

*Dr Halliday Croom* read his paper

# ON THE SYSTEMATIC USE OF ANTISEPTICS IN MIDWIFERY PRACTICE.

THE prevention of deaths during childbed is a subject which can never cease to be of interest to this Society so long as maternal deaths continue in their present ratio to be, as they are, the reproach of our art. Attempts more or less successful to prevent them by means of antiseptics are not new. Already the literature on antiseptics in midwifery, although not so bulky as in surgery, is yet by no means inconsiderable. Antiseptics and disinfectants have long been employed in obstetric practice; but of recent years, since the introduction of antiseptics by Mr Lister into surgical practice, much greater attention has been paid to their systematic use in our department. In Copenhagen, Germany, in Switzerland, especially Basel, in Paris, in London, antiseptic precautions have been employed to ward off what is the scourge of our lying-in hospitals.

It is at least twelve years since Bischoff, impressed with a visit he paid to Mr Lister in Glasgow, returned to Basel and set himself to carry out antiseptics in the lying-in hospital there with the most gratifying results.

Although, therefore, antiseptics are by no means new in midwifery, yet there seem to me to be reasons which justify my bringing the subject under your consideration—

1st, Because of the prevalence in our Maternity Hospital of maternal deaths, which it ought to be the first duty of every obstetrician to diminish, if not prevent.

2d, Because I have had a fair opportunity of carrying out antiseptics with care and accuracy for at least two terms of my service there.

3d, Because, so far as I know, the subject has not been ventilated here.

Now, concerning the question of maternal deaths, it must be

admitted that the diminution of maternal mortality is the main object of our art. These maternal deaths, or deaths during childbed,—by which is meant deaths occurring within four weeks after delivery,—have been shown by Duncan, M'Clintock, Le Fort, and others, to be striking in their frequency; Duncan finding the proportion 1 in 120, M'Clintock 1 in 128.

In our own hospital I have gone over the books from its foundation up to the present time, and I find that out of a total of 10,043 women who have been delivered in it, 1·84 per cent., almost 2 per cent., or nearly 1 in 50, have died, so that the Edinburgh Maternity shows a death-rate sufficiently high to attract our attention and incite to the adoption of all means in any way calculated to diminish it. There is, perhaps, a sort of melancholy satisfaction to be derived from a consideration of the fact that we have not as yet reached a mortality to be compared with that attained by some of the German and French hospitals, where a mortality of 1 in 11 is by no means uncommon.

One cannot help feeling inclined to echo Miss Nightingale's remark, who, in commenting on Dr M'Clintock's observations concerning what he thought to be the normal death-rate of childbed, 1 in 128, observes: "One feels disposed to ask whether it can be true that in the hands of educated accoucheurs the inevitable fate of women undergoing, not a diseased, but an entirely natural condition at home, is that 1 out of 128 must die. If the facts are correct, one cannot help feeling that they present a very strong *prima facie* case for inquiry, with the view of devising a remedy for the present state of things." And if a mortality of 1 in 128 justifies such a remark, how much more a death-rate of 1 in 50.

Now, maternal deaths may conveniently be classified under three heads:—

1st, Non-puerperal deaths—deaths occurring from conditions altogether apart from the puerperal state—deaths which possibly the puerperal condition may have accelerated, but which are not necessarily connected with it, *i.e.*—deaths from phthisis, bronchitis, etc. With the occurrence or prevention of such deaths the present communication does not deal, but it may be interesting, in passing, just to note the relation which these deaths bear to puerperal deaths properly so called.

This has been well brought out in a table given by Munro in his excellent work on deaths during childbed. In this table he gives the deaths of women in England referred to childbed during the only fourteen years during which there is a record of non-puerperal deaths. He shows that out of 11,298,433 births of children born alive, 10,769 women have died from causes referable to this head,—in other words, that one-sixth of the women who die during the four weeks immediately subsequent to delivery succumb to diseases which are not the result of childbed. With the prevention of such deaths the physician *qua* accoucheur has but little to do.

The second class of deaths, termed the accidents of childbirth, are, of all the causes of death during childbed, those which are most dependent on the skill and adroitness of the accoucheur. Such deaths may arise from convulsions, rupture of uterus, hæmorrhage, and so on. With these deaths we have not at present to deal.

It is with the third class of deaths, deaths from metria or puerperal fever, that we are now concerned.

Again let us look at Munro's table, where we find that of 66,792 women dying during the first four weeks after childbed, 22,355, or 1 in 3, died from puerperal fever.

I have shown the general death-rate of the Edinburgh Lying-in Hospital, but I am unable to say with any accuracy what the relative death-rate is, arranged under the three headings to which I have just referred. The reason of this is simply owing to a want of definiteness in the manner in which the records have been kept.

If the general death-rate is high,—and I fear there is no denying the fact,—much may be said by way of explaining and accounting for it by a reference to the various unsuitable and unsanitary localities in which it has from time to time been situate in its long though chequered existence. It is sufficient for my present purpose to analyze the death-rate since the opening of the New Royal Maternity and Simpson Memorial Hospital. Thanks to the admirable suggestion of Dr Keiller, accurate reports by the ordinary acting physicians have been published quarterly, and the death-rate, as well as the cause, can be ascertained with exactitude.

The new hospital was opened in May 1879, and from that date till the end of October 1880, 320 women have been delivered in the building; and of these 320 women 12 have died, making the mortality 1 in 26·6—3·89 per cent.—a sufficiently startling fact. In the new hospital no similar explanation of the high death-rate is to be found. Here we have a completely new building, with all the most modern sanitary improvements, examined by the most competent sanitary authorities, and conducted with all due care and caution, with a death-rate accompanying a normal process I think I may say higher than now after the capital operation of ovariotomy in the hands of Dr Keith.

Let us analyze this mortality under the three heads to which I have alluded, viz., non-puerperal, accidental, and metria; and what do we find? From non-puerperal causes only one woman died, and she succumbed to an affection of the kidney. Under the second head it may be said that a maternity charity should, *prima facie*, be expected to have a higher death-rate than extern practice, because to it are sent many serious operative cases. I do not think this is the case to the extent that might be supposed. Speaking of my own experience of our own hospital, the great majority of cases are not sent, but come voluntarily, not because of any peculiarity in their case, but simply for shelter till the confinement is over. No doubt serious operative cases are occasionally sent to hospital, but

not in anything like the proportion that might be expected. From this second set of causes there died but one patient, owing to an ovarian tumour complicating pregnancy.

We come now to the third class—deaths from metria or puerperal fever. Since the opening of the hospital, of the 12 deaths which have been recorded, 10 have taken place from this cause. Nor have these deaths been confined to the service of any one physician. With the exception of Professor Simpson, each of us has contributed his quota of deaths from metria. The occurrence of puerperal deaths to the extent I have just shown, occurring in a new hospital, is sufficiently striking to require our earnest attention. In a report which I read to this Society, giving an account of my first quarter at this hospital, I fully recorded three deaths from puerperal fever, and advanced what I believed to have been the origin of the disease, viz., the want of a separate mortuary, and the performance of post-mortem examinations in the hospital. Since that report this fault has been remedied, and the hospital thoroughly and repeatedly disinfected. Notwithstanding all this, the deaths from puerperal fever have continued. Yet during that period there has not been recorded a single case of death from a similar cause in the extern practice of the charity, although the births are double, amounting to 625, and the general death-rate only 1 in 156.

This brings us back to the old question long ago worked out by Sir J. Simpson, Evory Kennedy, and others, of home *versus* hospital practice, and of the greatly increased mortality of hospital as compared with home. The present communication obviously does not embrace any reference to the necessity of maternity hospitals, nor to the best methods of their construction. Those who wish a *résumé* of the whole subject will find such in Dr Munro's excellent book. To me it seems sufficiently established that maternity hospitals must exist, as much for the benefit of women at a time when they most need shelter and assistance, as for the clinical instruction which the medical student can receive there, and there only.

Another point seems equally clear to me, viz., that we must make the best possible use of the hospital we at present possess. For as it has already taken about half a century to impress upon the people of Edinburgh the need of a proper building to be used as a lying-in house, there does not seem any immediate prospect of another being built, even if any flaw could be pointed out as existing in the present one.

The present Maternity Hospital being a necessity, and puerperal fever having been shown to exist there, and to have been the direct cause of death in 1 out of every 32 women, and as all needful sanitary improvements have been made, it becomes necessary to look for the prevention of this scourge by means apart from the building itself.

I speak of prevention rather than cure, because I take it that it must be the experience of most if not all of us who have had to deal

with a pronounced case of puerperal fever, that in its presence we are nearly powerless, or at least we are not in a position to rely with certainty on the efficacy of any of the means employed. The recent paper of Dr Matthews Duncan on the treatment gives an account of the various means that have been employed, and it would appear that the pharmacopœia has been ransacked, and drugs of all kinds have been had recourse to, but with very uncertain effect. At most, we are fortunate if we alleviate pain by narcotics, or prolong life for but a brief period by a free administration of alcohol. If, therefore, we are comparatively unable to cope with puerperal fever once it is fairly established, it becomes our duty to be all the more anxious to adopt any precautions which may offer a reasonable hope of preventing it.

What, then, is the nature of this disease which has proved fatal in our new hospital to one out of every 32 women who have been delivered there? and is it feasible to suppose that it can be prevented? Now, I do not believe that we can ever hope to prevent puerperal fever entirely, because its origin is possible in so many ways, and the factors in its production are often beyond our control; but I feel certain that by a strict attention to antiseptics we shall be able to reduce its occurrence to a minimum, and render its presence in hospital practice, where I have just said it is most common, a rarity. By an almost general consensus of opinion, puerperal fever is regarded as a wound disease resulting from a poison introduced into the wound. Of wounds in the puerperal condition there is no lack, and that after the most normal labours.

Be the labour ever so natural, several wounds are never wanting—1st, A tear at the posterior commissure, and frequently, though they are often unobserved, tears in front, in the neighbourhood of the urethra and clitoris. 2d, There is seldom wanting a tear in the cervix, more or less deep; and lastly, a wound at the placental site there always is. If there be any want of harmony in the three factors of labour, the wounds at the perinæum and cervix become more extensive, and there is superadded, possibly, the crushing and bruising of the parts from a prolongation of the labour as well as the application of instruments. Now, these wounds, as long as they remain open wounds, and until they become granulating sores, are liable to infection. Besides, these wounds are specially liable to absorb and rapidly spread noxious material through the system; for we must recollect the extreme vascularity of the genital organs and the parts in the neighbourhood, the expansion of the venous and lymph channels, as well as the diminished vitality of the parts close to the wounds.

Now, I have referred to these wounds probably in the order in which the infection takes place; because, no doubt, the external wounds are the most likely and most frequent conductors of infection. Next in order comes the cervical tear, and, least frequently, the placental site. Contained as it is deeply in the uterine cavity, it is

cut off from external influences by the contractions of the uterus. Now, we can only to a very limited extent indeed prevent these wounds. Of the conditions favouring the development and spread of infection in puerperal women by the vascularity of canals, the presence of open wounds, and the greater or lesser destruction of the vitality of the parts surrounding, we can only to a very limited extent indeed modify the two latter; i.e., by a timely use of the forceps we may possibly prevent a deep tear, and certainly will prevent continued contusion, and, consequently, impaired vitality. So much for the condition of the parts favouring the absorption of septic material. Whence comes the infection? For sources of infection we have not far to look. These may either be from without or from within—autogenetic or heterogenetic. Of the former we can readily observe several sources. Even the normal lochia have been shown to be of importance, containing, as they do, copious debris; and if the normal lochia are to be considered possible sources of infection, what shall be said about this discharge when it has become foetid? Decomposing blood-clot, as well as pieces of retained placenta and membrane, are by no means uncommon accidents during the puerperium. Then, again, the liquor amnii may become septic from contamination with external air in cases of early rupture of the membranes. The discharge from any of these sources, passing over the wounds to which I have referred, before they have become coated with granulations, may at once become a source of infection. To the heterogenetic there is scarcely a limit. First, there are the fingers of the accoucheur and the nurse, as well as unclean instruments and appliances. In our own Maternity, where both the University and extra-mural students are taught, there is the additional risk from students who, in spite of instructions to the contrary, may have come from post-mortem or dissecting-rooms, and from attending infectious cases. Further, there is possibility of infection from insufficiently cleansed linen, as was shown to be the case in a recent report of an outbreak of puerperal fever in the Queen Charlotte Lying-in Hospital in London. The medical report of this hospital for the past year shows that in the spring of the year 1879 sixteen deaths occurred from diseases comprised under the name puerperal fever—a fatality which very properly led to the temporary closing of the hospital and a careful inquiry into the cause of the mortality. The result of the inquiry was, as I have just shown, the discovery that the *fons et origo mali* lay in imperfectly cleansed linen. This hospital was closed accordingly, and since its reopening the death-rate has fallen to 1 in 350. It need scarcely be pointed out that the presence of any decaying animal matter is sufficient cause of infection, as well as the proximity of fever or erysipelas. But, apart from these, the mere aggregation of lying-in women is of itself a cause of danger.

Such is the disease, and such the channels and source of infection. The channels of infection must remain. They are in great measure a part, and a non-preventable part, of the normal process of delivery. The sources of infection, no doubt, are to a much greater extent under our control. By strict attention to cleanliness an immense amount by way of prevention may be accomplished; but in our hospital every attempt has been made. The hospital has been cleaned and disinfected again and again; one set of wards have been changed for another; and yet the mortality has gone on. Unlike some maternities, our hospital is not attached to any general hospital, so that one fertile source of infection is removed. The remedy, then, as Bischoff showed twelve years ago, consists in preventing the septic germs or bacteria from entering the wounds; and as carbolic acid is destructive to the vitality of these germs, the obvious indication is the employment of this or some other antiseptic systematically in the treatment of all cases of labour.

Now, although I would strongly advocate the employment of antiseptic precautions regularly in private practice, yet it is more particularly to the Maternity Hospital that the following simple antiseptic rules apply.

It is impossible, we must admit, to carry out antiseptics completely and thoroughly in obstetrics, at least, except by the adoption of elaborate contrivances, which I fear would be impracticable. But although absolute asepticism is not attainable, yet by a strict adherence to the rules we shall, by modifying the poison, either render it inert or else greatly diminish the severity of the infection.

#### *Rules to be observed by Students.*

1. No student shall be allowed to visit the hospital who is engaged in the dissecting-rooms, or in attending post-mortem examinations or infectious cases, either in hospital or dispensary practice.

2. No student shall examine any patient in the hospital, in any way whatever, except in the presence of the ordinary physician or the resident medical officers.

3. Before each per vaginam examination the student shall thoroughly wash his hands in carbolic wash (1 in 30).

4. In all vaginal or uterine examinations 1 in 20 carbolic oil shall be used for lubricating the fingers.

5. Each student, on entering the hospital daily, shall sign the album.

#### *Rules to be strictly observed by Nurses.*

1. *Washing Hands.*—No nurse shall touch, or make any application whatever, to the genital organs of a patient, without having first thoroughly rinsed the hands in carbolic wash (1 in 30).

2. A large bottle, containing a solution of 1 in 30 carbolic acid,

and a small bottle of carbolic oil (1 in 20) shall permanently stand on the table in every ward and delivery-room.

3. *Diapers*.—Each diaper, on removal from a patient, shall at once be taken out of the ward or delivery-room downstairs to the wash-house, and then placed in a tub containing carbolic wash.

4. Each diaper shall be washed, boiled, and dried by the laundress.

5. Immediately before application to the patient's genitals, the nurse in charge of the case shall soak the diaper in 1 in 20 carbolic wash, and afterwards dry it, or apply it wet, according to instructions.

6. *Catheters, Vaginal Tubes*.—All catheters and vaginal tubes shall be kept, when not in use, in carbolic oil (1 in 60).

7. Before using a catheter, the nurse shall dip her fingers and catheter in carbolic oil (1 in 20).

8. After use she shall wash the catheter in carbolic lotion (1 in 20), and then replace it in carbolic oil (1 in 60).

9. *Syringes, Sponges*.—All syringes and sponges, when not in use, shall be kept in carbolic wash (1 in 30).

10. Before using a syringe, the nurse shall lubricate her fingers and the vaginal tube of the syringe with carbolic oil (1 in 20), and see that air is carefully expelled.

11. *Washing and Syringing*.—All washings and syringings, when such are required, shall be done with a solution of carbolic acid (1 in 60).

12. All the Mackintosh sheets shall be thoroughly washed in carbolic wash.

13. *Dirty Sheets*.—All dirty sheets shall be promptly removed from the ward or delivery-room to be cleansed.

14. *Deaths*.—On the death of any patient, the body shall at once be removed to the mortuary outside the hospital.

15. *Visitors*.—No visitor whatever shall be allowed admittance to the hospital unless provided with a special pass from the resident medical officer on duty.

In respect of these rules there are one or two points which require special notice:—

1st, In regard to the application of diapers. In the hospital it has been the custom to use the same diapers over and over again, which in itself I hold to be a source of danger; but further, if the nurses are allowed to apply the diapers dry there is no sufficient guarantee of when they have been dipped and dried. As the first twenty-four hours are the most dangerous period, the wounds being raw and the vagina more or less patent, I have adopted the precaution of having the diapers applied when still wet with carbolic wash during that period. This precaution I hold to be of great importance. Perhaps diapers dipped in boracic acid and allowed to dry might do equally well, if not better. They would be applied with crystals still adhering to them, and would probably be more comfortable for the patient.

2d, All operative procedure, such as application of forceps and the introduction of entire hand into vagina or uterus, I have conducted under the carbolic spray, with the instrument and arm well lubricated with carbolic oil. The latter is absolutely essential under all circumstances. The former—viz., the use of the spray—is, I think, needful only in hospital, where the infection is greater than in home practice, and also because in hospital, at least in teaching hospitals, the measure, to be properly demonstrated, requires longer time and more exposure of the parts. At the same time, if I had to deliver a woman in private with scarlet fever or erysipelas in the house, I should certainly use the spray.

3d, The carbolic oil is to be preferred to carbolic acid wash to keep the instruments when not in use. I fear I have destroyed several catheters and vaginal tubes with the carbolic wash. A weak carbolic oil does not in any way injure gum-elastic instruments.

4th, I have adopted, and found it valuable, to insist on the students, at every morning visit, signing an album acknowledging that they have conformed to the rules I have laid down for them.

5th, In any case where the labour is prolonged, it is desirable to wash out the vagina occasionally with a weak solution of carbolic lotion previous to delivery.

These rules, involving as they do considerable trouble on the part of the nurses, are apt to be perfunctorily carried out. A great deal of the success of the treatment, therefore, depends on the energy and strictness of the resident surgeons. It must be their duty, at each daily visit, to inquire carefully whether and how the antiseptic precautions have been carried out in the case of each individual patient. Satisfactory results cannot be expected unless the precautions are scrupulously observed in every case.

In bringing this paper to a conclusion, the question naturally arises, Am I able to show that the adoption of these antiseptic precautions has been accompanied by any good results in my own experience during the two terms I have had the privilege of conducting in the present hospital? Early in my first quarter three maternal deaths from septicæmia rapidly succeeded one another, originating in the manner I have already described. During the same period high temperatures and frequent attacks of pelvic peritonitis were common.

After the third death the antiseptic precautions just described were adopted, with the result that the temperature became normal, the peritonitis disappeared, and no further case of septicæmia occurred. On assuming duty this quarter I found a septic case in hospital, which died from septicæmia, and shortly after a second patient succumbed to the same disease. Thereafter antiseptic precautions were energetically carried out, and no further case occurred, and the temperature, with one or two exceptions, to which I have alluded in my report, became and continued normal; for I hold that the frequent pelvic disturbance and high temperature

which showed themselves in the early days both of my present and former quarters were owing to septic influences, these becoming definitely and fatally developed when specially predisposed persons were attacked. But it may be said that the satisfactory result in my first quarter was owing to the closure of the hospital, and its thorough disinfection, and at that time such certainly was my impression, as shown in my previous report; but this year, after the second death from septicaemia, no such closure took place, and the deliveries went on uninterruptedly, the only change being the careful adoption of the antiseptic rules, and yet no indications of septicaemia manifested themselves. It must be kept in recollection that we labour in the Maternity under two great disadvantages—

1st, We have not, as in other hospitals, a permanent trained staff of nurses, but each acting physician has to begin and conduct his quarter with a new and often most incompetent set of women, who, without any previous instruction, come to be trained as nurses. It is often with difficulty we can impress on them the most ordinary rules of cleanliness, apart altogether from the carrying out of minute antiseptic details. It is therefore with satisfaction we must regard the proposed appointment of a permanent trained nurse, to whom the superintendence of such minutiae can be left.

2d, It must be borne in mind that the majority of the intern cases are single women who have been seduced, and who, apart from their mental condition, which is of great importance, have, previous to admission, been in straitened circumstances and badly nourished, and are consequently specially liable to be quickly and gravely affected by any septic influence under which they may be brought.

From these and such like causes I fear it is utopian to hope that we shall ever be able to prevent puerperal septicaemia entirely. I feel convinced, however, that by a strict observance of these or some such antiseptic rules we shall very materially diminish its frequency, certainly prevent anything like an epidemic, and render its presence a rarity in our hospital, where hitherto it has been a scourge.

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*The President* thought it a most important communication, and hoped it would give rise to an interesting discussion.

*Dr Taylor* felt grateful to *Dr Croom* for his paper, although he thought he put too much faith in carbolic acid. It was certainly a good antiseptic, but others were more effectual, namely, care and cleanliness. He had some experience in the Maternity of old days, as he was resident physician in it for nine months. During the previous nine months there had been thirteen deaths, and during the subsequent six months there had been six deaths. He found that the mortality was due to the internal arrangements, as the same unpurified mattresses were employed for successive patients. He had great difficulty in getting this arrangement altered. In

addition to this, he had always one ward empty for a week; and a third thing was that great care was taken that the patient brought in no infection from without. To secure this last point every patient was put in a bath on entrance, even although the birth sometimes occurred in the bath-room. As the result of these precautions he had only one death during his nine months' tenure of office. This death was not due to puerperal fever; and he might remark that this special patient had been put into an uncleaned bed. He had never had a maternal death in his private practice. Dr Croom's description of the avenues of entrance for puerperal fever was very good. He had listened with pleasure to the paper.

*Dr Keiller* agreed with *Dr Taylor* as to the value of the paper. He remembered the period alluded to by *Dr Taylor*. Sir James Simpson had gone into the question of the causes of puerperal fever very thoroughly. He also insisted on the importance of the employment of fresh straw for each new case. He had no doubt as to the danger of hospitals. He believed the antiseptic treatment to be very good. He remembered asking Mr Lister if he thought his system of antiseptics could be carried out in midwifery. His reply was that it would be difficult, but that he thought it possible. One point he wished to insist on was that the nurses should not live in the Maternity Hospital, but in some place near. He thought that they should specially insist on women being very cleanly in their persons, especially during their menstruation. He was at one with *Dr Croom* as to the employment of antiseptics.

*Dr Taylor* alluded to a correspondence which appeared some years ago in the *British Medical Journal*, affirmative of the truth of a popular belief, that a woman during her menstrual period was unfit to manipulate ham in the process of curing, the general experience being that ham so treated did not keep. This correspondence was cut short by a leader from the editor, in which he dealt with this suggestive subject in a summary and unscientific manner. The truth was, that these popular beliefs were, as a rule, the result of intelligent observation and sagacious inference, and this one, at least, was supported by not only ample testimony, but constantly recurring experience. They were all aware that whilst in some women menstruation was a comparatively local process, in others it was accompanied by characteristic emanations from the rest of the body, and these, proceeding from the hands and reaching the pork in the process of rubbing, could hardly fail to contaminate it. In the same manner, if these emanations be brought into contact with the raw surfaces which seem to be a necessary contingent of parturition, how much more rapidly and certainly will mischief be done! If it affects raw pork, notwithstanding the intervention of salt used in rubbing, how much more rapidly will it be absorbed to the detriment of a living organism. Hence there is great need

for the precautions which Dr Keiller suggests. Not only should the nurses be separately housed, but the grave question forces itself upon us, Should a menstruating woman be allowed to nurse at all in cases of parturition?

*Dr James Carmichael* had listened with great satisfaction to Dr Croom's paper, and believed it would do good service in the profession. It was two years since the use of antiseptics in midwifery had been heralded in this Society, and they had the subject now regularly under discussion for the first time. He thought Dr Croom had demonstrated the danger of maternity hospitals, although he could not agree with Sir James Simpson in thinking they should be abolished altogether, as in large cities their existence was a matter of convenience as well as necessity. He thought Dr Croom's rules should be fuller. Thus the patient might lie on an antiseptic sheet, and so on.

*Dr C. E. Underhill* remarked on the interest of Dr Croom's paper. It was certainly striking that there were no deaths in the extern department. The antiseptic method advocated by him was much like that of Stadtfeld of Copenhagen. As to the causes of puerperal fever, he believed that it was very seldom autogenetic, as was shown by the comparative rarity of its occurrence in private and extern hospital practice. The poison was really introduced from without. He was astonished to find that the wards in the Maternity Hospital had so many beds, and thought this a serious mistake in arrangement in a lying-in hospital.

*Dr James Young* said that in private practice he used carbolic oil in all gynæcological cases as an antiseptic, and in obstetric practice he recommended the free use of Condyl's fluid in warm water, or Condyl's ozonized water, with which the patient was bathed at frequent intervals. Vaginal injections of the same were very useful, especially when the lochial discharge became foetid. He could not boast of Dr Taylor's success, as he had had several deaths in his obstetric practice.

*Dr A. H. Barbour* thought the use of the term "antiseptics" in midwifery was a misnomer, as one could not keep vaginal or perineal wounds antiseptic. He thought it of importance to wash vaginal wounds and apply salicylate paste according to Gusserow's plan. Schroeder washes out the vagina often, and uses constant intra-uterine irrigation in septic cases. In Prague, injections are used as little as possible. He himself was of opinion that vaginal injections were beneficial.

*Dr J. B. Buist* thought that Dr Croom had in his paper hit a good many nails on the head. One cause of puerperal fever was a want of cleanliness on the part of the nurses. It seemed to him extraordinary that each physician began his quarter with a new staff of nurses. He did not think that the students carried infection. The real cause was to be found in the aggregation of patients and nurses. He admired the simplicity of Dr Croom's

method. No one advocated Listerism in obstetrics, as that was impossible. The use of injections was uncalled for, as it introduced septic matter.

The President had listened with great pleasure to Dr Croom's paper. The practice advocated by Dr Croom was an extension of his own, with the addition of the spray (in operating cases) as recommended by Stadtfeld of Copenhagen. Undoubtedly the *sine qua non* in a maternity hospital was cleanliness. Still, one should not trust too much to carbolic oil, as Zweifel had demonstrated the occasional occurrence of septic bacteria in catgut kept in carbolic oil. Koch's and Ogston's experiments showed that carbolic acid in a five per cent. solution certainly destroyed the *materies morbi* in putrid pus, rendering it perfectly inert, and such a solution could easily be borne by the hands without inconvenience. As regards the word autogenetic, the French were undoubtedly right in rejecting the distinctions. They maintained that no such condition as autogenetic septicæmia ever occurred. If all outside influences were excluded, there was no possibility of the tissues generating septic poison. In regard to the criticism by Dr Barbour of the use of the term antiseptics, he thought Dr Croom quite right. He did not much fear the students of anatomy carrying contagion, inasmuch as the subjects they dissected were usually saturated in a disinfectant fluid, and, besides, were usually long kept in spirit. Dr W. Hunter taught anatomy and practised obstetrics without thereby causing any danger to his patients, so far as our information warrants us in asserting. At any rate, he had the most fashionable practice of his time in London. This he could not have done were it so dangerous for students to dissect and at the same time attend cases of midwifery as it is sometimes asserted. In private practice he thought systematic vaginal injections troublesome and unnecessary in ordinary cases. He did not recommend them except the case had been instrumental, or the patient had been subjected to a great deal of manipulation, as the *nimia diligentia obstetriciæ* could do harm as well as the *nimia diligentia chirurgiæ*. In his own report he had mentioned this as to the too free use of antiseptics. They could not be too particular in carrying out the rules given by Dr Croom. He was glad they were to have a permanent nurse in the hospital, and he hoped they would have better results for the future; but he could not adopt some of the favourable views of extern hospital and private practice mentioned. It was impossible to keep one's eye on extern patients long enough, and somehow, in private practice, there was a universal tendency to rapidly forget one's losses.

Dr Croom was extremely gratified that his report had been so well received. He could congratulate Dr Taylor from the bottom of his heart on the good results he had in his private practice. Carbolic acid was a good disinfectant; but he would employ any other one equally efficient. Mere cleanliness was not sufficient,

as their Maternity experience had taught them. He thought with Dr Keiller that it would be very desirable if the nurses lived out of the Hospital in a building by themselves, as they do in the Royal Infirmary. The remarks of both Drs Keiller and Taylor on menstruation as a means of infection were most important and suggestive, and the field was a wide but a difficult one for study. He wished to point out to Dr Barbour that the use of antiseptics in midwifery did not mean Listerism. He therefore could not agree with Dr Barbour as to the term antiseptics in midwifery being a misnomer. He was anxious to draw attention to a point which he thought had been a little misunderstood, viz., that he used the spray only in operative cases.