PUBLIC MEDICINE.

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SOME POINTS IN CONNECTION WITH HOSPITALS
FOR INFECTIOUS DISEASE.

DR. H. T. BULSTRODE, Assistant Medical Officer of the South-Western Fever Hospital, London, in introducing the subject, dealt with certain circumstances which impaired the popularity and effectiveness of hospitals for infectious disease.

1. Wooden or corrugated iron huts, which it was impossible to keep warm in winter, put up hastily and imperfectly under stress of an epidemic, and which constantly required, but seldom obtained, repair, were often the only provision made. It might be that the building was of brick, but it consisted, perhaps, of a couple of ill-ventilated cottages situated next door to the cemetery, and presided over by a "Mother Gamp."

2. Occasionally the unpopularity was apparently due to the proximity of the building to the workhouse, and its consequent association with pauperism and disgrace. An excellent instance of the deterrent effects of pauperism was to be found in the history of the Metropolitan Asylums Board. Prior to 1887 a relieving officer's order was necessary in order to obtain admission into the Board's hospitals, and the consequence was that only a very small proportion of those attacked with scarlatina applied for admission. This restriction was in 1887 removed, and since that date a much wider use had been made of the hospital provision.

3. It was undesirable that any charge should be made for admission into the general wards of a fever hospital. Graduated payments produced distinction and jealousies. It was expedient to provide, if possible, separate accommodation for the wealthier classes, but this was best done by means of private wards, for which payment should be demanded. At the London Fever Hospital and the Wardell Convalescent Home a charge of £3 3s. a week was made for such accommodation.

4. It was to be feared that in a large number of fever hospitals the nursing was not first class, and the patients were often entrusted to people who had had little or no special training. There were several reasons for this: the risk to life was considerable; the employment was often of a very temporary character; the social ostracism to which those engaged in the work were subjected was no imaginary evil; and, lastly, the monotony of fever nursing was such that few good nurses seemed to care for a very long experience of it. It was impossible to eliminate all these drawbacks, but much might be done by offering wages and comforts in some degree commensurate to the trying nature of the occupation.

If a justice of the peace could compel a patient to leave his home because he had not proper isolation accommodation, the patient on his side had a right to expect that he should at any rate receive comfortable lodging, good food, and proper nursing, as some sort of compensation for having to leave his home and friends. The success of an infectious hospital could only be measured by the proportion of first attacked cases it was able to tempt within its walls. During a considerable portion of a patient's stay in hospital, he was, approximately speaking, in a healthy state of mind and body, and, in proportion as this was so, the minor restrictions and limitations necessarily imposed upon him were likely to give rise to discontent and grumbling.

While ill in bed with acute fever he was content with his surroundings, but when he was practically, except for infection, well, he needed ample resources of recreation and amusement to diminish the monotony of his exile. For this reason there should, at all fever hospitals, be a recreation ground, and a piece of asphalt for the patients to take exercise on in wet weather. In large towns convalescent homes, such as those attached to the acute hospitals of the Asylums Board, were of course a great boon, while a popular and discreet matron, with a well-trained and active staff under her, was an important element in the hospital's popularity. In many fever hospitals the regulations as regards the visiting of patients were unnecessarily stringent. It could hardly be seriously urged that there was much danger in the visiting of patients suffering from enteric fever, or, if proper precautions were taken, from diphtheria. Even in scarlet fever, in an experi-

ence of three years at one of the largest fever hospitals in the metropolis, he had only met with one case in which there was the least suspicion of a visitor having contracted the disease from a patient. Of course, the visitors were in almost every case adults, and therefore, but little susceptible to scarlet fever, diphtheria, or enteric; and it would be a working basis to exclude all visitors under twenty-one years of age. He stated that the following regulations were in force in the hospitals of the Metropolitan Asylums Board:

Visitors are further advised not to enter the wards in any of the hospitals when in a weak state of health, or in an exhausted condition, but to partake of a good meal before entering the hospitals. They will be required, when in the wards, to carefully avoid touching the patient, or exposing themselves to his breath, or to the emanations from his skin; and will not be permitted to sit on the bed or handle the bedclothes, but will be allowed to sit on a chair by the bedside at some little distance from the patient. Visitors will also be required to wear a wrapper (to be provided by the Board) covering their dress when in the wards, and to wash their faces with carbolic soap and water before leaving the hospital, or to use such other mode of disinfection as may be directed by the medical superintendent. Visitors are strongly urged not to enter any omnibus, tram-car, or other public conveyance immediately after leaving the hospital.

In dealing with small-pox, there was little doubt that visitors should, as far as possible, be absolutely excluded, since it was a most difficult matter to disinfect the clothes and hair, especially of women, so as to prevent the carriage of infection. When visitors were practically excluded it was the more desirable that every facility should be given patients to communicate by letter; an efficient apparatus should be provided for the disinfection of the letters. An ordinary hot-air bacteriological steriliser was perhaps the best and most economical apparatus. In large institutions where a Washington Lyon stove was used, the letters might be disinfected by simply turning the steam into the outer jacket. The removal of the patient from his home to the hospital often afforded an opportunity for the exercise of considerable tact and discretion on the part of those immediately connected with it. A request was sometimes made that the ambulance might call after dark, as its appearance outside a house of business was naturally a serious blow to it, and was calculated to allay the notification of the disease. Requests of this kind should, as far as practicable, be granted. The ambulance should be provided with good springs, rubber tyres, air mattresses and cushions, good ventilation, and facilities for washing and disinfection. Close and ill-ventilated ambulances were not only detrimental to the patient, but a cruel and unnecessary hardship on the nurse or attendant. A basket, under the control of the nurse, containing stimulants and milk, should be provided for the use of the patient on long journeys, while in the winter hot water bottles and foot warmers should be carried.

A somewhat serious drawback connected with infectious disease hospitals was the occasional recurrence of disease in the home of a patient apparently due to, or at any rate intimately connected with, his return from hospital. Cases had come under his notice in which patients, after having been in hospital three, four, five, and in one case eight months, had apparently taken scarlet fever back to their homes on their return thither. In some cases the explanation was presumably to be found in the retention by the mucous membrane of the air passages of infection inhaled during the patient's stay in a highly infectious atmosphere. In others the evidence was in favour of its being due to imperfect disinfection on the part of the sanitary authority, or rather those officials who represented it. An instance would make the point clearer. A notice was sent to the friends of a patient that, on a certain day, their child would be discharged from hospital. Unfortunately, some complication supervened which prevented the discharge, but three or four days from the time when the first notice was sent scarlet fever broke out in the house. In this and parallel cases the explanation probably was the taking out from some box or cupboard of imperfectly disinfected clothes which the child had worn before being taken to hospital. It was a good practice for the medical officers of the hospital to warn the patients that there was some risk in placing a child, fresh from a highly infectious atmosphere, into the same bed with a susceptible brother or sister; and Dr. Hopwood, medical superintendent of the London Fever Hospital, stated that this was the practice he had adopted for some years past. Passing the patients through convalescent homes might do something to mitigate

the evil, but unfortunately these cases sometimes occurred after discharge from convalescent homes for infectious diseases.

In spite of all efforts, it was to be feared that the occasional outbreak of other diseases of an infectious nature in wards devoted to one specific fever could never be completely obviated. There must, from time to time, be imported into fever hospitals cases which were incubating other diseases, such as scarlet fever, measles, or whooping-cough. Much might be done by cultivating an observant spirit amongst the nurses and encouraging them to look for any fresh symptoms. It was most important that the temperature of all patients, even during convalescence, should be taken and recorded at least once daily. The employment and education of intelligent women as ambulance nurses, who would inquire diligently into what history there might be of the recent occurrence of infectious disease in the patient's home, would do something to diminish the risk. In one instance he had prevented an outbreak of varicella in a ward by acting upon the report of the ambulance nurse, who stated that the disease had just recently been present in the patient's house. The patient was isolated, and ten days afterwards came out with chicken-pox.

What, he asked, was the exact value of the medical certificate which certified the disease from which the patient was suffering? It appeared to him that, from a legal point of view, all responsibility must rest with the signer of the certificate, and in the event of a patient wrongly diagnosed contracting the disease for which he was admitted, there could be, assuming the certificate to have been acted upon, no blame to be attached to the authorities of the hospital. In many cases admitted into hospital with a certificate of scarlet fever there were few signs or symptoms to support a diagnosis, the accuracy of which was eventually confirmed by a typical desquamation. In diphtheria the secretion on the fauces might be of a very doubtful nature and yet diphtherial paralysis subsequently ensue. The moral responsibility of the medical officer, however, remained, and in practice the position simply resolved itself into the medical officer exercising his best judgment in the disposal of the cases. In those cases which had the disease for which they were certified or nothing, the evil results of adhering to the certificate, though bad enough, were not very far-reaching; but in the case of a patient certified as suffering from, say, scarlet fever, but really a victim of some other disease, such as measles, it assumed a much more serious aspect, and in the interests of the majority of the patients the case must be excluded from the wards. To return the patient at once in the ambulance was not a proceeding calculated to obtain or retain the goodwill of the general profession, whereas to admit the patient was to submit him and the other inmates to a reciprocal danger.

The answer to the question was the provision of ample and efficient isolation accommodation. Isolation wards were required for cases wrongly diagnosed, for noisy and delirious patients, for those suffering from venereal diseases, and for cases of other infectious diseases which might crop up in the general wards, such as measles, varicella, variola, whooping-cough, mumps, ringworm, etc. Cases in which more than one infectious disease existed at the same time could not be refused admission, yet their admission entailed the sole use of an isolation ward. This fact of the frequent coexistence of infectious diseases was one which had hardly been kept sufficiently in mind in planning fever hospitals, as the demand they made upon the isolation accommodation was really very considerable. The proportion of isolation accommodation to beds in hospital should be a pretty high one.

Dr. E. W. HOPE observed that hospitals for infectious disease were an important link in the chain by which infectious disease was controlled. Their object was to afford prompt and attractive means of isolation of infectious sickness, in order by this means to minimise or suppress such forms of sickness. Hence, in order to ensure full utility, the structure, site, and administration must be such as to ensure the confidence of the profession and the public. They must, moreover, be worked together, with—(1) An efficient system of notification; (2) an appropriate sanitary staff for purposes of routine inspection and investigation, and available in any special emergency; (3) an ambulance service; (4) and also full means of carrying out the requirements of

the Public Health Act, so far as they related to disinfection and cleansing of infected houses and clothing. With these essentials every inducement and facility should be held out to the public to avail itself of the hospital. The result would appear in the diminution of the zymotic death-rate, as well as in the number of cases of zymotic sickness, and consequently in the number of patients requiring to be treated in the hospital. Hence a very much less number of beds would be required than the 1 per 1,000 of inhabitants, and the cost and extent of hospitals for infectious disease would tend to lessen. But it was not wise to have only the minimum hospital accommodation, and it was most undesirable to charge for patients admitted to the hospital. Ratepayers supported the hospital, and ratepayers should have the right to use it. He could not agree that the responsibility for the accuracy of the certificate should rest with the medical man signing it.

Dr. WHITELEGGE thought that the responsibility for removal to hospital was not covered by mere certification in pursuance of the Notification Act. The notification certificate had to be sent even if the patient was dying. Where the certificate was accompanied by a definite statement that the patient was fit for removal, there could no longer be any difficulty. In small-pox, and to a less extent in other isolated diseases too, the notified cases included a serious percentage of mistaken diagnoses, and in small-pox, at all events, it was assuredly not safe to send a notified case to hospital without confirmation of the diagnosis by someone with special experience—be he M.O.H. or medical superintendent of the hospital. As to the question of charges for admission, it had surely now been decided by the experience of all hospitals for infectious diseases; where special indulgences were desired, they should, of course, be paid for. In all other cases the hospitals should be free; and they were not free if charges were even nominally made and then remitted. The institution of such charges brought in a trifling income, at the cost of the greater part of the efficiency of hospital isolation. Whilst so much had been done in large towns to deal with infectious disease, it was a matter of regret that in country districts they had not yet settled the question whether it was desirable to have an infectious hospital at all.

Dr. BOOBYER said that Nottingham had recently been provided with a new isolation hospital, which many of those present had visited on the previous day. The hospital had been completed for twelve months, and notwithstanding the confident prediction of many self-constituted judges that it would never be anything more than an empty monument of its builder's folly, it had, during that brief period, become so popular that no less than 87 per cent. of all the notified cases of scarlet fever had, during the second quarter of the current year, been removed to it without the use of compulsion in any single instance. The Health Committee had done all in their power to make it popular. A code of rules had been adopted regulating the work and conduct of all its inmates and officers. The staff had been very carefully chosen, the nurses, as far as possible, being drawn from the educated classes. The available accommodation in the permanent wards, with an allowance of 2,000 cubic feet to each bed, was insufficient to accommodate all the cases requiring removal. For the time being, therefore, the temporary wards still standing on the enclosure had been brought into use, and an arrangement made by which acute cases could be housed together and provided with 2,000 cubic feet per head of air space. Each case, as convalescence was established, was drafted out into less ample wards. The minimum bed space of any part of the hospital was 1,200 cubic feet, all space above a height of 14 feet being ignored. Six small isolation or quarantine wards for doubtful or other exceptional cases had been provided, and as many as four of these had been in use on one occasion for doubtful cases alone. As an example of an exceptional case, there was at the present time in hospital one in which acute chicken-pox was superadded to unmistakable desquamation after scarlet fever. Dr. Boobyer and his predecessors had alike advised the Health Committee to make no charge for the treatment and maintenance in hospital of ordinary cases, whatever the class to which they belonged. This advice had borne fruit, for no compulsory charge was now made to anyone. No class distinctions were made in the hospital, but a judicious arrange-

ment frequently promoted the comfort and social intercourse of patients. By statistics already published elsewhere Dr. Boobbyer had been able to show that isolation, as now practised at the Nottingham Infectious Hospital at Bagthorpe, had the effect of diminishing the spread of infection through the agency of the persons isolated by more than 50 per cent. Taking 100 primary hospital cases, it was found that some 23 per cent. additional cases occurred in the houses from which they were removed within three weeks of their removal and after their return home, the latter constituting only one-sixth of all. For every 100 home cases the result of a years' experience went to show that nearly 60 per cent. additional ones had to be looked for during the progress of the cases at home. It was interesting to note in the first place that the present hospital mortality (2.5 per cent.) was less than one-third of that occurring among similar cases outside, and in the second that the cause of death in more than half the fatal hospital cases was malignant—that is, intractable—scarlet fever, whereas such death cause was returned in only about one-third of the home cases. Kidney and other complications, fostered by injudicious treatment and exposure, was a far more frequent occurrence at home than in the hospital. Hospital patients were usually kept in bed for three weeks; it was almost impossible to observe such a rule at home. The average duration of stay in Bagthorpe Hospital for all normal cases was some seven weeks and a-half. He had estimated from the office register the number of patients coming to hospital in successive years from houses above a £50 rental, and had discovered that during the past year the percentage of such admissions had risen nearly 100 per cent. compared with similar periods in the past.

Dr. A. H. L., medical officer of health for Birmingham, said that the large diminution of zymotic diseases was attributable in a great measure to the fever hospitals, although, of course, other agencies had been at work. The benefit of such hospitals was that they educated the public to the value of isolation, and much of the prejudice against them had disappeared. Overcrowding an hospital was, of course, a very great evil. There was great difficulty in educating the committee of management up to the point of believing that there was any harm in overcrowding. It was difficult to convince them that if the cubic space was diminished mortality was increased, and there was a marked increase in the severity of the disease. That was particularly noticeable in small-pox. The question of responsibility for the diagnosis and notification of disease was a matter of great importance. He held the view that the medical man who certified the case was to be held entirely responsible for the diagnosis. If he was not an expert, what was he? He was an expert in the practice of medicine, and if, after seeing the patient day after day, he could not diagnose a rash and come to a conclusion as to the true nature of the disease, he could not see that the medical officer of health, dropping in when required, should be expected to be able to do so. He did not think it was fair he should be asked to take the responsibility; if, however, it were meant that the responsibility for the final diagnosis should rest with the superintendent of the hospital, he quite agreed, because there were many variations in the manifestations of diseases. Hence the value of wards in which doubtful cases could be put. There was a difficulty about a medical officer of health stepping in and interfering with the diagnosis of the regular medical attendant—he would be at loggerheads with every practitioner in the town. He (Dr. Hill) would not presume to do so, and when he was requested to do so he always declined. The idea of charging for admission to fever hospitals was exploded. In Birmingham they were willing to accept payment if people were willing to pay, but they never intended to exact it. Payment had been taken from the guardians for pauper cases, but it was seen to be inimical to the interests of the hospital, and it was announced that the hospital was for the benefit of all without charge.

Dr. S. MONCKTON COPENMAN thought that, as an addition to the usual isolation accommodation provided by sanitary authorities, it would be advisable, at any rate in large centres, to make arrangements also for the temporary housing of persons turned out of their homes during disinfection. In a recent epidemic of typhus fever which he had investigated several persons had undoubtedly received infection from friends who had paid them a visit during the performance of

disinfection in their own homes. If this state of things could only be remedied, it was quite conceivable that the extra expense involved would be more than repaid to the authority by the smaller number of cases which it would be necessary to admit to the local isolation hospital.

Dr. GROVES (Isle of Wight) said that if the subject were of interest to the medical officers or health of districts in which isolation hospitals obtained, it was of far greater moment to those who administered districts which had no isolation hospital. In a health resort, for example, there was great liability to the introduction of infectious disease. In such districts it was necessary to make dangerous cases paupers, in order to protect the community from, possibly, an outbreak of small-pox. As to the diagnosis of cases, it was most undesirable that the medical officers of health should not go behind the notification. If a case of chicken-pox were diagnosed as small-pox, much trouble might be caused; but it was better so than that the medical officer of health should interfere. Should he once enter upon that course, there was nothing but trouble before him. The medical officer of health in a district of health resorts had to be especially careful, because there would be some who would vote themselves outside the operation of the Notification Act, and would excuse themselves upon the plea of the trade interests of the particular resort. As to the payment for admission to an isolation hospital, the more reasonable course would be to pay a person suffering from infectious disease to go into the hospital; any way, the sanitary authority should thank the patient for assisting to protect the community by consenting to isolate himself at the expense of the community. As to the cost of isolation hospitals. At Nottingham, for a visit to the isolation hospital of which so many of the section had been indebted to Dr. Boobbyer, and the Chairman of the Sanitary Committee of the Town Council, they seemed to have got hold of the right end of the stick, for, notwithstanding the large outlay, the worthy alderman said the ratepayers would be only too glad if there were no occasion to use the hospital.

Mr. WALTER SMITH (Chairman St. Pancras Health Committee) considered that in doubtful cases it was advisable that the medical officer of health should see the patient if requested by the attending medical attendant, but that it was absolutely necessary that the medical officer of health should be debarred from private practice. He recommended that a resolution should be passed by this meeting to that effect. He advised also that in future the Metropolitan Asylums Board should be altogether separated from the guardians. At present many patients objected to go to these institutions, thinking they would be classified as paupers. He would also recommend that every isolation hospital should have a probationary ward in which doubtful cases could be put until a proper diagnosis could be made.

Dr. MASON spoke of the advantages of hospital isolation, which was essential in carrying into effect the compulsory notification of diseases. In Hull they had erected a modern hospital. Each block was distinct in itself for administrative purposes, affording accommodation for a sister and nurses in charge. Probationary wards were erected to receive patients suffering from diseases of a doubtful character. No charge was made to patients received into the public wards; special rooms were set apart for the reception of private cases, for which £2 2s. per week was charged. The duration of stay in hospital was about eight weeks, and the cost per patient about £5. The responsibility of removal and isolation of patients in hospital devolved upon the medical officer of health, the responsibility of the medical practitioner ceasing after notification for removal to hospital.

Dr. TATHAM, the Chairman, suggested, with respect to the question of responsibility in the diagnosis of infectious disease, that the existing differences both in opinion and practice amongst medical officers of health might possibly be explained by the varying conditions under which these officers severally exercised their functions. Above all things it was desirable, from a preventive point of view, that the early removal of even suspicious cases should be secured; and in order to accomplish this, with reasonable safety to the patient, it was necessary that every fever hospital should contain wards, or preferably a separate block of wards, for the isolation and observation of such cases, apart from the infected parts of hospital. Reference had been made by Dr.

Copeman to the desirability of providing apartments for the isolation of the families of infected patients, pending the disinfection of the infected home. He (the Chairman) might mention that in Manchester, in Leeds, and he thought in other places, such a provision did exist—a house, or houses, being kept ready for this purpose by the sanitary authority. Referring to the new isolation hospital recently erected at Bagthorpe by the Corporation of Nottingham, Dr. Tatham spoke of it in terms of high commendation; both as regards the site, and as regards the design and general arrangement of the hospital.

On the motion of the CHAIRMAN, a cordial vote of thanks was unanimously passed to the chairman and members of the Nottingham Health Committee for their hospitality and kindness in the arrangements they had made for the convenience of the Section, and for the facilities which they had offered the members for the inspection of the new Isolation Hospital at Bagthorpe.

THE NOTIFICATION OF ERYSIPELAS AND PUERPERAL FEVER.

DR. JOHN C. THRESH, medical officer of health Essex County Council, said: Recently, when summarising the reports of the district medical officers of health in the county of Essex, the statistics with reference to erysipelas and puerperal fever attracted my attention. Wishing to compare them with similar statistics for other counties, I was surprised to find how little attention was given to either disease by the county medical officers, for in three county reports only did I find the information required. In no case was any reference made to their relative incidence in various parts of the county. In fact, they were not alluded to at all except in the tables of sickness and mortality. In my own county, I find the district medical officers of health rarely comment either upon the origin or distribution of these diseases. Some have remarked upon the difficulty experienced in getting cases of puerperal fever notified, but the impression evidently is that no good purpose is served by the notification of these diseases, and that they are not worthy of comment. In 1890, I found that the type of disease prevalent in our rural districts was much more fatal than that in the urban districts, the mortality per 100 cases being 9 in the former and 5 in the latter. Last year the difference was still more marked, since the death-rate per 100 cases in the country districts had fallen to 1.8, whilst in the towns it remained as in the previous year. I have not been able to find such marked variations in any other county (*vide* Table). That during different epidemics of

ERYSIPELAS.

Deaths per 100 Cases Notified in Urban and Rural Sanitary Districts in various Counties.

	Urban Districts.	Rural Districts.	Both.
Warwickshire, 1890...	14.8	7.3	11.8
Durham, "...	8.0	11.7	9.7
Yorkshire, W. R., "...	16.0	15.5	15.8
Essex, "...	5.6	8.9	7.0
Essex, 1891...	1.8	8.9	5.1

ERYSIPELAS.

Case-rate and Death-rate per 100,000 Population.

	Urban Districts.		Rural Districts.		Whole County.	
	Case-rate.	Death-rate.	Case-rate.	Death-rate.	Case-rate.	Death-rate.
Warwickshire, 1890	52	8	33	2.5	43	5
Durham, "...	58	5	41	5	48	5
Yorkshire, W. R., "...	32	5	70	11	36	6
Essex, "...	77	4	59	5	67	5
Essex, 1891	74	1½	71	6	73	4
Derby, 1890	—	3	—	7	—	5½
Worcester, "...	—	4	—	3	—	3½
Stafford, "...	—	4½	—	5	—	4½

most zymotic diseases the mortality-rate varies enormously is very well known, if not understood, but I was quite unprepared to find that the mortality from such a disease as erysipelas should vary within such wide limits (1.8 per cent. in Essex Urban, 1891, and 16 per cent. in West Riding Yorks Urban, 1890). Not only does the case mortality vary, but the number of cases notified in proportion to the population differs exceedingly. Thus in 1890, in West Riding Yorks Urban, 32 cases per 100,000 population were notified, whilst in the towns of Essex the proportion was 77 per 100,000. Yet the death-rate in the Yorkshire districts from erysipelas was higher than in Essex. In 1890 also the rural districts in the West Riding had a death-rate from this disease of 11 per 100,000, whilst that for the corresponding portions of Warwickshire was only 2.5, yet in the urban districts of the latter county the death-rate from erysipelas was considerably higher than in the towns of the former. I am anxious to hear any explanation which may be offered concerning these variations. I know that by some it will be suggested that the statistics are valueless, or only prove that in many districts every roseolar blush is notified as erysipelas, and they will urge this as a reason why the disease should not be notified. I do not now incline to this view, for even if we assume that this wholesale notification of roseola accounts for the excessive number of cases in certain districts, it does not account for the fact that the death-rate varies within almost as wide a limit (1.3 to 11 per 100,000 population). These and other interesting facts brought out even by these imperfect tables constitute, in my opinion, a plea for the retention of erysipelas on the schedule of diseases to be notified. It is only by collecting such statistics that these differences are discovered, and by multiplying our observations we may at length obtain a clue as to the cause. That there is some relation between erysipelas and puerperal fever has already been surmised from a comparison of the curves plotted from the respective death-rates for series of years, and from the fact that in certain forms of puerperal fever a streptococcus closely resembling that of erysipelas can be obtained from the tissues and cultivated. The exact relationship of these diseases remains to be ascertained, and may prove to be closer than is usually supposed. If medical officers of health judiciously but thoroughly investigate each case of puerperal fever notified, the results cannot fail to be instructive, and will probably throw a flood of light upon this subject. Reference to the register of cases notified should show at a glance whether a medical man is attending or has recently been attending any case of erysipelas. It is unfortunate that the general medical practitioner evinces an unmistakable objection to notify cases of puerperal fever. This is much to be regretted, since it is a constant source of friction, especially where the medical officer of health is himself in private practice. In many reports which I have examined, I find the only reference to puerperal fever is a brief note explaining that the cases were not notified or were only notified after death. In other reports I find the number of deaths exceeds the number of cases of fever notified. Such omissions vitiate our statistics. It would doubtless be a serious matter to prosecute a medical man for not notifying such a case, but so long as puerperal fever remains scheduled notification should be enforced. In a case with which I am acquainted the accoucheur had in the morning attended a patient suffering from erysipelas. In the afternoon, after changing his clothes and washing his hands in carbolic lotion, he delivered a woman. Within a week she died from puerperal fever. A fortnight later a second patient died shortly after childbirth, death being certified as due to pelvic cellulitis. The woman was stated to have jumped from a chair a short time before her delivery, and it was assumed that she had suffered some internal injury, and that this was the cause of the cellulitis. The symptoms set in the day after delivery. Was this a form of puerperal fever? And this leads up to the question, What is puerperal fever? Is there both a septic and an aseptic form? and are both alike notifiable? If the septic forms only are to be notified, is there any distinct line of demarcation between these and the aseptic form, or do they merge the one into the other by insensible gradations? Is there a traumatic peritonitis or cellulitis which may follow delivery which, though associated with marked febrile symptoms, is yet distinct from any of the forms of puerperal fever, and is therefore

not to be notified? With reference to both puerperal fever and erysipelas, so much remains to be learnt from the notification and investigation of cases, that I am in favour of retaining both on the schedule of diseases to be notified, although the statistics for the first few years will not be very reliable. That continued notification will ultimately result in a decrease in the mortality from both causes I see no reason to doubt. The fact that they have to be notified is teaching the public to look upon them as diseases which are in a great measure preventable; and whilst medical men and midwives pay greater attention to the antiseptic mode of treatment, the patients supplement their efforts by improving the sanitary condition of their homes and their surroundings.

Dr. SERGEANT (Lancashire County Council) recommended the inclusion of erysipelas in the list of notifiable diseases. Experience had shown him that puerperal fever could be communicated by a person suffering from erysipelas, and notification was important to prevent such an occurrence. Erysipelas, again, had frequently a connection with insanitary conditions, and these could be remedied if information were obtained by notification. Certainly the small additional expense to the sanitary authority ought not to prevent erysipelas being notified.

Dr. BARWISE, with reference to the notification of erysipelas, stated that he was decidedly against its inclusion under the Act. Admitting that it was true that puerperal fever might be caused by erysipelas, the same was true of pyæmia, septicæmia, and, in fact, of all septic purulent inflammations. It was also possible for puerperal fever to be conveyed from the poison derived from a cadaveric examination; why not, on the same grounds, make every medical man notify every *post-mortem* examination? It was on record that a practitioner in New York who suffered from *ozæna* spread puerperal fever. Why not notify *ozæna* therefore? The remedy, in his opinion, was the education and registration of midwives, not notification.

THE NOMENCLATURE OF NOTIFIABLE DISEASES.

Dr. WILLOUGHBY, while admitting the difficulty of diagnosing obscure cases, and, indeed, most diseases in the earliest stages, especially of recognising the true nature of cases of anomalous or nontypical characters, insisted on the fact that notification was abused on the one hand, and evaded on the other. Some men engaged in a lower class of practice, notified, for the sake of the fees, every sore throat as diphtheria, or erythema as erysipelas; while others, yielding to the prejudices of their wealthier patients, evaded notification by describing the cases during life, and certifying them after death by names which were either inaccurate, or, if synonymous, were not notifiable. Diphtheria was thus called "croup" or "diphtheritic throat," and even puerperal fever "septicæmia," which by an unfortunate omission was not in the schedule. When fears were by this means allayed, it could not be expected that strict isolation, efficient disinfection, and other precautions would be enforced. Errors of diagnosis, through ignorance or negligence, as reporting small-pox as varicella, or scarlatina as measles, or *vice versa*, led to the spread of the disease on the one hand and the sending of cases of trivial disease to infectious hospitals, endangering the lives of the patients, on the other. To prevent these various abuses, he would have the fee, if retained, reduced to a shilling, which would minimise the temptation to false notification, while he would certainly refuse it in cases of inexcusable error, and impose a fine, not only for neglect to notify, but for sending cases to hospital under erroneous certificates. This would lead men in doubtful cases to call in the aid of others in whose judgment they had confidence, while the medical officer of health, if a competent expert, and not engaged in private practice, might with great advantage to all parties offer his advice freely to all. Much, however, might be effected by a revised schedule, clearly indicating what forms of disease were included in, and what excluded from, the several expressions. Under the one or other group would be placed all ambiguous or equivocal designations, so that notification could not be evaded by the use of names not at present in the schedule, nor except by deliberate misrepresentation could cases be notified that ought not to be. He was strongly in favour of including measles, since its notification enabled the sanitary authority

to arrest outbreaks, and check their spread by isolating the cases in their own homes; but he maintained that hospital accommodation ought to be provided for grave cases occurring among the very poor, since they were attended by a high mortality and were the cause of much blindness. Erysipelas, properly so-called, was always connected with insanitary conditions, and, though it might have been contracted elsewhere, its notification would often lead to the discovery and removal of such defects. Puerperal fever was an unscientific expression; it was a generic term including every form of blood poisoning occurring in the puerperal state, the infective material being derived from without or within, and either simply putrefactive or specifically pathogenic. The word croup should be banished from medical language, indicating, as it did, in popular parlance, any affection of the larynx, diphtherial or catarrhal. The name of cholera should not be allowed save in the event of the importation of the epidemic disease; and such expressions as varioloid retained only in the explanatory clauses—that is, be relegated to oblivion. The revised schedule would be as follows:

Small-pox (including so-called varioloid).

Cholera (Asiatic, not the so-called cholera nostras, cholera infantum, sporadic cholera or cholérine).

Diphtheria, pharyngeal, laryngeal, and nasal (including infectious and so-called diphtheritic sore throat, membranous and infectious croup, but not simple catarrhal, non-infectious, or spasmodic croups).

Erysipelas (traumatic and so-called idiopathic, but not erythematous, without the characteristic doughy swelling of the part).

Scarlatina or scarlet fever.

Typhus fever.

Euteric or typhoid fever, including gastric, infantile remittent, etc.

Relapsing fever.

Continued fever, so-called.

Puerperal septicæmia, or fever of every kind.

N.B.—The names in brackets not to be used at all; but, if included, to be returned under the respective headings.

Dr. WHITELEGGE agreed with Dr. Willoughby in the main, but asked whether the amplification of the schedule, and the introduction of additional technical terms, would not render "householder notification" even more hopeless than it was now. In any case, the suggestion of systematic verification of the diagnosis by the medical officer of health was impracticable; and even if practicable, would be impolitic, since it would at once introduce complications. Small-pox and typhus were now unfamiliar diseases to many practitioners, and the necessary verification would usually take the form of a consultation requested by the notifying practitioner. Dr. Whitelegge had at first doubted the wisdom of including erysipelas and "continued fever" in the schedule, but was now inclined to the contrary opinion, notwithstanding the looseness of the sense in which these terms were used by some practitioners.

Dr. SERGEANT, while agreeing generally with the views expressed by Dr. Willoughby, desired to say that from his experience of notification in Lancashire, dating from 1877, he was satisfied that medical practitioners carried out the duties imposed upon them in a creditable manner; instances of cases being reported for sake of the fee were exceptional. When *bonâ fide* notifications were made, they should be accepted by the medical officer of health, and he ought not to be required to verify the diagnosis. In case of removal to hospital, the medical officer of health should be responsible for the fitness of patient for removal, and, if possible, each case should be previously visited by him after communication with the medical attendant. He objected to the medical man incurring any responsibility in case of the patient being removed. The medical officer of health should be responsible for the fitness of the patient for removal; and, if possible, each case should be previously visited by him after communication with the medical attendant. The fee of 2s. 6d. for notification was fair, and he would not recommend a lower fee. He was further of opinion that medical men should not be deprived of paying patients without some compensation, and this suggestion had been favourably accepted by a committee of a corporation with which he was connected in the early days of notification.

Dr. ALFRED HILL regretted that his experience did not agree with that of Dr. Sergeant, that there was no such a thing as false notification. He was quite certain that he had known many such; he knew of one instance in particular where scores of so-called typhoid cases were notified by one particular practitioner, which on inquiry turned out never to have been confined to bed, and in the course of a few days to

be eating and running about as if nothing had happened. The medical man attending the cases above referred to subsequently left the town, with the result that such cases of typhoid no longer occurred. Numerous cases of common sore throat were reported as diphtheria. There were from the first many reasons for concluding that these were not diphtheria; as was subsequently proved by the course and termination of the cases, and especially by the fact that their mortality was altogether out of proportion to that of true diphtheria. He did not wish to cast any reflection upon the general character of the medical profession, but it would be unreasonable to suppose that there were not some black sheep in the medical as well as other flocks. He could not understand the objection to the intimation on the notification certificate of the "fitness" and "willingness" of the patient for removal to hospital. It was true it was not required by the Notification Act, but as it entailed no trouble on the medical man—indeed, saved him the trouble of being interviewed or of answering subsequent inquiries—and as it saved trouble on the part of the M.O.H. and loss of time, and was of advantage to everybody concerned, including the patient, it seemed to be desirable on every account. In Birmingham such a note was printed at the foot of each notification certificate, and all that the medical attendant had to do was to leave the note unaltered if the case might be removed, and simply to insert the word "not" in the contrary case. He held that it was altogether out of the question that the M.O.H. should be held responsible for the correctness of the diagnosis; this duty must be, as a matter of necessity, imposed on the certifying practitioner, who was to be assumed to be as competent as the M.O.H.; if it were not a necessity, the interference of the M.O.H. would be indignantly resented, and would lead into a sea of trouble and difficulty. As regarded the hardship of removal to hospital of cases which would otherwise be a source of profit to the private practitioner, this contingency was avoided in Birmingham by the permission to every practitioner to attend his cases in the hospital, where he receives every facility for access to and examination of his patient at all times, and his prescriptions were dispensed free of cost.

Dr. GROVES thought it most desirable that some explanatory notes should be affixed to the list of notifiable diseases. It was absurd that there should be hundreds of cases of erysipelas in a year in a comparatively small population. He again protested against the medical officer of health going behind the notification of the medical attendant; it was better that an authority should be put to considerable expense in isolating a case of chicken-pox which was notified as small-pox, than that the medical officer of health should intrude upon the case. As regards the giving and paying for certificates, the medical profession gave a large amount of time and trouble gratuitously for the protection of the education, war, naval and other public departments, to say nothing of insurance and such-like companies, and it was desirable that all certificates in connection with the public health should be paid for.

Dr. MITCHELL WILSON (Doncaster), said he wished to guard the medical officers of health against taking up the position of criticising the diagnoses of the medical practitioner who had notified a case of infectious disease. Their real position ought to be one of mutual consultation when asked; at other times they should accept diagnoses in all good faith. Mistakes occurred, but these were not wilfully made, and very frequently the public safety was more carefully guarded by a doubtful case being reported than by neglecting to report some of these doubtful cases.

Dr. BOOBYER said he thought it best to obtain the notifier's opinion as to the question of removal in any particular case by getting him to signify upon the notification form sent in whether he "approved" or "disapproved" of it. The practice of notification might very well be extended to several other diseases than those now included in most of the schedules. Much could be learnt, and much good could often be done in the way of prevention by its agency in the case even of these diseases. Erysipelas and puerperal fevers might be taken as examples of the class. The additional responsibility which the obligation to notify placed upon the medical man was calculated to have an educating influence upon him. He thought it inadvisable for medical officers of health or their assistants to take upon themselves the responsibility of

deciding upon the diagnosis in ordinary circumstances. After the removal to hospital, however, they were not only entitled but actually under an obligation to separate from others, and subsequently to return to their homes, as soon as possible, all cases in which an erroneous diagnosis had been formed. It became necessary at times to urge upon certain practitioners to exercise, in their own interests and those of their patients, the utmost care in forming a diagnosis.

After some brief observations from Dr. ALDRED, Dr. TEW (Nottingham) said he considered that there was a wide distinction to be made between the conditions under which medical officers of health in large towns and in large country districts were called upon to perform their duties. In the latter they were practically required to assist in the diagnosis of all doubtful infectious cases when requested to do so.

Dr. WATT (M.O.H. Aberdeenshire) wished to ascertain what would be the position of the medical officer of health in case of legal action being raised in consequence of a patient being removed to a hospital on an erroneous diagnosis. Would the medical officer of health be held in no way responsible, and would this be the view held by his board? The relation between the medical officer of health and the general practitioner should be such as was on the previous day well described by Dr. Tatham, and should be undoubtedly aimed at by all medical officers of health.

Dr. MUMBY was glad to say there was no friction between the medical officer of health and general practitioners in Portsmouth as to notification. Medical practitioners not infrequently called upon the medical officer of health to meet and consult upon some cases of a doubtful character before notification had been made. After notification the medical practitioner must take the responsibility of his statutory duty. With regard to continued fever, it was an interesting fact that among the 150 medical practitioners in Portsmouth, only eight had during the last six years notified any case of that disease.

Dr. MANLEY pointed out that there was one Public Health Act in which there was a definition of cholera.

Dr. WILLOUGHBY, in replying on the discussion, alluded to the large proportion of utterly unqualified men who had charge of so-called dispensaries in London.

ON THE INFLUENZA EPIDEMIC OF 1892 IN LONDON.

Dr. F. A. DIXEY said: Since the end of 1889 London has been visited by three successive outbreaks of influenza, each more destructive than its predecessor. The disease has never been entirely absent from London during the time referred to; the three great epidemic waves are nevertheless perfectly well-marked and distinct. I propose to refer to them as the epidemics of 1890, 1891, and 1892 respectively; though the last-named belongs partly to the close of 1891. The first two epidemics are being dealt with by me elsewhere¹; it is the last—that of 1892—which forms the main subject of the present communication.

The epidemic of 1892 ran a more typical course than that of 1891, especially in regard to (1) the rapidity of its rise and decline, and (2) the time of year of its incidence. Like that of 1890, it culminated in the third week of January, whereas that of 1891 reached its height in the third week of May. The great epidemic of 1847-8 was most fatal in the beginning of December.

Table I² gives the number of deaths returned in London week by week during four epidemics as primarily due to influenza. It enables the various outbreaks to be readily compared with regard to their severity and duration, as well as to the time of year of their occurrence.

The number reached by the fatal cases of influenza in the maximum week of 1892 is the highest on record (506). The nearest approach to it is 374, the maximum weekly fatality in 1847, in which number, however, are included cases where influenza was a secondary cause only.

Influence of Meteorological Conditions.—In 1890 mild weather and south-west winds prevailed during the rise and first part of the fall of the influenza mortality; in 1891 the rise of the epidemic coincided on the whole with a rise of temperature,

¹ *Epidemic Influenza*. Clarendon Press, Oxford.

² Derived from the Weekly Returns of the Registrar-General.

but the period of greatest intensity was accompanied by unusual cold. The meteorological conditions that obtained during the epidemic of 1892 are shown in Table II.

TABLE I.—London. *Weekly Deaths from "Influenza" during Four Epidemics—1847-48, 1890, 1891, 1891-92.*

Weeks.	Deaths.	Weeks.	Deaths.	Weeks.	Deaths.	Weeks.	Deaths.
1847. 44	1	1890. 1	4	1891. 11	1	1891. 49	8
45	2	2	67	12	3	50	17
46	4	3	127	13	7	51	19
47	4	4	105	14	3	52	37
48	38	5	75	15	9	1892. 1	95
49	198	6	38	16	10	2	271
50	374	7	30	17	37	3	506
51	270	8	24	18	148	4	436
52	142	9	23	19	266	5	314
53	127	10	24	20	319	6	183
1848. 1	102	11	11	21	310	7	79
2	102	12	17	22	303	8	61
3	89	13	13	23	249	9	34
4	56	14	10	24	182	10	30
5	59	15	7	25	117	11	35
6	47	16	9	26	56	12	20
7	27	17	6	27	40	13	14
8	33	18	2	28	29	14	13
9	18	19	3	29	18	15	7
10	11	20	2	30	17	16	8
11	10	21	1	31	6	17	8
12	16	22	1	32	10	18	11
13	8			33	9	19	10
14	6			34	7	20	4
15	9			35	12	21	3
16	11			36	4		
17	7						
18	3						
19	—						

the materials for which, as for the other tables in this paper, are collected from the "Weekly Returns" and other publications of the Registrar-General's Department at Somerset House.

Table II.—London, 1891, 1892. *Temperature, Rainfall, Force and Direction of Wind, etc., and Mortality from Influenza.*

Week.	Influenza No. of deaths.	Temp. of air.		Rainfall in inches.	Wind.		Humidity (Saturation = 100).
		Average mean daily value in degrees Fahrenheit.	Departure from average of 20 years.		General direction.	Horizontal movement of air. Departure from average of 20 years.	
1891						Miles.	
49	8	44.9°	+ 2.3	0.96	S.W.	+ 1907	83
50	17	40.7	— 0.1	0.51	V.	+ 229	79
51	19	29.1°	— 10.2	0.02	C.	— 1341	93
52	37	43.0	+ 4.5	0.56	S.W.	+ 852	86
1892							
1	95	33.1	— 4.6	0.09	W.	+ 219	80
2	271	30.8	— 7.3	0.01	N.	— 938	84
3	506	37.4	— 1.7	0.13	E. & S.W.	— 959	90
4	436	42.7	+ 2.7	0.11	W.S.W. & S.W.	+ 716	87
5	314	41.5	+ 0.9	0.29	S.W. & W.S.W.	+ 579	81
6	183	43.3	+ 3.9	0.19	N.N.W. & W.S.W.	— 339	86
7	79	30.7	— 8.3	0.56	V.	+ 246	72
8	61	40.9	+ 1.1	0.68	S.E.	— 1039	90
9	34	33.5	— 6.9	0.17	N.E.	+ 294	74
10	30	31.6	— 9.1	0.17	V.	— 561	74
11	35	41.4	+ 0.2	0.32	S.W.	— 281	77
12	20	41.4	— 0.5	0.28	E & N.E.	— 580	86
13	14	42.7	+ 1.6	0.17	N.E. & E.	— 135	63
14	13	53.4	+ 6.8	0.00	N.E. & E.N.E.	— 333	65
15	7	41.3	— 5.9	0.67	N.E.	— 463	75
16	8	47.1	— 1.0	0.20	V.	— 328	72
17	8	45.1	— 3.4	0.55	N.N.W. & W.S.W.	— 181	70
18	11	44.7	— 4.8	0.15	N.E. & N.	— 32	74

It is not easy, from the facts here adduced, to trace much connection between the influenza mortality and conditions of temperature or rainfall. It is, however, worthy of notice that the outbreak of 1892, occurring at nearly the same time of year as that of 1890, but differing widely from it in regard to its severity, was also marked by great differences from the

latter epidemic in point of meteorological accompaniments. The conditions of temperature, rainfall, and force and direction of wind were almost exactly reversed; and it is possible that the fall of temperature, dryness of the atmosphere, absence of rain, and lightness of prevalent winds at the beginning of 1892 may have helped the mortality to reach its extraordinary height.

Effect on the Mortality from other Diseases.—One of the chief characteristics of an influenza epidemic is the effect it produces on the mortality from other diseases. The disorders most conspicuously affected are; as is well known, those of the respiratory system; but others are influenced in an almost equally marked degree. The annexed table gives details of the relation between the mortality due to various causes of death and that attributed primarily to influenza during the course of the 1892 epidemic.

The principal facts are contained in Table III. Besides their rise in the mortality from the respiratory diseases, the augmented fatality of phthisis, diseases of the circulatory system, and whooping-cough is noticeable, as is also the increase in the number of deaths attributed simply to "old age." Another diagram (No. 1) exhibits the dependence of the mortality ascribed to the two main respiratory diseases, bronchitis and pneumonia, on the presence of influenza for the whole period from October, 1889, to July, 1892. It will be seen that in every instance of the prevalence of the latter, the curves representing the mortality from the two former rise far above the average. The peculiar significance of these curves lies in the fact that the presence of influenza as the primary cause of death was not recognised in any of the cases which they represent; otherwise they would have appeared in the Registrar-General's returns under the head of "influenza," and not under that of "bronchitis" or "pneumonia" as the case may be.

An increased mortality from all or most of the causes that have been mentioned characterises all influenza epidemics, and not that of 1892 alone. It is impossible to believe that the invariable coincidence between the rise of these various causes of death and influenza is accidental, and the conclusion seems inevitable that influenza itself is the determining cause, though it does not so appear in the returns furnished to the Registrar-General. This being the case, in estimating the mortality of any particular epidemic it is necessary to allow for the deaths returned under other heads than that of influenza. Computed in this way, the deaths due to the three late epidemics of influenza in London appear approximately as in Table IV:

TABLE IV.—London. *Deaths in Three Epidemics.*

	1890.	1891.	1892.
Deaths from influenza	600	2,200	2,170
Total deaths due to epidemic	2,800	5,800	8,000

The numbers for 1892 are made up as in Table V:

TABLE V. London. *Causes of the Mortality due to the Influenza Epidemic of 1892.*

Cause of Death.	Number of Deaths.
Influenza... ..	2,170
Bronchitis	2,770
Pneumonia	830
Other respiratory diseases	200
Whooping-cough	490
Phthisis... ..	245
Diseases of circulatory system	450
Brain diseases, etc.	230
Old age	175
Other causes	440
Total	8,000

Fatality of Influenza compared with that of Cholera.—Table VI has been framed in order to show the relative fatality of four epidemics of influenza in London as compared with that of the four historic outbreaks of cholera;

TABLE III.—London, 1891, 1892. *Weekly Deaths from Influenza and Other Causes, with Percentage Departures from the Mean of 10 years.*

Week.	Influenza.	Phthisis.	Per Cent. Departure from Mean (10 years).	Bronchitis.	Per Cent. Departure from Mean (10 years).	Pneumonia.	Per Cent. Departure from Mean (10 years).	Pleurisy.	Per Cent. Departure from Mean (10 years).	Other Diseases of Respiratory System.	Per Cent. Departure from Mean (10 years).	Whooping-cough.	Per Cent. Departure from Mean (10 years).	Premature Birth.	Per Cent. Departure from Mean (10 years).	Old Age.	Per Cent. Departure from Mean (10 years).	Apoplexy.	Per Cent. Departure from Mean (10 years).	Epilepsy.	Per Cent. Departure from Mean (10 years).	Other Diseases of Brain and Nervous System.	Per Cent. Departure from Mean (10 years).	Diseases of Circulatory System.	Per-Cent. Departure from Average (10 years).	Enteritis.	Per Cent. Departure from Mean (10 years).	Accidents of Childbirth.	Per Cent. Departure from Mean (10 years).	All Causes.	Per Cent. Departure from Mean (10 years).
1891																															
49	8	137	-19	205	-26	100	-10	5	-6	28	-20	56	+9	30	-25	42	-22	32	-34	8	+31	74	-13	118	-14	8	+21	4	+18	1462	-15
50	17	134	-24	209	-33	97	-15	2	-72	23	-50	71	+45	48	+27	38	-35	40	-21	9	+55	73	-20	125	-8	7	+9	4	+5	1449	-19
51	19	204	+20	355	+11	131	+10	8	+150	49	+12	93	+62	31	-19	40	-29	44	-4	8	+18	61	-35	148	+3	7	-8	2	-33	1771	-2
52	37	258	+41	927	+169	256	+113	9	+27	120	+135	180	+174	45	+15	90	+36	79	+59	12	+30	134	+40	317	+106	10	+5	4	-18	3599	+77
1892																															
1	95	177	-6	740	+82	246	+72	5	-44	79	+47	153	+107	59	+37	80	+14	45	-17	4	-47	91	-14	178	+4	14	+133	9	+100	2679	+31
2	271	238	-22	887	+102	285	+93	3	-58	79	+52	168	+116	56	+30	81	+20	68	+29	9	+22	111	+7	247	+45	5	-4	4	-3271	+57	
3	506	228	+21	1035	+171	317	+123	7	-3	99	+102	170	+122	63	+32	123	+77	69	+44	15	+95	120	+23	254	+57	8	+5	6	+161	3781	+88
4	436	911	+26	844	+146	255	+104	7	-8	73	+49	155	+78	55	+32	119	+92	53	+12	10	+37	162	+66	230	+50	18	+105	11	+182	3355	+78
5	314	186	+5	492	+63	215	+86	9	+64	35	-23	137	+55	36	-11	81	-27	45	-3	8	+8	114	+10	161	+19	10	+43	4	-9	2500	+38
6	183	179	-5	368	+11	140	+16	6	+2	40	-6	104	+9	44	+6	42	-39	50	+6	13	+56	82	-14	141	+6	9	+30	7	+89	2010	+9
7	79	159	-13	259	-18	137	+16	4	-37	39	-34	69	-20	43	+6	44	-19	40	-15	4	-55	82	-20	137	+2	10	+37	7	+32	1693	-6
8	61	189	+2	291	-6	116	-7	8	+38	29	-34	69	-20	43	+5	44	-32	47	+6	8	-99	-	-4	141	-5	14	+87	6	+46	1829	-1
9	34	158	-12	227	-13	114	-1	3	-64	26	-30	67	-19	41	+4	50	-14	36	-23	7	-69	-	-34	128	-7	7	+35	3	-42	1545	-15
10	30	166	-11	288	-13	123	-7	8	+29	29	-34	89	+6	60	+49	51	-2	14	-16	16	+98	100	-9	140	+5	9	+18	5	+11	1808	+4
11	35	181	+1	315	-8	165	+29	4	-38	35	-14	91	+11	59	+53	62	0	53	+15	8	+21	82	-25	168	+13	16	+125	1	-74	1983	+6
12	20	154	-1	256	-17	164	+24	7	+8	29	-29	92	+11	50	+24	46	-31	42	-12	11	+75	100	-5	140	0	13	+76	9	+100	1744	+5
13	14	170	-3	220	-24	168	+34	7	+6	27	-28	30	-8	47	+22	45	-21	37	-22	10	+43	85	-14	177	+29	7	+6	7	+7	1753	-2
14	18	178	-2	200	-20	169	+40	8	+15	22	-42	65	-22	54	+46	55	-1	46	+1	11	+77	114	+12	143	+10	10	+64	3	-3	1812	+5
15	7	147	-15	148	-40	164	+21	7	-2	23	-26	66	-20	48	+24	48	-15	50	+11	12	+43	70	-33	120	-7	8	+29	7	+40	1590	-8
16	8	158	-9	202	-6	143	+18	9	+23	29	-10	68	-24	38	-5	50	-14	47	+10	7	-23	74	-24	132	-2	12	+82	4	+21	1715	+1
17	8	149	-16	138	-34	135	+9	10	+28	23	-23	59	-29	40	+2	39	-27	46	+1	10	+83	94	-2	141	+20	9	+15	9	+125	1819	-3
18	11	173	-	131	-31	135	+14	7	-10	21	-34	59	-27	48	+23	44	-11	33	-26	9	+14	84	-10	124	-7	11	+66	6	+46	1549	-6
19	10																														
20	4																														

there is here given not only the actual number of the deaths but the deaths in proportion to the population. From these it is seen that since the beginning of 1890 the number of victims that have succumbed to influenza in London has absolutely, though not relatively, exceeded the number of those that fell in the great cholera epidemic of 1849.

TABLE VI. London. *Actual Number of Deaths, and Proportion of Deaths to Population in Eight Epidemics.*

Year.	Deaths.	
	Actual Number.	Number in Proportion to Population.
1832 (cholera)	5,275	0.003517
1847-48 (influenza)	5,250	0.002390
1849 (cholera)	13,611	0.005920
1854 "	10,708	0.004280
1866 "	5,572	0.001791
1890 (influenza)	2,800	0.000666
1891 "	5,800	0.001380
1892 "	8,000	0.001860

The Epidemic in its Relation to Age.—It is characteristic of influenza that it leads to little fatality among infants and young children. Different epidemics differ in the extent to which the middle-aged and old are affected respectively. In the 1890 outbreak a very high relative mortality was experienced by persons between the ages of 40 and 60. In 1891 the chief sufferers were those between 60 and 80, and Table VII will show that the same holds good of the epidemic of 1892. This is interesting in relation to the fact that the mortality from pneumonia was relatively more affected in 1890 than that from bronchitis, the reverse being the case in 1891 and 1892. Pneumonia, as compared with bronchitis, is a disease of middle rather than of advanced life, and the fact that it seems to have been a more frequent complication of influenza in 1890 than subsequently no doubt explains the

TABLE VII.—London, 1889 and 1892. *Actual and Percentage Number of Deaths at Different Ages from Influenza and other Causes.* (The numbers for 1889, when there was no influenza, are given for comparison.)

	Ages.							All Ages.
	0-1	1-5	5-20	20-40	40-60	60-80	80-	
<i>Influenza.</i>								
10 weeks: 52nd of 1891 to 9th of 1892, influenza at height.								
No. of deaths	77	108	61	255	568	784	163	2,016
Per cent.	4	5	3	13	28	39	8	100
<i>Pneumonia.</i>								
10 weeks: 52nd of 1891 to 9th of 1892, influenza at height.								
No. of deaths	373	557	78	229	408	396	40	2,081
Per cent.	18	27	4	11	19	19	2	100
1889, first 22 weeks, no influenza.								
No. of deaths	457	612	105	211	310	288	33	2,016
Per cent.	23	30	5	11	15	14	1	100
<i>Bronchitis.</i>								
10 weeks: 52nd of 1891 to 9th of 1892, influenza at height.								
No. of deaths	941	759	56	168	1,132	2,476	518	6,050
Per cent.	15	12	1	3	19	41	9	100
1889, first 22 weeks, no influenza.								
No. of deaths	989	788	51	120	682	1,683	355	4,708
Per cent.	21	17	1	3	15	36	8	100
<i>All Causes.</i>								
10 weeks: 52nd of 1891 to 9th of 1892, influenza at height.								
No. of deaths	4,912	3,982	1,070	2,706	4,960	6,865	1,547	26,042
Per cent.	19	15	4	10	19	26	6	100
1889, first 22 weeks, no influenza.								
No. of deaths	7,231	5,728	1,958	3,916	5,914	7,094	1,585	33,426
Per cent.	22	17	6	12	18	22	5	100

exceptional age incidence of influenza mortality in the first of those years.

The figures given in Table VII afford additional evidence that the bronchitis and pneumonia of the influenza period are not the ordinary bronchitis and pneumonia, for the age incidence is seen to be considerably modified by the presence of the epidemic, notably in the direction of the relative lowering of infant mortality.

Dr. WILLOUGHBY said that the connection between meteorological conditions and cholera was direct, namely, that of temperature and humidity on the microbes in the soil and water. In influenza it was only the indirect influence of weather on the complications following influenza and causing death, it might be, long after. The spread of influenza was certainly wholly the result of personal intercourse, as was well seen in its first invasion of Europe in 1889. When men travelled on foot or by caravan it advanced slowly, when by rail at railway speed. Mountain ranges, such as the Carpathians, arrested or diverted its course, and lines of passenger steamships determined the date of its appearance in North and South America, India, Australia, etc., and notably in India itself where the effects of facilities or absence of intercommunication were forcibly exhibited. In towns it spread most in Government offices, barracks, etc., where large numbers of persons were employed together, and next in shops. In the country farmers were most heavily affected, for though they might live far asunder they crowded together at market once, twice, or thrice a week; the tradespeople led a more secluded life. Subsequent epidemics did not show this, having been due rather to recrudescence than invasion.

Dr. WHITELEGGE said that the variable period of the year at which influenza prevailed in different parts of the kingdom confirmed the view that the season as such had little to do with the outbreak, but it was at least possible that weather conditions, besides influencing the frequency and fatality of complications, might greatly affect the mechanical facilities for spreading infection, especially through air. The secondary waves of mortality from respiratory diseases were most clearly shown by Dr. Dixey's charts. Similar "shadow waves" were to be found in regard to scarlet fever in the mortality from kidney diseases, while respiratory diseases caused increased mortality during epidemics of measles or whooping-cough.

The CHAIRMAN (Dr. Tatham) referred to experience of influenza epidemics in Manchester, and stated that he had undertaken a study of the statistics.

Dr. DIXEY, in reply, said that with regard to Dr. Whitelegge's opinion as to the independence of atmospheric conditions shown by influenza, he agreed that it was a most significant fact that the premonitory rise of bronchitis and pneumonia in 1890 took place in weather that ought, according to general experience, to have led to a greatly diminished mortality from those diseases.

WASTE WATERCLOSETS.

Dr. ALFRED HILL (M.O.H. Birmingham) said: If there is one question which is exempt from dispute or difference of opinion it is that cleanliness and purity are essential to health. The doctrine is not new, for it stands prominent in the system of the Mosaic dispensation, it is presented more or less completely in the teachings and practice of the Greeks and Romans, and it has never been quite lost sight of during even the most degraded portions of the Christian era even when personal filth was exalted by certain fanatical orders of priests into a positive virtue. The whole history of modern sanitary effort is that of contests with filth, which has long been regarded as inseparably bound up with many, and the worst, diseases. Some of these were specially and most appropriately designated by Sir John Simon "filth diseases." These diseases are propagated through the media of air, water, and soil; and the last important inquiry of the Local Government Board by Dr. Ballard into the etiology of the most fatal of all the zymotic diseases of childhood—diarrhoea—is all in the direction of the purity of these media: pure air, uncontaminated water, wholesome food. In the early abolition of the most crying sanitary evils, as cesspits, other gross accumulations of surface filth, impure drinking water, stagnant air vitiated by overcrowding in houses, workshops, mines, hospitals, ships, gaols, and other confined spaces, a

marked improvement was effected in public health, a great reduction of mortality was realised, and a greater duration of life was attained. But latterly there has been somewhat of a lull in sanitary work, with the result that sanitary improvement has not been so marked in the last decennium as in the previous one, with one or two exceptions. I am fully aware that the evils "that flesh is heir to" are not all the outcome of filthy surroundings; some are the result of immoral lives; some are produced by artificial habits and overstrain; and others are the result of infections of a specific kind, which would spread under any circumstances even in a community whose sanitary arrangements and personal habits were above reproach. But even here we do not know how much is due to filth somewhere, and even if filth is not the cause of some diseases, it can hardly be denied that it is a condition which favours their attacks and intensifies their character. While, therefore, admitting that there would be disease if filth were abolished, I contend that it would, under the circumstances, be enormously diminished both in degree and kind, and that we are justified in holding the view that filth is still the great predisposing, if not exciting, cause of the great amount of ill-health existing in communities. It is not my intention to refer to all the filthy conditions surrounding human habitations; they are too numerous. I wish to refer only to those connected with the various methods of dealing with excremental refuse. After long observation I have come to the conclusion that if we are to continue the onward march of sanitary progress, to obtain a higher degree of health, a happier existence, and an extended duration of life, especially in towns, all the methods of interception and retention of excreta and other polluted matters must be abolished, and be replaced by a simple, cheap, and rapid means of conveying them from our midst to a position where they not only can do no harm, but where they may be made to contribute to the benefit of populations. The primary provision for the disposal of excreta is some form of privy or closet. The principal forms are the old ashpit midden, the pail or pan with the use of ashes as in Manchester, or without the use of ashes as in Rochdale, the "Goux," and the earthcloset. I have nothing to say about any of these except to utterly condemn them for use in communities on the ground that they all intercept and retain in our midst what Nature has told us in unmistakable language should be at once removed to a distance, what decency has emphatically condemned, and experience has shown to be a most prolific source of sickness and death. Knowing, as we do, the baneful effects of a large exposed surface of faecal matter fresh and putrid, normal and infective, I would ask: Is it likely that towns can enjoy the highest attainable health while breathing the effluvia and drinking the exudations, however diluted, of such a mass of the most offensive and poisonous matter, intended and made by Nature to be offensive so that natural disgust might prompt its removal or proper disposal, and if not removed allowed to be poisonous, and so reading a sterner lesson to the careless and the ignorant in the low health, the disease, and the death which inevitably result from the disregard of a simple and natural law. If these receptacles were situated always in the free open air at a distance from dwellings, where abundance of air could gain access to them and exert its oxidising influence, they would be less objectionable; but instead of this they are in almost all cases near to houses, pails are frequently only 3 feet from the doors of the houses, while in the case of ashpit middens one of the walls of the dwelling house not uncommonly forms also one of the sides of the pit, absorbing its gaseous and liquid filth and conveying it to the air of the dwelling, contaminating it and the interior of the wall and floor. Not infrequently the liquid filth from the pit flows over the floor and into the foundation. It is impossible to conceive anything more filthy or dangerous. Again, if the surface of these receptacles constituted an area of a limited extent they might be regarded with less apprehension; but, as a fact, the area is enormous, and in a large town amounts to many acres. It appears hard to avoid the conclusion that as long as these and so many other filth conditions are allowed to remain among communities, the contest with disease will be unequal and unsuccessful. The filth diseases so fostered will continue to maintain their ground, and the death-rate will undergo only very slow and very slight diminution. The only method to supplant

SECTION OF DRAINS & CLOSETS.

Diagram 1.

SECTION C D.

Diagram 2.

the existing interception systems is that of water carriage, and this is not new. Ancient Rome is found to have had its water closets, and as we are following her example in conducting abundant and pure water supplies from long distances to our towns, so we cannot do better than imitate her in the use of the watercloset. As a consequence of improved knowledge and greater refinement no other arrangement is admissible for decent houses; but there is no reason in limiting a good system in this manner, and if it is found best for one kind of house it is best for all, receiving only such modifications as the difference of circumstance requires. A water-closet suitable for a high-grade house is of course not suit-

able for the houses of the poorer classes; its too complex, and therefore delicate, mechanism would soon cause it to be broken or otherwise disordered, and the cost of repairs and the consequences of obstruction and damage would be so serious as to render them impracticable. Again, the small dwellings of the lower working classes are not favourable to a closet inside the house. These differences of conditions admit of, and, indeed, demand a closet of a different kind—a closet which, while it replaces the midden and the pail by a water-carriage system, does not require to be placed inside the house, and is so arranged as to dispense with cistern, pulls, cranks, valves, or, indeed, any fittings of a mechanical

Diagram 3.

kind, thus saving much expense; it should consist of parts so strong as not to admit of being broken by the roughest usage; it should be so constructed as to admit of ready access to the drain pipe in case of obstruction; it should involve no cost for water inasmuch as it should be actuated, as its name implies, with the waste water proceeding from domestic use and the rainfall, while from its essential nature it is exempt from the great drawback of an ordinary water-closet of being affected by frost, one of the principal objections to the water-carriage system put forward by the advocates of the interception system. It has another great recommendation to the notice of public authorities who dispose of the sewage as all sewage ought to be disposed of—namely, on the land; it does not involve any dilution of the already weak sewage, and so does not either diminish its manurial value or demand any increase in the area of the sewage farm upon which it is treated. In the year 1886, at the request of my Health Committee, I made a report on the waterclosets, and then suggested for cottage property the use of the waste watercloset, which I had been for some time excogitating, for I felt strongly how desirable it was that some substitute for middens and pans should be introduced in the interests of public health and for the credit of sanitary science. In the following year I read a paper before the Society of Medical Officers of Health in which I described such a closet, which I had tried on a large scale in one long series for the use of thirty-nine cottages. The paper was printed in the *Transactions* of the Society, and in my annual report on the health of the city of Birmingham for 1890, I recurred to the subject, and described and illustrated modifications introduced by Mr. Allen, the builder who had constructed the original closets for me. The two modifications are, first, the substitution of a "tipper" for the automatic siphon flushing tank originally used, which was found to clog from the accumulation of grease, soap, and other solid matters, and to necessitate the occasional cleaning out of the tank, the contents of which, moreover, were offensive; and, secondly, an arrangement at the top of the perpendicular pipe immediately under the seat for preventing the entrance of improper matters which could cause obstruction; it consists of a head piece provided with a slit $2\frac{1}{2}$ inches wide, extending from front to back. The working model in the exhibition will show at a glance the construction and working of the closet. I propose now, in calling your attention to the diagrams, to explain briefly in detail the various parts and features of the closet. Diagram 1 represents a section of premises where the system is in operation, and indicates the point at which

slop water issues from the backs of the houses, two such points only being represented on the diagram. A surface trap on the superficial drain, made to fall from the sewer end to the distal end of the premises is shown. Having reached that point, its direction is either simply reversed so as to continue its course back to the sewer at a lower level—an arrangement which is sufficient where a considerable number of houses are concerned—or, at the turning point, a tumbling cistern or "tipper," is placed in a chamber. This tipper, being supported on trunnions, tips up when nearly full, and delivers an abundant flush of several gallons of water, after which it immediately swings back into its original horizontal position, to be again filled and actuated by a fresh supply of waste water from the superficial drains. Diagrams 1 and 2 show sections of the drains and closets. Under the closet seat is placed a salt-glazed stoneware pipe, the upper aperture of which is oval, and about 16×14 inches in its diameters, the lower aperture is 11×9 inches; this lower opening is received into a collar on a length of pipe which is cylindrical, 22 inches long and 9 inches wide in the deep drain, so that the opening into the horizontal drainpipe is larger than the general diameter of the same. The vertical pipe, running from the closet seat to the deep drain, is so shaped that its posterior wall is perfectly vertical, while its anterior wall, towards the lower end, inclines in a straight line backwards and downwards, causing a narrowing of the lower aperture, to enable it to enter the collar, or flange of the horizontal pipe, which, as I have already said, is 11×9 inches in diameter. This peculiarity in the form of the pipe has for its object the obviation of the soiling of it during use. The narrowing of the pipe, represented at its lower end, is of course not absolutely necessary. The pipes are so thick and strong it is impossible they can suffer injury, except from great and intentional violence. The deep drain may be composed of pipes of either 6 or 9 inches in diameter, and for 8 or 10 feet before the siphon should have a somewhat increased fall, in order to carry everything through it. No siphon should be fixed at a distance of less than 10 feet from the nearest watercloset. A manhole or inspection opening (Diagrams 1 and 3), not less than 3 feet 6 inches $\times$ 2 feet in diameter, is placed at the point of the drain nearest the sewer, enabling any accidental stoppage to be removed without difficulty. The floor of this manhole is provided with a pipe, the upper half of which is removable, so converting it into an open channel; but it is found desirable in these closets to place the upper convex half of the pipe loosely in position on the lower half, as indicated by the dotted line. The object

of this is to prevent an accumulation of paper, or other light substances, at the exit of the floor pipe, which is otherwise liable to occur. It is very desirable to have several manholes on the line of the deep drain; they are constructed at a trifling cost, and are extremely convenient and economical. In case of obstruction of the drain, immediate access to it is obtained on removing the cover, and the drain each way, owing to the introduction of the raking arm can be raked, and any obstructing object cleared away with the least possible trouble, time, and cost. Where the series of closets is extensive, some of the vertical pipes may act as air inlets, others as outlets, causing some degree of nuisance. This result may be prevented by the insertion of a ventilating shaft, connected with the highest point of the deep drain, and running up the side of the house in a suitable position. Diagrams 2 and 3 show the details of the pipes. All pipe-joints are to be made with Portland cement. The superiority of the waste watercloset is becoming very widely acknowledged, and the system is being introduced into many towns. In Nottingham it has been experimentally tried, with, I hear, satisfactory results; in some Lancashire and Yorkshire towns, and many others, it has been already largely adopted, and is about being so by others; in Providence, in America, it has been accepted in consequence of the medical officer there having read a description of it in my annual report. In cases where it has failed to give satisfaction the cause is either the inherently vicious arrangement of the particular form adopted, or the improper laying of the pipes. There are many modifications of the waste watercloset, so that it becomes necessary to point out the advantages or the defects of some of them. Fowler's closet has two glaring defects: its supply of water is too much like a "trickle," and the presence of a bend trap at the bottom of the shaft prevents the feeble stream carrying away the contents. The presence of such bends is also objectionable in the case of a series of closets, for the reason that even with a "head" of water from a siphon tank or a tipper the force of the current becomes so weakened by the obstruction as to be inefficient in the later members of the series, which consequently are never freed from their faecal contents. A bend-trap under the closet is admissible only for single closets supplied with a brisk flush of water. Similarly I object to the slight "dishing" even of the drainpipe under the lower opening of the shaft, for the same reason that a small stream of water is too weak to remove the contents. The feature which I regard as the cardinal one of the form of closet proposed by myself, and which, as far as I know, is possessed by no other, is the absence of any form of trap or dish, which, while it is altogether unnecessary, is unquestionably disadvantageous. I spoke just now of a supply of water so small as to amount only to a "trickle." Now, it is only with such a small supply that my proposed form of drainpipe will efficiently act, and the reason is not difficult to perceive. Faecal matter has a specific gravity very nearly identical with that of water, so that when lying upon a smooth wet surface, with a very slight incline, it is carried away with perfect ease by a very minute current of water; but such would not be the case if it lay in a depression, however shallow. It is unnecessary for me to say that personally I have no pecuniary interest whatever in any form of closet; I desire only that in the public interest the best form should be adopted; and now that attention is being actively drawn to this subject, it appears to me desirable to take advantage of the present occasion when so many medical men and medical officers of health are met together, to give an opportunity for a study and a discussion of the question. If any proof were needed of the importance and interest of the subject, it is furnished by the fact of Dr. Parsons's recently published "Report to the Local Government Board on Slop-closets and Trough-closets." This report may be studied with very great advantage, as it presents a large amount of very valuable information, well arranged and illustrated. The objections most commonly urged against the waste waterclosets are that they are not quite free from odour in some cases, and that they may become obstructed by the introduction of various matters. Now, none but the very best waterclosets are quite free from odour, and neglected waterclosets are quite as bad as the waste or slop-closets; but the same amount of perfection is not demanded in the latter as in the former, because they are simply out-of-

door substitutes for the midden privy and pan, and do not require, therefore, the same degree of purity. Moreover, the odour perceived is generally that of urine, and is no worse than that proceeding from any ordinary urinal. As to obstruction, that is just as easily caused by careless, reckless, or ignorant tenants in an ordinary watercloset as in a waste watercloset, while the manhole connected with the latter enables any obstruction to be removed at the smallest possible cost and trouble. The more recent modification of the single closet has the slit basin placed at a lower level, so as to admit of being itself washed clean at each flush. With experience of the closet there can be no doubt that it will be further improved from time to time. In very low neighbourhoods it would be a great advantage to exercise periodical supervision of the closets; it would entail much less trouble and expense than the present system of removal of pan and midden contents. I leave the subject of trough-closets as outside that of the waste watercloset, because in the first place they are not actuated by waste water, but by fresh; and in the second place, the water required is very large in volume, which is objectionable on the ground of expense and in relation to sewage farms; moreover, they can only be employed where a water supply is "laid on," and they partake considerably of the nature of an interception system, owing to the considerable time which is allowed to elapse between the flushings. I think the verdict upon the system of waste waterclosets must be in their favour, on the triple ground of health, convenience, and economy.

Dr. KERN said that medical officers of health undoubtedly had reason to thank Dr. Hill for having instituted a system which might, with confidence, be recommended as a substitute for the objectionable privy system of excretal removal. Experience of slop waterclosets in various towns in which they had been in operation for a considerable time, went to prove that these appliances might confidently be recommended in cases in which the system was applicable. As regards the particular form of closet to recommend, the speaker had had considerable experience of Duckett's, and he was of opinion that it was not open to the objection mentioned by Dr. Hill.

Dr. MITCHELL WILSON said that all medical officers would agree in according praise to Dr. Hill for bringing forward a design which was a great improvement on the old arrangements. Whilst readily recognising that, he felt bound to say that he scarcely approved of the idea of sloping pipes. He thought it would be better that the pipes should be laid at such a level that they would retain a small quantity of water.

Dr. SIMPSON (Manchester), thought that in the Allen method and in the Duckett closet an objectionable point was that the flushing took place so far below the seat of the closet, so that soiling of the sides of the closet must occur. He thought the flushing should wash all the surface that was filthy.

Dr. GROVES (Isle of Wight) observed that the kind of method used for filth removal must depend upon the character of the sanitary district. If there were sewers into which closets could discharge, it was most desirable that a flushing arrangement should be fixed to them. The ordinary closet for cottages was that with the hopper pan without flushing arrangements usually. If the slops could be admitted at the slit of the hopper with a rush by means of the apparatus of Allen's closet, it would be a great gain in such places, as it was an economical arrangement. In districts where there were no sewers, water carriage of filth was to be avoided, because it necessitated cesspits, which were objectionable where there was no independent water supply. If pan closets were used the flush admitted at the top of the pan kept it fairly clean, or, at any rate, far cleaner than they would be kept by the flush below the pan.

Dr. WHEATLEY (Blackburn) stated that in that town there were 300 or 400 slop waterclosets. Some of them were of the Duckett type, and others were hopper closets, flushed by a hopper beneath the seat. It was found that the powerful objection to these closets was the odour which was always associated with them. The better class working population objected to them, and much preferred the ordinary water closet, whilst in the very poorest districts they were found very frequently to get out of order. For these reasons, and

because Blackburn had a very good water supply, no new slop waterclosets were at the present time being put in.

Dr. WHITELEGGE called attention to the need for periodic renewal and revision of the information given in Dr. Parsons's report. Further experience was being gained, and further improvements introduced constantly, but there was at present no way for any authority desiring to adopt a better system, to find out what had been done since the date of Dr. Parsons's inquiry.

THE CHAIRMAN (Dr. Tatham) also made some remarks, and expressed the opinion that the closets were not suitable for indoor use.

Dr. HILL, in replying on the discussion, said, in regard to the admission of rainfall to the closets, that where the dual system was in use the rainfall would be excluded from the closet, but in Birmingham the sewers carried the rain water as well as the sewage matter. That being so, he thought they were quite justified in dealing with the matter in the manner in which he had suggested. He objected to a trap under the seat. It had its advantages, no doubt, for it stopped foul air; but he objected to it because it was apt to lead to an accumulation in the bend where the flushing was not sufficient. Modifications of the system which he had suggested had been tried in Birmingham but had failed. Flushing would not altogether obviate the difficulty which was experienced. There must also be rubbing and friction. It had been said in the course of the discussion that long shafts were objectionable, but in certain districts long shafts were inevitable. Where they could be used, it was, of course, desirable that short shafts should be employed. He had not a word to say against earthclosets in the country; but it was not with the country he was dealing. They had never contemplated the use indoors of the closets which he had been describing. He looked upon them as a substitute for middens, in which respect they were an enormous improvement. The soiling of the shaft was an objection; but it occurred in neglected waterclosets, which necessarily required some attention, and where it was not given by the users it should be furnished by the scavengers who removed the ashes.

THE CONDEMNATION OF TUBERCULOUS MEAT.

Dr. E. W. HOPE, Assistant Medical Officer of Health, Liverpool City and Port, said: Cattle, pigs, poultry, and rarely sheep, are all liable to be affected with tubercle, but it is in cattle, and more especially milk cows, that tuberculosis is met with. The flesh of the tuberculous animal is affected in varying degrees, and much diversity of opinion exists as to the stage at which the flesh should be condemned. Opinion is practically unanimous that in advanced stages of tuberculosis the consumption of the flesh should be prohibited, not that every observer is prepared to state that its consumption would give rise to specific inoculation, but on the general grounds that the flesh is so deteriorated as to possess no longer the nature, quality, and properties of wholesome nutritious meat. Thus far the position is a simple one, and any practical butcher can recognise when the disease has advanced so far as to prejudice the quality of the meat. Tuberculosis is known by various names, such as "grapes," "wasting," "pearls," and the like, the first term being perhaps the commonest, from the fancied grape-like arrangement of the nodular tuberculous masses frequently found adhering to the chest walls. The most common seats of the disease are the lungs, pleuræ, and other serous membranes; the liver, lymphatic, and other glands are often affected, sometimes the marrow and the nervous system, and it is also alleged that bacilli have been found in the flesh. The extent of the local lesions varies widely; they may be limited to a single nodule, or almost the entire organs mentioned may be invaded, their tissues destroyed by caseous or calcareous masses or by liquefying pulsatious matter. Grape-like aggregations of various sizes attached to serous membranes are extremely common, and the condition left by stripping them away with the costal pleuræ, with a view to conceal the appearances of disease, should at once attract attention and lead to a close examination. The various conditions are all forms of one and the same process, and caused by a microbe which, growing in the tissues, gives rise to the tubercles, and which, by reason of its being thrown off from the diseased animal in quantity, renders the malady a contagious one. The temperature

which is most favourable to the growth of the microbe is that of the ordinary body heat of a warm-blooded animal, say 98° to 100° F. A temperature of or below 32° F. appears to kill it, as does also continued exposure above 108° F. These are points of considerable practical moment, as suggestive of the probable effects of cooking or of refrigeration upon the bacillus. It is regarded as established that the infectious discharges of a tuberculous animal remain actively virulent in this climate for a long time after they have been cast from the body, and stalls and sheds may thus become a source of danger unless thoroughly cleansed. Inhalation appears to be the usual way in which the microbe enters the body, a circumstance which would be anticipated from the frequency with which the lungs are the seat of the disease; on introduction into the blood the disease may spread so rapidly as to constitute acute or general tuberculosis, or on the other hand it may be limited for a considerable time to the point of entry and neighbouring lymphatic glands, which local lesions are frequently the only ones detectable, producing during life no symptom whatever, the animal being slaughtered in prime condition. As the malady progresses, emaciation and weakness become marked, milk diminishes and is poor in quality; when the animal is slaughtered the extensive signs of the disease already described are met with, the flesh is soft, skinny and dropsical, the fat wet and flabby, the carcass in short presenting every sign of unsound meat. A very important and much discussed question is: At what stage is the flesh of a tuberculous animal unfit for human consumption? Some observers contend that the whole carcass should be destroyed if the merest trace of tubercle is discovered, even though the carcass may be otherwise in prime condition. The general practice, however, in this country is to condemn any carcass in which the disease is extensive, or has progressed so far as to cause deterioration of the flesh. In Prussia, where very great care is taken in inspecting meat, the law is to this effect: "The condition of the flesh of a tuberculous animal is to be regarded as dangerous to health when the meat contains tuberculous nodules, or the tuberculous animal has begun to show emaciation; while, on the other hand, the meat is to be regarded as fit for food when the masses of the tubercle only occur in an organ, and in general the beast is well nourished." The French decree says: "The flesh of tuberculous animals shall be excluded from consumption (1) if the lesions are generalised, that is to say, not confined; (2) if the lesions, although localised, have invaded the greater part of an organ, or are by an eruption on the walls of the chest or the abdominal cavity." That the tubercle bacillus may be introduced into the body by swallowing is shown by the fact that tuberculous secretions, mucus, saliva, portions of tubercles from diseased tissues, and cultures of the bacilli have been swallowed by various animals, and some of these animals have subsequently developed the disease. It will be noted that in all of those cases the presence of the bacilli was demonstrable in the tissues swallowed—the most diseased parts were, in fact, carefully selected for the experiments. There is obviously a vast difference between eating masses of tuberculous matter and eating the properly cooked flesh of an animal which is sound except for the presence of, say, a nodule in the lung. In the report of the inquiry of the Departmental Commission appointed by the Privy Council in 1888 to inquire into the subject of tuberculosis, no case of tuberculosis in man from eating the flesh of tuberculous animals was stated, although witnesses were fully interrogated upon this point. Professor Bang, of Copenhagen, thinks that experiments show that the muscular tissue is so unfavourable a nidus for the tubercle bacilli that they do not multiply in it. He is of opinion that the seizure of the meat of every tuberculous animal is too severe a measure, and where the lesion is localised he does not consider that the consumption of the meat is attended with danger.

Dr. SIMPSON said although the flesh of an animal, where tubercle was localised in the lungs, might be healthy, bacilli might be carried by the manipulations of the butcher, and deposited on sound flesh.

Dr. ALFRED HILL said the practice he followed with regard to the flesh of tuberculous animals and the views he held were quite in accordance with those of Dr. Hope. He did not regard the presence of tuberculosis in the lungs or other local organ as rendering the flesh unfit for food. Before condemn-

ing it as unfit, he should require evidence either of ill-health before slaughter, or of a vitiated condition of the meat. Mere inferiority of the meat would not necessarily cause it to impart tuberculosis, but he would then condemn it because of its inferior quality, and as a prudent measure of precaution. It had never been proved, as far as he knew, that the eating of the apparently healthy flesh of an apparently healthy animal, although affected with local tuberculosis, had produced the disease. As long as human tuberculous disease diminished coincidentally with the use of more animal food than ever, and the greater prevalence of animal tuberculosis than ever, he should consider it unjustifiable to condemn such meat out of regard for both the meat trade and the consumer. As to milk from tuberculous cows, it had not been found that tuberculous disease among children was increasing. As soon as proof could be adduced of injury, instead of mere theoretical speculation, he should be prepared to change his views and his procedure in regard to the use of such meat and milk.

Dr. BOOBYER thought it was impossible to adopt the proposal that meat should not be destroyed until tuberculous disease had affected the condition of the whole animal. In Nottingham they followed the rule of destroying animals which were in an extremely emaciated condition indicating disease. There were some cases, however, in which animals appeared to be in a perfectly good condition until they were cut open and the disease was discovered.

Dr. WATT (Aberdeenshire) thought it would be well if the plan recommended by Dr. Hill could be followed, but considered that, for several reasons, it would be unsafe. If any part was affected, the whole carcass should be destroyed. With regard to tuberculous milk, experiments on animals had shown that consumption of milk from tuberculous cows produced tuberculosis. It would be most important to establish a systematic inspection of dairy cows, as carried out in Denmark, to detect tuberculosis at the earliest possible period in the cows. It had been said that the tubercle bacilli could not live in the acid secretion of the stomach, but that did not apply to their spores, which might be absorbed and carried by the lymphatics to the glands.

The CHAIRMAN (Dr. Tatham) contended that the practice of many sanitary authorities in relation to this matter could not be justified. Either tuberculous meat was dangerous or not. He thought it was dangerous, and that therefore every carcass which was tuberculous should be destroyed.

Dr. HOPE, in reply, said that every anxiety was shown by the sanitary authority to protect the public health, and to prevent the consumption of noxious materials as food. Further evidence would be necessary before additional steps could be taken with successful results in regard to the destruction of alleged tuberculous animals.

SIR JOHN ARNOTT has given a cheque for £1,000 to be allocated among the Cork Hospitals.

THE Berlin Academy has voted a sum of 800 marks to Professor Wernicke, of Breslau, towards the expense of the revision of his *Atlas of cerebral anatomy*.

THE NIGHTINGALE FUND.—The report of the Nightingale Fund for the year 1891, which has just been issued, states that ten special probationers, and twenty nurse probationers, were entered on the register of nurses after satisfactorily completing their year of training; twenty-eight obtained appointments, either at St. Thomas's Hospital, or elsewhere. Important changes have taken place in the teaching medical staff, owing to the retirement of Dr. Bristowe and Mr. Croft. Dr. Ord has undertaken to give the course of lectures on medical subjects, and Dr. Seymour Sharkey has accepted the office of instructor and medical attendant. The death of Dr. Bernays, who gave annually a course of lectures on heat, air, water, and diet, is recorded as a great loss to the training school. Sympathetic reference is made to the death of Sir William Bowman, who took an active interest in the school. Miss Vincent, the Matron of St. Marylebone Infirmary, Notting Hill, reports that twenty-three new candidates had been admitted to the training school there, and that many of those who had left the school after the completion of their training had received appointments.

MEMBERS PRESENT AT THE ANNUAL MEETING.

THE following names of members and visitors attending the annual meeting were entered in the books provided for the purpose:

Abraham, P. S., M.D., London
Adam, A., M.D., Boston
Adami, J. G., M.D., Cambridge
Adler, M., L.R.C.P., Hanley
Airling, J. H., M.D., London
Aldred, Henry, L.K.Q.C.P., Manchester
Aldridge, Charles, M.B., Plympton
Alexander, S., L.R.C.P. Ed., Bulwell
Allbutt, T. C., M.D., Cambridge
Allen, Richard G., M.R.C.S., Belper
Allen, H. M., F.R.C.P., Brighton
Allison, J., M.B., Kettering
Alston, Hy., M.B., Trinidad
Anderson, A. R., F.R.C.S., Nottingham
Anderson, Mrs. Garrett, M.D., London
Aplin, Alfred, M.D., Nottingham
Arbuckle, H. W., M.D., Thorne
Arbuckle, John H., M.D., Kilmarnock
Archibald, J., M.D., Loughborough
Armistead, W., M.B., Sheffield
Armytage, F. F., L.R.C.P., Rotherham
Arnison, W. C., M.D., Newcastle-on-Tyne
Arthur, J., L.R.C.P., Windgate
Ashby, H., M.D., Manchester
Ashdown, K., M.D., Lincoln
Ashford, Edwin C., M.R.C.P., Bath
Ashwell, Herbert G., M.R.C.S., Nottingham
Bagshawe, F., M.D., St. Leonard's-on-Sea
Bailey, H. B., M.D., Loughborough
Bailey, T. R., M.D., Bilston
Bain, William, L.R.C.P., Manchester
Balding, D. B., F.R.C.S., Royston
Bamford, C. R., M.R.C.S., Uthoxteter
Banks, Leonard P., L.K.Q.C.P.I., Sutton-in-Ashfield
Bark, J., F.R.C.S., Liverpool
Barker, A. J., M.D., London
Barnes, J. W., F.R.C.S., London
Barnes, W. R., M.D., Lyss
Barr, T., M.D., Glasgow
Barron, G. B., M.D., Southport
Barry, P. J., L.K.Q.C.P.I., Dublin
Barton, G. H., M.R.C.S., Market Rasen
Barwise, S., M.B., Derby
Batchelor, F., M.D., Dunedin, New Zealand
Bateman, Sir F., M.D., Norwich
Bateman, F., M.B., Whitchurch
Batten, R. W., M.D., Gloucester
Beaumont, W. M., M.R.C.S., Bath
Bell, J. H., M.D., Bradford
Bennett, F. W., Leicester
Benson, A. H., F.R.C.S., Dublin
Benthall, W., M.B., Derby
Berridge, R. E., M.B., Sunderland
Berry, Frederick, M.D., Watford
Berry, G. A., M.B., Edinburgh
Berry, H. P., M.B., Grantham
Bevan, W. C. P., M.D., Alton
Beverley, Michael, M.D., Norwich
Bickerton, T. H., M.R.C.S., Liverpool
Bingham, H., M.D., Belfast
Bingham, John, M.D., Alfreton
Birt, George, M.B., Stourbridge
Bishop, E. S., F.R.C.S., Manchester
Black, J. G., Surg.-Capt. M.S., Coleraine
Blackburn, W., M.R.C.S., Nottingham
Blake, W. H., M.B., Harpenden
Blakesley, H. J., F.R.C.S., Leicester
Blandford, J. W., Stockton-on-Tees
Blurton, J. F., M.B., Nottingham
Bokenham, Thos. J., L.R.C.P., London
Bolton, Joseph S., M.B., Nottingham
Bond, C. J., F.R.C.S., Leicester
Boobyer, P., M.B., Nottingham
Booth, G., L.R.C.P., Chesterfield
Booth, P. L., M.R.C.S., Barrow-in-Furness
Booth, T. C., M.R.C.S., Manchester
Bostock, J., M.R.C.S., Costock
Bower, H. E., M.B., Weaverham
Bowman, R. M., M.R.C.S., Ripon
Box, W. H., M.R.C.S., Churchill
Boyce, R. M., M.R.C.S., London
Bradley, W., L.R.C.P., Drogheda
Braidwood, P., M.D., London
Braithwaite, J., M.D., Leeds
Bramwell, Byom, M.D., Edinburgh
Bristowe, J. E., M.D., London
Broadbent, S. W., M.R.C.S., Sunderland
Broadbent, W. H., M.D., London
Bronner, A., M.D., Bradford
Brook, W. F., M.R.C.S., E.D., Fareham
Brookhouse, Joseph O., M.D., Nottingham
Brosnan, H., M.D., Killarney
Brown, George, London
Brown, W., F.R.C.S., Carlisle
Browne, J. W., M.D., Belfast
Browne, L., F.R.C.S., London
Brunton, T. L., M.D., London
Buchanan, H. D., M.B., Thirsk
Buck, C. W., M.R.C.S., Settle
Bulstrode, H. T., M.D., London
Burkitt, J. C., M.D., Leicester
Bush, J. Paul, M.R.C.S., Bristol
Butler, S., L.F.P.S., Stafford
Butlin, Henry Trenham, F.R.C.S., London
Butterfield, Harris, M.R.C.S., Sevenoaks
Buttery, G.P., L.R.C.P., Oldbury
Buxton, D. W., London
Byers, J. W., M.D., Belfast
Byrne, J., F.R.C.S., Londonderry
Cagney, J., M.D., London
Caldwell, R., F.R.C.S., London
Cameron, M., M.D., Glasgow
Campbell, A., L.R.C.P., Navenby
Campbell, C., M.R.C.S., Saddleworth
Campbell, H., M.D., London
Cant, W. J., L.R.C.P., Lincoln
Cardew, H. W. D., M.R.C.S., London
Carter, G. R., M.R.C.P., London
Carter, R. W., M.D., Weymouth
Carline, W. A., M.D., Lincoln
Cassidi, F. R., M.D., Derby
Cathcart, C. W., M.D., Edinburgh
Cattle, Charles, H., M.D., Nottingham
Chambers, J., M.D., London
Champneys, Hy. M., F.R.C.S., Penge
Charlesworth, G. H., M.D., London
Charlesworth, J., M.D., Hanley
Cheadle, W. B., M.D., London
Chicken, Rupert, F.R.C.S., Nottingham
Chidell, Claude C., M.B., Helensburgh
Child, Herbert, M.R.C.S., Seaforth
Childs, C., M.D., Weymouth
Clark, A., F.R.C.S., London
Clark, C. D., L.R.C.P., Sydney
Clark, H. E., M.R.C.S., Glasgow
Clark, J., M.D., Lichfield
Clarke, E. W., M.B., Chesterfield
Clarke, J. C., Bolton
Clarke, J. M., M.D., Bristol
Clarke, W. B., M.B., London
Coates, W. H., M.R.C.S., Melbourne
Cocking, W. T., M.D., Sheffield
Cogan, M. F., M.R.C.S., Northampton
Coghill, J. G. S., M.D.I., Ventnor
Colahan, N. W., M.D., Galway
Collier, J. T., M.D., Lincoln
Collier, S. R., M.D., Wimbledon
Collins, M. Colman, M.D., Nottingham
Cooper, W., M.R.C.S., Sneinton
Copeman, J. M., M.D., London
Corbin, M. A. B., F.R.C.S., Guernsey
Corkery, T., Pinxton
Corner, H., M.B., London
Cornish, Surg.-Gen., W. R., C.I.E., London
Cotman, J. S. E., M.R.C.P., London
Cousins, J. W., M.D., Portsmouth
Cox, F. A., M.B., St. Leonard's-on-Sea

- Coy, John Henry, L.R.C.P.L., Nottingham
Crawford, A. W., M.B., Paisley
Crean, R., M.D., Manchester
Crighton, A., M.D., Brymbo
Cripps, C. C., M.D., London
Cripps, H., F.R.C.S., London
Crocker, H. Radcliffe, M.D., London
Croft, John, F.R.C.S., London
Cronk, H. G., M.B., Repton
Cross, F. R., M.B., Bristol
Cuff, H. E., F.R.C.S., Leeds
Cullingworth, Charles, M.D., London
Cumming, J., M.D., Belfast
Curran, J. J., L.R.C.S., Killeagh
Currie, G. B., M.B., Aberdeen
Cuthbert, C. F., M.R.C.S., Gloucester
- Daniell, G. W., M.R.C.S., Blandford
Davidson, A., M.D., Liverpool
Davies, A. T., M.D., London
Davies, J. H., M.D., Leicester
Davies, T., M.R.C.S., Whittlesea
Davis, Arthur N., L.R.C.P., Ivybridge
Davis, D. L., M.R.C.S., Nottingham
Davis, R., M.R.C.S., Epsom
Davison, James, M.D., Bournemouth
Delépine, S., M.B., Bowdon
Dempsey, A., M.D., Belfast
Denning, E., L.R.C.P., Stow-on-the-Wold
Denton, Edward Ranson, M.R.C.S., Leicester
Dixey, F. A., M.D., Oxford
Doble, W. M., M.D., Chester
Dodd, H. W., F.R.C.S., London
Dodsworth, F. C., L.R.C.P., Gunnersbury
Dolan, T. M., M.D., Halifax
Donovan, Wm., M.D., Birmingham
Douglas, W., M.D., Leamington
Doyle, R. R., M.R.C.S., Oxford
Drage, Lionel, Hatfield
Drake-Brockman, E. F., F.R.C.S., Brig-Surg-Lieut.-Col., London
Draper, J. W., L.R.C.P., Huddersfield
Drew, H. W., F.R.C.S., Croydon
Drysdale, C. R., M.D., London
Dudley, William E., Brigade-Surgeon (retired), Bath
Dunkley, W. W., F.R.C.P., Foleshill
Dunn, W. D., M.R.C.S., Nottingham
- Eagles, W., M.R.C.S., Aylesbury
Earle, W. G., M.R.C.S., Nottingham
Easby, W., M.D., Peterborough
Eastes, George, M.B., London
Eastes, Thomas, M.D., Folkestone
Eccles, S., M.B., London
Eddison, J. E., M.D., Leeds
Eddowes, Alfred, M.D., London
Edge, A. M., M.D., Manchester
Edwards, D., L.R.C.P., Mold
Edwards, J. W., M.B., Wrexham
Elder, G., M.D., Nottingham
Elliot-Blake, H., M.R.C.S., Teddington
Ellis, Richard, F.R.C.S., Newcastle-on-Tyne
Ellistott, Alfred William, M.D., Ipswich
Emmerson, W. L., M.R.C.S., Waltham, Melton Mowbray
Emtage, E. W., M.R.C.S., Bradworthy
Erskine, J., M.B., Glasgow
Esler, R. M.D., London
Evans, E. P., M.R.C.S., Mountain Ash
Evans, Maurice G., M.D., Cardiff
Eve, F. S., F.R.C.S., London
Ewens, John, L.R.C.P., Bristol
- Fardon, I., M.D., Maidenhead
Farrar, J., M.D., Gainsborough
Faulkner, J. T., Stretford
Favell, Richard, M.R.C.S., Sheffield
Fawcitt, T., M.R.C.S., Oldham
Fawcett, F., M.D., South Lincs.
Felce, Stamford, M.R.C.P., London
Fenwick, Edwin H., London
Fernie, E., M.D., Stone
Ffennell, E. B., M.B., Notts
Field, G. P., M.R.C.S., London
Fielden, Samuel, M.D., Shildon
Fielding, J. R., M.R.C.S., Alfreton
Finlay, David, M.D., Bridgend
Finzi, Judah, L.R.C.P., London
Fleming, Robert A., M.B., Edin-
- Fligg, W. M., M.B., Grahamstown, S. Africa
Foreman, T. D., L.R.C.P., Manchester
Foster, Sir Walter, M.D., M.P., Birmingham
Fowler, J. E., M.D., Aberdeen
Fox, Herbert, M.B., Nottingham
Fox, Thomas Colcott, London
Franklin, Geo. C., F.R.C.S., Leicester
Freeland, F. J., M.D., Antigua
Freer, Edward Luke, M.D., Birmingham
Frost, W. Adams, F.R.C.S., London
- Gairdner, W. T. M.D., Glasgow
Galabin, Alfred Lewis, M.D., London
Galloway, Walter, L.R.C.P., Gateshead
Galton, J. H., M.D., London
Garner, J. E., M.D., Preston
Garrard, William Arthur, M.R.C.S., Rotherham
Garstang, W., M.D., Blackburn
Gass, A. B., L.R.C.P., Carrington
Gemmell, T. P., M.B., Airdrie, N.B.
Gentles, R. W., L.R.C.P., Derby
Geraty, T., M.R.C.S., Nottingham
Gibson, C., M.D., Harrogate
Giddings, R. R., M.B., Nottingham
Gilbert, B., M.B., Birmingham
Gilbert, Herbert J., M.D., Gateshead
Giles, O., L.R.C.P., New Sleaford
Godlee, R. J., London
Goff, Bruce, M.D., Bothwell
Goodchild, J. A., L.R.C.P., Bordighera, Italy
Goodfellow, J. A., M.B., Brampton
Goodhart, James F., M.D., London
Goodwin, Arthur G., L.F.P.S. Glas., Liverpool
Gordon, F. W., M.R.C.S., Norwich
Gordon, W., M.R.C.P., Exeter
Gordon-Smith, J., L.R.C.P., Jamaica
Gould, Alfred Pearce, F.R.C.S., London
Gould, John, M.R.C.S., Hatherleigh
Goyder, D., M.D., Bradford
Graham, T., M.D., Belfast
Gramshaw, F. S., M.D., Easingwold
Grant, J. Dundas, M.D., London
Gray, A. E. L., M.B., Sunderland
Gray, C. F., M.R.C.S., Newmarket
Gray, F. J., Walsall
Gray, J. P., F.R.C.S., Nottingham
Greaves, Charles A., M.B., Derby
Greaves, Edwin Hyla, M.D., Bournemouth
Green, E. C., M.R.C.S., Derby
Green, W. E., M.R.C.S., Sandown
Greenhough, V. I., M.B., B.A., Bakenwell
Greenwood, G. S., M.R.C.S., Ossett
Greenwood, J. W., M.R.C.S., Ossett
Griffiths, C. N., L.R.C.P., Cheltenham
Griffiths, Lemuel M., M.R.C.S., Bristol
Griffiths, T. D., Swansea
Grimling, J. C., Birmingham
Grimoldby, G. H., L.R.C.P., Grimsby
Groom, William, M.R.C.S., Wisbech
Groves, Joseph, M.B., Isle of Wight
Gubb, A., M.D., London
Gwynne, Charles Nelson, M.D., Sheffield
- Hackney, John, M.D., Hythe
Haig, A. M.D., London
Hall, A. J., M.B., Sheffield
Hall, F., M.R.C.S., Southampton
Hall, J. G., M.R.C.S., Swansea
Halpin, J. E., L.R.C.S., South Normanton
Hamel, Julius, M.B., Sheffield
Hamill, J. W., M.D., Manchester
Hamilton, T. T., Bury
Hamilton, William, M.B., Boyle
Handford, H., M.D., Nottingham
Hare, C. J., M.D., London
Harger, F. A., M.R.C.S., London
Hargreaves, J. B., F.R.C.S., Leeds
Harley, G., M.D., London
Harley, Vaughan, M.B., London
Harman, William, M.D., Winchester
Harper, H., M.D., Nottingham
Harrison, A. J., M.B., Clifton
Harrison, Charles, M.D., Lincoln
- Harrison, J., L.R.C.P., Bradford
Harrison, J. W., M.R.C.S., Sheffield
Harrison, R., F.R.C.S., London
Harrison, W., M.D., Matlock
Hart, Ernest, Editor of the *British Medical Journal*, London
Harvey, George, L.R.C.P., Wirsworth
Harvey, Henry, M.B., Liverpool
Harvey, Surgeon-Colonel R., I.M.S., India
Hatherly, Henry R., M.R.C.S., Nottingham
Hattton, G. S., M.D., Newcastle
Hawkins, F., M.B., London
Hayes, Richard A., M.D., Dublin
Hayward, T. E., M.B., Haydock
Heath, Richard, M.D., St. Leonard's
Heelis, R., M.D., Nottingham
Hemming, J. H., M.R.C.S., Kimbolton
Henderson, Brown, M.D., Glasgow
Henty, G., M.D., London
Herbert, S. J., M.D., London
Herman, George Ernest, F.R.C.P., London
Hern, John, M.D., Darlington
Herrick, Robert, M.D., Nottingham
Hewetson, H. B., M.R.C.S., Leeds
Hicks, F. J., M.B., Madeira
Higgins, Charles, F.R.C.S., London
Higgins, T. J., M.D., Louth
Hill, A., M.D., Birmingham
Hill, W., M.D., London
Hills, F. F., L.R.C.P., Bristol
Hind, Henry, Stockton-on-Tees
Hingston, W. H., M.D., Montreal
Hitchcock, Charles K., M.D., York
Hobson, J. L., Harrogate
Hobson, L. J., Harrogate
Hodges, Frank H., F.R.C.S., Leicester
Hodgson, John, M.B., Oldham
Hoernlé, E. F., M.B., Edinburgh
Holdsworth, S., M.D., Wakefield
Hollings, Robert, M.D., Wakefield
Holloway, L. F., M.R.C.S., Erchfort
Holman, C., M.D., London
Holmes, J., M.D., Whitefield
Holt, J., L.R.C.P., Castleford
Holt, R. C., F.R.C.S., Burnley
Hope, E. W., M.D., Liverpool
Hopkins, T., M.B., Chester
Horrocks, Peter, M.D., London
Horsfall, J., F.R.C.S., Bournemouth
Horsley, Victor, F.R.S., London
Hough, J., F.R.C.S., Cambridge
Howell, T. M., F.R.C.S., London
Howett, F., M.D., Nottingham
Hume, G. H., M.D., Newcastle-on-Tyne
Hunt, De Vere, M.D., Cardiff
Hunt, J. A., L.R.C.P., Borrowash
Hunt, J. M., M.B., Liverpool
Hunt, L. M.D., Sheffield
Hunter, J. L., M.B., Helensburgh
Hunter, Walter, M.B., Nottingham
Hunter, W., M.D., London
Hunter, W. L., M.D., Pudsey
Hutchinson, C. F., M.D., Monte Carlo
- Iliffe, W., M.R.C.S., Derby
Ince, John, Surgeon-Lieutenant-Colonel (retired) L.M.S., Swanley
- Jackson, A. J., M.R.C.S., Sheffield
Jackson, George, F.R.C.S., Plymouth
Jackson, S., M.R.C.S., Oldham
Jackson, Thomas, M.D., Hull
Jackson, T. V., F.R.C.S., Wolverhampton
Jacob, E. H., M.D., Leeds
Jalland, W. H., F.R.C.S., York
James, W. D., M.R.C.S., Sheffield
Jamieson, J. Anderson, M.D., Arran, N.B.
Jefferies, Horace, M.R.C.S., Bolton
Jeffrey, W., L.R.C.P., Kilsyth
Jenkins, T. W., M.D., Glasgow
Jessop, T. R., F.R.C.S., Leeds
Job, S., M.R.C.S., Newark
Johnson, C. J. B., L.R.C.S., Birmingham
Johnson, D. Williams, L.R.C.S., Edinburgh
Johnson, O., M.R.C.S., Bassingham
Johnson, S., M.D., Stoke-on-Trent
Johnson, S. E., L.R.C.S., Birmingham
Johnson-Alloway, T., M.D., Montreal
- Johnston, A., Surgeon-Lt.-Col., M.D., I.M.S., London
Johnston, R. A., L.R.C.P., Belper
Johnston, Thomas, M.R.C.S., Belper
Johnston-Lavis, H. J., M.D., Harrogate
Jones, Evan, M.R.C.S., Aberdare
Jones, H. L., M.D., London
Jones, Thomas, M.R.C.S., Mansfield
Jones, W., L.R.C.P., Ruabon
- Kanthack, A. A., M.B., Cambridge
Kay, W., M.D., Sheffield
Keetley, C. B., F.R.C.S., London
Kelynaek, T. N., M.B., Manchester
Kennedy, W., L.R.C.S., Northampton
Kerr, N., M.D., London
Kershaw, A., L.R.C.P., Farnworth
Keyworth, G. H., M.D., Wem
King, Henry W., M.D., Chester
King, J. B., M.B., Brighton
Kingdon, E. C., M.B., Nottingham
Kingsley, G. C., M.D., Blackpool
Kitchen, C. F. H., L.R.C.P., Manchester
Knight, J. T., Nottingham
Knox, J., M.D., Bakewell
- Lamb, W., M.D., Nottingham
Lane, Hugh, M.R.C.S., Bath
Lang, G. H., M.D., London
Laurie, Robert, M.D., Derby
Lawford, J. B., F.R.C.S., London
Lawrence, James, Darlington
Lawton, Herbert, M.D., Poole
Lee, C. A., M.D., Hull
Leech, D. J., M.D., Manchester
Lees, David B., M.D., London
Lees, W., M.R.C.S., Chester
Leigh, T. D., M.R.C.S., Liverpool
Leslie, W. M., M.D., London
Lewis, W. Bevan, Wakefield
Liddell, J., M.D., Harrogate
Lindow, Albert, M.R.C.S., Plumstead, S.E.
Lindsay, J. A., M.D., Belfast
Lindsay, James M., M.D., Derby
Lister, Edward, L.R.C.P. Ed., Leamington
Little, E. Muirhead, F.R.C.S., London
Little, J. F., M.B., London
Littlewood, H., F.R.C.S., Nottingham
Littlewood, Joseph, M.R.C.S., Nottingham
Lloyd, Jordan, F.R.C.S., Birmingham
Lothouse, Surgeon-General R. C., London
Longmore, M. M., M.R.C.S., Southampton
Lorimer, George, M.D., Buxton
Lowson, David, M.D., Hull
Lund, Edward, F.R.C.S., Manchester
Lyons, Richard T., M.D., Rugby
Lyth, E. R., M.B., Nottingham
- McAldowie, Alex., M.B., Stoke-on-Trent
Macarthur, A. J., M.D., Edinburgh
Maccall, Thos., M.D., Southport
McCaw, J. Dysart, F.R.C.S., London
McClure, Henry W., M.D., Cromer
Macdonald, J. A., M.B., Grantham
Macdonald, J. A., M.D., Taunton
Macdonald, T. R., M.B., Torquay
McFarland, B., M.D., Lincoln
Macfie, C., M.D., Bolton
McGeagh, William, M.D., Liverpool
MacGrath, J. J., L.R.C.P., Dublin
Macintyre, John, M.B., Glasgow
Mackay, Geo., M.D., Edinburgh
Mackenzie, A. F., M.B., Nottingham
Mackenzie, D. J., Glossop
Mackenzie, James, M.D., Burnley
Mackenzie, Wm. G., F.R.C.S., Belfast
Mackey, E., M.D., Brighton
Mackie, John, L.R.C.P. Ed., Lowdham
MacKinlay, J. G., F.R.C.S., London
McKinney, S. B. G., F.R.C.S. Ed., London
MacKlin, T. Thornton, M.B., Scilly Isles
McNicoll, E. D., F.R.C.S., Southport
Macphail, S. K., M.D., Rotherhithe
Macpherson, J., M.B., Ladbroke
Macpherson, J., M.B., Manchester
McVittie, Robert, M.D., Dublin

Madden, T. More, M.D., Dublin
 Malr, L. W. D., M.D., London
 Manley, H., M.D., West Bromwich
 Mann, A., M.D., Chester
 Mapother, E. D., M.D., London
 Marsh, L., M.D., Lincoln
 Marshall, C. D., F.R.C.S., London
 Marshall, L., M.D., Nottingham
 Martin, Sidney, M.D., London
 Mason, T. Wright, M.B., Hull
 Masters, John A., M.D., London
 Mathieson, A. Lewis, M.B., Sheffield
 Matterson, Robert T., L.R.C.P., Newark
 May, B., F.R.C.S., Birmingham
 Megginson, Mowbray, M.R.C.S., Scarborough
 Melland, F., M.R.C.S., Manchester
 Menzies, J. Herbert, M.R.C.S., London
 Merson, John, M.D., Hull
 Middleman, J., M.B., Edinburgh
 Mickie, H., M.B., Nottingham
 Mickie, W. J., M.D., London
 Millar, James, M.D., Nottingham
 Milne, J., M.B., Sheffield
 Mitchinson, G., M.R.C.P., Lincoln
 Moffat, D., M.B., Glasgow
 Monk, H. G. H., M.R.C.S., Shrewsbury
 Moon, G. D., L.R.C.P. Ed., Derby
 Moore, E. A., M.D., Leicester
 Moore, F. F., L.R.C.P., Derby
 Moore, Sir William, K.C.I.E., Surg.-General, London
 Moore, W. Withers, M.D., Burgess Hill, Sussex
 More, James, M.D., Rothwell
 Morgan, M., M.B., Adelaide
 Morison, R., M.B., Newcastle-on-Tyne
 Morris, J. E., M.D., Bishop Stortford
 Morris, G., M.R.C.S., Skelmersdale
 Morse, T. Herbert, F.R.C.S., Norwich
 Morton, C. A., F.R.C.S., Bristol
 Morton, T. H., M.D., Sheffield
 Mott, Frederick W., M.D., London
 Mounsey, G. H., M.B., Lincoln
 Moxon, William, L.R.C.P., Matlock
 Muir, W. M.D., Kirby Moorside
 Muir, Robert, M.D., Edinburgh
 Muir, William, M.B., Glasgow
 Mullet, T. C., Nottingham
 Mumby, R. H., M.D., Southsea
 Murphy, James, M.D., Sunderland
 Murray, George R., M.B., Newcastle
 Mutch, F. R., M.D., Nottingham
 Mutha, D. J. Chowry, M.R.C.S., Ilford
 Napier, A. D. Leith, M.D., London
 Neale, J. H., M.B., Leicester
 Neech, J. T., L.R.C.P., Tyldesley
 Neilson, H. J., M.D., Nottingham
 Nesfield, S., M.D., Manchester
 Nevill, Thomas, M.D., London
 Newcombe, F., M.R.C.S., Ancaster
 Newman, W., M.D., Stamford
 Newton, George, M.R.C.S., Dukinfield
 Nicholson, R. H. B., M.R.C.S., Hull
 North, T., M.B., Hull
 Norton, E., M.D., Folkestone
 Nuttall, A. E., M.B., Nottingham
 Oakley, John, M.R.C.S., Halifax
 O'Callaghan, M. G., M.D., Brailford
 Odell, W., F.R.C.S., Torquay
 Okell, J. B., M.R.C.S., Nottingham
 Oliver, T. M.D., Newcastle-on-Tyne
 O'Neill, H., M.D., Belfast
 O'Neill, William, M.D., Lincoln
 Osler, W., M.D., Baltimore
 Oswald, J. M. J., M.D., London
 Owen, Isambard, M.D., London
 Owen, J. L., M.R.C.S., Sheffield

Patterson, A. E., M.B., Dartford
 Patton, Alex., M.B., Finglas
 Paul, E. W., M.R.C.S., Nottingham
 Pearcey, P., M.B., Sunderland
 Pearce, Frederick, M.D., Southsea
 Pegge, W. J., M.R.C.S., Beeston
 Pegler, L. H., London
 Penberthy, W., M.R.C.S., Nottingham
 Penny, Dep. Surg.-Gen. J. C., London
 Percival, A. S., M.B., Newcastle-on-Tyne
 Perry, S. H., L.R.C.P., Birmingham
 Philipson, G. H., M.D., Newcastle-on-Tyne
 Phillips, S., M.D., London
 Philpotts, E. P., M.D., Bournemouth
 Pierce, Bedford, M.D., London
 Picher, W. J., F.R.C.S., Boston
 Pinkerton, Chas., M.D., Southport
 Polson, G. Y., M.B., Southwell
 Pope, E., M.R.C.S., Tring
 Pope, F. M., M.B., Leicester
 Porter, F. C., M.R.C.S., Nottingham
 Pott, F. H., M.D., Bournemouth
 Potter, H., M.R.C.S., Ilkeston
 Powell, Evan, M.R.C.S., Nottingham
 Power, D'Arcy, M.B., London
 Powne, B. L., M.R.C.S., Chard
 Praeger, O. R., M.D., Brighton
 Pratt, Alfred, M.D., Lincoln
 Pratt, R., Leicester
 Price, William, M.B., Cardiff
 Pringle, Robert, M.D., Brigade-Surgeon, London
 Pryce, Thos. D., M.R.C.S., Nottingham
 Putsey, W. H., M.D., Derby
 Pye-Smith, R. J., F.R.C.S., Sheffield
 Raley, Surg.-Major John, Bedford
 Ramsden, H., M.B., Dobcross
 Rand, John, F.R.C.S., London
 Rankin, James, L.F.P.S.G., Kilmarnock
 Ransom, W. B., M.D., Nottingham
 Ransom, W. H., M.D., Nottingham
 Ratcliffe, J. R., M.B., Birmingham
 Rayner, H., M.D., London
 Reeves, H. A., London
 Reid, Surg.-Capt. J. H. M.S., Rothwell
 Rentoul, R. R., M.D., Liverpool
 Rhodes, James, Glossop
 Rice, W. R., M.D., Coventry
 Richards, J. E., L.R.C.P., Huddersfield
 Richards, Joseph P., M.R.C.S., Ealing
 Richardson, W., M.D., Isle of Man
 Ridden, B., M.R.C.S., Canterbury
 Ringrose, E., L.R.C.P., Newark
 Ritchie, James, M.B., Oxford
 Roberts, James, M.B., Nottingham
 Roberts, R. J., M.B., Lowestoft
 Robertson, C. M. D., Birmingham
 Robertson, J. A., Stilton
 Robertson, R., M.D., Ventnor
 Robertson, W., M.D., Newcastle-on-Tyne
 Robinson, W. T. G., M.D., Poole
 Robson, A. W. M., F.R.C.S., Leeds
 Roddick, T. G., M.D., Montreal
 Rolston, John, M.D., Devonport
 Roper, W. R., M.D., Cambridge
 Ross, J. A., M.D., Folkestone
 Rothera, F., M.D., Beeston
 Roulston, R. J., M.D., Newtown Stewart
 Rowell, George, F.R.C.S., London
 Ruffer, M. A., M.D., London
 Rugg, G. P., M.D., London
 Russell, A. P., M.B., Lincoln
 Russell, W., M.D., Edinburgh
 Ruxton, W. L., M.B., Sheffield
 Rygate, D. J., L.R.C.P., Cambridge
 Rygate, J. J., M.B., St. Leonard's
 Rygate, J. R., L.R.C.P., Bridgewater
 Rygate, R., L.R.C.P., Banbury
 Ryan, S., L.R.C.P., Sheffield
 Sandford, A. W., Cork
 Sandwith, F., M.R.C.S., Cairo
 Saundby, Robert, M.D., Birmingham
 Savill, Thos., Thos., M.D., London
 Scowen, J. S., M.D., Derby
 Secfield, H. C. L., M.B., Netherfield
 Scott, A. W., M.D., Woodhouse
 Semon, Felix, M.D., London
 Sergeant, E., L.R.C.P., Preston
 Serres, J. J., Loughborough
 Sharp, J. A., L.R.C.P., Derby
 Sharpe, W. C., M.B., Matlock
 Shea, J. G., L.R.C.S., Chesterfield
 Sheen, Alfred, M.D., Cardiff

Shives, John, M.D., Liversedge
 Shuttleworth, G. E., M.D., Lancaster
 Simpson, H., M.D., Manchester
 Sinclair, David, M.B., Bristol
 Smith, A. M., M.D., Glasgow
 Smith, E. G., Birmingham
 Smith, Heywood, M.D., London
 Smith, J., M.B., Radcliffe-on-Trent
 Smith, J. Priestley, M.R.C.S., Birmingham
 Smith, J. W., M.D., Ryton-on-Tyne
 Smith, L. G., Tottenham
 Smith, Noble, F.R.C.S. Ed., London
 Smith, P. B., M.D., Aberdeen
 Smith, W., M.D., London
 Smith, W., M.D., London
 Snell, Enoch, M.R.C.S., Nottingham
 Snell, Simon, Sheffield
 Snook, S. F., M.R.C.S., Weymouth
 Snow, H., M.D., London
 Somer, James, M.R.C.S., Broadclyst
 Somerville, John, L.R.C.P., Blithley
 Southcombe, A. G., London
 Southern, J. A., M.E.C.S., Derby
 Spanton, W. D., Hanley
 Spence, W. J., L.R.C.P., Leicester
 Spencer, H. R., M.D., London
 Spicer, Scanes, M.D., London
 Spowart, T., L.R.C.P., Sheffield
 Sproatt, W. J., M.D., Beeston
 Stafford, W., M.B., Nottingham
 Stamp, W. D., L.R.C.P., Plympton
 Stanger, Wm., F.R.C.S., Wakefield
 Stanfield, R. K., M.B., Sutton
 Stark, N., M.B., Glasgow
 Stear, H., M.R.C.S., Saffron Walden
 Steele, S. T., M.R.C.S., Morley, Leeds
 Stephen, G. N., M.R.C.S., Cyprus
 Stephens, Edward, L.R.C.P., Ilminster
 Stephenson, A., M.D., Nottingham
 Stephenson, Sydney, M.B., London
 Sterling, R., L.R.C.P., Stoneyford, co. Kilkenny
 Stevens, G., Bury St. Edmunds
 Stevens, W. Goldie, L.R.C.P., Renfrew
 Stevenson, George, M.D., Stretford
 Stewart, James, F.R.C.P. Ed., Clifton
 Stewart, Jas., M.D., Montreal
 Stewart, Donald, M.D., Nottingham
 Stewart, R., M.R.C.S., Leicester
 Stiles, H. J., M.B., Edinburgh
 Stockman, Ralph, M.D., Edinburgh
 Stoker, G., F.R.C.S., Dublin
 Strachan, John, M.D., Dollar
 Street, A. F., M.D., Westgate-on-Sea
 Surveyor, N. F., M.D., Bombay
 Sutherland, H., M.D., London
 Sutton, Frederick, M.R.C.S., Gainsborough
 Sutcliffe, J., Stalybridge
 Swain, E., M.R.C.S., Hitchin
 Swain, J. M., M.R.C.S., Long Clawson
 Sykes-Ward, A., M.D., Nottingham
 Symes, W. S., L.R.C.P., Chesterfield
 Symonds, C. J., London
 Symson, E. Marsh, M.D.
 Tait, Lawson, L.R.C.P. Ed., Birmingham
 Tapson, J. A., L.R.C.P., London
 Tate, W. B., M.D., Nottingham
 Tatham, John, M.D., Manchester
 Taylor, C. H., M.B., Derby
 Taylor, C. V., M.D., Nottingham
 Taylor, Frederick, M.D., London
 Taylor, G., M.R.C.S., Mattesall
 Taylor, H. Owen, M.D., Nottingham
 Taylor, J., F.R.C.S., Chester
 Taylor, J. M., L.R.C.P., Burslem
 Teale, T. P., Leeds
 Tew, J. S., M.D., Nottingham
 Thimbleby, John, F.R.C.S., Spilsby
 Thomas, G. Danford, M.D., London
 Thomas, Jabez, F.R.C.S., Swansea
 Thomas, R. H., M.R.C.S., Istock
 Thomas, W., M.B., Birmingham
 Thompson, J., M.R.C.S., Nottingham
 Thompson, J. C., M.B., Galveston, Texas
 Thompson, J. Roberts, M.D., Bournemouth
 Thompson, J. T., M.B., Cardiff
 Thompson, M., L.R.C.P. Ed., Dorchester
 Thompson, W., F.R.C.S., Leeds
 Thomson, G., M.B., East Retford
 Thomson, H. A., Edinburgh
 Thomson, J. F., Felling-on-Tyne

Thresh, J. C., Chelmsford
 Tibbles, J. T., M.R.C.S., Melton Mowbray
 Tibbles, W., M.R.C.S., Nottingham
 Tidey, S., M.D., Montreux, Switzerland
 Tobin, T. J., M.D., Ilkeston
 Tobin, W., F.R.C.S., Halifax, Nova Scotia
 Tosswill, L. H., M.B., Exeter
 Travell, J. W., M.B., Nottingham
 Treasure, W. B. C., M.R.C.S., Cardiff
 Tresidder, W. E., M.B., Nottingham
 Trevelyan, E. F., M.D., Leeds
 Trouton, G. W., M.B., Hereford
 Truman, C. B., M.D., Nottingham
 Tubby, A. H., F.R.C.S., London
 Tuckey, C. L., M.D., London
 Tuke, D. Hack, M.D., London
 Tuke, J. B., M.D., Edinburgh
 Turner, D., M.D., Edinburgh
 Turner, F. C., M.D., London
 Tylecote, J. H., M.D., Stone
 Tyson, W. J., M.D., Folkestone
 Urquhart, R. R., M.D., Perth
 Usher, J. F., M.D., Melbourne
 Vinrace, Dennis, M.R.C.P., London
 Vinrace, John, M.D., Birmingham
 Walker, Benj., M.D., Kirkby-Stephen
 Walker, D. J. G., M.B., Lincoln
 Walker, S., F.R.C.S., Leeds
 Walker, J. B., M.D., Huddersfield
 Walker, J. S., M.D., Hanley
 Walker, N., M.D., Edinburgh
 Walker, W., M.D., Glasgow
 Wallace, R. S., L.F.S., Manchester
 Walsham, W. J., F.R.C.S., London
 Walter, W. H., M.D., Nottingham
 Walter, W., M.D., Manchester
 Warburton, E. S., Treherbert
 Ward, A. O., M.D., Tottenham
 Warden, C., M.D., Birmingham
 Waring, Alfred, M.B., Okell, Nottingham
 Waring, F. J. A., M.R.C.S., Brighton
 Warner, Francis, M.D., London
 Watkins, J. W., M.D., Newton-le-Willows
 Watson, J., M.D., Manchester
 Watson, James, M.B., Nottingham
 Watson, T. A., M.B., Sunderland
 Watt, J. F., M.B., Aberdeen
 Weatherley, L. A., M.D., Bath
 Webb, G. F., M.R.C.S., Dawlish
 Webb, Henry L., M.R.C.S., Cheddar
 Webster, T. J., M.R.C.S., Merthyr Tydvil
 West, S., M.D., London
 Westwood, H. O., L.R.C.P., Bingham
 Wheatley, J., M.D., Blackburn
 Wheelhouse, C. G., F.R.C.S., Filey, Yorks.
 White, G. G., M.R.C.S., Nottingham
 White, H. W., L.R.C.P., Bradford
 White, Joseph, F.R.C.S. Ed., Nottingham
 White, S., M.D., Sheffield
 White, T. H., M.R.C.S., Lincoln
 White, Wm., M.D., Hadfield
 Whitehead, Surgeon-Captain H. R., A.M.S., Netley
 Whitelegge, A., M.D., Wakefield
 Whitham, Alfred, Adlington
 Wild, G. S., M.R.C.S., Bootle
 Wilks, J. H., M.B., Sheffield
 Willan, G. T., Melton Mowbray
 Williams, Dawson, M.D., London
 Williams, E., M.R.C.S., Leicester
 Williams, H., M.R.C.S., Nottingham
 Williams, J., M.D., Swinton
 Williams, J. M., M.R.C.S., South Devon
 Williams, M., M.R.C.S., Leicester
 Williams, P. Watson, M.D., Clifton
 Williams, W. R., F.R.C.S., Preston
 Williamson, G. E., F.R.C.S., Newcastle-on-Tyne
 Williamson, J. M., M.D., Ventnor, Isle of Wight
 Willmore, F. W., M.R.C.S., Walsall
 Willoughby, E., M.D., London
 Willoughby, J. F. D., M.R.C.S., Southwell
 Wilson, Frederick, L.R.C.P., Hull
 Wilson, H. P. C., M.D., Baltimore
 Wilson, J. M., M.D., Doncaster
 Wilson, R. M., M.D., Derby
 Wilson, S., M.R.C.S., London

Wilson, Theodore, S., M.D., Birmingham
Windle, Wm., M.R.C.S., Colston Bassett
Wise, R. S., M.D., Banbury
Withers, O., M.R.C.S., Nottingham
Woakes, E., M.D., London
Wood, T. Outterson, M.D., London
Wood, W. J. H., Boston
Woodhead, G. Sims, M.D., London
Woodhouse, T. J., M.D., Putney
Woods, Hugh, M.D., London
Wray, C., F.R.C.S., London
Wray, G. B., M.R.C.S., Nottingham
Wrench, E. M., Baslow

Wright, C. J., M.R.C.S., Leeds
Wright, F. M., M.R.C.S., Nottingham
Wright, G. E., Wimbledon
Wright, James, M.R.C.S., Bottesford
Wright, Thomas, M.D., Nottingham
Wright, Walter, Bacup
Wright, W. H., L.R.C.P., Derby
Wylie, John, M.B., Stewarton, N.B.
Wynne, E. S., M.B., Rainhill
Wynne, J. Darley, M.B., Nottingham
Yorke, Wm., L.R.C.P., Loughborough
Young, W., M.R.C.S., Wimbledon

Also the following guests attended the meeting:

Dr. A. Bruschetti, Bologna
Professor Wilhelm Erbstein, Göttingen
J. Morel (Commissioner in Lunacy), Ghent, Belgium
W. A. Morton, M.D., Limerick
Dr. Wilhelm Nagel, Berlin
Dr. Roussel, Paris
W. G. Scott, M.R.C.S., Auckland, New Zealand
Dr. Laurence Turnbull, Philadelphia
Dr. Emil Pfeiffer, Wiesbaden
Professor C. Jacobs, M.D., Brussels
J. D. LaFerty, M.D. Calgary, Alberta, Canada
A. P. Chadbourne, M.D., Boston, Mass.
W. Thomson, M.D., Algiers
Thomas Barclay, M.B., Melbourne
Dr. E. A. Spilsbury, Toronto
Dr. L. F. Hockwart, Vienna
Dr. Ad. Meyer, Zurich
Dr. Hermann Schrötter, Vienna
W. H. Sergeant, Nottingham
Professor Schrötter, Vienna
J. J. Chisholm, M.D., Baltimore
Walter W. H. Tate, M.B., London
Professor Josef Gruber, M.D., Vienna
Deputy Inspector-General R. Domenichetti, Louth

ANNUAL MUSEUM.

SANITARY AND AMBULANCE APPLIANCES.

THE section of the annual museum which is devoted to sanitary and ambulance appliances received this year a special extension. The Nottingham Corporation assigned to it a large covered wood-paved drill shed at the rear of the town hall, and the exhibition was organised by Dr. Boobyer, the medical officer of health, with whom Dr. Whitelegge was associated as Honorary Secretary. The ceremony observed at the opening of the exhibition was reported in the *BRITISH MEDICAL JOURNAL* on July 30th, page 259. The exhibition contained much that was interesting and instructive, and many of the appliances were shown in action.

Messrs. FOSTER AND COOPER, of Nottingham, the firm by whom the new infectious hospital of the Nottingham Corporation has recently been furnished, showed a number of hospital appliances. Among these were improved bed Tables and Lockers made from suggestions by Dr. Boobyer, who also showed the original patterns. One of the lockers shown by Messrs. Foster and Cooper has a removable top which falls easily in its place over the locker, and, when removed, forms a bed table of strong construction and convenient design. The other locker, which is on castors, has a sliding top which can be pulled out over the bed to serve as a bed table. When not in use, two flaps fold down over the top of the locker out of the way. As agents for Messrs. Chorlton and Co., of Manchester, and Messrs. S. B. Whitfield and Co., of Birmingham, this firm exhibited a number of Hospital Bedsteads presenting various improvements.

Messrs. BILLINGTON BROS., of 2, Cambridge Street, Liverpool, showed a number of Wire-wove Mattresses adapted to bedsteads. The most novel of the designs was an epileptic bed; the mattress was of wire, and on each side was raised about a foot above the level of the bed, and curved over, thus forming a flexible but firm side to the bed, which had the double advantage of contributing to keep the patient from falling out of bed, and of preventing injury from striking against the sides during a fit.

Messrs. MERRYWEATHER AND SONS, LIMITED (London) showed several pumps and other appliances, the most noticeable of which was a Hydraulic Sewer Flusher. In cleansing sewers by flushing, in order to reach the upper part of the sewer, it is necessary to have a head of water which shall completely fill the pipes, and the quantity of water required for this purpose is large, a great deal being practically wasted. The new sewer flusher is designed to accomplish the cleansing of all parts of a sewer more effectually and with a moderate quantity of water. The demonstrations given appear to show that it is well designed to do this; the essential point in the invention is a cylindrical tube pierced by small holes arranged so that water forced through them shall play in all directions; this is the flusher; it is connected with a hose,

and water under pressure is driven into it and issues from the perforations at a high speed, so that the several streams impinge upon the sides of the sewer with great force. The flusher can be mounted on wheels, and so pushed through a large sewer.

THE WATER CARRIAGE ENGINEERING COMPANY, LIMITED (Mowbray Street, Sheffield) showed an Automatic Flush Tank and Trough Closet in working order. The difficulty of finding a thoroughly reliable form of closet for use in connection with tenement houses and rows of cottages in towns is well known. The system of separate basins with pull-handles does not work satisfactorily in practice, because the poorest classes appear to be too careless and rough to keep the simplest and strongest appliances in order. Trough closets with automatic flush tanks present many advantages. The special claim for the apparatus exhibited by the Water Carriage Engineering Company is that it is in all its working parts so simple that it is not likely to get out of order. The automatic flush tank shown was invented by Mr. Merrill, Chairman of the Sewerage and Rivers Committee of the Sheffield Town Council. The tank will work with a very

small trickle of feed water. The principle of its action is as follows: When the feed water has risen in the tank as high as the bend of the siphon, it runs down the long leg into the tipping bucket, which is placed in the chamber underneath. When it has risen in this tipping bucket to the bottom of the long leg it traps the siphon. In the act of trapping it slightly compresses the air in the pipe, and as a consequence the feed ceases to run down the long leg until the water in the tank has risen sufficiently high to form a head with a pressure sufficient to overcome the air pressure in the siphon. This slight head forces more water down into the tipping bucket, which compresses the air in the siphon still more and consequently requires a greater head to force more water down. When the tank is filled to the required level the tipping bucket is also filled to its tipping point, and it then cants over and discharges its contents, untrapping the siphon and releasing the compressed air contained in it, the head of water in the tank instantly charging the siphon. The trough used with this apparatus has also some special features; as will be seen from the section, it is narrowed at the bottom as in an egg-shaped sewer, and has a straight back and front from end to end. It is contended that by this arrangement the water has the greatest scouring power, and, as the result of the narrowed bottom, rises higher in the trough for the same quantity of water.

Mr. JOHN JONES (Sidney Street, Chelsea) exhibited a model designed to show both bad and good conditions of House Drainage, and Systems of Ventilation. He also exhibited a number of sanitary appliances, among others an Automatic Double-seal Air-tight Manhole Cover; the cover is double, the inner cover being arched. The arch collects the moisture which rises from the drain, and it runs down into a deep groove into which the cover fits, forming an air-tight water-seal; the top-cover is flat with the surface of the ground, and fits into another groove, which may be filled with suitable material. The principle is applied in various ways to suit varying circumstances. The same manufacturer showed drain stoppers, bag and screw expanding, which are used to plug a drain when applying the water test. It is stated that the stoppers have been much used, and found both convenient