ART. IX.—*Observations on the Administration and Effects of Ergot of Rye on the parturient Female and her Offspring, when administered during Labour.* By SAMUEL L. HARDY, M. D., F. R. C. S. I., Assistant Physician to the Lying-in Hospital, Vice-President of the Dublin Obstetrical Society, &c.

[Read before the Dublin Obstetrical Society.]

THE use of ergot of rye in the practice of midwifery has, within the last few years, become so very general and extensive, as to lead one to suppose that we possess an accurate knowledge of all its properties and effects upon the parturient female and her offspring. Unfortunately, however, we are constrained to think otherwise; and notwithstanding the many valuable essays that have from time to time been written upon the use of ergot, some of which were read before this Society, there are many points of great importance which still require investigation and elucidation.

During the period that I have been connected with this Institution, I have had extensive opportunities of witnessing the exhibition of ergot, and have kept accurate notes of a large number of cases, with a view, if possible, of throwing some further light upon the action and effects of this drug. In the prosecution of this inquiry, there were certain points, to elucidate which I directed particular attention, and these I shall now briefly mention.

1st. The period after administration that its action commences.

2nd. Its effects on the maternal pulse (when any), and how soon evident.

3rd. Its effects upon the foetal heart (when any), and how soon produced.

4th. The state of the uterus and lochial discharge during convalescence, in cases in which it has been exhibited.

We shall now proceed to consider the first of these questions, namely :

I.—AS TO THE TIME THE ACTION OF THE ERGOT UPON THE
UTERUS COMMENCES.

From comparing tables which I have drawn up, it appears that in some cases ergot acts on the uterus so soon as seven minutes after its exhibition, whilst in others a much longer period of time is required ; but in the generality, from about ten to fifteen minutes may be stated as the average. In those cases where the children have been expelled alive, I have always observed the action of ergot on the uterus to commence within twenty-five minutes. On the other hand, when a longer period than this elapses before the uterus takes on action, the use of instruments has been necessary to perfect the delivery, or the children have been dead born.

In some instances the ergot has produced in the uterus a kind of tonic contraction, without any effective expelling pains.

In accordance with what has been observed by others, I have noticed that in those cases where the ergot acts beneficially, its exhibition is followed by strong expulsive pains, which gradually increase in frequency, so that, in fact, they may be said to run into each other, there being no distinct interval between them.

II.—EFFECT ON THE PULSE.

The action of ergot on the maternal circulation is a subject of considerable interest, and, so far as I am aware, has not received the attention it deserves from practitioners. This is a fact of great importance, and one of the truth of which I have convinced myself by repeated observation.

In nineteen cases of those I have recorded, there was a marked diminution in the frequency of the mother's pulse following the administration of ergot, and this effect gene-

rally began to take place from about fifteen minutes to half an hour. In all these instances when the depression of the pulse occurred, the foetal heart underwent a similar change.

From the consideration of this fact, a practical question naturally arises, namely, is ergot a safe remedy in a case where the woman is greatly reduced by hæmorrhage arising from relaxation of the uterus after delivery? A case bearing exactly on this point occurred in No. 3 ward of this hospital about three years ago, where a draining had continued for several hours after the expulsion of the placenta, by which the patient was greatly weakened: the usual dose of powdered ergot was given, and was followed almost immediately after by most alarming depression, requiring the exhibition of the most powerful stimulants.

In several of the cases where the circulation of the patient had undergone this depression from the action of ergot, the effect continued for several days, notwithstanding, in some instances inflammation of the uterus followed delivery; and the uterine tumour not unfrequently remained much larger than natural, even where there was no reason to suspect the presence of inflammation of that organ.

III.—THE EFFECTS OF ERGOT ON THE FOETAL HEART.

The effect of ergot on the foetal heart is even still more remarkable than on the maternal pulse, and, in a practical point of view, deserves much more serious investigation and research.

By referring to the tables it will be found that in the great majority of cases, a diminution in the foetal heart's pulsations followed the exhibition of ergot. The period at which this effect begins to be produced, varies from about fifteen minutes to half an hour, sometimes a little sooner, and occasionally at a later period.

The most common effect, and usually the first that I have observed, is a diminution in the frequency of the pulsations;

this is succeeded, after some time, by an irregularity in its beats, which irregularity continues more or less until the sounds intermit, and, at length, after a variable period, become quite inaudible.

There is a practical inference which my own observations have led me to with respect to the changes in the foetal heart, namely, that in those cases where the number of its pulsations have been steadily reduced below 110, and, at the same time, *with intermissions*, the child will be rarely, if ever, saved, although its delivery should be effected with the greatest possible speed.

In making this statement, I may be allowed to say, that the mere depression of the foetal heart below 110, *without intermissions*, is not in itself sufficient to cause this result, as instances have occurred where the number of pulsations have been still more reduced (in one case so low as 56, *vide* Case I.), and yet by speedy delivery, and adoption of the usual remedies, the children have been saved. But in none of these instances was there a *steady, distinct, and well-marked intermission*.

The knowledge of these facts points out the necessity of watching closely the change in the foetal heart after the administration of ergot, as delay beyond a particular time cannot be allowed with impunity to the life of the child. Should the case in other respects be eligible for the application of the forceps or vectis, in order to save the child it must be had recourse to within a certain period, which can only be known by a careful use of the stethoscope.

On this subject, I am happy to state, my observations fully coincide with those of Dr. Beatty, who fixes the limit beyond which the child will rarely be born alive at two hours. To this rule I have met with but three exceptions. (*Vide* Cases I. IV. and XIII. in Tables).

It by no means follows from this that a period of two hours should elapse from the exhibition of ergot until the

expulsion of the child. In two instances (Cases XX. XXI.) the children were lost, although only twenty minutes in one, and twenty-five in the other, had passed from the administration of the ergot to their expulsion.

Different opinions have been advanced as to the cause of the child's death, some supposing this event to result from the vigorous contractions of the uterus, while others believe the ergot to exert a poisonous influence on the life of the child. Perhaps the combined effects of both these agents may sometimes cause it.

In numerous instances I have observed the foetal heart undergo all these changes, where very little uterine action, and sometimes none whatever, followed the exhibition of ergot, on which account I am led to believe that the depressed state of the foetal circulation must arise, not from uterine contractions, but from some deleterious influence exerted by the ergot. Its effects on the mother's pulse corroborate this opinion.

These depressing effects are so great, that frequently after birth a considerable time elapses before the children can be perfectly restored; and I have observed that infants born in a weak state, where no ergot was given to cause their expulsion, have been restored to animation with much less difficulty than in those cases in which this medicine was exhibited during labour.

The placenta, in most of the cases that have come under my notice, has come away favourably very soon after the expulsion of the child. In one case a good deal of hæmorrhage occurred, both before and after its expulsion. In a second the uterus was not affected by the ergot, though the pulse was greatly reduced in frequency, and the foetal heart had ceased in about twenty minutes after its exhibition. It was necessary in this instance to introduce the hand for its removal. In a third the uterus, which had acted well in expelling the child, contracted so closely at the os immediately

after its expulsion, that although the placenta was ascertained by Dr. Johnson and myself to be detached and lying in its cavity, its removal could not be effected for upwards of an hour, until relaxation of the os took place.

I look upon Case I. (*vide* Cases) as a case deserving of particular attention, and for the following reasons: first, it shews the necessity of closely watching the expulsion of the placenta in every instance where ergot has been given during labour, a rule I have always observed, but much more so since encountering this case. Secondly, a question arises as to the proper time of giving ergot for the purpose of preventing flooding to those patients who after the birth of the child are subject to uterine hæmorrhage.

There are three periods at which this medicine might be administered in such cases. First, when the head is about to pass; secondly, after the head has been expelled; and thirdly, so soon as the insertion of the funis into the placenta can be reached.

By giving ergot before the child has been expelled, some time may be gained; but should the placenta be morbidly adhering to the uterus, the difficulty of introducing the hand for its removal will be greatly increased.

By adopting the third plan, the risk of having to introduce the hand for the placenta is avoided. To this method it may be objected that much time will perhaps elapse, and a considerable quantity of blood be lost before the ergot is administered; nevertheless, the possibility of the placenta being morbidly adherent should be ever present in the mind of the practitioner, and deter him from resorting to a measure which may so greatly augment the danger of the complication.

Hæmorrhage, after the birth of the child, is an occurrence I have never met with in any case where the uterus was sensibly affected by the ergot during labour. Mention is made in my tables of one instance only of flooding pre-

vious to and after expulsion of the placenta. This was a case of what nearly might be called *inertia uteri*, in which ergot exerted very little influence in exciting uterine contraction; I am, therefore, inclined to think, that in general we need not be very apprehensive of such an event, although it must be admitted that caution is always necessary. (Case XXXVII. in Tables.)

IV.—THE STATE OF THE UTERUS AND LOCHIAL DISCHARGE.

During the convalescence of those patients, the points which seem to me deserving of particular attention refer to the state of the pulse, the uterus, and lochial discharges.

Allusion has already been made to the effect of ergot on the maternal pulse, so that I need not again dwell on it.

The volume of the uterus is often found much greater than after ordinary labours, imparting to the hand almost the feel of a uterus before expulsion of the placenta. Dr. Johnson has frequently remarked this fact, of the truth of which I have convinced myself by repeated observation.

In addition to this enlarged state of the uterus, it has sometimes a firmly-contracted feel (as in Case I.), which generally continues for several days.

In a few instances the lochial discharge was rather pale and scanty, although nothing unfavourable occurred during convalescence to account for this circumstance.

With some few exceptions, the women had generally good recoveries. Of those who were attacked with inflammation all recovered but two. One was a case of retained placenta where the hand was introduced; this patient died of uterine phlebitis. In the second there was inflammation of the peritoneum and uterus.

The children that were born alive, all, with one exception, did well. In this case delivery was effected by the forceps, as the foetal heart had fallen so low as 100 from the

exhibition of the ergot. This statement refers only to those cases where complete restoration was accomplished after delivery, although, strictly speaking, the child that died could not be said to have been fully restored to animation. It died within three hours after delivery. (Case XI. in Table.)

MODE OF ADMINISTRATION.

The manner of administering ergot varies with different practitioners. The plan adopted in this hospital is the following: half a drachm of the powder is infused for ten minutes in about three ounces of boiling water; to this infusion, when strained, ten or fifteen grains of fresh powder is added, with a little sugar. This dose is generally repeated in twenty minutes, and occasionally, if the uterus does not act well, a third draught may be given. In a few cases vomiting occurred; in other instances, where the stomach was irritable, the ergot seemed to exert a beneficial effect in quieting it.

I only remember having once seen delirium come on during its action. In this case the uterus acted vigorously; the pulse fell twenty beats, and the foetal heart within two hours became inaudible. After delivery, which was effected by the crotchet, so great a degree of inertia of the uterus followed, that it was necessary to introduce the hand for the removal of the placenta. (Case XL. in Tables.) Died of phlebitis.

I think it right to mention that in every case of tedious labour the usual remedies for exciting uterine action, such as stimulating injections, change of position, &c., are first had recourse to before resorting to the use of ergot.

The observations here detailed have been limited to the effects of ergot when exhibited in the one form only. It was my intention to have given an account of the action and comparative efficacy, during parturition, of the various pre-

parations of this medicine, whether as administered by the mouth, or in the form of enema; nevertheless, as I still continue to prosecute the investigation of this interesting topic, I hope at some future period to lay before the Society the results of my further inquiry.

CASE I.—Anne M'Daniel; æt. 30. Third pregnancy. Placenta held by os uteri; foetal heart, 56.

Labour commenced on the 17th of September, 1843; continued until the 19th, when, at 25 minutes to 8 o'clock, P. M. (on account of the slowness and inefficiency of the pains, which had not caused much advance for nearly twenty-four hours), a dose of ergot was given. At this time the pulse was 104, and the foetal heart 136. The head, the presenting part, was in the third position, and the ear within reach. In twelve minutes the pains were evidently increased in force; in fifteen, the foetal heart beat 152, that is sixteen beats more than when the ergot was given, but no change had taken place in the pulse. A second dose was given in twenty minutes after the first. 9 o'clock: no change in the pulse; foetal heart 124, (twelve lower than before ergot was given); the pains strong, and causing the head to advance. 20 minutes past 9 o'clock (one hour and forty-five minutes): the foetal heart very much affected, occasionally seeming about to cease; uterine action very good, forcing the head to the external parts at each return of the pains, which are nearly continuous. At 10 minutes to 10 o'clock, two hours and a quarter from administering the ergot, the child, a male, was expelled; its heart, immediately after birth, beat 56; in about one minute it rose to 76; in twenty minutes, when animation was restored, the number of pulsations amounted to 136. The mother's pulse, in twenty minutes after delivery, had fallen to 83 from 104, what it was when the ergot was given, and during its action.

On examination, the placenta was ascertained to be still within the uterus, the insertion of the funis into its substance

could with some difficulty be reached by the finger, but so rigid was the contraction of the os uteri, that nothing short of violence could have dilated it in the least degree: externally the uterus felt of almost strong hardness.

In three quarters of an hour after delivery the patient vomited, but the uterus remained still in the same state; pressure by the hand applied externally, with the intention of pressing off the placenta, had not the least effect. In an hour and five minutes a discharge of blood took place; the placenta was then found lying in the vagina, and the uterus felt as firm as before its expulsion. The patient had an attack of matietes, which terminated favourably. The uterus remained large for some days. Both mother and child ultimately did well.

CASE II.—Elizabeth Collins, æt. 35, a healthy looking woman. Second pregnancy.

Labour set in on the 15th of January, 1845, at 6 o'clock, A. M. On the same day, at 4 o'clock, P. M., the os uteri was fully dilated, and the membranes ruptured. The head, at 10 o'clock, was so low as to allow the ear to be reached by the finger.

On the 16th, as the pains were feeble, and had not caused much advance during the night, at 6 minutes to 12 of noon, a dose of ergot was given (3ss. gr. x.), the pulse being 120, and the foetal heart 136. In twelve minutes the uterus acted better; the pulse and foetal heart remained unaffected. Twenty-five minutes; no effect on the pulse or foetal heart; good uterine action; the ergot repeated (3ss. gr. x.) The head, from the time the ergot began to act, advanced steadily, and in an hour and five minutes, the child, a male, was expelled alive; the placenta followed soon after the birth of the child.

CASE III. (Case IV. of Table.)—Anne Pierson, æt. 25. First pregnancy.

Labour set in on the 20th of February, 1844.

On the 21st, at 9 o'clock, A. M., the os uteri was fully dilated; at 12 o'clock noon, the membranes ruptured, and the head had descended so low as to allow the ear to be reached. In this situation it remained, owing to feeble uterine action, till the 22nd, on which day, at 26 minutes past 4 o'clock, P. M., she had a dose of ergot (3ss. gr. x.), the pulse being 84, and the foetal heart 140, and strong. In twenty-five minutes the pains seemed to be a little increased. At 10 minutes past 5 o'clock a second dose was given. The pulse, at 6 o'clock, (one hour and a half nearly), was the same as when the ergot was first given, 84, but the foetal heart had fallen to 116, and sometimes 104, and intermitting occasionally; the pains were not good, though at each return of uterine contraction, the head distended the perineum. A third dose was given at 10 minutes past 6 o'clock. At a quarter to 7 o'clock, the child, a female, was expelled, and with difficulty restored; that is, two hours and twenty minutes after the ergot was administered. The pulse, at 7 o'clock, had fallen to 72, and the placenta was lying in the vagina. During recovery, the uterus was well contracted, and the lochial discharge of the usual colour and quantity. Both mother and child did well.

CASE IV. (Case V. of Table.)—Mary Fegan, æt. 25. First pregnancy.

Labour set in early on the 30th of March, 1843. On the 31st, the head of the child having remained on the perineum for twelve hours without making any advance, at 19 minutes to 12 o'clock, noon, a dose of ergot was given, the pulse being 96, and the foetal heart 144. In ten minutes the pains were increased in strength, and the pulse reduced to 88. In twenty minutes the ergot was repeated, pulse 80. At a quarter to one o'clock, a living female child was expelled, and a second, also a female, presenting naturally and alive in a quarter of an hour after. The placenta came off favourably. During her recovery, which was very good, the lochial dis-

charge was of the usual colour and quantity. Children did well.

CASE V. (Case VI. of Table.)—Mary Powell, æt. 20. First pregnancy (a full plethoric woman).

For upwards of twelve hours the head of the child remained in the same situation, owing to feeble uterine action, the ear being within reach.

On the 5th of October, 1844, at 10 minutes to 11 o'clock, she had ergot (3ss. gr. x.); the pulse at the time was 132. The foetal heart 160, and not to say strong. In twenty minutes the pulse fell to 120, but the pains were not in the least improved, and the patient seemed inclined to sleep. She now had a second dose. Uterine action in a few minutes became more frequent; the tendency to sleep went off, and the foetal heart beat at the rate of 100, occasionally intermitting. At 25 minutes past 11 o'clock the pains were very frequent, but not strong, nor causing much advance, and the pulse was down to 112. The child, a male, was born alive at 25 minutes to 12 o'clock, and the placenta expelled immediately after into the vagina. During recovery the uterus remained large for some days, but the lochial discharge was of the usual colour and quantity. Both mother and child did well.

First labour, male, alive, twenty-eight hours; sixteen hours in second stage; forty-five minutes from dose child born. Pulse and foetal heart fell; uterus acted well.

CASE VI. (Case XIV. in Tables.)—Anne Doran, æt. 30. Third pregnancy.

Labour set in on the 18th of July, 1843, and continued until the head of the child had come to press upon the perineum. The pains then became inefficient, and no advance was made for some hours. At 20 minutes to 10 o'clock, P. M., a dose of ergot was given, the pulse being 92, and the foetal heart 160, and very distinct. In half an hour the pulse had fallen to 84, and the foetal heart beat very indistinctly. Uterine action was scarcely in any degree improved. She now

had a second dose. In half an hour from first having the ergot, although no increase of pains took place, the foetal heart became so much depressed that delivery had to be effected by the forceps. The child, a female, was with difficulty restored to animation. The placenta came off favourably. Both mother and child did well.

CASE VII. (Case XV. in Table.)—Bridget Cavanagh, æt. 31. First pregnancy.

Labour commenced on the 1st of March, 1843. Owing to rigidity of the os uteri, the first stage occupied a period of thirty-four hours.

On the 4th, at 9 o'clock, P. M., the os uteri was fully dilated the membranes ruptured, and the head presenting: (face to pubes). Labour continued from this time until the evening of the 5th, when, at 9 o'clock, a dose of ergot was given, uterine action being very feeble, and the head having remained nearly in the same situation for some hours. The pulse, at the time of exhibiting the ergot, was 96, and the foetal heart 152. In ten minutes the pains were improved, and in fifteen minutes the ergot was repeated (powder and infusion, gr. x. 3ss.) In half an hour the pulse fell to 48. At ten o'clock, being an hour from the time the ergot was first given, a dead male child was expelled, and followed in half an hour after by a second child, also a male, presenting naturally, and dead born.

The placenta came off favourably. The pulse remained depressed for some hours; on the second day it was 76. This patient's recovery was very good.

CASE VIII. (Case XVII. in Table.)—Bridget Dooley, æt. 34. First pregnancy.

Labour commenced on the 11th of March, 1843. At 10 o'clock, P. M., the same day, the membranes ruptured; and the os uteri soon after became fully dilated.

On the 12th, at 23 minutes to 11 o'clock, the pains being weak and inefficient, a dose of ergot was given. At this time

the head was nearly pressing on the perineum. The pulse 104, and the foetal heart 132. Uterine action came on in fifteen minutes.

At 11 o'clock, the pains became nearly continuous, but were not increased in strength. The pulse had fallen to 96, and the foetal heart was scarcely audible, beating 100, and occasionally but 60 in the minute. A second dose of ergot was given in half an hour after the first. At half past 11 o'clock the pulse was 80, and the foetal heart about 90. Some advance had taken place in the progress of the labour.

On the 13th, at half-past one o'clock, A. M., nearly three hours from the time the ergot was first given, a dead male child was expelled. The placenta came off favourably. The recovery of this patient was very good.

CASE IX. (Case XX. in Table.)—Bridget Whelan, æt. 33; second pregnancy. Labour commenced at 6 o'clock, A. M., on the 20th of September, 1843.

At 25 minutes to 12 o'clock, noon, on the 21st, she had a dose of ergot, the pains being feeble, the pulse 88, and the foetal heart 136.

In seven minutes a strong pain came on; soon after the uterus acted forcibly, the pains coming on in rapid succession, with scarcely any intermission.

In twenty minutes the head, which presented in the second position, had come to press on the perineum; pulse 88; foetal heart 134, and not so strong.

In twenty-five minutes from having the medicine the child was expelled; its heart had nearly ceased to beat, nor could animation be restored. The placenta followed in ten minutes. This patient had a very good recovery.

CASE X. (Case XXIII. in Table.)—Esther Morris, æt. 21. First pregnancy; a full strong woman.

Labour set in on November the 11th, 1844; on the 13th the pains were very feeble and the head had made no advance

for some hours. The pulse was 88, and the foetal heart 160, and strong.

At 22 minutes past 11 o'clock, she had a dose of ergot (3ss. gr. xv.) In twelve minutes the pains became stronger.

Twenty minutes after the dose, pulse 96; uterine action nearly constant; foetal heart varying from 96, to 108, full, and both strokes distinctly audible. The ergot was now repeated 3ss. gr. x.)

Ten minutes past 12 o'clock. Pulse 108, and full; foetal heart 140, and of its usual strength; uterine action not so good; the head has somewhat advanced.

Twenty-two minutes to 1 o'clock. The pains not so frequent; pulse 96, full; foetal heart 128; sometimes down to 88, and not so distinct.

One o'clock. The head more advanced; the pains returning at short intervals.

Quarter to 2 o'clock. The foetal heart nearly inaudible, and beating about 80.

At 10 minutes past 2 o'clock, a male child was expelled; the heart had nearly ceased to pulsate, but by artificial respiration it got up to 120.

All efforts failed in restoring animation, although the heart, by the aid of artificial respiration, continued to pulsate for upwards of an hour from delivery, and the child, when irritated, moved its limbs. On the second day after delivery the pulse was 92. The uterus well contracted, and the lochial discharge abundant.

Inflammation of the uterus set in on the third day, with pain, no rigor, and the lochial discharge became scanty; from which, in the course of a few days, she recovered, and was discharged quite well.

CASE XI. (Case XXXI. in Table.)—Mary Monaghan, æt. 28; first pregnancy. Labour set in on the 23rd of August, 1843. For about twelve hours the head, which had de-

scended so low as nearly to rest on the perineum, made little advance from want of good expelling pains.

On the 31st, at a quarter to 11 o'clock, A.M., a dose of ergot was given. The pulse at the time was 104, and the foetal heart 152 and strong. In ten minutes uterine action became increased; the pulse fell to 96, and the foetal heart to 68. In twenty minutes the medicine was repeated. At half past 11 o'clock the pains were nearly continuous, the pulse 120, and the foetal heart very indistinct, but no advance in the labour. At a quarter to twelve o'clock, noon, an hour from having the ergot, she was delivered by the forceps of a male child. The heart continued to pulsate, but animation could not be restored. In sixteen minutes all action of the heart ceased. The placenta came off favourably soon after the birth of the child. There was slight inflammation of the uterus in this case, which yielded to treatment, and in fourteen days she left the hospital quite well.

CASE XII. (Case XXXII. in Table.)—Mary Kelly, æt. 36, a *tolerably* healthy-looking woman, but thin; first pregnancy. Labour set in on December 26th, 1844, at 4 o'clock, A.M. At 8 o'clock, A.M., on the same day, the membranes ruptured, and at noon the os uteri was fully dilated. The ear of the child could be reached at 8 o'clock, P.M. From want of good expelling power, the head remained nearly in the same situation until 27 minutes past 11 o'clock on the 27th, when a dose of ergot was given (3 ss. gr. xv.), the pulse being 76, and the foetal heart 144, and distinct. In eight minutes the pains were very much increased in strength and duration; thirteen minutes, very little interval between the pains, the head pressing on the perineum; twenty minutes, pulse unaffected; foetal heart reduced to 92, irregular, full, and intermitting. The ergot repeated (3 ss. gr. x.)

12 o'clock.—The strength of the pains very much reduced: at 5 minutes past 12, the vectis was passed up, and the

child, a male, extracted. Its heart was beating very slowly, and it gasped a few times but could not be restored. The placenta came off in a few minutes (ten) after the birth of the child. This woman had an attack of metritis, but ultimately recovered.

CASE XIII. (Case XXIV. in Table).—Honor Greene, æt. 27. First pregnancy.

The head remained in the same situation, the ear being within reach for several hours. The pains, though regular in their returns, were yet very weak and inefficient. At 12 minutes past 2 o'clock, the pulse being 88, and the foetal heart 140, and strong, a dose of ergot was given (3ss. gr. x.), which acted in twelve minutes. In fifteen minutes the pains were nearly without intermission, and no change had taken place in the pulse or foetal heart. At 23 minutes to 3 o'clock, the pains continued very frequent, but were not strong. She now had a second dose. The pulse at a quarter to 3 o'clock was 80, the foetal heart 84, full, and not intermitting. The child, a female, was extracted by the vectis at 3 o'clock, but was quite dead.

A second child being in utero, its membranes were ruptured, and the foetal heart found diminishing in frequency. So soon as the breech (the presenting part) came low enough, it was hooked down by the finger, and the child extracted.

The second, also a male, was born thirty-five minutes after the first; all pulsation of the heart had ceased on delivery. This patient had a good recovery.

CASE XIV. (Case XXXIX. in Table.)—Agnes Cavanagh, 30. First pregnancy.

Labour set in on November 24th, at 2 o'clock, p. m., and the membranes then ruptured.

On the 25th, at 2 o'clock, a. m., the os uteri was fully dilated, and the head entering the pelvis. At 2 o'clock, p. m., uterine action very weak; the pains returning at lengthened intervals, and causing no advance in the labour. The tip of

the ear to be felt. Pulse 72. Foetal heart beating vigorously, 140 in the minute. The patient now had a dose of ergot (half dr. infusion, and gr. x. of the powder). Uterine action seemed to be excited by it in ten minutes. In twenty minutes after its exhibition, the pulse fell to 60 in the minute; foetal heart 140, and not changed in its character. A second dose now given. Five minutes to 3 o'clock. Pulse 68; foetal heart 132, seemingly weaker. The pains coming on at regular intervals, but not strong. Half-past 3 o'clock. Pulse 76; foetal heart 120, very feeble; uterine action not so strong. In order to stimulate the uterus still more, the patient was directed to walk, and bear the pains in the upright position. A little inclination to vomit; the pains improved by moving about. Five o'clock. Pulse 64; foetal heart 116; the second stroke very faintly heard. In three hours from the exhibition of the first dose, the foetal heart ceased to pulsate; and some time after delivery, was accomplished by means of the crotchet. The placenta came off favourably. She recovered slowly, and was discharged on the 22nd of December, 1843.

CASE XV. (Case XL. in Table.)—Jane Thompson, æt. 25. First pregnancy.

On the 14th of June the membranes ruptured. The os uteri was fully dilated on the 15th, at 9 o'clock, A. M.; and at 8 o'clock in the evening the ear could be felt, though still the head was high in the pelvis. Uterine action had nearly ceased. The pulse was 120; the foetal heart 144, feeble, and sometimes intermitting; her tongue was clean and moist, and the bowels free. A dose of ergot was now given (3 ss. gr. x.) In fifteen minutes the pulse fell to 116, and was full and soft. The foetal heart so feeble as not to be reckoned, and intermitting very much. Uterine action not increased. A second dose was given in twenty-three minutes after the first. For about fifteen minutes the pains *seemed* improved, then became more frequent, but did not cause any advance. At 6 minutes to 9

o'clock, the foetal heart beat 132, and was sometimes pretty regular; pulse 128, and soft. Half past 9 o'clock. The pains very constant, but scarcely any advance. Foetal heart nearly inaudible, beating occasionally two or three strokes. Within two hours from receiving the ergot the foetal heart ceased. It was necessary to deliver by the perforator, as she became delirious a little before 10 o'clock; the pulse then was 100. The placenta had to be removed from the uterus by the introduction of the hand, owing to inertia.

The patient died of phlebitis on the 24th of June.

CASE XVI. (Case XLVII. in Table).—Anne Smyth, æt. 30. A delicate little woman. First pregnancy.

Labour commenced at 6 o'clock, P. M., on the 28th of January, 1845. The os uteri was nearly fully dilated on the 29th, at 10 o'clock, P. M.

On the 30th, at 6 o'clock, A. M., the membranes ruptured; and at 9 o'clock the same morning the ear was within reach of the finger, and the head advancing very slowly from want of sufficient uterine action. At 22 minutes to 4 o'clock, P. M., the pains were nearly suspended; the head had made no more advance; and a yellowish discharge began to flow from the vagina. She now had a dose of ergot, the pulse being 88, and the foetal heart 140, and tolerably strong. In twenty minutes no increase of uterine action followed. The pulse and foetal heart remained unaffected. A second dose was now given. Thirty minutes: No increase of pains. The pulse the same. The foetal heart nearly inaudible, fluttering, and very slow. In a very few minutes more the heart's action entirely ceased. During delivery, which was effected by the crotchet, the uterus acted so feebly, that it was feared there should have been hæmorrhage; none, however, took place. The placenta had to be pressed off by the hand applied over the uterus. The uterus remained very large for some days after delivery, and the discharge was dark-coloured. The patient afterwards did well.

As the Tables elucidate so fully the result of the cases, I think it unnecessary to detail more than the notes of a few as illustrative of the peculiar effects of the medicine.

EXPLANATION OF THE TABLES.

TABLE I.—Contains cases in which the children were expelled by the uterine efforts *alive*.

TABLE II.—Cases in which instruments were used to perfect the delivery, after the administration of ergot: the children all born alive.

TABLE III.—Cases where the children were expelled by the uterine efforts *dead born*.

TABLE IV.—Cases in which, owing to the depression of the foetal heart, caused by the ergot, the forceps or vectis was used, but failed in saving the children.

TABLE V.—Cases in which delivery was effected by the crotchet: *the foetal heart having ceased* after the exhibition of the medicine.

TABLE I.—Cases in which the Uterus expelled the Children alive.

No. of Case.	No. of Pregnancy.	Age of Patient.	Sex of Child.		Effects how soon perceived on Uterus.	Effect on Pulse.				Effect on Fetal Heart.		Hours in Labour.		Hours from having Ergot.	Expulsion of Placenta.	State of Lochia.	State of Uterus.	OBSERVATIONS.
			M.	F.	Min.	None.	Fell.	Rose.		None.	Rose.	1st stage.	2nd stage.	H. Min.				
1	3	30	1	..	12	..	..	1	1	1	..	50	24	2 30	Troublesome.	Dark.	Remained large.	Os uteri closed on placenta. Metritis. Recovered.
2	2	35	1	..	12	..	..	1	..	1	..	30	20	1 5	Favourable.	Natural.	Natural.	Recovered.
3	3	30	..	1	15	..	..	..	..	..	..	16	11	1 0	Do.	Do.	Do.	Head on perineum 10 hours.—Recov.
4	1	25	..	1	25	..	..	1	..	1	..	40	24	2 20	Do.	Do.	Do.	Recovered.
5	1	25	2	..	10	..	1	..	..	1	..	28	13	1 15	Do.	Do.	Do.	Twins; both natural presentations; second child quarter of an hour after first. Recovered.
6	1	20	1	..	25	..	1	..	..	1	..	28	16	0 45	Do.	Do.	Large.	Head nearly in same situation 12 hours. Recovered.
7	1	25	..	1	15	..	..	1	..	1	..	6	0	0 40	Do.	Do.	Natural.	Twins; first, foot and funis. Ergot given to expel second child. Head present. R.

TABLE II.—Cases in which the Children were born alive by Application of the Forceps and Vectis.

No. of Case.	No. of Pregnancy.	Age of Patient.	Sex of Child.		Effects how soon perceived on Uterus.	Effect on Pulse.			Effect on Fetal Heart.			Hours in Labour.		Hours from having Ergot.	Expulsion of Placenta.	State of Lochia.	State of Uterus.	OBSERVATIONS.
			M.	F.		Rose.	Fell.	None.	Rose.	Fell.	None.	1st stage.	2nd stage.					
8	2	40	1	..	Min. None.	..	..	1	..	..	1	27	17	H. Min. 0 40	Favourable.	Natural.	Natural.	Forceps.—Recovered.
9	1	26	1	..	30	1	..	..	..	1	..	28	14	1 0	Do.	Do.	Do.	Vectis.—Recovered.
10	2	30	..	1	None.	..	1	..	..	1	..	28	17	1 30	Do.	Do.	Do.	Forceps.—Recovered.
11	1	25	1	..	7	..	..	1	1	1	..	36	13	0 50	Do.	Do.	Do.	Do.—Fœtal heart 100; child died three hours after birth.—Recovered.
12	1	20	1	..	10	..	1	..	..	1	..	25	16	1 0	Do.	Do.	Do.	Vectis.—Fœtal heart 102; head 12 hours on perineum.—Recovered.
13	1	21	..	1	23	..	..	..	..	1	..	34	23	2 0	Do.	Dark.	Large.	Do. (inflammation of uterus)—R.
14	3	30	..	1	None.	..	1	..	..	1	..	26	12	0 30	Do.	Natural.	Natural.	Forceps.—Recovered.

TABLE III.—Cases where the Uterus expelled the Children dead-born.

No. of Case.	No. of Pregnancy.	Age of Patient.	Sex of Child.		Effects how soon perceived on Uterus.	Effect on Fetal Heart.			Effect on Pulse.			Fetal Heart ceased.		Hours in Labour.		Hours from having Ergot.	Expulsion of Placenta.	State of Lochia.	State of Uterus.	OBSERVATIONS.
			M.	F.		None.	Pell.	Rose.	None.	Pell.	Rose.	None.	Rose.	1st stage.	2nd stage.					
15	1	31	2	..	Min.	..	1	..	..	1	..	H. Min.	1 0	79	..	H. Min.	Favourable.	Natural.	Natural.	Pulse depressed during recovery. Twins; both natural. 1st, face to pubes; half hour interval.—R. Child could not be restored. R. Recovered.
16	2	28	..	1	30	..	1	..	..	..	..	2 0	2 0	25	..	2 0	Do.	Do.	Do.	Recovered.
17	1	34	1	..	15	..	1	..	..	1	..	2 30	2 30	36	27	3 nearly	Do.	Do.	Do.	Recovered.
18	3	27	1	..	10	..	1	..	..	..	..	1 0	1 0	26	18	1 0	Do.	Dark.	Large.	Recovered.
19	1	28	..	1	30	..	1	..	..	..	..	1 45	1 45	60	16	1 45	Do.	Natural.	Natural.	Second position.—Recovered.
20	2	33	1	..	7	..	1	..	1	..	..	0 25	0 25	30	16	0 25	Do.	Do.	Do.	Second position; fetal heart had nearly ceased at birth.—R.
21	1	18	..	1	10	..	1	..	1	..	..	0 20	0 20	30	14	0 20	Do.	Dark.	Do.	F. heart had nearly ceased at birth. (Infl. of uterus).—R.
22	3	34	1	..	15	..	1	..	..	1	..	1 40	1 40	26	24	1 40	Do.	Natural.	Large.	Recovered.
23	1	21	1	..	12	..	1	..	..	..	1	3 0	3 0	42	..	2 30	Do.	Scanty.	Do.	F. heart continued to pulsate for about one hour, by application of artificial respiration. (Infl. uteri).—Recovered.
24	1	27	1	..	10	..	1	..	..	1	..	1 30	1 30	27	..	2 0	Slow.	Pale and scanty.	Do.	Delay in second stage.—R.
25	1	27	1	..	13	..	1	..	..	1	1	1 45	1 45	27	14	1 45	Favour.	Natural.	Natural.	Pulse first fell, then rose.—R.
26	1	22	..	1	10	..	1	..	..	1	..	2 0	2 0	32	17	2 0	Do.	Brown & scanty.	Large.	Pulse depressed; 88 for some days.—R.
27	1	24	1	..	12	..	1	1	..	1	..	2 30	2 30	29	12	4 0	Do.	Natural.	Natural.	Delay in second stage.—R.
28	1	23	1	..	15	..	1	..	..	1	..	1 35	1 35	28	12	1 35	Do.	Scanty.	Large.	Inflammation of uterus.—R.
29	2	22	1	..	20	..	1	..	1	..	..	1 0	1 0	36	12	1 0	Do.	Natural.	Natural.	Recovered.

TABLE IV.—Cases in which the Forceps and Vectis were applied, but the Children dead-born.

No. of Case.	No. of Pregnancy.	Age of Patient.	Sex of Child.		Effects how soon perceived on Uterus.	Effect on Fetal Heart.			Effect on Pulse.			Hours in Labour.		Hours from having Ergot.	Expulsion of Placenta.	State of Lochia.	State of Uterus.	Fetal Heart fell to	OBSERVATIONS.
			M.	F.		None.	Fell.	Rose.	None.	Fell.	Rose.	1st stage.	2nd stage.						
30	2	30	1	..	Min. 25	..	1	..	..	..	1	36	13	H. Min. 1 55	Favourable.	Natural.	Natural.	104	Vectis.—Recovered.
31	1	28	1	..	10	..	1	..	..	1	..	30	15	1 0	Do.	Scanty.	Large.	68	Forceps.—Upwards of 12 hours nearly <i>in situ</i> .—Recovered.—(Infl. of uterus).
32	1	36	1	..	8	..	1	..	1	..	..	32	24	0 40	Do.	Dark.	Do.	92	Vectis.—Gasped. (Infl. uteri. R.
33	1	30	..	1	15	..	1	..	1	..	..	36	14	1 30	Do.	Natural.	Do.	80	Vectis.—Gasped. Heart got up to 120 by art. respiration.—R.
34	1	27	2	..	12	..	1	..	..	1	..	36	27	2 0	Do.	Do.	Natural.	84	Vectis.—Twins; first nat., face to pubis; second, breech; 35 min. interval.—Recovered.
48	1	33	..	1	15	..	1	..	1	..	..	33	9	3 0	Do.	Do.	Do.	..	Vectis.—Gasped.—Recovered.

TABLE V.—The Children dead. Delivery effected by the Crotchet.

No. of Case.	No. of Pregnancy.	Age of Patient.	Sex of Child.		Effects how soon perceived on Uterus.	Effect on Pulse.			Hours in Labour.		Hours from having Ergot.	Expulsion of Placenta.	State of Lochia.	State of Uterus.	Fetal Heart ceased after Ergot.	OBSERVATIONS.
			M.	F.		None.	Fell.	Rose.	1st stage.	2nd stage.						
35	2	34	1	..	Min.	1	..	..	38	18	H. Min. 4 30	Favourable.	Pale.	Natural.	H. Min. 3 0	Perforation.—Recovered.
36	1	27	..	1	20	..	1	..	50	16	2 10	Do.	Foul.	Large.	1 10	Do.—Inflammation of uterus.—Recovered.
37	5	35	1	..	22	1	..	..	30	22	no good action.	Hæmorrh. bef. & aft. placenta.	Do.	Do.	6 0	Do.—Uterus acted very feebly.—Recovered.
38	1	28	1	..	15	1	..	..	36	24	4 0	Favour.	Brown.	Do.	3 0	Do.—Recovered.
39	1	30	1	..	10	..	1	..	35	17	4 0	Do.	Unhealthy.	Natural.	3 0	Do.—Recovered.
40	1	25	..	1	15	..	1	..	37	13	2 0	Retained.	Foul.	Large.	2 0	Do.—Pulse depressed for some time.—Died of phlebitis.
41	1	30	..	1	20	1	..	..	58	14	3 30	Favourable.	Natural.	Do.	2 30	Do.—Recovered.
42	1	36	1	..	15	1	..	..	28	18	2 45	Do.	Do.	Natural.	1 45	Do.—Inflammation of uterus.—Recovered.
43	1	26	1	..	30	..	1	..	60	14	3 30	Do.	Unhealthy.	Large.	2 30	Do.—Died on sixth day of inflammation of peritoneum and uterus.
44	1	23	1	..	25	..	1	..	48	13	3 0	Do.	Natural.	Natural.	2 0	Do.—Recovered.
45	2	28	1	..	15	1	..	..	46	23	6 0	Do.	Do.	Do.	2 30	Do.—Recovered.
46	1	25	..	1	30	..	..	1	25	12	2 0	Do.	Do.	Do.	1 0	Do.—Recovered.
47	1	30	..	1	none	1	..	..	40	12	2 30	Do.	Dark.	Large.	0 35	Do.—Recovered.