TWO LECTURES ON ANTENATAL DIAGNOSIS.

Delivered in the University of Edinburgh, February, 1900,

By J. W. BALLANTYNE, M.D., F.R.C.P.E., F.R.S. EDIN.,
Lecturer on Antenatal Pathology and Teratology in the University of
Edinburgh; Lecturer on Midwifery and Gynaecology in the
Medical College for Women, Edinburgh.

LECTURE II.

MATERNAL SYMPTOMATOLOGY.

IN making an antenatal diagnosis of morbid intrauterine conditions, the closest scrutiny must be given to all the details of the pregnancy. It ought to be our object to elicit from the mother all that she can remember of her symptoms during both the early and the later months of her gestation; too often we repress such information, partly because we do not wish to make the patient nervous about herself, and partly because we desire to avoid long tales about maternal impressions. Therein doubtless we err; for although the mother's speculations regarding her sensations may be worthless, and worse than worthless, for the formation of a diagnosis, the same cannot be said for the definite information she gives as to the occurrence of her sensations. Her theoretical opinions may be of no value, but her statement of facts is of great importance; we must therefore endeavour to direct her flow of information along the line of facts, and not in the current of theories.

In the first place we inquire into the symptomatology of pregnancy itself, for it is not altogether a truism that before we can diagnose an abnormal pregnancy we must diagnose that there is a pregnancy. Further, the very ease with which we recognise that there is the normal symptomatology of gestation is indirect evidence that intrauterine affairs are progressing in a natural way, for it is the abnormal gestation that is difficult to separate from conditions which are not connected with the presence of a foetus *in utero*. The very fact that the diagnosis of pregnancy is not easily made is presumptive evidence that there is an abnormal pregnancy. If then it be found that in the history of the case the symptoms upon which we rely in diagnosis, such as suppression of the menses, morning sickness, frequency of micturition, quickening, mammary fullness, nervous phenomena of a reflex type, abdominal enlargement, etc., show deviations which make us doubt the existence of pregnancy, we may almost unconsciously have made the first step in the diagnosis of a case of antenatal morbid change. The patient herself will often sum up the symptomatology for us in the remark that she does not feel in this pregnancy as she did in previous ones, that in fact she doubts if she is really in the family way at all. By this she generally means that one or several of the symptoms upon which she has learned to rely for the detection of pregnancy have deviated so much from the usual that her opinion has been shaken, while the presence of other of these symptoms in a natural way has prevented her altogether abandoning the notion that she is pregnant.

Some of the symptomatological deviations which are met with may be referred to. There is, for instance, the occurrence of more or less regular and more or less sanguinolent discharges from the vagina—the persistence of menstruation in an erratic form. In the early months this may indicate a threatened abortion or a hydatid mole, and in the later months it may point to a low implantation of the placenta, or to premature separation of the after-birth. It may also point to the existence of an antenatal morbid condition of the uterus itself, such as bicornate or septate organ, or to the presence of a tubal or tubo-abdominal pregnancy. Along with these hæmorrhages, however, there is a continuance of the other phenomena of pregnancy, and the patient becomes alarmed about her dubious condition. A case illustrating this uncomfortable state of matters came under my observation quite recently. It was that of a woman, aged 41, who had been eleven times pregnant. At a date when she thought she was four and a half months pregnant for the twelfth time she was suddenly attacked by flooding, and passed from the vagina a mass of blood and clot along with a sac about the size

of the palm of the hand, which she compared to a little india-rubber balloon with water in it and a small solid body. She concluded, and I think her conclusion was justified, that she had aborted; but as weeks passed by her abdomen continued to enlarge, and soon she felt foetal movements.

I saw her when nearly three months had elapsed after the abortion, and there was no doubt in my mind that she was pregnant about seven months. The conclusion must be drawn that it was originally a twin gestation, and that one twin had come away while the other had gone on developing. It may be stated generally that we do not yet know the exact significance of irregular menstrual discharges during pregnancy, and the same remark applies with still greater force to the occurrence of hydrorrhœa gravidarum. In a recent paper, P. C. T. van der Hoeven¹ has given details of three cases of hydrorrhœa in pregnancy, in all of which the infants were born alive and healthy, but premature, and from the chemical and microscopical examination of the fluid it did not appear that it was either liquor amnii or a transudation through the membranes from the liquor amnii. J. A. Macdougall in 1885 gave details of 7 cases of marked hydrorrhœa gravidarum, and I note that in at least 5 of them the foetus was small, puny, and poorly developed.²

Again, the patient may complain of deviations from the normal in the symptomatology of quickening. The foetal movements may have been felt very early or unusually late in pregnancy, or they may have been very strong or very weak, or they may have been very frequent or have occurred only at long intervals, or, finally, they may have shown different deviations at different epochs in the gestation. Sometimes foetal death has been indicated by unusual activity of the foetal movements, followed by complete cessation of them. In cases of maternal malaria the mother has occasionally described attacks of foetal quivering and shaking either synchronous with the ague fits in herself or occurring at other but at regular times; it has been concluded that there was foetal malaria, but not always of the same type as the maternal. Foetal movements of a kind very different from the normal have been described under the name of foetal singultus. The details of a case of this sort were communicated to me some time ago by my friend Dr. T. B. Darling. It was that of a woman, 29 years of age, a 4-para, who had in each of her four pregnancies and always about the seventh month suffered from convulsive movements of the foetus which were quite unlike the usual "kicking" sensations. They were regarded by her as due to hiccough or singultus of the foetus, and they occurred most markedly at night. Her belief received considerable support from the fact that all her infants suffered from hiccough for a few days after birth and that the movements were very similar. It is interesting to note that in the first two pregnancies the vertex presented in the L.O.P. position, that is, with the foetal abdomen anterior; in the third and fourth gestations, however, the position was the R.O.A. It has recently been affirmed that these peculiar movements are not very rare, although it is likely that they are not often so marked as to attract special attention from the mother; but this point will be referred to again under the head of the physical examination of the abdomen in pregnancy.

The symptomatology of morbid pregnancy has also to do with abnormalities in the degree and rate of abdominal enlargement, in the mammary sensations, and in morning sickness, dysuria, headache, neuralgia, etc. The patient may, for instance, assert that she is larger or smaller than she ought to be for the supposed date of pregnancy, circumstances which may on the one hand indicate hydramnios, hydatid mole, twins, a dropsical foetus, a double monster, and on the other hand, oligohydramnion, poorly developed foetus or monstrosity by defect such as anencephaly. Of course, it may mean nothing more than that she has made an error in her estimate of the age of her pregnancy. Again, she may state that she has a sensation of weight or of coldness in the lower part of the abdomen, that the abdominal enlargement has ceased to grow, that the breasts have stopped swelling, and that certain neuralgias or other reflex phenomena which she has come to associate with the continuance of gestation have ceased; and from these symptoms she may draw the conclusion that the foetus *in utero* has died, and it may very well be that she is quite right.

In the second place we must inquire into the symptoms which have been present in pregnancy which have nothing to do with pregnancy as pregnancy. For instance, she may have suffered from an infectious fever, and have had its typical symptoms, or she may simply have been exposed to the infection without herself showing its manifestations. It does not of course follow that the diagnosis of foetal infection can be certainly made under such circumstances, but it makes it a probability, and it ought also to make the observer think of foetal death, of premature labour, and of congenital weakness or other indication of toxic poisoning of the unborn infant. Further, there is evidence that an infectious condition in the mother may be connected with an apparently entirely different morbid state in the foetus, as in Bidone's case of erysipelas in the mother with streptococcal endocarditis in the foetus, or in Moncorvo's record of repeated lymphangitis in the mother as the result of traumatism, with infection and congenital elephantiasis in the infant. Although apparently unconnected, the foetal state may nevertheless be the result of the maternal infection, for allowances must be made for differences in environment and in physiology. Reference may here be made to the occurrence of traumatism in pregnancy; this should always be noted, for it may have a direct bearing upon foetal injuries, death and even deformities. Here also it may be well that maternal impressions be recorded, their nature, and the date of gestation at which they took place, if for no other purpose than to disprove the efficacy of these impressions in the production of monstrosities. Further, the fact that the mother during her pregnancy has had for any reason to take powerful or poisonous drugs ought to be referred to in the formation of a diagnosis of foetal disease or death; the toxicology of intrauterine life is a large and as yet almost unworked field. The commencement or continuance of habits of intemperance during the gestation must be noted; and, finally, the supervention of symptoms of disorder in any of the great systems, such as the circulatory, respiratory, digestive, urinary, cutaneous, or nervous, must not be passed over in silence, for such may throw light, often quite unexpectedly, upon morbid intra-uterine states.

It may be that in this enumeration of the symptoms of morbid gestation I have referred to conditions which have little apparent diagnostic value, but the antenatal pathologist is not yet in a position to say what is and what is not of importance in this matter. It is only by the careful recording of all such circumstances that we can ever hope to build up a system of foetal symptomatology. If the truth be told it is not excess of zeal in recording the phenomena of morbid pregnancies that it is to be deplored or feared, but the reverse.

MATERNAL PHYSICAL EXAMINATION.

After the history and symptomatology of the pregnancy have been ascertained, it will be necessary to proceed to an exhaustive physical examination of the maternal and foetal organisms, and in the case of the mother it will be important to examine not only the reproductive organs, but also the other bodily systems.

1. Physical examination of the maternal circulatory, respiratory, and other systems (except the reproductive). The discovery of a serious diseased condition of any of the maternal systems does not, of course, enable the observer to declare that the foetus is suffering in the same organ, and in the same way *in utero*. Antenatal diagnosis is not so easy as that. At the same time it makes it possible, and with some maladies even probable, that the foetus is affected with the same pathological change as the mother, and it nearly always enables the observer to predict that the infant unborn is suffering in some way or other, and that the pregnancy will be in some way or other abnormal. The structures in the uterus do not reflect as in a mirror the state of the maternal organs; but it is doubtful whether there can be anything far wrong with the mother's economy without the foetus or embryo suffering in one way or another, and it occasionally happens that it suffers in the same way. For instance, the discovery of grave maternal cardiac disease (namely, a state of mitral incompetence and stenosis of recent origin, and without compensation) will be an undoubted warning that abortion, or premature labour, or foetal death may be looked for; and it may, especially when the maternal valvular lesions can be traced to acute rheumatism, mean that the infant will be

born with a malformed heart, and possibly with a murmur caused thereby. Again, the existence of pulmonary tuberculosis does not often carry with it phthisis of the foetus, or even evident tuberculous changes in any of the organs or in the placenta; but it may and often does carry with it deviations from the normal progress of gestation, such as premature delivery, and the infant may, as has been pointed out by Hanot and others, show malformations—for example, stenosis of the pulmonary artery. Septic pneumonia of the mother may occasionally produce septic pneumonia of the foetus; it cannot be doubted that it nearly always interferes in some way with the pregnancy which it complicates. Similarly renal mischief in the mother produces changes in the foetal tissues, which are sometimes localised in the kidneys, but more often they are found in the other organs and very often in the placenta, which is, after all, the kidney of the unborn infant. Marked maternal dropsy often means simply placental lesions and a puny badly-nourished foetus; but sometimes, as I pointed out several years ago,³ the foetus which is born shows general anasarca; out of 36 cases of marked foetal dropsy there was also maternal dropsy in 16.

After having examined the maternal circulatory, respiratory, and urinary systems (I omit for the present a reference to the testing of the urine), the observer should turn now his attention to the other systems. The osseous and locomotor structures should be examined, for women with achondroplasia have given birth to achondroplastic infants; and congenital rheumatism, although rarely recognised, has now and again been noted in the offspring of mothers who have suffered from rheumatic fever in pregnancy. Nervous diseases, in addition to being distinctly hereditary, produce effects in other ways upon the products of conception. Goitre in the mother has sometimes been found in her foetus, and Demme, of Berne, found that in 53 cases of congenital goitre 23 had mothers suffering from the same malady.⁴

The physical examination of the mother must include the search for congenital anomalies in herself, such as naevi, minor malformations, and muscular peculiarities, for such are now and again to be expected in her infant. It must include the taking of her temperature and the inspection of the skin, for in nearly all the infectious maladies such as small-pox, scarlet fever, typhoid, measles, varicella, and erysipelas, the possibility, and, indeed, the strong probability, is that there is a transmission of the morbid agency through the placenta to the foetus with results which may not always exactly resemble those existing in the mother but which are, nevertheless, due to them. Jaundice in mother and foetus has been noted, so has hæmorrhagic purpura, so has epidemic cerebro-spinal meningitis. Even if the foetus escape the disease in its ordinary manifestations, it may fall a victim to the increased maternal temperature, or the toxins arriving in the placenta may cause disease of that structure, or may pass on to the foetus and cause pathological changes in it.

There is another aspect to this subject. It is possible, and indeed probable, that morbid states in the foetus may cause changes in the maternal organs which are capable of being recognised by the observer. Foetal death, for instance, may be followed by the disappearance of varicose veins, by shrinking of the thyroid enlargement, and by a freer condition of respiration; when the foetal death is accompanied by putrefactive changes *in utero*, maternal vomiting, hectic, high temperature, and other signs of blood poisoning will occur. It is also very probable that a diseased foetus may react upon the maternal system; but this is a matter upon which we have little information, and the cases which might teach us something about it—such as instances of foetal small-pox in an immune mother—are very rarely noted. At the same time there is reason to believe that a high temperature in the foetus, with excess of waste products passing to the placenta and so into the mother's system, may sometimes determine eclampsia, or albuminuria at least.

2. Physical examination of the maternal reproductive system. It goes almost without saying that in diagnosing intrauterine conditions it must be from the examination of the uterus and its contents that the facts of the greatest value will be obtained. The examination of the maternal organs of generation now falls to be considered.

The inspection and palpation of the mammary glands may

reveal retrogressive changes which point to foetal death; so may the fading of the purple discoloration of the vulva and vagina. The inspection of the abdomen may show at a glance that it is larger or smaller than the calculated age of the pregnancy warrants it being, and this observation may be corrected and confirmed by careful mensuration. Periodic mensurations may show that the abdomen is not enlarging in a steady fashion, or is not enlarging at all. Palpation may discover a uterus more cystic in feeling than is normal in gestation, a circumstance which will suggest hydramnios, or may, indeed, cast grave doubts upon the existence of pregnancy at all. Here it may again be said that when we are in doubt about the existence of pregnancy it will be well for us to suspect the existence of an abnormal pregnancy. Percussion of the abdomen may serve to mark out more clearly the uterine outlines and to eliminate pseudocyesis from the diagnostic possibilities; and auscultation may make known irregularities of the uterine *souffle*, pointing to anomalies in the growth of the uterus.

PHYSICAL EXAMINATION OF THE FŒTUS IN UTERO.

The physical examination of the unborn infant can hardly be separated from that of the mother's uterus and vagina, either in theory or practice. As a matter of fact, the two procedures are carried on simultaneously.

Abdominal inspection can scarcely do more than suggest that the foetus is very large or very small, or not alone *in utero*; abdominal palpation, on the other hand, may be made a diagnostic means of the greatest importance and value. Nowadays, when so much stress is laid upon the recognition of presentations and positions by abdominal without vaginal manipulation, it must follow that obstetricians will feel better able to appreciate deviations from the normal in the size and form of the foetus. Further, the widening of practice in the sphere of abdominal surgery must have given most of us a more distinctly erudite touch than we ever possessed before. It is largely, I believe, want of utilisation of our powers in this respect that has interfered with the more frequent making of an antenatal diagnosis. Let us examine the abdomen of the gravid woman with the same care that we would employ if we were anticipating the performance of an ovariectomy or a hysterectomy. Further, let us not forget to use both hands, either both outside the abdomen, or one outside and the other inside the vagina, in order to get the help which the bimanual method always gives. Anæsthesia may yield as valuable results in the examination of the foetus *in utero* as in any other department of medical practice, and there are some emergencies in antenatal pathology which fully justify us in putting the mother under chloroform.

By abdominal palpation, either with or without anæsthesia, it may be possible to make out the irregular foetal outlines and the indistinct crepitus associated by Negri⁵ with foetal death, to diagnose provisionally that there are twins *in utero* or a double monstrosity, to ascertain the presence of excess or of absence of liquor amnii, and possibly also to hazard the speculation that the foetus is small or large, or grossly malformed. Peculiarities in the foetal movements, such as their great strength, or frequency, or character (for example, singultus), may be detected by the hands, and the difficulty or ease with which *ballotement* can be elicited has a diagnostic value. In cases of hydramnios, where it is usually very difficult to palpate the foetus, and where it is particularly important to be able to do so, it has been recommended to put the patient in the genu-pectoral position so as to allow the foetus to gravitate towards the abdominal part of the uterus, where it can be better felt, but care must be taken that the mother does not faint or have very grave dyspnoea during the process, and I fancy the same result in aiding palpation will be obtained by putting the patient on the side or in the semi-prone position. An unusually cystic feeling in uterus, with the existence of the other symptoms and signs of pregnancy, ought to make the observer suspect hydramnios, and along with it a monstrous condition of the uterine contents or the presence of twins, for if there is one fact in antenatal pathology that is well established it is the association of teratological conditions, twinning, and hydramnios. The scarcity of the liquor amnii is also a sign of intrauterine morbid changes, especially of multiple malformations, congenital dislocations, fractures, and ankyloses. Doubtless in the

future the palpation of the foetus *in utero* will be much more widely practised than it has been in the past.

Auscultation of the abdomen to detect the presence of the foetal heart is a common, indeed a constant, practice with the careful obstetrician, but there seems to be no doubt that the observant ear ought to be able to make out more from this method of investigation than the diagnosis of pregnancy. Some years ago a colleague showed me a series of regular daily estimations of the foetal heart-rate taken by himself in the case of his pregnant wife; he had made them with the hope of arriving at a conclusion regarding the sex of his unborn child, and his method had been to make dots with a pencil on paper as he listened over the abdomen with the stethoscope for a period of half a minute or a minute as determined for him by the patient. The procedure was a little difficult, but it struck me at the time that it had possibilities in it which could scarcely be overestimated; it might, for instance, be valuable in giving warning both of disease and of impending death in the foetus, and it might be used as a clinical means of determining what drugs when given to the mother passed through the placenta and produced a pharmacological effect upon the infant *in utero*. In a recent case of pregnancy which was under my charge during 1899 I was impressed by the fact that the mother, a primipara, who had not been strong during girlhood (threatened hip-joint disease), during the latter half of gestation rapidly put on flesh and weight; synchronous with this improvement in the maternal condition there was a marked slackening in the growth of the foetus and a weakening and slowing of the foetal heart, with an almost entire absence of foetal movements; it seemed, to put it into ordinary language, as if the mother were being nourished at the expense of the offspring. At any rate, I diagnosed a small infant with very little liquor amnii and possible placental changes. The event proved me to be right, for the infant—a male—was puny and had a senile appearance, was brought through the first weeks of life only with the greatest care; and the placenta was small, of the marginate variety, and diseased; there was scarcely any liquor amnii.

The character of the foetal heart sounds may also give diagnostic indications, and the number of cases in which foetal heart disease or malformation was found out before birth is every year being added to. Within the past few years Bellot,⁶ Padgett,⁷ Nazarov,⁸ and Hall⁹ have all diagnosed foetal heart murmurs, and confirmed the diagnosis after the infant was born. Hall in his communication gave details of cases by Barth, Hennig, and Christopher; in the example reported by himself, the lesion seemed to have been a roughening of the lining membrane of the ductus arteriosus, for the murmur which affected the first sound disappeared ten days after birth. It has been affirmed by Giglio¹⁰ that the presence of an anencephalic foetus *in utero* may be suspected from the weak, uncertain, distant, and frequent beat of the heart, characters which may be due to the absence of cerebral and spinal centres having to do with the innervation of the heart. In such cases, and on account of the above-named peculiarities of the foetal heart beat, it is often supposed to be absent unless very carefully listened for; this apparent absence, when associated with active foetal movements (and with signs of hydramnios), may point, therefore, to anencephaly.

The absence of the foetal heart sounds, especially in a case where they have been previously well heard, and in which their disappearance has been preceded by a slowing of them, points strongly to foetal death; but it must always be remembered that absence of the foetal heart is a negative sign, and therefore never of the same diagnostic importance as, for instance, presence of it is in the estimation of pregnancy and foetal life.

Other sounds *in utero* detected by the stethoscope have been referred to by authors. Thus bubbling sounds due to intrauterine decomposition and alterations in the uterine or placental *souffle* have been described in cases of foetal death; but their diagnostic value is most problematical. It seems, however, that the early foetal movements may be heard even before they are felt.

Mensuration of the foetus *in utero* is a well-known means of forming an idea of the age of the pregnancy, especially in connection with the induction of premature labour; but it is a method which seems to have been little if at all employed in

the diagnosis of anomalies in the size and form of the unborn. It may be carried out with the aid of a pair of callipers, or, better, with the special modification of them known as the cephalometer of Budin or Perret;¹¹ by means of this instrument certain of the foetal cranial diameters have been determined with a degree of error rarely amounting to more than 5 mm. There seems to be no reason why this instrument should not be used for the detection of abnormalities in head and body measurements.

The graphic representation of the foetal movements is another way in which mechanical methods may be made to help the obstetrician in his attempt to find out the state of the unborn infant. Foetal movements are chiefly of four kinds: revolutionary; extensions and flexions of the limbs; extension and flexion of the spine, especially of the cervical part of it; and rhythmical movements of the trunk, and particularly of the thorax, which have been ascribed to foetal singultus, to swallowing, and to intrauterine respiration. These movements, as also the foetal heart beat, may be represented as tracings by the ordinary, although slightly modified, apparatus known as the cardiograph. Pestalozza, in a case of twins, succeeded in getting a tracing of the foetal heart, but the conditions were peculiarly favourable, and not likely soon to occur again. Ferroni,¹² however, has shown that it is quite feasible to get good tracings of the two kinds of rhythmical movements which have been ascribed to foetal singultus and to respiration, the former being abrupt, with an apex, and of a rate of from fifteen to thirty-four per minute, the latter being undulatory, without interruptions, and at a rate of from forty to seventy per minute. Ferroni also got foetal tracings in a case of maternal typhoid and in another of malaria. There is some justification for the hope and expectation that ere long this method of investigation of the infant *in utero* may be expanded and made of use. When it is borne in mind how much we can learn from the movements and attitude of the newborn and young infant, there is surely reason for trying to learn something about these same movements and attitude in the foetus. It is a fact, but not perhaps a recognised fact, that the symptoms and signs of disease in the foetus will more closely resemble those of the infant than those of the adult or child. *Verb. sap.*

Skiagraphy will no doubt also play a part, perhaps not an unimportant part, in the antenatal diagnosis of the future, but in the meantime the results obtained by Varnier¹³ have been exceedingly unsatisfactory as regards the foetus. For this various reasons are forthcoming. Among these may be named the deep shadow thrown by the mother's pelvis and spinal column, the imperfectly ossified foetal skeleton, the thickness of the maternal structures, the impossibility of getting the sensitive plate in the same relation to the abdominal and pelvic part of the pregnant uterus, and perhaps the respiratory maternal and the irregular foetal movements. To meet some of these difficulties Varnier has proposed to take a skiagraph with the patient in the lateral and another with her in the ventral posture, but he has not overcome the technical obstacles in the way.

There is yet another means of diagnosis of foetal conditions which has scarcely at all been employed, and which might yet be made use of. I mean the detection of changes in the chemical composition of the maternal excretions and in the microscopical appearances of the blood. Progress in this direction is in the meantime hindered by the fact that so little is definitely known about the physiological chemistry of pregnancy, and still less about its pathological chemistry. What a wide field of research, and not difficult research at that, there lies open in connection with such questions as the occurrence of albuminuria, of peptonuria, of acetoneuria, of glycosuria, of hæmoglobinuria, and of urobilinuria in pregnancy. Some of these changes in the urine have been supposed to indicate the occurrence of foetal death, but none of them can as yet be regarded as an infallible test, and in one case at least—namely, in albuminuria—the disappearance of the morbid product, and not its appearance, may point to foetal death. Further, we know little of the effect of illness (short of death) of the foetus upon the maternal excretions and blood. There are many problems. Why, for instance, should the ingestion of from 60 to 120 grams of glucose by the pregnant woman produce alimentary glycosuria, while the

non-pregnant woman requires to take from 140 to 180 grams to bring about the same effect? Why should the toxicity of the maternal urine diminish during pregnancy? Why should Bunge's law (the weight of the ashes of the foetus equals the weight of the ashes of the milk of the mother animal) not apply to the human foetus and mother's milk? Whatever the answers to these and to other problems may be, there can be little doubt that from the chemical side will yet come diagnostic aids of no small importance.

INTRANATAL DIAGNOSIS.

Even when labour has commenced and is in progress, it is of importance to diagnose morbid states in the foetus on its way through the maternal passages. It may be all-important to recognise, for instance, causes of delay in labour due to enlargement of the foetal body or head, so that they may be dealt with ere the delay has become a danger; it may be well for the peace of mind of the obstetrician that the diagnosis of the presentation be made, and it will be an advantage for him to be able to forewarn at least the relatives of the mother of the arrival of a monstrosity or a dead foetus, for it will at any rate save him from some of the reproach associated with the unexpected appearance of such an unwelcome little stranger.

The symptomatology of the labour must therefore be taken into account and deviations from the normal noted, such as excess of liquor amnii or dryness of the labour, the absence of foetal movements and the like. Again the most careful abdominal and vaginal examinations must be made. It will now be more easy to palpate the foetus through the abdominal walls, for the liquor amnii will, in part at least, have drained away, and the vaginal palpation will be facilitated by the opening up of the os and the exposure of the presenting part. It may be taken as a common occurrence for the malformed part of a monstrous foetus to present at the os uteri—for example, the intestinal coils in exomphalos and the basis cranii in anencephaly. If the *tactus eruditus* fail to make out the presentation with ease the erudite mind ought to think of a monstrosity. It is a good plan for the obstetrician, when he gets a chance, to palpate the deformed part of a malformed foetus so that he may recognise it again if he feels it coming down the birth canal. The escape of meconium-stained liquor generally, but not always, forewarns of foetal death; the feeling of the hydrocephalic head is characteristic, islands of bone in a sea of membrane; and the introduction of the hand well into the passages ought to detect the coming down of a distended foetal abdomen (as in ascites) or the presence *in utero* of united twins. An interesting case of hydrocephalus with intestinal atresia diagnosed during labour was put on record by Salus in 1896; it was that of a breech presentation in which delay occurred after the birth of the body from the large size of the head; whilst the trunk was thus protruding from the maternal parts meconium of an earthy colour and devoid of bile was passed from the anus, and it was concluded that there existed an imperforate condition of the bowel in some part of its extent; the conclusion was confirmed after birth by *post-mortem* examination. Foetal ichthyosis may also be recognised during labour. The presence of a hairy mole on the shoulder in, say, a transverse presentation, might prove misleading to a man who thought that hair only grew on the foetal scalp. There are many other matters which might be referred to under intranatal diagnosis, such as the detection of foetal anasarca or of foetal rickets, from the inspection and palpation of a limb or limbs lying in the vagina, or the feeling of the bones of the cranium of a dead foetus; but enough has been said to show the possibilities.

POSTNATAL DIAGNOSIS.

After the morbid or dead foetus is born, the necessity for the formation of a diagnosis does not disappear; for if the infant be dead, it will be essential to discover the cause, so as to take measures to prevent its recurrence in a future pregnancy; and if it be diseased or malformed, it will be needful to make a diagnosis in order to institute the proper treatment. Now, however, the diagnosis will not differ in its details from that carried out by the pediatric or general physician, and it will have lost much of its difficulty. The disease or the deformity may be external, and need little more than recognition; on the other hand, it may be internal, for example,

congenital heart disease or pyloric stenosis or diaphragmatic hernia, and necessitate the most careful application of all our diagnostic methods. Finally, the placenta and membranes and cord ought always to be scrutinised, and when possible submitted to microscopical and bacteriological examination.

REFERENCES.

- ¹ *Monats. f. Geburts. u. Gynäk.*, x, 329, 1899. ² *Edin. Med. Journ.*, xxx, 601, 1885. ³ *Diseases of the Fetus*, i, 126, 1892. ⁴ C. Taruffi, *Sulle Strume Congenite della Tiroides*, Bologna, 1892. ⁵ *Ann. di Ostet. e Ginec.*, v, 82, 1883; vii, 223, 1885. ⁶ *Bull. de la Soc. Anal. de Paris*, 58, ix, 757, 1895. ⁷ *South. Pract.*, p. 318, August, 1894. ⁸ *Vratch*, xvi, 323, 356, 387, 1895. ⁹ *Arch. Pediat.*, xiv, 905, 1897. ¹⁰ *Ann. di Ostet. e Ginec.*, xix, 333, 1897. ¹¹ *L'Obstétrique*, Ann iv, p. 542, 1899. ¹² *Ann. di Ostet. e Ginec.*, xxi, 897, 1199. ¹³ *Ann. de Gynec.*, li, 278, 1899.

EPIDEMIC CEREBRO-SPINAL MENINGITIS IN DUBLIN.*

BY
ALFRED R. PARSONS, M.D. Dub., F.R.C.P.I., Physician to the Royal City of Dublin Hospital, and to the National Hospital for Consumption, Ireland.
and
H. E. LITTLEDALE, M.B. Dub., Assistant to the Lecturer on Pathology, Trinity College, Dublin.

CLINICAL REPORT BY DR. ALFRED R. PARSONS.

IRELAND has been free from cerebro-spinal meningitis in its epidemic form since 1886. The present outbreak commenced in the earlier months of this year; and I shall briefly refer in chronological order to the clinical records of the cases which have come under my observation at the Royal City of Dublin Hospital.

CASE I.—E. D., aged 28, a servant, was admitted to the ophthalmic ward on January 31st, complaining of seeing double. She was in good health till January 5th, when she had a shivering fit, followed by severe pain in the back of the head and vomiting. Her temper became irritable and uncertain. On January 23rd, as she developed diplopia, Dr. Flood, under whose care she was, asked Mr. Benson to see her. He found that in the right eye the vision was $\frac{1}{2}$; while in the left eye it was nearly normal. In both eyes there was optic neuritis, of a very intense character in the right, with oedema of the disc and retina, a large patch of white exudation above the disc, and great tortuosity and enlargement of the veins. There were no hemorrhages in the retina. She was removed to the City of Dublin Hospital. I examined her carefully, but failed to find any symptoms or signs beyond those enumerated—headache, chiefly in back of head, vomiting, diplopia, slight strabismus, and intense optic neuritis. The temperature, Dr. Flood informed me, was never higher than normal, and the pulse, always, quiet, about 60. While in the hospital all the symptoms gradually subsided, the diplopia disappearing about February 12th. She left on February 23rd, feeling nearly quite well, and with her sight greatly improved. After a rest she resumed work, and now feels in excellent health. She remembers very little of the earlier weeks of her illness.

On March 10th her eyes were again examined by Mr. Benson. She said she was perfectly well, but that she could not use her eyes for long without feeling them fatigued. There was a very slight haziness of both discs, most marked on the right. No exudation was visible in the retina above the disc where the large white patch existed on a former occasion. At no time was there albumen or sugar in the urine.

I was unable to arrive at any positive diagnosis in this case while she was in the hospital. The symptoms were, I thought, more suggestive of meningitis than of any other intracranial disease, but the complete recovery of the patient differed from any form of meningitis I had met. In the light of the subsequent cases there is little doubt, I think, that it was a mild attack of cerebro-spinal meningitis.

CASE II.—D. S., aged 7, residing in Booterstown, was also sent in by Dr. Flood. He was admitted on February 14th, a fortnight after the previous case. On Saturday, February 10th, he complained of a slight headache, and his stomach seemed out of order, but he did not vomit. On February 11th headache was much worse, but his mother did not think him sufficiently ill to be sent to bed. On February 12th at 6 A.M. he began to rave, and he was unconscious by 7 A.M., when he was seen by Dr. Flood. Later during that day he regained consciousness, and complained of seeing double, and then his mother noticed that he had a squint.

Previous History.—He was in the Children's Hospital in Harcourt Street two years ago, and is said to have been operated on for morbus coxae. In his family there is no indication of any tendency to tuberculosis.

On Admission there was retraction of the head and rigidity of the neck muscles to such an extent that it was not possible to flex the head. There was extensive naso-labial herpes. The movements of the chest wall were normal, and there was perhaps slight retraction of the abdomen. The spleen was not enlarged; there were no spots, and I could detect nothing abnormal in the chest or abdomen. The temperature varied from 100° to 103° F. during the first week in hospital, and then gradually settled down, falling about 98° F. each day till it became normal on March 13th. It remained practically normal till the 22nd with one exception, when it rose rapidly to 104°, but fell in the course of eighteen hours to 98.4° again. On March 23rd and every second day till April 6th, the temperature rose some degrees, while on the alternate days it remained subnormal.

Briefly, therefore, it may be stated that during the early weeks the course of the temperature was like that of typhoid fever, but during the later it simulated tertian ague. Since April 6th the temperature has been practically normal.

On March 12th Mr. Benson examined his eyes and found that the right disc was more vascular than the left, the edges everywhere slightly hazy, and the veins a trifle large and dark. The left disc was clear everywhere at the edge except above; there was thus very slight optic neuritis, more marked in right eye.

On March 13th Kernig's sign (see Fig. 1) was present. Any attempt at extending the limbs made him cry with pain.

Fig. 1.—Case II; Kernig's sign.

On March 15th his temperature ran up to 104°, and he vomited, moaned, and complained of his head, and passed a restless night, but the following day he was as well as usual. He became greatly emaciated during his illness, but since the temperature became normal he has gained flesh. He is now in excellent health, the strabismus has disappeared, and the reflexes, superficial and deep, are quite normal, and he left the hospital on May 10th. In this case there was constipation throughout, and the Widal test was negative.

CASE III.—G. McC., aged 20, a checker, was admitted about 9 P.M. on Friday, March 2nd in an unconscious condition.

Previous History.—I subsequently ascertained from his father and his employer that he was apparently perfectly well till the previous Wednesday morning, when during his work he complained of his head and a feeling of sickness. His employer recommended him to go home, to take some hot rum, and go to bed. On Thursday he heard he was better, but on Friday so much worse that Dr. Byrne was sent for, and he recommended his immediate removal to hospital.

Condition on Admission.—He could be roused sufficiently to say that he had very violent pain in his head. He had no herpes, but there was retraction of his head and rigidity of his neck muscles. He had no indication of any pulmonary or abdominal disease, no cardiac hypertrophy, and no increased arterial tension. He had retention of urine and abolition of the knee-jerks.

After History.—On March 3rd, while drawing off the urine in the morning, my resident pupil, Mr. Wilson, was surprised to hear the air whizzing into his bladder as the urine escaped. This rather rare phenomenon is due to the complete paralysis of the bladder.

The urine was loaded with lithates, and contained a large amount of albumen. The course of the temperature is shown in the chart. On the night of March 3rd he was comatose, cyanosed, and bathed in perspiration, and he died at 1.15 A.M. on March 4th, twenty-eight hours after admission and about three and a-half days from the commencement of his illness. A post-mortem examination was not permitted, and I regret that I did not make a lumbar puncture.

CASE IV.—R. M., aged 22, a cook residing in Wellington Road, was admitted on March 2nd, complaining of severe headache and not feeling well.

Previous History.—She had a rigor the previous day at 4 A.M., followed by headache.

Condition on Admission.—When admitted some thirty hours later, at 9 P.M., March 2nd, her temperature was 102° F. She passed a restless night, and during the following day she was vomiting and suffered much from her head.

After History.—On March 5th her headache was still very violent, and there was constant contraction and relaxation of the occipito-frontalis muscle. There was also pain and stiffness down the spine, and very abundant naso-labial herpes. On March 6th diplopia and convergent

CHART I.—CASE III.—Death in 86 hours.

* Read before the Section of Medicine of the Royal Academy of Medicine in Ireland, May 18th, 1900.