May 1869. He was pale, and seemed out of health. He presented a copious eruption of vesicles and papules in various stages, and affecting the face, trunk, and limbs, and, to a slight extent, the scalp. The fresh spots consisted of elevated pointed papules, feeling very firm, and each surmounted by a small vesicle. In the older ones the vesicle had sometimes broken, but in the greater number it had dried up; on the scalp, the spots had sometimes run on to porrigo. There were a few on the palms and soles. The eruption avoided the flexures; was more abundant on the back than on the chest and abdomen. It was evidently excessively pruriginous, and there were numerous scratches. The mother's history was, that the rash had appeared when the child was three months old, and soon after vaccination, and that the medical man in attendance told her that it was "glass-pock". The eruption had varied in intensity at different times, but had never been quite well since its first appearance. He remained under care only two months, and I cannot tell you the final result.

CASE III.—Sarah Richardson, aged 11 months, was brought on June 22nd, 1869, with a papular and vesicular rash on the trunk, limbs, and scalp; it affected the palms and soles. The spots were at first small papules, apparently devoid of fluid; presently these became inflamed and red at the base, while at the top was formed a yellowish point, in the centre of which a little dot was seen; while still later, a considerable red areola was present, and a concave scab was formed on the top of the spots. The mother stated that the eruption had been present for five months, and that it came soon after the child had been vaccinated. When it first came out, she thought it was chicken-pox, on account of the "clear watery heads" which were present at that time. An only sister of the infant was free from any eruption.

CASE IV.—Sarah Ann Tosland, aged 19 months, was admitted on July 13th, 1869. She was suffering from a pruriginous rash on the body and on the backs of the hands and soles of the feet; some of the spots were very like wheals of urticaria. The history given was of a gradual onset of the eruption at the age of five months, the mother thinking that it was like chicken-pox. It was said to have been well in winter. The child was of fair complexion and very stout, and seemed muscular and strong, notwithstanding the constant itching she suffered from the rash. She was the youngest of eight children, and the only one who had suffered from any skin-disease. This case is not very well characterised.

CASE V.—Isabella Brown, aged 12 months, a fair-skinned light-haired child, was brought on account of an eruption in September 1869. The rash was general and pretty thickly distributed; it affected the soles, the face, and the scalp, but not the palms. The flexures were avoided. It was distinctly vesicular, and in parts impetiginous from scratching, but there were no large pustules. It had already lasted seven months, and was said to have come out soon after vaccination. The child was nearly well in six weeks.

CASE VI.—Walter F. Seymour, aged 12 months, in good health, was brought on September 24th, 1869. He had a copious itching eruption of papules and vesicles, with some pustules. The parts affected were the trunk, palms of the hands, dorsal surface of the feet, scalp, and, to a less extent, the face. The bulk of the rash was papular. There were, however, some large irregular vesications, with areolæ of congestion, and containing turbid fluid; other spots looked as if they had been about to suppurate, but had dried up before pus was formed in sufficient quantity to break the cuticle; some, especially on the hands and feet, were distinctly vesicular. The rash had been taken in the first instance for chicken-pox. Under treatment, the rash improved for a few weeks, but very soon relapsed and became as bad as ever again.

CASE VII.—Walter Thompson, aged 19 months, admitted on April 2nd, 1869, on account of a very copious pruriginous eruption. He was stout and healthy-looking, and was said to have an excellent appetite. He had been nursed till 11 months old. The eruption had appeared for the first time at the age of 15 months, and it came out about three weeks after vaccination; the vaccination spots having done well. His nurse thought it was chicken-pox; but, from her statement, it seemed probable that the spots were not so distinctly vesicular as in that disease. The eruption had steadily become worse until he was brought to the hospital. There was no reason to suspect contagion from scabies or pedicularia as the cause. The eruption consisted, when first seen at the hospital, of very numerous isolated spots, most of them papular and of dusky colour. The early stage, as seen in some recent spots, appeared to consist in the formation of a vesicle on an indurated base; the vesicles were deeply placed, and contained but little fluid, and it seemed that subsequently they either dried up or had their tops removed by scratching. The rash was most abundant on the limbs and face, the forearms and legs being more thickly covered than the arms and thighs; it occurred in tolerable abundance on the palms and soles.

There were no spots on the scalp or forehead, and the eruption specially avoided the parts where the skin was thinnest, the flexures of the joints and the interdigital clefts. Looking at the soles and palms only, we might easily have mistaken the case for scabies; but its symmetry and uniformity, and its avoidance of some parts, such as the bends of joints and the spaces between the fingers, served to distinguish it from that disease. He got quite well in six weeks under arsenical treatment, and remained well for about eight months, when he again (in April 1870) came under care for a dry lichenous rash. This time, however, there were no vesicles, and the palms and soles remained free.

CASE VIII.—Alfred Vernon, aged 2 years, admitted on September 7th, 1869. His mother stated that the eruption, on account of which she brought him to the hospital, began suddenly when he was three months old as an eruption of clear vesicles. She was told that it was chicken-pox. There was no contagion either to herself or the girl who nursed the patient. When first seen, the child presented a copious itching, scratched, papular, and vesicular rash. The vesicles were most conspicuous on the feet. The rash was most abundant on the outer parts of the arms and thighs, on the backs of the forearms and fronts of the legs; it avoided the flexures in a very marked way. The backs of the hands were almost free from spots. He was of fair complexion, and had a thick upper lip and fine downy hair on the general surface of the body; he was much emaciated, probably in part from the incessant irritation. He remained under notice, more or less regularly, for more than a year, and improved very much during the earlier part of his attendance while taking bromide of potassium, cod-liver oil, and quinine, and using an ointment of mercury and lead. The eruption, however, relapsed somewhat towards the end of the time.

CASE IX.—Frederick Manger, aged 1 year and 9 months, was admitted on May 9th, 1871, with a pruriginous eruption of nine months' duration. There were five other children in the house, and none of them had suffered from it. The mother thought it was chicken-pox when it first appeared; but the medical man considered it not to be that disease. The child was not known to have had chicken-pox. The rash had never been well since its first appearance.

CASE X.—Samuel Bristowe, aged 15 months, came on October 12th, 1869, and was under notice, more or less regularly, for about thirteen months. He had a severe papular, vesicular, and pustular eruption, which was worst on the legs; the soles and palms were also severely affected. There were spots on the face. It avoided the flexures. It was then of eight months' duration, and was stated to have come out immediately after vaccination, and to have been considered by the medical man to be chicken-pox. There was great itching, and the child was said to be often awake most of the night. The scratching had produced large porriginous scabs in some parts. The child was somewhat relieved for a time, but the rash relapsed several times. There were three other children in the house, none of whom had had any eruption, excepting one who was subsequently brought to the hospital with eczema-porrigo of the scalp from lice.

CASE XI.—Anne Cridland, aged 3¼ years, was brought for an eruption of prurigo urticans in March 1871. It was stated that she had been liable to the rash since an attack of chicken-pox at the age of 2 years.

[To be concluded.]

THE FEVER AT CROYDON; AND INTERMITTENT WATER-SUPPLY AS A CAUSE OF TYPHOID.

By ALFRED CARPENTER, M.D.

THE occurrence of an epidemic of typhoid fever in the district of Croydon, after the cessation of any tendency to that disease for a period of nearly ten years, is worthy of something more than a passing notice, both as to causation and to removal. I propose, therefore, to place the whole of the facts which have come to light with reference to the outbreak before our associates, feeling sure that it contains a lesson worth remembering.

Croydon was visited in October 1865 by an epidemic, which I had good reason to remember. Previously to that date, the ventilation of the sewers in Croydon had been at first suggested to the local authority, and then demanded by those who studied the subject; but for a long time the demand was not acceded to. The facts which presented themselves to the inhabitants at the time of that outbreak were such that the local board, after a long continued struggle against facts, carried out, in 1865, an extensive plan of ventilation by means of shafts connected with the crown of the public sewer, which were placed on the arterial sewers at distances of about a hundred yards from each

other. Energetic means were taken to remove the causes which produced that epidemic, viz., the contamination of the water-supply, and defilement of the upper rooms of the houses of the residents by sewer-gas, which was conveyed by pipes in immediate connection with the sewer, and also by soil-pipes discharging sewer-gases directly into the houses.

On December 6th, 1865, a series of resolutions were accepted by the Local Board, and made to have the effect of bye-laws, by which it was hoped that Croydon would, in the future, be entirely free from typhoid. This was the case, as far as epidemics were concerned, until March last, a period of nearly ten years. The local board of health, impelled at length by a proper sense of responsibility, saw what was wanting, and provided for the want with immediate and excellent effect. Typhoid as an epidemic entirely ceased. Nevertheless, it occasionally happened that a sudden development of slight or more severe illnesses took place in single houses or blocks of houses, in which almost every inmate suffered more or less from sickness, diarrhoea, continued indigestion, or sudden feverish disturbances, which affected most of the inmates in a similar manner in each block.

Having carefully noted the situation of these anomalous attacks, I found that they were generally in the higher parts of the district; that they occurred at rare intervals; that, on three or four occasions since 1865, cases of typhoid fever had occurred in houses in which the sewers were properly ventilated, which had a superior water-supply from the public works, and in which it was supposed that every sanitary requirement had been complied with. After a time, I noted another circumstance, viz., that those cases in which the whole household had suffered from a general cause occurred soon after the district had been placed under an intermittent water-supply, in consequence of the demand for water being greater than the quantity which could be supplied; or because an engine or a boiler required repair; or during a hot season, when the pumping power and the waste together were not equal to the demand made upon the waterworks. Another point was also noted; that, in some cases, the occupants had complained that the water smelt badly, and was not fit to drink, although looking as clear as usual. Occasionally it was discovered to be dull, cloudy, and containing foreign matters. I examined the water obtained from some of these houses; and on several occasions I discovered evidence of sewage-contamination quite sufficient to account for the illness under which the inmates had suffered. The cases which occurred in this way were rare, and in units only compared with the tens which arose before the ventilation of the sewers was provided for. They were, however, sufficiently numerous and sufficiently distinct to make it certain that impure water did find entrance into the service-pipes, which impure water was not supplied by the local authority in an impure state when first sent into the mains. The contamination must have taken place, therefore, at some point between the local board's well and the service-tap in the house. It did not appear that this could be the case on ordinary occasions; for the majority of the mains had a constant pressure from within outwards, often equal to four atmospheres, or 132 feet head of water. But I also observed that, when from any cause, such as from a cessation of pumping at the works, or because the supply was cut off to allow new connections, the water which was drawn from the pipes after such intermission of supply contained a large quantity of fixed air, which escaped as soon as the water was drawn from the tap, the water exhibiting a milky appearance, as if chalk were suspended in it. That it was not chalk was at once manifest; because it cleared immediately, and became as bright as usual. I concluded, therefore, that, when the supply was intermittent, the mains did not continue charged (as in the London district), but that the mains and services emptied themselves; that air did find admission at some points, allowing exit of water at others. This explained the cause of the great waste which occurred in the Croydon water-district—a waste which led to the apparently enormous consumption of fifty-six gallons per head daily.

It is evident that, whilst the pressure was continuous, there could be only leakage outwardly, and no impure water or foul air could find entrance into the fully charged water-pipes; but the moment the pressure was removed, there was no longer pressure from within. If, at that time, the taps on any of the lower parts of the water-district were opened, water might be obtained if there existed any means by which air could be admitted into the services at any portion of the upper parts of the district. Wherever, therefore, there were defects in the services, or faults in the construction of the taps, so that leakage occurred, then, at the moment when the supply which was intended for constant service became intermittent, contamination became possible, and even certain.

The supply-pipes which run from the mains into the houses are often carried through made ground, through a subsoil soaked with old

sewage matters, and abounding with nitrates. The services become rapidly corroded, and a pin-hole pipe results, which lets water out under pressure. When that pressure is removed by a falling water-line on the water-main, there is intermission of supply, nasty water is drawn into the pipe, and is delivered to some one below the point of entrance; or above them if the pressure happen to be restored before the contaminated water is drawn from the pipe. The water which is thus sucked in if the pipe happen to be near to a faulty sewer, may be simply diluted sewage, which even when mixed with a large volume of water is strong enough to do much evil. In Croydon, there was a worse danger even than this from defective services, because much more multiplied. A kind of tap has been allowed to be continued in use among the cottages called a screw-down tap, which is placed on a service-pipe coming direct from the main, and delivering into the pan of the water-closet, by which the pan of the water-closet itself is placed in direct communication with the water-service. If taps of this kind be used without the intervention of a cistern, it necessarily follows that it is only required for the tap to be left partly open to be a channel by which regurgitation becomes certain as soon as the pressure of the head of water is removed, by a cessation of pumping at the engine-house, or by a closure of the valves on the ordinary mains. It is impossible for the majority of persons using these kinds of taps to know whether they are closed or open, if the water-service happen to be intermittent at the time of use. Children especially are unable to close them; and as a consequence, in a great number of instances, they are left open. Thus a direct communication exists between the pan of the water-closet and the interior of the water-main. If a person at this juncture visit a water-closet at a few feet lower level than the first one, water is discharged into the pan of the closet, air rushing in to supply its place from the pan of the first closet, the tap of which has been left open. If, as sometimes happens in poor districts, the water-closet be allowed to choke up, and the pan to become filled with faecal matter, the most dangerous material may actually find its way into the services, and be supplied with water for dietetic purposes to the next house, or, indeed, to any house on that particular main. This event has actually happened. Its possibility places a serious responsibility upon those who, having the good fortune to determine that a constant supply is the right thing, yet allow their arrangements to get into such a condition as compels a return, if only for a short season, to an intermittent one.

For like reasons, when a constant supply is afforded to urinals, or other similar places, it should only be allowed through the intervention of a proper cistern, or with proper stop-valves, which should be imperishable and self-acting; otherwise, when the supply becomes intermittent, there will be a rush of air through the open pipe, carrying with it ammoniacal odours from the urinal, which must necessarily contaminate the water-supply, and may even convey matters which are capable of setting up specific epidemic disease.

I have described the condition of a large part of the old district of Croydon as it now exists, viz., that in which the water-works were first laid down twenty-four years ago. About three thousand screw-down taps exist in association with as many water-closets, which are at this moment violating one of the laws of hygiene, viz., that no water-pipe should be allowed to continue in immediate and direct communication with any part of a sewer-system, and also bringing unnecessary discredit on water-closets. I pointed this condition of things out very forcibly in 1865 to the local authority, but without convincing them of the extreme danger of leaving the closets in the state mentioned. It was considered by many of the members to be a "notion" of mine scarcely worth debating. A resolution was, however, adopted that no new house should be allowed to have any direct communication between the water-pipes and the sewers; and also that all overflow pipes from cisterns, baths, waste water-sinks, or housemaids' closets, should in every case be severed from immediate connection with the sewer. The screw-down taps originally put up were allowed to remain; and although several bye-laws were adopted as to new houses, they were not carried into effect by the then officers of the board, because they were considered to be fads of mine, and altogether unnecessary.

It was only by a steady and persistent following up of individual cases by various persons, and by showing the frequent connection between the want of ventilation in the sewers, or the contamination of the water-supply in a similar manner, that the public were convinced of their connection as causes of disease (and the illness of the Prince of Wales seemed to prove the truth of my deductions).

Another cause of trouble was the persistent refusal of the plumbers to loyally carry out the regulations of the board. Every kind of subterfuge was employed to defeat the object; dummy pipes were put up, so as to apparently comply with the bye-laws. When in real communi-

cation, the ventilators were often twisted and turned about at any and every kind of angle, so as to be perfectly useless for the purposes of ventilation. The sewers, although thoroughly ventilated on the general main, were not as efficiently treated in the house-services and in the branches as they ought to have been.

Nevertheless, from 1865 to this present year, no epidemic of typhoid has ever appeared. Yet I never heard of the possible contingency of intermittent water-supply, without a little terror lest we should have a return of our old enemy; and year after year urged upon the local authority the duty of removing the great blot in our sanitary work, but without great effect. In the year 1870, I prevailed upon the board to have a large number of old iron services taken up and relaid with lead, as more enduring in our subsoil, lead also being unacted on by hard chalk-water, such as ours. This act led to a great diminution of waste, and gave greater power to the local authority to keep up a constant supply, and postponed the evil day.

Still it was, for various reasons, intermittent at times. It was so in the month of January last for a few hours in the daytime. It is important to note this; because there does not appear to be the same excessive danger attending an intermittent service in the night-time: the consumption of water after most persons had retired to rest is very small compared with the quantity used in the daytime. Hence it happened that it might be intermittent for several hours in the night without serious evil; for the mains only emptied by slow leakage, and air might be supplied from pure sources; but, when the pressure was removed in the daytime, the whole of the mains would be completely emptied in a single hour. It is always liable to be intermittent in certain districts when extensions or repairs are being made, or in case of fire; and local danger did continually arise.

In February last, three cases of typhoid were known to be in the district. Two of these were imported cases; and I knew of their presence. The water-committee of the local board, at this juncture, proposed an intermittent supply to the water-district for several days, to allow of some repair to some portion of the engine. I most strongly protested against this course in my place at the local board, and wished my protest to be entered on the minutes of the board. The water-committee carried their point against me; and, from March 16th, there was a water-supply provided for six hours a day only. This limited supply was continued for six days; not long afterwards, it was manifest to the medical men that an epidemic of fever was amongst us. By the 30th of April, upwards of four hundred cases were reported as existing in the water-district by Dr. Philpot, the medical officer of health. The subject was at once brought to the notice of the local authority; but the water-committee declined to allow that the water had anything to do with the disease; some members of the board alleging that fever existed elsewhere; that some unknown causes, independent of waterworks, were acting; that it was the heavy rain; that it was atmospheric; that the disease was not propagated by the water. I steadily opposed these notions; but, the water-committee being supported by one portion of the local press, I was assailed in the most virulent manner as a public enemy for the course I took in the matter. My arguments were not listened to; and ultimately I was refused a hearing by the local board; because it was said that my statements tended to bring the town into disrepute, and did harm to its trade and damaged its property. One portion of the local press contained virulent attacks, with not a single line of regret for those who were the victims of the disease. I then published an account of the matter in a comprehensive letter to the *Times*, which brought down upon me the wrath of everyone who had opposed my view, and refused to be parties to the only remedy which could be effectual in preventing a recurrence of the disease. The remedy I had suggested was that the canon law applying to waterworks should be used in its integrity; viz., that, under no pretence whatever, ought a direct channel between the water-services and the sewers to be allowed. To effect this object, all screw-down taps and defective services ought to be removed; and, as a sequence to these repairs, a constant service would be then attainable with the present water-supply. In my communication to the *Times*, I had suggested, as, indeed, I had continually done at the local board meetings, that, if the supply were again made intermittent, a more severe epidemic would immediately follow. For this prediction, I was accused of wishing to bring about a panic, and it was said that there was no foundation for my idea.

The local board determined, however, to meet the case of a constant supply by taking measures for supplementing the present pumping power; digging a new well, and providing a more powerful engine, at an expense of £20,000.

In the meantime, the epidemic of April subsided; typhoid continued to hang about houses with defective and badly ventilated sewers. These were rapidly remedied, when the continued recurrence of cases in houses

satisfied the occupiers that they were in danger. As these were removed, the cases diminished, and the scare was almost forgotten by the general public. At the end of September, however, medical men practising in Croydon were aware that there was a recurrence of a more severe attack of the disease, and that many fatal cases would occur. On comparing notes, it appeared that, whilst the severity of the attack was greater, it did not cover so much ground as on the former occasion, but was in a great measure limited to less than half the water-district; and that that half corresponded with the portion which was commanded by the water-tower, and which constituted what is called the high level. On further inquiry, it also appeared that, on September 16th, the high-level supply had been intermittent in the daytime for five hours and a half; and just as in the former case the height of the epidemic was about five weeks from the time of the intermittent supply, so in this case, at the end of five weeks, it was manifestly and rapidly declining. I believe our energetic and observant medical officer, Dr. Philpot, will eventually have all the facts and all the statistics of this marked outbreak in a form available for publication. In this communication, I only, as chairman of the sanitary committee, wish to point out the principles which have produced the epidemic, and to publish the cause of its appearance in our town. The most marked result after that of the epidemic has been that the local authority has at last determined to follow advice, and to determine that, in the future, the channels by which contamination is possible shall not be allowed to remain; that the water-system shall be put upon the same principles as apply in the London districts; and contamination by regurgitation shall be a thing of the past. This was resolved on, November 2nd; and that which I tried very hard to carry into effect ten years ago, is now accomplished, at the cost of nearly a hundred lives, and very much suffering to many hundred others.

I have been obliged to use the personal pronoun rather more frequently than is pleasant; but as the principle for which I have contended, for the last twelve years, has been mainly promoted by myself in our local board of health—now, however, ably supported by the medical officer of health—it has been almost a matter of necessity for me to write in the singular number.

At the last meeting of the local board, the following recommendation of the sanitary committee was unanimously agreed upon. The epidemic was able to do that which was beyond the power of an individual member; viz., compel the board to obey a canon law of hygiene. The first paragraph of the report contains a law which cannot be disobeyed without mischief resulting sooner or later, viz.:

"The committee are of opinion that it is highly dangerous, and contrary to the first principles of hygiene, to allow the possibility of intercommunication between the contents of sewers and the water-services. That it is very desirable that immediate measures be taken to prevent possible contamination by such channels for the future. The committee recommend that a list of all houses in which screw-down taps are used in the water-closets be at once prepared; and that the water-committee be requested to advise the board as to the most rapid way in which contamination may be prevented in the manner which, at any rate, now appears to be possible. They would also suggest that the services in all these cases be examined, and that inquiry be made as to any possible source of contamination in connection with the water-mains or well.

"The committee again draw the attention of the inhabitants to the fact that, on a request being made to that effect, an immediate examination of drainage arrangements would be made by the board's officers in cases where illness has occurred, or defects suspected.

"The committee directed that a list of urinals which have no back-pressure valves be presented, and also a list of those urinals which have no water laid on."

I have inserted the whole of the recommendations made by the committee. The board also directed the water-committee to give notice to all persons having improper fittings, that such fittings were to be changed, and that it was their intention to institute proceedings against everyone who continued to use defective services after due notice had been given for their alteration.

As regards the fever itself, it is again on the wane; and, if the alterations suggested be carried out in good faith, it is not likely to again arise. It is requisite that the supply shall be continuous in the daytime. It is right to state that Dr. Philpot is also of opinion, in which I certainly concur, that it is not safe even to allow a removal of pressure in the night; but intermittent supply in the small hours of the night has not the serious significance which it has when consumption of water is great, as in the day.

The first epidemic in March and April last was general, and appeared all over the water-district simultaneously; most of the cases which arose from the intermission of the water-supply occurred within

a month of the act. This act of intermission continued in operation for seven days.

The epidemic then subsided; but a large number of sporadic cases occurred in houses in which epidemic cases had been introduced, and in which it was afterwards found that serious defects existed in the house-drains. These defects seemed to expose the inmates to fresh sources of contagion; and others then suffered from the disease who did not in the first instance get a sufficient dose of the typhoid contagia to set up the fever.

The second epidemic, which followed upon the intermission of water-supply on the 16th of September, has not been at present succeeded by these sporadic cases. The larger number of the cases have occurred in the high level district, which includes a large number of the best houses in the neighbourhood, and those which have the best arrangements as to drainage. The first outbreak affected this district equally with the second. The second outbreak mainly affected this district, but including those parts of the low level which are in immediate communication with the high level water-mains. Both epidemics came to a climax five weeks after the act of intermission was committed; but the second has been more simultaneous than the first, because the act was committed for a few hours only, whilst in the first instance it extended over several days. The second, although it occupied a less extended area, has been more general and more severe, which may be easily understood, considering that the foci of contagia were much more numerous on the second occasion than on the first, and the chances of escape from their influence much less.

There are many other points of considerable importance which are worthy of record, and which may form the subject of another notice. One, however, may be mentioned here; namely, that in a certain street the houses are supplied with water from two different sources; those on the right by the Croydon Waterworks, those on the left by the Lambeth Company. The sewer is in the middle of the road, and is common to both. The fever affected only those who were supplied with water from the Croydon waterworks.

OBSTETRICAL STATISTICS.*

By J. G. SWAYNE, M.D.,

Consulting Physician-Accoucheur to the Bristol General Hospital.

THE importance of obstetrical statistics must, at the present time, be obvious to every one who is much engaged in the practice of midwifery. In no department of the healing art is there a greater need just now for clear and definite principles by which we may shape and guide our future practice. Within the memory of most of us, the changes in this department have been so strange and sweeping, that they constitute little less than a revolution. During the last half-century, the practice of medicine and the practice of midwifery seem in this respect to have changed places. The *medicina perturbatrix*, that heroic system of treatment which prevailed in the time of our fathers, is, in these days, superseded by a more careful and expectant plan; whilst, on the contrary, the somewhat timid *laissez faire* policy of waiting upon Nature, and giving her no assistance until she had proved herself incompetent to do her work, has, in the hands of the modern accoucheur, given way to an active anticipation of her wants, and sometimes, I fear, to an officious interference with her operations. To bring these changes to the test of time and experience, which alone can decide upon their respective merits, we require records of cases accumulated by a great number of independent observers during many years of private practice, in addition to the valuable statistics which we already possess from the various lying-in institutions. If every man who is in extensive midwifery practice would keep accurate notes of all his cases, and, on relinquishing the active duties of his profession, would follow the good example set by Dr. Churchill of Dublin, and publish a statistical account of them, what a mass of valuable information we should obtain! The records of lying-in charities are, in their way, most important contributions to obstetrical science, as all must acknowledge who have read, for instance, Dr. Johnston's masterly report of the Rotunda Hospital at Dublin for last year; but they are incomplete in one respect; viz., that they furnish statistics of labour amongst the lowest grade of society only; whereas every one who has been much engaged in private practice knows that the process of parturition is much affected by station and habits of life. It is only, therefore, from careful records of private practice that we can obtain statistical evidence of the manner in which the process is performed in the upper and middle classes of society.

* Read before the Obstetric Medicine Section at the Annual Meeting of the British Medical Association in Edinburgh, August 1875.

Most accoucheurs who have been many years in full practice have had a tolerably wide experience of all classes; for their career usually commences amongst the poor and ends amongst the rich. Hence they are well qualified to make a comparison between the mode in which the process is performed in one class and in the other. And all who are in a position to do this must, I think, be prepared to admit that those who work hard for their daily bread have an advantage in this respect, and that, by a natural rule of compensation, a hard life tends to produce an easy labour. That the function of parturition should be thus affected by habits of life is not so much to be wondered at, when we see how evidently the function of lactation is modified by the same conditions. We all know that, amongst the labouring classes, a woman who cannot nurse her child is a rare exception, whilst amongst the rich and luxurious it is equally uncommon to find a mother who can nurse properly; on the contrary, the milk is deficient either in quality or quantity, and we see the same course of events recurring, and hear the same old story repeated with tiresome reiteration; the mother has nothing, or next to nothing, for the baby, and the child, thus deprived of its natural food, cannot digest the artificial food which is substituted for it, diarrhoea sets in, and the doctor who is called in to prescribe for this state of things is obliged to recommend that the natural deficiencies of the mother should be supplied by a hireling substitute drawn from another grade of society.

In order to institute a fair comparison between the process of parturition amongst the rich and amongst the poor, we require the records of a large number of cases of each sort attended in private practice. By this I mean that, amongst the poor, the patients ought to be attended at their own houses, and not at a lying-in hospital, because there are certain special risks connected with these institutions which would render the comparison an unfair one. It is necessary also that all cases to which the practitioner has been called in in consultation should be carefully distinguished. These conditions being observed, we may class amongst the rich all those who can afford to pay well for the attendance upon them, and amongst the poor all those who are attended gratuitously in connection with some lying-in charity. Most men who have had much experience will have met with a considerable number of cases of each kind, the earliest patients belonging to the poor and the latest to the rich class; and a number of records of this kind will give trustworthy data for making such a comparison as that I have indicated. I have the means of doing so on a small scale from the records of my own practice. During the time I was a student, and during the first years of practice, I attended more than 250 poor patients at their own houses in connection with two lying-in charities. I am, therefore, in a position to compare the first two hundred of these cases with the last two hundred of my patients in private practice, dating back from the end of last June. In both sets of cases, I have excluded those to which I was called in consultation. I have not sufficiently correct notes of the duration of labour in my earliest cases to enable me to compare the first and second stages of labour in each set; my remarks now will be entirely confined to the third stage of labour and its attendant dangers and difficulties. And here I find that, in two particulars, there is a decided advantage in favour of the poorer class.

In the first place, with regard to *post partum* hæmorrhage arising from inertia of the uterus, I find that, in the 200 cases of the poorer class, there were seven cases of *post partum* hæmorrhage, whilst there were as many as twelve, or nearly double, in the 200 of the richer class. Again, none of the seven cases out of the first 200 were very severe, but were readily controlled by such means as cold, pressure, ergot, and the introduction of the hand. On the contrary, some of the twelve cases in the second class were very severe, and two of them required, in addition to the means above mentioned, the injection of perchloride of iron. I should mention that the first 200 cases were attended previously to the year 1846, and the last from February 1872 to July 1875. During the time when I was attending the first set, I was called in to one consultation case which was not severe; whilst I was attending the last 200, I was called in to two cases which were both very severe, one terminating fatally within six hours. These cases are not included in either list. These figures show, then, a percentage of $3\frac{1}{2}$ cases of *post partum* hæmorrhage in the poorer class of patients,* and 6 in the richer class: a fact which confirms the belief which I had previously entertained, that the latter are more prone to *post partum* hæmorrhage than the former. This hæmorrhage arises not so much from a want of contraction in the uterus immediately after delivery, as from a want of persistent contraction during the first hour afterwards. The uterus contracts and again relaxes, so as to allow a considerable accumulation of blood within its cavity.

* Dr. Johnston's report, above alluded to, shows a percentage of little more than 2.