THE TREATMENT OF THE TOXAEMIA OF LATER PREGNANCY.*

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The following cases illustrate the toxæmia of the later periods of pregnancy—that is, after the sixth month:

CASE I. (Reported by Dr. W. R. E. Wilson, House-Surgeon, Maternity Hospital, Belfast.)

Mrs. B., aged 32, admitted to the Maternity Hospital on November 25th, 1914, in the seventh month of her first pregnancy, during which she had been very constipated, having to take three cascara pills every night. For three or four months (before admission) she could not sleep well, and was very restless, and during the last two months she noticed her face, legs, and feet swollen, so that her boots did not fit her. She had also had severe headaches for a month or six weeks, floating spots before her eyes, failing sight, and a bad taste in the mouth. On November 24th the headache became very severe, and was accompanied with constant vomiting. She sent then, for the first time, for a medical man, who examined her urine and, recognizing her serious condition, advised complete rest in bed. That night she became worse, and her doctor, finding her semi-comatose, sent her into hospital, her husband stating that just before the doctor saw her she was "working" with her hands and foaming at the mouth. On admission to the Maternity Hospital on November 25th, 1914, where Sir John Byers saw her almost immediately, she was in a stupid, dazed condition, but could answer questions and was able to swallow fairly well. No fits had occurred since her admission. Her face—especially the parts about the eyelids—was swollen. Temperature normal, pulse 80. A catheter sample of urine had a dark fawn colour, was acid, 1032 in specific gravity, and, when tested, was almost solid with albumin. No signs of onset of labour. The pregnant uterus was felt well above the umbilicus, the fetal parts could be made out, and the fetal heart was heard.

Treatment.—Morphine $\frac{1}{2}$ grain and atropine $\frac{1}{160}$ grain were injected hypodermically, and, after waiting a quarter of an hour, the stomach was thoroughly washed out with saline—(sod. bicarb., 3j. ad 0j.). This brought away a quantity of brownish material. Castor oil, 1 oz., with a minim of croton oil, was left in the stomach. An enema of soap and water, a second with the addition of $\frac{1}{2}$ oz. of turpentine, and a third with 2 oz. of olive oil, produced no effect. A soft rubber tube was then passed up the bowel for twelve inches, and warm saline (sod. bicarb. in water) run in, but it was not until fourteen large wash-out saline enemas were given in this way, with doses of compound powder of jalap and compound senna mixture, and 4 minims of croton oil left in the stomach after lavage, that the bowels began to move.

November 27th. On this day the urine was sent to Dr. John M. Gibson, Demonstrator of Physiology at Queen's University, Belfast, who reported as follows on its composition: Specific gravity, 1030. Reaction, very acid. The average acidity is about 30. The acidity of this specimen is 120. Deposits, very large in amount, composed chiefly of amorphous urates; also transitional epithelial cells and a few granular casts. Albumin, present in large amount: 1.5 grams per 100 c.cm. Urea estimate, 1.1 grams per 100 c.cm. The normal is about twice this amount. Ammonia estimate, 0.1479 gram per 100 c.cm. The normal is about half this amount, and often very much less.

From this date, November 27th, following the action of the bowels, the patient steadily improved—the urine increased in amount, the albumin diminished, the swelling in the limbs and eyelids gradually disappeared, and her bowels acted regularly without medicine. She left the Maternity Hospital on December 18th, being advised to take a light milk and farinaceous diet, to see that the bowels acted daily, and to come back to hospital when signs of labour set in; but parturition took place so quickly during the first week of January, 1915, that she was unable to do so, and she has since continued in good health. The child was born dead.

CASE II. (Reported by Mr. R. L. Rea, Maternity Hospital.)

Mrs. G., admitted to the Maternity Hospital on March 3rd, 1915, towards the end of her first pregnancy.

The patient was admitted on the morning of March 3rd, suffering from eclamptic fits. The attacks apparently began at 4 a.m. that day, and before she came to hospital she had three fits. On admission to hospital she got ol. ricin. 3ij and ol. croton. mij by mouth; the bowel was washed out with sod. bicarb. solution and injection of morphine gr. $\frac{1}{2}$ given. The patient was found to be pregnant almost nine months, and expected to be confined in a fortnight's time.

She was suffering from severe constipation, the enema tube

going in for only four inches, and after repeated washings the tube could be passed fifteen inches. A quarter of a pint of sod. bicarb. solution was transfused under each breast.

Two hours after admission the stomach was washed out with bicarb. solution, and ol. ric. 3ij and ol. croton. mij with some warm sod. bicarb. were left in the stomach. The patient was kept quiet, and every two hours morphine gr. $\frac{1}{2}$ was given hypodermically. During the remainder of the day she had six fits, each fit leaving her very weak.

The patient came into labour naturally at 6 p.m. the same day, and when the os was fully dilated she was delivered by forceps at 1.30 a.m. on March 4th. The perineum was ruptured, and immediately after birth she had another fit, making ten in all.

The perineum was sutured, and during the suturing the patient was kept under the influence of chloroform, the fit taking place when the chloroform was removed.

During all this time the patient passed by catheter only about 4 oz. of urine, and the bowels moved once. The child was pallid and did not attempt to breathe, but artificial respiration brought it round.

March 6th. Both mother and child doing well. No more fits. Bowels and kidneys are acting freely, but the patient's mind is not clear yet.

March 11th. The patient developed maniacal symptoms. Sleep was poor, but she took nourishment. Paraldehyde up to 3ij had been given, and bromides 25 grains, with little result. The patient getting worse mentally was then removed to an asylum, where she has done well, and the child is still living.

March 23rd. Urine brown; specific gravity 1010; very acid, and contains much albumin and acetone.

CASE III. (Reported by Mr. R. L. Rea, Maternity Hospital.)

Admitted to the Maternity Hospital, Belfast, on March 20th, 1915, in the last month of her first pregnancy. The patient, who was a primipara, and expecting her confinement about the end of March, was admitted on March 20th with the history of having had seven fits on the same morning before coming in.

At 8 a.m. she had morphine gr. $\frac{1}{2}$ injected. When admitted, at 1.30 p.m., she was having eclamptic fits frequently, so that morphine gr. $\frac{1}{2}$ was given about every two hours until one and a half grains had been given before 9.30 p.m. the same day.

On admission the bowels were washed out with sod. bicarb. solution as high as possible. The stomach also was washed out with the same solution, and half a pint was left in the stomach with ol. ric. 3ij and ol. croton. mij. This, however, was all vomited within half an hour, and not until after the child was born and the patient had another fit and was in a comatose state, was the stomach tube introduced again and the same doses left in the stomach. These were retained. On attempting to do intravenous injection with sod. bicarb. solution, very little fluid could be got in as the patient was so full-blooded. However, a few ounces of strong sod. bicarb. were put into the right arm. Labour having set in, the membranes were artificially ruptured by Sir John Byers at 4.20 p.m., and labour was terminated by forceps at 8.15 p.m., with slight laceration of the perineum; 1 c.cm. pituitrin extract was injected subcutaneously to contract the uterus.

Altogether the patient had seventeen fits, fourteen before birth of child and three after.

March 21st. The bowels and kidneys acted well during this day, but the patient had scarcely any sleep.

March 22nd. At night sod. brom. gr. xxx were given and some sleep obtained. She showed symptoms of slight mental disturbance.

March 23rd. Paraldehyde (5 iij) was given, after sulphonal (gr. xx), administered twelve hours previously, had failed to act. She fell asleep almost instantaneously, and continued in that condition the night through.

March 24th. Cerebral symptoms gone, and the patient takes her food well (milk diet).

March 25th. The patient sleeps naturally and takes her food well.

The infant gradually became cyanosed and swollen all over, and died on the second day, in spite of warm bath treatment and injections of strychnine and digitalin, with signs of bronchopneumonia.

On March 20th the patient's urine was tested and was found to be small in amount, to contain much albumin, to be very acid, and to contain acetone.

Later (March 25th, 1915) the albumin was almost nil.

Note.—The patient was quite well on the day before admission to hospital, but her urine had not been tested by any one.

The above cases are examples of what is now called "the toxæmia of later pregnancy," occurring from the sixth month onwards. This toxæmia may be due to the increased metabolism which takes place in a pregnant woman, but unfortunately, despite the great scientific advances in modern medicine, we cannot tell what the toxin is, or where it is formed, and why it occurs so frequently in women pregnant for the first time, or why it is met with in only about 1 in 500 pregnant women. We cannot show the toxin in a test tube, but, in the meantime, we accept, as the best working hypothesis, the theory that there is a toxin, and we hope and wait for more scientific light on what is the most vexed question in obstetric medicine.

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TYPES OF TOXAEMIA OF LATER PREGNANCY.

From a clinical point of view there are three well-defined types of toxæmia met with in the last three months of pregnancy.

1. There is what is termed the pre-eclamptic toxæmia, which includes a large number of cases—from those which are mildest, right up to those which are most severe, but which just stop short of coma and convulsions—the characteristic signs of eclampsia. In these pre-eclamptic cases the symptoms vary, but there are usually those which indicate disturbance of the nervous system (headache, lassitude, irritability, dizziness, somnolence); alterations of vision; swellings seen in various parts of the body (face, limbs, vulva); now and again epigastric pain, but always—in the mildest as well as in the most severe—an examination of the urine will clear up the diagnosis. In cases of this type—in which the symptoms are mild, with, say, a little occasional headache, some slight oedema of the limbs, and a trace of albumin—the term “kidney of pregnancy” was formerly given by German writers.

2. *Nephritic Toxæmia*.—This group includes all cases of toxæmia in which the patients have pre-existing kidney disease before they become pregnant. Among them we meet with many of the same symptoms which are observed in the case of the first group, but, in addition, actual organic changes may be observed on ophthalmoscopic examination of the retina; and, when present, such signs are of bad omen. A careful analysis of the urine shows a marked difference between these two groups of cases. In the pre-eclamptic toxæmia the total amount of the urine is diminished, and the output of nitrogen, as well as of urea, is lessened, while in the nephritic toxæmia one often finds all these increased. In the pre-eclamptic cases the albumin is para-globulin; in the nephritic toxæmia it is serum albumin.

3. In the third type of toxæmia, occurring after the sixth month of pregnancy, we place the true cases of eclampsia, where we have the additional symptoms—convulsions and coma.

Some writers describe a fourth group, which they designate as cases of “eclampsism without fits,” but they are really only extreme examples of pre-eclamptic toxæmia.

Case 1, from the time I saw her first, might, by some observers, be placed in this group, but there was a history that she had “worked” (that is, suffered from a convulsion) before she came to hospital. From the period she entered the hospital, though drowsy, she had no convulsions, nor did she pass into coma. Her urine, however, was of the characteristic type met with in eclampsia.

THE TREATMENT OF THE TOXAEMIA OF LATER PREGNANCY.

It is, however, satisfactory to note that the treatment of the toxæmia of later pregnancy is much in advance of our knowledge as to the exact pathological cause of this condition. Of the first two groups—the pre-eclamptic and the nephritic toxæmia—the treatment runs largely on similar lines, and like many other obstetric complications it consists mainly in preventive measures. Every effort should be made to relieve the kidneys by getting the skin and bowels to act, and by the administration of a simple non-nitrogenous diet. If there be headache or oedema the patient, in addition, should be kept in bed, and should have hot baths, free purgation, and a milk diet; and if the state of affairs becomes more severe, warm saline lavage of the stomach and intestines is useful. In the nephritic cases, if in spite of this method of management they get worse, labour should be induced. One of the most important points to be emphasized is that a pregnant woman's urine must be analysed once a month during the first six months of gestation, and at least once a fortnight after that period. Since adopting this routine method I have not had in private practice during the past fifteen years a single case of eclampsia, as prompt measures taken, when an examination of the urine showed any considerable amount of albumin (and under these circumstances a catheter specimen should always be obtained), and with it any diminution in urea and nitrogen output, warded off all risk of convulsions and coma. At the Maternity Hospital, Belfast, almost every month I am on duty cases of eclampsia are sent in, and invariably the history given is

that no doctor had ever been asked to see these patients until their condition—from the presence of convulsions or coma—had become extremely grave. One of the great blots in the Insurance Act is that a woman can get maternity benefit without being obliged to see any doctor during her pregnancy. Had it been made compulsory that, in order to render themselves eligible for maternity benefit, women must report themselves regularly during pregnancy to a doctor whom they had selected to attend them at their confinement, not only would most cases of eclampsia be prevented, but it would also be recognized at a sufficiently early time that certain of these patients had contracted pelves, and arrangements could be made beforehand to adopt the special operative measures necessary to secure for them and their children a safe delivery. As matters stand at present among the working classes, the medical attendant is too often called for the first time only when, in the case of pregnancy, the patient is in convulsions or coma, or he is summoned to find at the time of confinement a condition needing some special form of operative delivery if mother and child are to live.

THE TREATMENT OF ECLAMPSIA.

At the present time two most contradictory views are held by experienced obstetricians as to the proper treatment of eclampsia. According to one school the best results will be obtained if delivery be effected as soon after a patient has had her first convulsion as is consistent with her safety. Such a line of action naturally appeals to those who believe that the toxin originates within the pregnant uterus, and that, therefore, the sooner that organ is emptied the better it will be for the patient, and the most advanced advocates of this method recommend some form of Caesarean section—abdominal or vaginal. The other line of opinion is that better results are obtained by treating the toxæmic condition, and not by inducing labour, either by the very dangerous accouchement forcé, or by any form of Caesarean section. The supporters of this course of management believe, however, that when labour comes on naturally it may be expedited when the os is fully dilated, but they teach that the duty of the obstetrician is to treat the patient specially from the toxæmic, and not from the obstetric, point of view.

I. ECLAMPSIA TREATED BY IMMEDIATE DELIVERY.

It may be objected to the immediate emptying of the uterus in eclampsia (1) that such a plan does not cure all cases; (2) that patients with convulsions and coma have been treated so that they have recovered completely, and have given birth at a later period to living healthy children, all signs of a previously existing toxæmia having disappeared—I have personally had several such cases; (3) that some of the worst and most fatal cases of eclampsia have been those in which the first fit occurred after delivery. I used to think, under such circumstances, the prognosis was good; in later years, however, I am much more anxious about cases in whom the first fit occurs *post partum*. Further, if Caesarean section is to be done in the case of every woman with eclampsia, surely among them there will be a number who would have recovered with less radical measures of treatment. It must be conceded, in fairness to those who recommend immediate emptying of the uterus on the onset of convulsions and coma (or either), that any operative measures to do this should not be postponed until other lines of treatment have been tried and have failed, and then employed only as a last remedy; and, further, that the operative method best suited for use at an early stage—Caesarean section—is done on a patient who is already in a serious condition from a poison circulating in her system. Such a plan cannot be supposed to give anything like the good results it does in the case of a healthy, unexamined woman, in whom Caesarean section is the method of delivery chosen beforehand owing to a contracted pelvis.

RESULTS OF CAESAREAN SECTION FOR ECLAMPSIA.

In Routh's paper “On Caesarean Section in the United Kingdom,” being a report read at the Vme Congrès International d'Obstétrique et de Gynécologie, at St. Petersburg, in September, 1910,¹ he writes: “In 1897 Kettlitz collected 28 cases (in eclampsia gravidarum) with 14 deaths; in 1899 Hillman collected 40 cases with 21 deaths, and Streickeisen, in 1903, added 26 cases with 8 deaths.

In the list of cases collected for the purpose of this paper there have been 10 cases with 6 deaths. Olshausen reports 3 Caesarean sections in 250 cases of eclampsia with 1 death. Thus, in 105 cases treated by abdominal Caesarean section, the deaths were 50, a mortality of 47.6 per cent."

The most recent statistics dealing very fully with Caesarean section done for eclampsia appear in volume 39 (for 1914) of the *Transactions* of The American Gynaecological Society, and were brought before the annual meeting of that body, held in Boston in May, 1914, by Dr. R. Peterson, in a very able paper, "A Critical Review of Five Hundred Published and Unpublished Cases of Abdominal Caesarean Section for Eclampsia." These 500 cases represented the work of 259 operators in fifteen countries of the world. Among them there were 174 deaths, or a total mortality of 34.8 per cent., but if they are divided into two classes—(1) those done up to 1908, and (2) those done between 1908 and 1913, the results are markedly different. During the first period—that is, up to 1908—there were 198 cases with 95 deaths, or a mortality of 47.97 per cent. During the second period—that is, between 1908 and 1913—there were 283 cases with 73 deaths, or a maternal mortality of 25.79 per cent., this improvement being due to greater asepsis and to better technique. In making up these figures, 29 out of the 500 cases were omitted because the year of the operation was not given. This was done simply to be accurate. Dr. Peterson believes the mortality percentage of 25.79 can be considerably lowered by care in technique and by not making use of the suprapubic route when there is great probability that the woman has been infected from below.

Excluding premature children and counting all children as living who survived one hour after delivery, there were 9 deaths in the series from 1903 to 1913, where 248 children were delivered by abdominal Caesarean section, or a fetal mortality of 3.62 per cent. Under the same conditions the fetal mortality was 10.69 per cent., if children dying the first three days after delivery be counted among the deaths. As Peterson concludes: "Even estimating the fetal mortality by this method, it is much better than by any other method of treating eclampsia."

Professor Bumke's statistics for the years 1904-9 at the Charité Hospital, Berlin, are as follows: 17.7 per cent. mortality in 330 cases; when, however, the uterus was emptied within six hours of the occurrence of the first convulsion the mortality was 8.8 per cent. The fetal mortality was 21.7 per cent.² I cannot get any of his later statistics.

II. The alternative method of management of eclampsia aims specially at the treatment of the toxæmic condition; no forced delivery is done, but when labour sets in, it is helped. One plan is that employed by Zweifel and Lichenstein, and it consists in bleeding, followed by intravenous salt solution, which is said to give a mortality of less than 7 per cent., while another method,

THE ELIMINATIVE TREATMENT OF ECLAMPSIA, aims—

- First, at the prevention of the formation of any more toxins;
- Secondly, at the elimination of the toxins which are already circulating in the system;
- Thirdly, at the facilitating of labour at the proper time, if it should come on naturally, no induction of labour being allowed; and
- Fourthly, at the careful treatment of special conditions, such as heart failure, obstruction of the larynx, etc.

This plan of treatment has been called "the Rotunda" method, because it was begun, slowly evolved—step by step—and brought to its present state in that institution, just in the same careful way as the treatment of accidental hæmorrhage has been worked out. The plan of campaign for the treatment of eclampsia was started during the mastership of Sir William Smyly; and at the International Congress of Gynaecology and Obstetrics, Geneva, in 1896, when I was asked to open—from the English point of view—the discussion on The Treatment of Eclampsia, in the absence of Sir William Smyly, who was then Master of the Rotunda Hospital, I was able to give his results, which showed a marked improvement on previous methods. His plan was the avoidance of

induction of labour, as well as the use of chloroform (except for operative interference), pilocarpine, and chloral. He reintroduced the use of morphine ($\frac{1}{2}$ grain at first hypodermically, followed by $\frac{1}{4}$ grain, as often as is found necessary to control the fits, the idea being simply to keep the convulsions in check; as much as $2\frac{1}{2}$ grains being allowed in the twenty-four hours), and he recommended the placing of the patient on her side (not on her back) with her head low. Here are Sir William Smyly's statistics which he gave me at that time: "There were 30 cases of eclampsia (at the Rotunda), of which 4 occurred before labour, 22 during, and 4 after delivery. The first seventeen were treated with chloroform; of these six mothers and eleven children were lost. Since 1893 we have abandoned chloroform, except during instrumental delivery, and have had thirteen cases with two maternal and eight fetal deaths; one went out undelivered." It should be stated that it was G. Veit who originally suggested and used the morphine treatment. Before Sir William Smyly reintroduced the morphine treatment the death-rate in the Rotunda Hospital was 35.3 per cent.; it fell to 20 per cent. during his mastership and that of his successor, Dr. Purefoy, in those cases treated in the way I have described. The next chief of the Rotunda Hospital, after Dr. Purefoy—Dr. Tweedy—specially elaborated and developed the management of eclampsia, and his very full method of treatment has been, with certain modifications, continued during the mastership of his successor, Dr. H. Jellett. This plan depends for its success on the thorough and careful carrying out of a series of clearly defined details:

1. To avoid any further formation of toxins, the patient is starved, the stomach and bowels are carefully washed out with warm saline (half to one drachm of sodium bicarbonate to the pint), but in order not to embarrass the heart or breathing no fluid—after the washing out—is left in the stomach. This gastric and intestinal lavage is employed with the object of removing any toxins, as well as any articles of food taken recently, because Dr. Tweedy teaches very strongly that indigestible food is a most important exciting cause of eclampsia.

2. To eliminate the toxins, the washing out of the stomach and thorough and frequent intestinal lavage are employed, and care is taken that no medicines of any kind are placed in the mouth of an unconscious patient, but they (two ounces of castor oil, with three drops of croton oil, or some other aperient) are poured into the stomach just before the tube for lavage is withdrawn. Of course, if the patient can swallow, compound powder of jalap, croton oil, compound senna mixture, or calomel may be given in the ordinary way. To my mind, no part of the treatment is more important than the thorough emptying of the bowel, and it often requires an amazing amount of purgatives and frequent intestinal lavage, the rubber tube being passed twelve to fourteen inches until this is accomplished. For the same reason—to get rid of the toxins, to supply fluid to the system, and to act as a diuretic—mammary or venous saline infusion is to be used (especially if after washing out the bowel the urine remains scanty and high-coloured), and warm poultices to the loin are employed for the purpose of increasing renal activity, and with the idea of eliminating the poison.

3. Treatment of special conditions. The patient should be always kept on her side (either will do) to prevent mucus and saliva entering the larynx and so adding to the risk of oedema of the lungs. Suppose mucus to collect in the throat and signs of laryngeal obstruction to arise, the patient's head and shoulders should be drawn over the side of the bed, her face turned down towards the floor, so as to let any blood or mucus mechanically flow out. Oxygen and artificial respiration are important aids in re-establishing breathing. During a fit, a gag or handle of a spoon (covered with a piece of linen) should be introduced between the teeth to prevent the patient injuring herself. A cork should never be used, as it is apt to be broken up into small pieces which, if they get into the larynx, may tend to choke the patient. For any signs of heart failure 10 to 20 minims of brandy or whisky may be injected, as well as $\frac{1}{10}$ grain of digitalin. No warm baths, or any form of diaphoresis, are recommended. If labour sets in, as soon as the os is fully dilated artificial delivery is to be employed. But the three great points to attend to are (1) to prevent the formation of any more toxin, (2) to get rid of any already circulating in the

system, and (3) to treat special complications as they may arise. Dr. Tweedy has kindly given me his latest results as follows: He has had 78 cases of eclampsia treated in the way I have described, with 6 deaths—that is, a maternal mortality of 7.7 per cent.

Stroganoff's method—which differs from that of Zweifel and Lichenstein in that no free bleeding is used—is based largely on the same lines as that employed at the Rotunda clinic, with the following additions and alterations:

1. He tries to avoid all external irritation; hence, the patient is kept in a quiet darkened room; no one is admitted except the doctor and the nurse; everything is done silently, and without fuss or noise.

2. If any examination has to be made—external or internal (only if necessary)—if the catheter has to be used, or a hypodermic of morphine has to be given, the patient is allowed to inhale twenty to thirty drops of chloroform.

3. The fits are controlled by a combination of morphine and chloral (giving the latter by the mouth or by the rectum).

4. Labour is assisted, but not forced.

5. The vital processes are to be watched carefully, and to be stimulated, when necessary.

6. For the respiration, pure warm air is to be used, with oxygen after the fits; and the patient is to be kept on her side, and careful cleansing of the throat and nose is to be done.

7. For the heart, digitalis and stimulants are to be employed, if it gets weakened, and milk and saline infusion may be given by the mouth or rectum.

8. For the kidney and skin, the best remedies, he thinks, are warmth and saline infusion.

The last statistics I can procure show 900 cases reported by Stroganoff, with a 7 per cent. mortality.

When I contrast the clear and precise methods of treatment of eclampsia recommended and employed now, with the uncertain plans which were taught and carried out in a doubtful and hesitating way when I began practice, the change is indeed remarkable. Formerly, in our efforts to combat such a serious complication, we had little system or guidance; now we have clear, definite rules to follow; and—what is indeed remarkable—this complete alteration from uncertainty to self-reliance has been gradually brought about, although we still know so little—at least with anything like scientific accuracy—of the real cause of eclampsia. When the obstetrician is faced with a case of eclampsia, occurring after the sixth month of pregnancy, in whom there are no signs of the onset of labour, he may decide to follow one of two methods: (1) To deliver as soon as possible, or (2) to use every effort to eliminate the supposed toxin and to prevent the continuance of its formation, at the same time treating any complication as it arises, but avoiding all attempts at forcible delivery, and only interfering obstetrically when, in the course of labour—which has naturally arisen—the indications are clear for successfully helping the birth of the child.

Medical practitioners must, after a careful consideration of all the circumstances and statistics, such as I have given, make up their own minds which plan they will carry out. For myself, I have no hesitation in saying I prefer the second, or what we may call the eliminating method of treatment, which I have carefully followed out, with some modifications, at the Materaity Hospital, Belfast, during the past eight years, and where, of late, my results are about the same—from the point of view of mortality—as those of Tweedy and Stroganoff; and where also they have steadily improved *pari passu* with the thorough and careful attention to all the details I have enumerated. To call this method of treatment the morphine plan is to show a very superficial knowledge of what it is—it is really a combination of a series of details, every one of which is the result of close observation, thoughtful care, sound experience, and improved scientific technique. What above all else should be attended to is, I believe, starvation and the washing out of the stomach and the thorough lavage of the intestines, until they are both fully cleared out, as well as the prevention of laryngeal obstruction and oedema of the lungs, and the control of the fits by morphine. Wherever the poison is elaborated, I think it is got rid of much more thoroughly and

permanently by clearing out the stomach and intestines than by emptying the uterus.

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¹ *Journal of Obstetrics and Gynaecology of the British Empire*, January, 1911. ² *Kritisch-statistische Betrachtungen über die in der geburtshilflichen Klinik der Kgl. Charité von 1904 bis 1909, beobachteten Eklampsie fälle von Abraham Zyskowitz.*

A DRESSING STATION IN FRANCE.

BY

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THE following notes refer to a dressing station occupied for about three weeks last September by the bearer section of a field ambulance. During most of the time the assistance of a single tent subsection was also available. There were at first three medical officers, later five, and then four for the remainder of the time. The assistance of the regimental medical officers attached to whatever brigade happened to be in the trenches above was of great value in times of stress. The number of wounded and sick dealt with varied a great deal—from 20 to 300 a day.

It will be convenient first to notice the position of the station with regard to other places where medical aid was obtainable. Fig. 1 shows at T. the position of the station on the side of a hill. It dealt with all the wounded from the trenches between A' and A". This line is about a mile long, and nearly all the cases had to be brought across country, although a proportion came along the track running eastwards from T., a few slightly wounded cases wandered down the valley to V., where another ambulance had a dressing station. Here also were collected the cases from along the line A-A'. For a few days there was a tent division at M.—virtually a clearing hospital—this being only about two miles away, but for most of the period the wounded were cleared in wagons to V. E. P.—a distance of five miles. As this was at night the journey was apt to be a chilly one, but the roads were good except for shell holes. The whole district is of course well within the range of enemy shell fire, and the long hill north of M. was in particular an object of annoyance to the enemy.

Fig. 2 shows the position as it would appear to an observer in the valley, except for the deficient draughtsmanship of the writer. We will start from the road junction marked (1) on both figures. Proceeding along the upper road we go gradually uphill. The comparatively gentle slope of the hill on our left is a disadvantage, as it, after a time, rendered the farmhouse (8) untenable for medical purposes, and, later still, for any purpose whatever. Keeping on, we come to "dug-outs" (5) on the right of the road. These, indeed, covered the hillside and seemed to increase in number daily. Further on there is a bank on the left of the road, and this also is full of dug-outs. Then the road proper turns to the left and towards the lines of the enemy. Our advanced trenches were this side of the horizon on the road. The road is continued as a broad track—the remains of fields of beet, etc. The bank continues for a while, but towards (4) falls away so that the road becomes somewhat exposed for transport of the wounded. Our trenches are in view on the left of the road along the line A'-A".

Coming back to the road junction (1), we now take the lower road. On the left is a haystack (6), and there is another further on on the right. These, with the contents of one or two lofts, were the source of all the straw used in the caves (15) in which the wounded lay, and the supply was not as liberal as one could have wished.

At (7) we come to a track crossing the road, and it was at this point that the wagons were usually loaded. The track to the right was of no importance; that to the left was our main road, and will be dealt with presently. Beyond (7) are farmhouses on the left, and other houses (not represented in the figure) on the right. Further is a clearing (10) with a large tree, and it was here that wagons were parked when necessary. It was also the only spot at which a wagon could turn round. Behind it is a pathway to the church, which stood on higher ground surrounded by its burying ground. This was used for burials as long as possible. Then there is a fence on the left with an opening for the track which ran down the