wound. This continued for five days, when the fistula closed spontaneously, leaving a hollow, granulating surface about 2 in. square. Three silkworm-gut sutures were inserted, pulling the granulating surfaces together; the wound healed perfectly, and the patient did well.

Malignant Cervical Disease.—Panhysterectomy was performed in two cases of advanced malignant disease of the cervix in order to relieve severe symptoms of haemorrhage and pain; both patients recovered, although one of them developed a temperature which on one occasion was as high as 102.6° F. The temperature, however, remained perfectly normal for nine days before she was discharged from the hospital.

DRAINAGE.

Gauze was used in three of the earlier cases (Nos. v, vii, and xii) for the supposed purpose of drainage, and the result in all these cases was unsatisfactory. In Case v, panhysterectomy for ulcerating malignant disease of the cervix, gauze was used from the pelvis into the vagina, and the result was a gradual rise of temperature to 102.6° F., whereas in a similar case (Case xlvi) no gauze was used, and the patient made an uninterrupted recovery. In the case of the suppurating multilocular ovarian cyst (Case vii) the posterior vaginal fornix was opened and the pelvis drained through the vagina. The result was a pelvic abscess, which had to be douched for many days afterwards, and to which, I have little doubt, her high temperature and unsatisfactory convalescence was partly if not mainly due. In Case xii gauze was also used for the supposed purpose of drainage, on account of general oozing, and although this patient had a normal convalescence for four weeks after the operation, a faecal fistula developed during the fifth week.

I have since then altogether abandoned the use of gauze for drainage purposes in abdominal and pelvic work, unless in cases of pelvic abscess, where the abscess wall cannot be removed, and have since followed the following rule: If a little pus accidentally escapes I carefully mop it up, and in case a large amount escapes and soils the intestines, I wash the intestines and pelvic cavity thoroughly with normal saline and then close the abdomen, leaving a considerable quantity of saline behind. In cases of general oozing I first secure the more important points, and then fill the pelvis with saline.

I have followed this rule in several such cases on which I have operated since, and the result has been quite satisfactory in every case. I have now no doubt that the gauze in the earlier cases did not act as a drain, but merely as a superfluous and noxious foreign body, and a local irritant to any intestinal surface with which it came in contact.

TEMPERATURE.

A study of the temperature charts of the series is most interesting, considering the circumstances under which the operations were performed. There was not a single case of "sepsis from without," and in no less than 41 cases the temperature did not exceed 101° F. even on a single occasion, while in 28 it never exceeded 100.4° F.

In 5 cases the temperature exceeded 101° F. on two occasions only, but did not exceed 102° F. These cases were:

No. xvii. Recent ruptured ectopic with severe internal haemorrhage.

No. xxi. Ovariectomy for simple ovarian cyst.

No. xxxiii. Supravaginal hysterectomy for large myomatous uterus in a very corpulent subject.

No. xlii. Double ovariectomy. The abdomen was enormously distended, and the patient was extremely ill on admission.

No. xlvi. Panhysterectomy for ulcerating malignant disease of the cervix.

In Case iii, which proved fatal, the temperature was marked between 101° F. and 102° F. on three occasions. Only in two cases was the temperature recorded above 102° F. and less than 103° F. These were:

No. v. Panhysterectomy for ulcerating malignant disease of the cervix.

No. xlviii. Advanced malignant disease of the peritoneum. The temperature was due in this case to a somewhat mild attack of left-sided pneumonia at the end of the second week after the operation.

Only in one case was there any serious degree of temperature. This case was one of suppurating multilocular ovarian cyst with purulent peritonitis, but the

temperature was 104° F. for two nights prior to the operation.

The following table summarizes the charts:

	One Occasion Only.	Two Occasions Only.	More than Two Occasions.	Total.
Not exceeding 100.4° F...	—	—	—	28
100.5° F. to 101° F. ...	9	3	1	13
101.1° F. to 102° F. ...	—	5	1	6
102.1° F. to 103° F. ...	1	1	—	2
Above 103° F. ...	—	—	1	1

GENERAL OBSERVATIONS.

From this series the conclusion appears to be deducible that attention to the following points is highly desirable in order to obtain good results:

1. A correct preliminary diagnosis.
2. Simplicity in operative technique.
3. The simplest antiseptic preparations combined with asepsis.
4. The use of few surgical instruments and appliances.
5. Limited abdominal incisions.
6. The correct adjustment of all cut peritoneal surfaces.
7. The complete closure of the abdominal cavity without drainage of any kind.
8. The free use of normal saline solution in cases where purulent material gets accidentally spilled in the pelvis or abdomen during the performance of an operation.

Finally, I desire to express my great indebtedness for these results to Mr. J. W. Leech and the many practitioners and students who assisted me with the operations. I have also to record my high appreciation of the careful preparations, assistance at the operations, and careful nursing of all these patients by the sister in charge, and on account of which the entire elimination of sepsis was mainly due.

MIDWIFERY EXPERIENCES:

A RECORD OF FORTY-SEVEN YEARS' WORK.

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SINCE 1875 I have had assistants, till within the last few years, unqualified. Since that time I may not have been in actual attendance on more than the half of the cases, but upon nearly all serious cases I have been told about anything unusual.

When I started practice in 1859 I had experience of the usual kind of about 50 maternity cases in England. I had never seen labour carried out except in bed, or on the floor when there was no bed. In our district—and I do not know how far around—it is a very common habit to go through labour out of bed, the patient on her knees holding on by a chair. I resisted this very strongly at first, but had to give way sometimes when the patient said she could not lie and those in attendance pressed the matter, saying that her old doctor would have allowed it, and she would have been better long since. I soon got to see that it was not a bad way for a poor woman with, perhaps, a very scanty supply of clothing. The whole mess—often a very ugly one—is left on the floor, and with a warm dry cloth to the parts and a quick shift to bed the patient is pretty comfortable. I daresay more than half of our patients have been delivered in this way. I once tried the forceps in this position, but did not use them well and never tried again.

There has been no use of antiseptics except some antiseptic oil or grease for the finger, hand, or instruments. Many times we have been caught on the roads with no preparation. From the first I have always been very careful in washing my hands and changing my outer coverings if we had infection on our rounds, though this was not always possible.

It would be wrong to say that I have never poisoned a woman with my finger, because I was once caught a good many miles from home on my way from a *post-mortem*

examination, and, though I did my best with soap and water, I found after I left that my hands still smelled. It was before germs were much thought of, and, though I interfered as little as I could, she would cry out for help, and had a slight septic fever, but is now a strong old woman. There has been no shaving of the parts in our practice, no washing in the ordinary run of cases, and no syringing—in fact, in such interference I do not believe. I now see some of our trained nurses taking small bits of cotton and sponging the parts with a mild antiseptic, too mild, perhaps, to be of any use. Meantime the woman is exposed, and it serves, in my opinion, no good purpose, perhaps may plant some germs, which the flow of blood would envelop or take away.

I see now and again in our JOURNAL a run of a few successful cases since the doctor started the shaving process, others with a run since syringing out and with antiseptics, an interference with Nature not safe, I believe, and quite unnecessary.

In a large number of our cases the parts may not have been washed since infancy, though I should not speak too strongly; many of them may have given themselves a bath when they had opportunity. In one-end houses, obviously, there are not very frequent opportunities, and in a good many of the houses water was so scarce that there was little to spare.

So far as non-interference with the natural powers, of which we have heard so much lately, I think that in a good part of our practice, the opposite course—a good deal of interference—has been the case. There are little helps which often hasten labour, such as ergot, in right cases, rupture of the water-bag at the right time, pressure on the os when dilatable, and a firm bandage; if everything is natural, why should we delay the forceps if there is great suffering? I find our patients are more anxious for the forceps than we are, and if Dr. Horrocks was in our position, often miles from home, a cold house, and little in it in the way of comfort, perhaps a man and horse standing at the door, he would before long try all the little or big helps, which had in similar cases been found of use and with no fatality.

I do not know why there should be so much fatality in England in midwifery practice if it is not due to too much trust in a poor use of antiseptics and too little in ordinary cleanliness. I cannot help thinking the midwife is the danger—too much careless washing before and after, and other wicked interference by unskilful hands. I saw myself 50 cases in a mill-town in England nearly fifty years ago, not a case going wrong, and there were no antiseptics, no washing, and little interference except, I have no doubt, too frequent examinations. In the grandest surgical operation septic mischief crops up now and again; who can put an end to it here at the very point of the sewage discharges? We now know that typhoid germs are discharged by the urine; the kidney throws off pus, perhaps other septic things; and we know what dangerous organisms live in the bowel. I do not think the grounds for blaming the clean-washed finger are very strong.

Since my son commenced practice, about five years ago, there has been no fatality in over 600 cases. I see he is more careful, because he always carries a brush for his hands.

Nearly all my own work has been done without uncovering the patient, except when using instruments or when anything unusual arose. In fact, I do not like to see nurses throw women bare, so that you may see where to put your finger. There should be no modesty if it kills, but we have yet to learn that it does. May not so much exposure account for some of the mishaps? My first ten years or so were without a death, when antiseptics had no place in the midwifery bag. The first death having any real connexion with labour was a case of real puerperal fever, imported from Glasgow, by the nurse who nursed a fatal case there on a sister-in-law. It was some little time after, but I have no doubt it was brought in the nurse's clothes. I took off my clothes in an outhouse when I got home, sent all that had any connexion with the case to be disinfected, and we had no more of it.

In our practice there has been, as a rule, very little waiting for the placenta. When the child is born I immediately seize the uterus and either keep up pressure myself, or ask some one to do it (but I find that I often lose by that), till the child is separated, then keeping up

the pressure on the uterus and slight traction on the cord the placenta is soon delivered. Dragging by the cord will not do it, but the combination of pressure with judicious traction soon does it. The pressure is kept up for some little time, then a pad and a firm bandage.

I have had a few cases of *post-partum* haemorrhage, anything severe a long time ago, and no deaths from it. I often give a good dose of ammoniated ergot when the labour is nearly over, and the case a good way from home. I have thought in some of these cases that too much kneading of the uterus was bad, and took to watching or the application of cold towels. In a very few cases I have had to introduce the hand and remove the placenta after failure otherwise, or where symptoms were threatening. The most common difficulty has been when I was not present at the birth of the child, and the uterus had contracted on the placenta, enclosing it. I have had no case of adherent placenta, but have heard of a few.

ANALYSIS OF CASES.

The number of births was 5,845—I daresay close on 6,000—from July, 1859, to end of 1905.

Of forceps cases there were noted 309, and a good many not noted, cases requiring so little help, or for the doctor's convenience; 209 cases requiring help for tedious or difficult labour, a good many of them through the soft dilatable os, and also here, a few to help the doctor as well as the patient; 100 long forceps cases where the head was at the brim, 47 for long exhausting or helpless labour, with 7 stillborn children; 31 very lingering, and requiring great help, with 15 stillborn; 8 forceps and craniotomy (two women account for 5 of these—one for 3, the other for 2). In one of these I tried turning, but failed to save the child from difficulty with the head. Six women account for 18 of the very difficult cases; 22 cases include bad presentations, occipito-posterior (very common), cord, hand, face, hand and head, internal haemorrhage, etc. All the difficult cases had one or more living children, so that there is often not much difference between success and failure, the result being determined by slight difference in the size of the head, more favourable presentation, or possibly more perfect hold with the forceps.

Turning Cases.—19, 5 stillborn; 11 cases transverse presentation, mostly arm, arm and cord twice; placenta praevia once. Tried to save child, woman having had craniotomy before, but failed; once for convulsions and once after failure with forceps, the patient dying after from rupture of uterus. If I had been less squeamish about doing craniotomy, this woman might have been saved.

Placenta Praevia.—12 cases, 8 central 4 partial. I have no doubt, from the symptoms observed, there were a few more partial. Five deaths of children, one dead some time and one from perforator to save mother. These cases of placenta praevia were treated by turning in 5 cases, 1 after dilating with Barnes's bags, 2 dilating quickly by fingers and forceps, 1 craniotomy by ordinary household scissors, 3 forceps and 4 natural labours. No maternal deaths.

Cord Presentations.—13, 2 delivered by turning children stillborn, 9 quickly by forceps, 1 stillborn. I believe in the forceps if expeditiously used.

Breech or Feet.—40 cases, 8 stillborn, 2 from want of timeous help, and 1 dead for some time; result of partial presentation of placenta. I tried forceps on the breech once with good effect, but on another occasion failed, too much power being needed. Worth a trial.

Twins.—71 cases; presentations nearly all varieties; 5 of the second children stillborn, 2 dead for some time, one from want of help; 8 cases noted as premature. 3 cases of mummified fetus, one about sixth month, others fifth. All came away after birth of other healthy child, in an unbroken bag, attached to the placenta. In three of the cases each child was followed by its placenta.

Triplets.—3 cases, all about seventh month, and all lived a short time.

Occipito-Posterior.—52 cases noted. 37 cases born in that position with forceps or alone; 15 cases born without help. I have tried to turn the head with forceps, but not successfully.

Face Presentations.—13 cases; 8 cases help with forceps, 5 no help.

Inversion of Uterus.—2 cases. In one of them I determined to be cleverer than her old doctor, who had always to introduce his hand to bring away the placenta. In my usual way I was pressing the uterus firmly with the hand, not my weight on her, because she was on the floor on her knees, and my usual traction at the cord. After some little time the uterus suddenly left the hand and tumbled outside. I at once separated the placenta, and easily replaced with the hand. No evil result followed. The other was only partial into the vagina. Feeling the uterus suddenly leave the hand when the placenta was discharged, I very fortunately examined and found the fundus in the vagina; it was easily corrected. I once assisted at a *post-mortem* examination in a case of *post-partum* haemorrhage which resulted fatally. The doctor was at a loss to account for the result. We found an inversion into the vagina; if it had been noticed at the moment life might have been saved. These cases show the benefit of

having the uterus in the grasp of the hand, and the benefit of an examination if it goes suddenly out of the hand.

Mole.—2 cases; one large mass of hydatid; this was treated with chloroform and dilatation with Barnes's bags; in the other a large quantity of mole and a child healthy at full time.

Monstrosities.—8 crania or spinal bifidas; one small one was cured by iodine, but the child did not grow up; 8 cases of harelip more or less severe; 5 anencephalous, one lower part of belly wanting, one contents of belly hanging out at umbilicus, one no anus or rectum, meconium-like discharge from bladder. Other small things a few, such as want of small parts, supernumerary fingers and toes, etc.

Premature Births.—126 reckoning from sixth month onward; 63 dead some time before labour. Very few lived any length of time. These were accounted for in many ways, separation of placenta, albuminuria, scarlet fever, pneumonia; in most the reason was not known, or at any rate not well known. A few cases from syphilis; my experience in our country district is that two or three children are born prematurely and decaying, after that a fairly healthy family, and continuing healthy. Two women aborted about the fifth month, one from pneumonia, the other from albuminuria; the latter died.

Rupture of Uterus.—Three cases. One, multipara, aged 40. Seven years from last birth. Strong, little fat woman; occipito-posterior position; tried forceps twice and failed; then turned, and forceps to head. Head extraordinarily elongated from great pressure; placenta came easily, and uterus contracted fairly. Complained of great pain, and looked like sinking after labour, but lived six days. A rupture of two or three inches across the neck of uterus, beginning on left side. The second case was a very strong, little stout woman; very hard os, for which I tried chloral, and very hard labour; died almost immediately after labour was completed. No instruments used. *Post mortem*, small tears were found in the peritoneal coats, some deeper, and half-pint of blood in the peritoneum. The third case was the sister of last and of the same build; she was a multipara, and was in the hands of my assistant till her labour, which was severe, suddenly ceased. The head was well down, instruments were easily applied, and she was delivered easily and quickly; the placenta came away soon and no more haemorrhage than usual occurred, but she looked prostrated, which we were inclined to think might be from the severe protracted labour. She died next day. There was a large rupture across the uterus about the neck. In none of these cases was I aware that rupture had taken place till the *post-mortem* examination. Fortunately for me, I never had much difficulty in getting a *post-mortem* examination; in many places there is no chance. It requires training, and might be overcome to a far greater extent, and with great advantage to the doctor.

Indentation of frontal bone has happened five times; it always happens in difficult long forceps cases. It did not happen in the same woman twice, though three of the cases had come through severe labours. In one of the cases I heard it take place just as the head engaged in the pelvis. This was her first living child, evidently a smaller child; the first, severe, long forceps; second, forceps and craniotomy; third brought on premature labour at eighth month, but a breech presentation, and failed to save child. I corrected the second last indentation by pressure round the edges of the depression, and reported it in the BRITISH MEDICAL JOURNAL. It went into its place with a sound like a dislocated bone. It is worth trying, and I think a small, finely-made screw, which could be screwed into about the centre of depression and lift a little would almost certainly correct it at the moment, and save operation which is sometimes done for it. I have had a small screw made for the purpose by Young, of Edinburgh, which would do it, I feel certain, combined with pressure at the edges, and take no more room in the midwifery bag than a needle.

Rupture of Perineum.—I have had no case of rupture into the bowel, perhaps half a dozen cases reaching to about $\frac{1}{2}$ in. or so from the anus. Three or four of these were treated by stitching, not very successful in some, others left alone, keeping the patient on her side to avoid discharges. There were many slighter cases, which are unavoidable with the best management, and are, I believe, best left alone. One can scarcely tell to look at the parts after that such a thing had happened. It is now a good many years since I have seen one of these worst cases, but would now stitch, avoiding including the skin. I saw the benefit of this some years ago when I was asked to take a case in hand, in which a distinguished surgeon had failed by paring and stitches including skin. I could not coax her to go to hospital again, and made a good job by flap-splitting, which is easy and sure, and no loss of tissue.

Does support of the perineum help to prevent rupture? I believe keeping back the head long and strongly would, but no other help. I used to keep back the head, pressing forwards slightly. Long ago some of my patients told me they felt great relief from support of the bowel, and for some years I used to press on the anus and pretty strongly forwards. I decided after a good long experience that this

was dangerous, because it presses out the head—just what one is trying to avoid.

The deaths in these nearly 6,000 cases were 28; 8 from previous existing disease, 1 from putrid child (from which I suffered myself, never being able to see her again), 1 erysipelas, 2 pneumonia, 1 measles, 1 some peritonitic mischief (being her second premature labour), 2 scarlet fever. Four of these gave birth prematurely.

From septic fever, 1 real case of puerperal fever, 5 pelvic or peritoneal mischief, 2 cases of phlebitis coming on after the patients were out of bed and well, 4 cases of convulsions, 1 almost dead already from general paralysis, 4 from scarlet fever, 1 embolic clot of brain on the second or third day. In 5 of these 28 deaths forceps were used, 2 requiring great help; the others were easy cases. One of these 5 cases was a primipara aged 45 years, who but for religious feelings and anxiety to have a living child should have been relieved sooner by craniotomy. In only 4 of these cases could the doctor's finger or anything about him be blamed, and I believe this is pretty much the history of midwifery in Scotland; at any rate in a neighbourhood like mine, where it is the rule to have the doctor. It should be the same in England if the work were in the hands of the doctor.

Abortions have been numerous and many more were never heard of. A woman has often told me that she had several mishaps. In many cases pretty severe haemorrhage occurred, but none died from it. The treatment has been to do one's best to get the fetus away; in strong women this is often not practicable; giving ergot frequently and temporising, it comes away safely in a day or two. I feel sure there would have been a considerable death-rate if I had followed the advice of some great men, who have advised that a woman should not be left till the uterus is cleared out by the finger, or, if that fails, the curette—a dangerous tool in the best hands.

Nature has provided wonderfully for the safety of woman in her hard hour, we should be careful neither to add nor remove without good reason.

THE EVAPORATION OF CHLOROFORM DURING INHALATION.

AN INQUIRY INTO THE FACILITIES OF REGULATING WITH GREATER ACCURACY THE STRENGTH OF THE VAPOUR EVAPORATED FROM WOVEN FABRICS.

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THE process of dropping chloroform upon a piece of lint and allowing the patient to inhale from this, has the appearance, at first sight, of being extremely simple; but this is, however, an entire misapprehension, for the complexity of physical conditions is great, and gross fluctuations are liable to occur in the vapour which is yielded in accordance with apparently negligible, and certainly neglected, changes in conditions. Ignorance in regard to this subject has led to the adoption of various phrases and ideas which have no real signification, and are mainly due to wrong inferences regarding the relations which exist between the quantity of chloroform poured out and the strength of the vapour which is afforded. Thus such general injunctions as the giving of "plenty of chloroform" or "plenty of air" arose doubtless in relation to some definite procedure, but that they cannot involve that which they imply is evident from a consideration of the overwhelming preponderance of air over vapour which must of necessity exist even in the case of the most concentrated non-lethal mixtures.

The method is one of "unknown percentages," for no attempt is thus made to gain a knowledge of the strength of the vapour administered; but means—certainly very imperfect ones—are adopted to regulate the strength of the vapour according to the clinical indications of the patient under observation. These means consist principally of approaching or withdrawing the mask from the face, pouring or dropping out a greater or less unmeasured quantity of chloroform, or by an intermittent administration; and naturally these procedures, even in capable and experienced hands, leave a great deal to be desired.