nated from the blood in about twenty-four hours; so that in the first few days, in the generality of cases, it requires a constant supply of poison to keep the system under its influence to the same point.

The injection which I use generally is warm water at blood-heat, to every half-pint of which is added one drachm of solution of permanganate of potass. I prepare at least a quart, and use it till the lotion returns of its proper colour. Any other disinfectant may be employed; but this acts very nicely, without any risk, and tells when it has completed its work. In any case, it is better to use a weak solution, making up in the quantity of fluid used.

The ordinary syphon-syringe is very convenient, as is also the French enema-apparatus. Both these are worked by one hand.

From what has been remarked above, it may be gathered that I would have it established as a rule of practice, that, whenever offensive discharges occur, which are not removed by ordinary vaginal injections, we should at once wash out the interior of the uterus once or twice a day. But I would further add that I believe, if this were systematically done early in every such case, then we should in a large measure do away with the endogenous form of puerperal fever; and here I would remark, that even a very offensive state of the interior of the uterus may exist without manifesting itself very noticeably in the room. Upon two occasions I have seen very offensive fragments of placenta removed, and scarcely a suspicion of any putridity existed. Thus, provided we could keep the exogenous cause from the pregnant and parturient woman, and then remove the endogenous source from the puerperal one, we should reduce puerperal fever to its lowest point; at which point I should not despair of arriving, if every one would assist to this desirable end.

I shall not detain you with recitation of a number of cases, but shall instance a few which exemplified the benefit of the treatment.

Mrs. B. was taken into Guy's Hospital for induction of premature labour for a small pelvis. It was begun by dilating the os uteri with the elastic bags. The placenta was found presenting. However, upon its being dilated a sufficient size to admit two fingers, the placenta was detached from the cervix; the child turned by the combined external and internal version, and in due time delivered. An hour after delivery of the placenta, the uterus relaxed, and considerable hæmorrhage ensued. This much reduced her. On the third day, the uterus became enlarged and tender, the lochia offensive. She had rapid pulse; furred tongue; and anxiety of countenance. The day following, these symptoms increased; upon which I ordered the uterus to be syringed out with warm water, introduced through a gum catheter. This was done, with very considerable immediate relief to the patient; but the next day the change was very rapidly for the better. The uterus had become markedly reduced in size, and the tenderness nearly gone. Nearly all the irritative fever had subsided, and by next day was quite gone. She rapidly lost every untoward symptom, though the loss of blood and free leucorrhœa from chronic endometritis kept her weak some time. I may add, that the uterine douche was continued for some days.

The next case was somewhat similar, as far as the reason for induction of labour, and its complication with placenta prævia. It was treated in the same way; but the placenta was adherent, and the uterus very inactive, so that the hand had to be introduced to detach it; and much difficulty was experienced in getting it to contract, whereby some loss of blood ensued. However, the uterus at last contracted firmly; and, next day after, pains of much severity came on, lasting for upwards of two days, when suddenly portions of clots came away, with a little fresh blood and offensive discharge. On examining the os, I found some firm clots still adhering just inside the cervix, where the placenta had been situated; these I carefully removed. Next day, the offensive discharge filled the room with the odour. The pulse was 120; skin burning; tongue brown in the centre, with much thirst; a short cough, which had not existed before; and a peculiar odour in the breath, like the hepatic breath. In fact, the whole symptoms were indicating the rapid approach of puerperal fever. I washed out the uterus well with weak lotion of permanganate of potass. The patient felt more comfortable afterwards; but next day, on visiting her, I found her wonderfully better. The above symptoms were, however, all present; the cough was still troublesome, with much expectoration. The injection was repeated. The next day, every anxious symptom had gone, with the exception of the cough, which lasted some days. The offensive uterine discharge lasted only two days. The douche was used three days. The patient recovered fairly, being, of course kept quiet rather beyond the ordinary period.

I was asked to see, in consultation, a primipara who had been delivered a week. She had been ill three or four days. I found the room very offensive, from the discharge from the vagina. The pulse was 120 to 130; temperature 106° F.; tongue brown and dry in the middle; skin dry; respiration quick; considerable delirium; and hurry of manner.

Milk was not secreted, and the lochia was colourless and very offensive. Indeed, the case appeared one hastening rapidly to a fatal termination. I recommended the interior of the uterus to be washed out with warm and weak solution of permanganate of potash twice a day, with quina in pill, and chlorate potash and ammonia. The next day she was better, and gradually improved for five days. The injection was then omitted, and the offensive discharge recurred, with an increase of the symptoms. On repeating the injection, these improved. It was continued till the tenth day, when she objected to the disturbance it caused, and it was omitted altogether. She had for some little time after this an offensive discharge, which finally ceased, and she made a slow but steady recovery. Of course, it is difficult to say how far the douche saved the patient from a fatal termination; but, from what I have seen of the disease, I have every reason to think that it materially aided to her recovery. The cause of the offensive discharge was not apparent.

I have employed the douche in some cases of adherent placenta, after labour and in abortions, as a preventive, where a portion has been agglutinated to the uterus.

As the retention of clots in the uterus is liable to be followed by serious symptoms, our indication is, no doubt, to get the uterus to contract as firmly as we can, so as to expel the mass, which it frequently does next day, and thus saves the patient further risk.

You will, I dare say, have observed that the firm contraction of the uterus is no proof that a clot does not exist within, because it is sometimes retained by the very firmness. Its bulk often indicates its presence, especially if there be a rather obstinate trickling and a firm uterus. It is not my intention to go into this question more than to say that, if we have every reason to think there is a clot in the uterus after labour, it is well to pass one or two fingers through the os, and break it down, as far as they can readily reach. We may then, with a little grasping pressure applied outside, cause its expulsion.

An excellent instance of the advantage of clearing out the uterus in such a case occurred to me not long since. Secondary hæmorrhage occurred a week after delivery in a lady whom I had attended in consultation. She had placenta prævia, with much *post partum* hæmorrhage. The secondary loss was not very severe, but the discharges somewhat offensive. Finding the uterus bulky, I passed my finger through the os, and detected a clot, part of which I removed. It was very offensive. I therefore broke it up as far as I could reach, without passing the hand into the vagina. I then introduced the long tube to the fundus; and, as soon as it reached the fundus of the uterus, about half a pint of most offensive gas escaped. Water, slightly charged with tincture of perchloride of iron, was thrown within till it came away without smell. The remaining clots did not come away till next morning, after which all unpleasant odour ceased. The patient had had rigors before the washing out, but they did not recur. She had afterwards slight phlegmasia dolens and a slight cough. The leg soon recovered, but the cough remained some time. I think we may fairly assume that the evacuation of the offensive contents of the uterus saved this patient from a serious, if not fatal, illness.

FOUR YEARS' EXPERIENCE AS A HEALTH-OFFICER IN BRISTOL.*

By DAVID DAVIES, M.R.C.S., Bristol.

OWING to the prevalence of maculated typhus in Bristol, during the winter of 1864 and 1865, I was appointed without a moment's notice, by the Board of Health of that City, to the anomalous office of Medical Inspector of Health. I believe I am the only specimen of that species of health-officer in the kingdom. That appointment I have held up to the present time. No specified instructions were delivered to me on my appointment; but I was made to understand that I was to find out the cause of the existing evil, and to recommend the best measures to be taken for improving the health of the city. Having received no special training in hygiene, and having no authority to guide me, I had to tumble into my duties in the best way I could. Since then, a system of inspection and hygienic measures has been developed, which, on more than one occasion, has been most severely tried, and on each occasion has proved to be of infinite value. To trace the rise and development of our Bristol plan would unnecessarily occupy the time of this meeting. I will, in as few words as possible, describe it.

The city, for the purpose of inspection, is divided into four districts, each district being under the special superintendence of an able in-

* Read in the Public Medicine Section before the Annual Meeting of the British Medical Association in Leeds, July 1869.

spector, chosen (as a rule hitherto observed) from the best men found among the police of the city. It is the duty of these inspectors to report upon the scavenging, (in summer time) the watering, at all times the nuisances which may be found in their respective districts. In addition to these duties, they are to report to the Medical Inspector every case of infectious disease which they may know or hear of; and to appear at the office twice a day in the Inspector's room, to enter on their journals their daily reports, (their hours of attendance at the office being 11 A.M. and 5 P.M.) The district-inspectors are at the command of the Inspector of Health for hygienic purposes; such as the disinfection of houses, drains and sewers, etc.; but not further. They are not expected to do any menial work; but, in the presence of an epidemic, they have never flinched from danger or labour, and have been ready for action by night as well as by day. In fact, they take a pleasure in their work.

Each district-inspector has under his command, during the summer months, two labourers to white-lime courts and alleys, to let off stopped privies, to disinfect infected houses, and do any other menial work of a hygienic character. During the winter months, each inspector has only one man at his command, as whitewashing is not then carried on; but the single man is employed in letting off privies and disinfecting houses. Each of these labourers is expected to report to his master, the district-inspector, all that he sees and hears, and to take his orders from him. The work done by these men is work properly belonging to the landlords; but to get it done by them would require legal proceedings, and, from the time of serving the first notice to the hearing of the case, and the execution of the magistrate's order, a hundred people may be poisoned by the germs of enteric fever from an overflowing privy or a defective eject.

We have an experienced Superintendent Nuisance-Inspector, whose duties are to inspect lodging-houses and slaughter-houses; to assist in difficult cases of local nuisance; to sign official information of nuisances, when proceedings are unavoidable, and to appear before the magistrates to give evidence. He is also appointed as a smoke-inspector; but I may at once make a clean breast of it, and acknowledge that, through causes over which he has no control, the legislative enactments against smoke have proved in Bristol completely futile.

Next comes my own office. I regret that I am not in the position to call myself a Medical Officer of Health, as my brethren around me are; nevertheless, I have the subdued honour of appearing amongst them as the Medical Inspector of Health for Bristol.

Having received no instructions, I cannot tell what my duties are; but I will endeavour to explain what I consider them to be, and how I have tried to carry them out. I consider it my duty—

To submit every Thursday to the Committee of the Board of Health a report of the work done by me during the week, with a general summary of the state of the public health of the city, and any recommendations for the improvement of it, which I may think proper to make: to give medical evidence in court whenever required, in cases of prosecution: to meet the district inspectors at the office every day at 11 A.M., to hear their reports, and to advise as to what immediate measures may be required for the prevention of disease. If the measures recommended should require my presence, to accompany the inspectors, and see the measures executed.

In case of Asiatic cholera or maculated typhus being reported, to lose no time in visiting the case; to procure isolation or removal of the patient. In the case of cholera, to see that all the ejecta are destroyed by strong chemicals, and all the contaminated clothing by fire; to provide that all water derived from wells or land water be immediately disused, by taking off the pump-handle, and cautioning the people not to use it; and not to leave the premises until these measures are carried out.

In the case of maculated typhus (a most infectious disease among the overcrowded poor) to have the patient removed, if possible, and, if that cannot be done, to have all the other inmates removed, and isolate the house; to cover the floor and staircase with a thick layer of powder, consisting of 85 per cent. of silica and 15 per cent. of carbolic acid; to watch the patient, the family, and their relations for weeks after convalescence; to destroy all infected clothing by fire; to keep all the drains and surfaces in the neighbourhood of a case of cholera or fever well charged with carbolic acid and sulphate of iron. After the removal of the patient, to have the house cleansed and disinfected, under the 22nd Section of the Sanitary Act. To keep a sharp look out after the inmates of a workshop whither a convalescent from typhus has gone to work. (This is a common means of the spread of the disease.)

In the case of enteric fever, to recommend removal of the patient, if possible, if not, to isolate the patient as much as possible, to receive all the ejecta into a chemical (the most convenient being the powder mentioned above, and sold under the name of Calvert's Powder.) To ex-

amine the drinking water of the family, and, if it contain salts derived from sewage in any quantity, to stop the use of it; to charge all the drains communicating with the patient's house with disinfectants.

In the case of scarlet fever, as there are not hospitals for the reception of the first cases of this disease in a court or alley, all that I can do is to disinfect the sewers and drains, and so prevent its spread in that way, which I have reason to believe is not an uncommon one. The measures recommended by my good and kind friend, Dr. William Budd, one of the first sanitary reformers of the day, may, and I believe would, answer among the well-to-do and the well-disciplined classes of the community; but to enforce them among the poorer classes of Bristol would be simply impossible.

With regard to measles and whooping-cough, so frequently fatal among the children of the poor, I have at present no remarks to make, having no means at my command efficient to prevent their spread.

The Board of Health have, at my recommendation, erected a mortuary, for carrying out the 27th Section of the Sanitary Act, 1866. They have also provided a carriage for the conveyance of persons suffering from infectious disease; and they are ready to enforce the penalties incurred for any infringement of the provisions of the 38th Section.

The sewers of the city are under the management of their very able surveyor, one of the most practical civil engineers in the country, without whose abilities and cooperation my labours would have been comparatively useless. The water is also officially and legally under his care. On an official report by him that any house is not properly supplied with good and wholesome water, the Board of Health, on the refusal of the landlord to supply it, after proper notice, order the surveyor to supply the house with water, and recover the expense from the landlord under the Sanitary Act of 1866.

Such is a meagre outline of the plan followed out in Bristol. It is not for me to dwell on our shortcomings; but I will mention one of them. The Board of Health have not adopted bye-laws under the 35th Section of the Sanitary Act. It is to be regretted that this clause is permissive, and not compulsory.

It will be readily perceived that my opinions and operations are based upon the theory of the germinal and specific origin of zymotic disease; and that I have utterly disregarded the pythogenic hypothesis of the origin of fevers and other infectious diseases. This hypothesis I have practically found to act as a dead weight of incalculable inertia on all efforts for sanitary improvement. Whether my views regarded as a theory be correct or not, the plan of operations based upon them has stood us in good stead in our hour of need; for example, during the epidemic cholera of 1832, there died in Bristol of that disease nearly 1000; in 1849, 1979 died. In that year I saw 21 dead bodies carried out of the Bristol Workhouse in one day. In the epidemic of 1854 we lost 430. In the year 1866, with the system of disinfection described above in full operation, our total mortality from Asiatic cholera was only 29, and the majority of these cases had brought the disease with them from other parts. We were surrounded at nearly every point of the compass by places infected with cholera. Wales on the west, Exeter on the south, London on the east, and Liverpool on the north, each sent its quota to try us on twenty-six different points, and we stood the test well.

It has been doubted by the highest sanitary authority in the land, whether we are "out of the wood" yet as regards cholera, because similar measures said to have been adopted at Stettin and Stuttgart failed; but it is stated by the same authority that the disinfectants used at those places affected the drinking water. To this, I can only say that, where the surface of the ground and the drains are thus proved to be in immediate communication with the water, no measures could possibly answer. When this was found to be the case at Pill, in Somersetshire, Dr. Tibbits immediately procured a supply from a distance, by means of water carts. Moreover, I have been informed by Mr. Calvert, of Manchester, that he has it on sound information, that the disinfectant used at Stettin and Stuttgart as carbolic acid contained but little, if any, of that chemical.

I may here state that I have been favoured with the perusal of a private letter from Dr. Harris, the Registrar of Vital Statistics to the Metropolitan Board of New York, in which he expresses his gratitude to Dr. Budd for important information, and states that a plan of disinfection, more or less identical with the one followed out in Bristol, had met with complete success in New York.

By this plan, we completely stamped out the epidemic of typhus of 1865, in less than six months. We have been frequently tried since by the importation of cases of maculated typhus from Ireland and the iron-works of Wales; but this disease can get no footing in Bristol now.

The same remarks, in a modified form, apply to enteric fever, in which disease I frequently find the drinking water to play an important part, through being contaminated with sewage containing enteric germs.

As a summary of my experience on these points, I may state that we have found in Bristol that maculated typhus spreads only by infection; that each case may be traced to another from which it has sprung; and that its spread is not affected by mere cleanliness; but that the destruction of the germs by strong chemicals, of which real carbolic acid is the best, is a sure means of stopping it. We have been able to trace most cases of enteric fever to germs of the disease derived from the intestine of another patient; and analogy leads me to believe that all cases of this disease have a similar origin. We have found enteric fever as amenable to hygienic measures as typhus. We have found that terror of nations, Asiatic cholera, to be under the control of measures within the command of every public authority. We have found these three diseases to spread and kill our race entirely through the ignorance and neglect of man.

It follows from the above that mere sanitarianism, however desirable, will not, when other measures are neglected, prevent the spread of zymotic disease; that, whilst we are evicting a few pigs or a stray cow which may find their way into our towns, or indignantly removing a heap of dry ashes, a fatal epidemic may be marching, unimpeded, through our crowded population.

My views have been remarkably corroborated by the success of the Government measures for stamping out the cattle-plague, and the small-pox in sheep.

"There is much land yet to be possessed." Who can tell us how to render scarlet fever as amenable to hygienic measures, *practically applicable* to the overcrowded populations of our towns, as Asiatic cholera and typhus have proved to be in Bristol? Who can tell us how to diminish the fatality of measles and whooping cough among the children of the poor, during the cold spring months? Who can tell us how to stop the ravages of that fell destroyer of our race, which fills our work-houses with paupers, by taking away the lives of the bread winners—I mean tubercular phthisis; a disease which, I have special reasons to believe, will shortly be proved to be of a zymotic character, and communicable by germ from man to man? Who will show us how to remove that disgrace of our country and of our religious profession—the slow, but certain murder, by starvation and neglect, of illegitimate children, whose deaths are often registered as caused by summer diarrhoea, marasmus, tubercular meningitis, and other diseases? Who will teach the wives of our working classes how to nurse their husbands and children when struck with disease? Above all, who will teach all classes self-restraint and common sense in matters affecting their own and the public health?

These remarks which, owing to the short time unavoidably allotted to the reading of papers, give only an imperfect account, in fact, only a mere glimpse of the efforts nobly and honourably carried out by the Board of Health of Bristol, to improve a populous place laid out and built during the middle ages, are made in no dictatorial, self-satisfied, or fault-finding spirit. Whether the sanitary theory involved in them be right or not, the result has been good. I may humbly say, that my own opinions on the subject have not been formed by the reading of learned treatises or voluminous authors, but by the patient observing of facts in the courts and alleys of a crowded city, frequently among the groans of the sick and the dying.

If my remarks should be thought worthless, let them be forgotten, with an apology for occupying the time of the meeting; but if, on the other hand, I have brought forward or made prominent a single idea which will assist in solving the great and difficult problem of public health, and which may tend to alleviate the woes of suffering humanity, I shall always look back with satisfaction to this meeting.

APPENDIX.—I make the following suggestions for the improvement of the sanitary laws, founded on observations of their shortcomings on these points.

1. *Registration.*—The registration of deaths in each local authority's district should be under the superintendence of one person, who should be a medical man. His duties should be, to publish a weekly analysis of the deaths in his district; to represent such analysis on a map by different coloured points; such map to be on view in a public office in the district, so that medical men would be able at a glance to see the attitude of disease, and be prepared to meet the pathological constitution of the season. The want of this, we have felt very much in Bristol. By the present arrangements, we can have no analysis of disease, except in an indirect way from the Registrar-General's office. Part of the deaths in Bristol are registered in the Bourton Union, in Somersetshire; another part at Stapleton, in Gloucestershire; another part at Westbury-upon-Trym; and the remainder in Bristol.

The Superintendent Registrar should have power to amend any gross error in the certificate of the cause of death, with the approval of the Registrar-General, so as to bring all deaths within the official nosology. The present registration is grossly erroneous; typhus, enteric fever, and

non-specific febricula, being confusedly returned the one for the other. Specific Asiatic cholera, dysentery, bilious diarrhoea, are in the same confusion. Pneumonia, tubercle, bronchitis, chronic disease of the bronchial tubes, and asthma, are often jumbled together under the head "consumption" or "phthisis". At present, I find the returns of but little use without private inquiry as to the nature of the disease.

2. *Consolidation of all the Sanitary Laws* in one code is required. Clerks to Boards of Health could speak to this point better than any other persons.

3. *The Thirty-Fifth Clause of the Sanitary Act should be made Compulsory*, and not permissive. I have most materially felt the want of bye-laws under this section.

4. *Every District should be brought up to the same High Level.* In Bristol, we have extinguished continued fevers in an epidemic form; but we have cases continually poured in upon us from our neighbours. Last year, we had several cases of enteric fever from a populous part of Bristol, outside our district (Horfield). At Winterbourne, a village seven miles from Bristol, there have been at one time forty cases of enteric fever. At the Bourton Union Workhouse, whither the paupers from one part of Bristol go, there were over one hundred cases of enteric fever last year, from drinking water from an infected well. I could multiply instances of the want of equalisation of sanitary arrangements.

RAILWAY AND OTHER ACCIDENTS: CASES AND OBSERVATIONS.*

By P. C. LITTLE, F.R.C.S.I., Dublin.

ACCIDENTS are becoming more frequent in this age of progress. Those occurring upon railways are distinguished by the severity of the shock which generally accompanies them. The rapidity and momentum of the train, the suddenness of collision or other disaster, the unpreparedness and helplessness of the traveller, concur in producing most appalling results. The nervous system is especially affected—from without, by the intensity of concussion; from within, by the suspension of mental influence. The soldier who faces the storm of bullets recovers sooner from amputation of his shattered limb than the man who undergoes a like operation after railway injury, it is said. In surgical and medico-legal aspects, the element of shock is, therefore, of great importance, and, when properly appreciated, contributes much to correct diagnosis and successful treatment, and to harmony of opinion between medical witnesses.

Within the past few years, many railway and other accident cases have been under my care, the records of some of which I now beg to place before the Association, and trust they will be found not altogether devoid of practical interest.

CASE I. *Concussion: Nervous Debility.*—Aug. 29, 1863. I was in attendance upon D. D., a commercial gentleman, aged 37, for injuries which he had received this day on a railway. An error of the ticket-inspector led to a request that my patient should leave the train, which he declined to obey. Much force was then used by the company's servants to drag him out; but, being a powerful man, and fortified by a sense of right (afterwards affirmed by a jury), he successfully resisted for ten minutes the combined attack. His fellow-passengers then interfered, and he was allowed to proceed on his journey. On his arrival in the City, he visited me, and was suffering from the effects of a violent nervous shock.

He complained of severe pain in the head and vertigo, much sickness of stomach, faintishness, and soreness all over. His face was livid and perspiring, the lips quivering, the eyes suffused, the pupils dilated; the left temple was contused; the limbs were trembling; the speech thick; the skin cold; pulse small, variable, about 90; irregular respiration; inspiration short, gasping; heart's action quick, nervous; diaphragm heaving, epigastrium tender. The body was much bruised, particularly on the sides of the chest, right hip and thigh, and back of the left hand.

I ordered him a stimulating anodyne, and mustard foot-bath; perfect rest in bed, freedom from business anxiety, abstinence, cooling and nourishing drinks. I subsequently resorted to quinine, shower-baths, and other general tonics. Notwithstanding those applications, the symptoms, especially vertigo, persisted for more than a year, when they imperceptibly passed away. The cold shower-bath seemed to have been most serviceable to the patient. The prognosis in this case was not easy. The constant vertigo gave ground to fear an unfavourable

* Read before the Surgical Section at the Annual Meeting of the British Medical Association in Leeds, July 1869.