECTION.

IN presiding over this section, which is devoted to engineering and architectural subjects, it is necessary that I should say that I have been requested to address you upon a subject which properly belongs to the Climatological Section, namely, upon the probable influence of ground water on health. This request has no doubt been made in consequence of some observations which have been made in this city by Mr. North, the Medical Officer of Health, who has traced some connection between an outbreak of typhoid fever which occurred here in 1884 and the movements of the subsoil water at that time.

Having devoted much time, during the past eleven years, specially to the study of the question of underground water, and having established and maintained a number of stations for observing the relative height of subsoil water in various parts of the country, and having also collected the past records which are available in this country and elsewhere, I am in possession of facts not easily obtainable, and am able, therefore, to draw some definite conclusions as to the probable influence of ground water upon health.

Turning to what may be called historical records, periods of great drought clearly indicate a low state of the ground water, and in ancient records there are some remarkable references to the influence of drought in producing disease.

In the Volume of Sacred Writ, Zechariah, Chap. 14, v. 17 and 18, the effect of the absence of rain in producing plague is clearly set forth, and in a passage in Revelations, Chap. 11, v. 6, men-