colleagues in methods of research. Gradually his liability to anginal attacks increased and he had reluctantly to return to the warmer climate of the South of England, physically infirm, but mentally alert, his brain active and critical. In November, 1924, he wrote to me:

"For the last year I have been able to do no work, but it has been the most profitable year in my life, for I have sought for an explanation of the various phenomena met with in clinical medicine. I have been carefully going over physiology textbooks and testing the explanations, and I have got a new outlook on physiological problems."

Nearing his end but, as ever, seeking after the truth, testing the explanations and finding a new outlook. "So with the throttling hands of death at strife, ground he at grammar." On January 26th, 1925, he died in a prolonged attack of angina pectoris.

MACKENZIE'S ACHIEVEMENT.

One may ask, What has Mackenzie accomplished for medicine? Can it be gauged? So much of what he fought for is now accepted and taken for granted. It is, however, beyond question that Medicine has been placed on a different and higher plane by his work and teaching. At a time when the growing tendency is to worship the machine, and when the wonderful technique of the laboratory has become an obsession, Mackenzie has brought back to us a sense of proportion. He invented machines and utilized laboratories, but he never allowed them to blind him to the essentials of clinical medicine. To Mackenzie the bedside of a patient is the place for a physician. He knew only too well that clinical acumen tends to be lessened by a too great reliance on instrumental and laboratory methods. The obsession of the instrument is prone to make us indifferent to the significance of symptoms and unfamiliar with the "face of disease."

Before Mackenzie, our knowledge of irregular action of the heart was chaotic. He analysed the arrhythmias, separated the dangerous from the innocent, defined and distinguished them, and produced order in the place of chaos. From this chaos he dug out auricular fibrillation and rationalized digitalis therapy. This in itself is worthy of a monument.

He blew the old theory of "back pressure" into thin air, though it is true that one still hears of it occasionally from the mouths of those blind to the facts and deaf to the truth. But what is of still greater importance, he taught the real significance of cardiac failure and how to recognize its earliest manifestations, for it is cardiac failure that a doctor fears and must foresee. He proved that the response of the heart to effort, the area of cardiac reserve, is the true touchstone by which to estimate the gravity of murmurs and irregularities, a fact which is still far from finding general recognition.

He spent his life investigating the mechanism of pain, and this study found its final expression in the masterly volume on angina. Important and valuable as are his contributions to the study of visceral pain and cardiovascular disease, he would, I know, have said that they were only *examples* of the method of research which he preached in season and out of season—a method of research applicable to every branch of medicine. His message was a call to the study of symptoms, for better and more intelligent investigation of the patient; he believed in the intensive study of the patient at the bedside, and he held that future progress in medicine depended largely on those who will study the symptomatology of the early phases of disease. It was this belief that in the end led to his dramatic decision to give up his lucrative practice in London and start the Institute at St. Andrews.

There is a certain type of clinical research which from its very nature must inevitably be carried out on patients in the pre-institutional stage—in fact, on patients who are only beginning to feel ill. Such material is in the hands of the general practitioner alone. It is not to be found in the wards of a general hospital, and is not satisfactorily studied in an out-patient department. This pre-institutional research, if it is to yield a full harvest, must be correlated with the type of intensive investigation which is most fittingly carried out in hospitals and associated with laboratories. In other words, the general practi-

tioner must become one of the team, his position frankly recognized and his co-operation welcomed.

You have shown here in your Institute for Clinical Research how this theory can be put into practice. The full realization of your hopes is, I believe, to be found in close co-operation with the School of Medicine here in your great University; and in a lively co-ordination of your clinical activities with the research work carried out in the hospitals of Edinburgh and Dundee. In the complete scheme of clinical research your work is pre-institutional and complementary to that more fittingly carried out in the hospital and laboratory.

The life-history of disease must be followed up and recorded from the first moment of discomfort, the earliest malaise, right on to the post-mortem room. In any such comprehensive scheme work of the type done here in St. Andrews is essential, and to disregard such work will only result in a one-sided and unbalanced conception of disease.

In the realm of Medicine, as in the world of Art, no one can achieve anything of moment whose mind is dominated by greed or who measures success by dividends. Fortunately for our profession, there are many restless eager minds in every branch who are not satisfied to work merely in order to make a living, or for the fun of the thing, or for the pleasure associated with work well done. Such minds find the keenest satisfaction in tackling one or other of the problems which they encounter in their work—problems of prognosis, problems of symptomatology. These men are investigators by nature; they have inquiring minds, they yearn to become, in some real sense, of service to their generation. Unfortunately, many of them are obsessed by the idea that research is the prerogative of those on the staffs of our hospitals, or workers in laboratories, and soon, in the rough and tumble of building up a practice, their earlier enthusiasm fades, and their vision is dimmed. They are entitled to recognition, a recognition which carries with it financial backing and professional status.

To such men the story of Mackenzie's life comes as an inspiration and a stimulus. He is the great example of what can be done and accomplished, not in spite of the burdens of general practice, but in virtue of the very opportunities afforded by such a practice. Let any young practitioner early in his career interest himself in some problem of symptomatology, ponder over it, become familiar with the literature, define as well as he can the limits of knowledge, rid his mind of all that is not fact in relation to it; then collect from the material of his practice those cases which bear on this problem, follow those patients through the years, and I am confident that he will not only add to our knowledge of medicine, but that he will also find in such work both pleasure and an abiding delight.

THE OCCIPITO-POSTERIOR CASE:

ITS DIAGNOSIS AND MANAGEMENT.*

BY

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THE frequency with which the occipito-posterior case causes difficulty and anxiety in labour is acknowledged by all who engage in midwifery practice. Its importance in this respect is reflected also in the formidable contribution which it makes to what may be called the casualty work of a large maternity hospital. A review of the emergency admissions to the Edinburgh Royal Maternity Hospital over a period of three years shows that approximately one-sixth of the total number have been cases of this kind—a high proportion when the wide variety of obstetrical conditions which may necessitate hospitalization is considered. The extent of dystocia which this complication may produce was illustrated, further, in the discussion on unsuccessful forceps cases¹ at the Annual Meeting of the British Medical Association in 1928, in which it emerged that the cause of failure in almost one-third of 558 such cases was a posterior position of the vertex.

* An address delivered to the North Northumberland Division of the British Medical Association, Berwick-on-Tweed, February 11th, 1930.

A study of the hospital records of a large series of occipito-posterior cases, referred for admission for the most part late in labour, suggests that they may be classed in two groups: first, those in which diagnosis has been at fault and difficulty wrongly attributed, for example, to a contraction of the pelvis which does not exist; and, secondly, those in which the malposition has been recognized, but nevertheless has proved a serious obstacle to delivery. Without comparing statistically these two groups, it may be claimed that the former so outnumbers the latter that certain preliminary and perhaps rather elementary remarks on the subject of diagnosis may be permitted before proceeding to a consideration of the management of this abnormality.

Diagnosis Before Onset of Labour.

The ante-natal diagnosis of an occipito-posterior position by abdominal examination should be a matter of reasonable certainty in most cases, unless obesity or rigidity of the abdominal wall or excess of liquor amnii constitutes an unfavourable condition. Inspection of the abdomen usually shows an absence of the normal uniform anterior convexity, the rounded arch of the back being replaced by the irregular ventral surface of the child, so that a flattening or irregularity of contour of the anterior abdominal wall is produced. Foetal movement may be observed over an unduly wide area of the abdomen, and often on both sides of the middle line.

On palpation the back is difficult to locate, and the irregularity of the small parts is felt more prominently than usual and over a wider area than normal. The head frequently lies in an attitude of imperfect flexion, so that larger diameters than normal are in relation to the pelvic brim. The result of such deflexion is that the head tends to occupy a higher level than usual, and it frequently remains freely mobile after the time that engagement should normally have occurred. Such delayed fixation of the head should always suggest the probability either of contraction of the pelvis or of a malposition of the head; if the pelvic measurements are normal a posterior position of the vertex is without question the most likely explanation.

On auscultation, the foetal heart beat is heard far round in the flank and less clearly than usual; if, however, deflexion is pronounced, it may also be noted in the opposite lower quadrant of the abdomen in front—an important finding which will be referred to later.

On vaginal examination the ease with which the anterior fontanelle is felt is recognized as a classical sign of a posterior position of the occiput. On the other hand, after labour has been in progress for some time the vault of the skull may be so obscured by caput formation that the differentiation of sutures and fontanelles may be difficult or impossible. Even so, the frontal suture, and therefore the sinciput, can usually be identified in the following way: If two fingers are placed, one on each frontal bone, it will be found that these bones can be moved each on the other at the frontal suture, whereas, as the result of moulding, such mobility cannot be elicited at any other suture line in the vault. The frontal suture can be palpated only if the position is posterior, and therefore, if the bones on either side of a suture can be moved one on another, that suture is necessarily the frontal suture and the position must be posterior. While this sign is a useful aid in diagnosis, the exact position which the head occupies may be determined more easily and more precisely by the introduction under anaesthesia of as much of the hand as is necessary to palpate the ear. This is the diagnostic feature on which reliance may most confidently be placed; and it is one of which advantage should invariably be taken as a preliminary to the application of forceps where any doubt exists as to the position of the head.

If forceps have already been applied without an exact knowledge of the position of the head, it should be suspected that the occiput is posterior if difficulty is experienced in approximating the handles of the instrument, if more than moderate traction is required to move the head, if the forceps tend to slip, or if the perineum appears to be stretched by the handles or lower parts of the blades of the forceps rather than by the advancing

head. In such circumstances the forceps should be withdrawn at once and the position of the head determined with certainty, and if necessary corrected before the instrument is reapplied.

Treatment Before Onset of Labour.

The statistics of the ante-natal department of the Edinburgh Royal Maternity Hospital show that in rather more than 80 per cent. of cases a posterior position may be converted into an anterior by the use of pads, as described by Buist of Dundee.² It is true that pads are not successful after engagement of the head has occurred; on the other hand, their ineffectiveness in such cases is of less account, since engagement implies, as a rule, a satisfactory degree of flexion, and therefore the probability of spontaneous forward rotation of the occiput during labour. The type of case in which pads are most useful, and at the same time very generally successful, is that in which there is delay in engagement of the head—for example, during the last week of pregnancy in a primigravida. Such delay signifies relative extension of the head and augurs the possibility of early rupture of the membranes, slow dilatation of the cervix, and a long, difficult labour, terminating possibly in a persistent occipito-posterior; it is the avoidance of such difficulties by ante-natal correction of the malposition that has made the employment of pads such a useful addition to our treatment of the occipito-posterior case. While the pads are in place the patient should be encouraged, when resting, to lie semi-prone on the side opposite to that occupied by the child's back, so that the action of gravity may supplement that of the pads in bringing the back and head round to the front.

Treatment After the Onset of Labour.

It is very generally true that the extent of difficulty in labour which a posterior position may cause is commensurate with the amount of deflexion of the head. In the majority of cases flexion is satisfactory, so that the head engages normally, the membranes remain intact until towards the end of the first stage, the occiput first reaches the pelvic floor and rotates spontaneously to the front; in other words, the course of labour is affected only to the extent that the long internal rotation of the occiput increases by an hour or so the duration of the second stage. In such cases, therefore, the management of labour differs from that in primary anterior position only in two minor respects: In the first place, the longer duration of the second stage necessitates the exercise of more patience than usual, and a careful watch must be kept for such signs of maternal or foetal distress as may call for relief. In the second place, the patient is instructed to lie on the same side as that occupied by the back of the child; in this way the occiput is forced down towards the pelvic floor so that it becomes the leading part and rotates to the front.

It will be observed that posture in occipito-posterior cases differs according to whether the head is free or not; if the head is free the object of posture is primarily to favour rotation of the back and indirectly that of the head; the patient lies, therefore, on that side opposite to the back of the child—for example, on her left side if the position is right occipito-posterior. If, however, the head is engaged, an attempt is made to encourage indirectly the forward rotation of the occiput by placing the patient on that side which will promote the advance of the occiput towards the pelvic floor—that is, on the same side as that occupied by the back of the child. It is sometimes recommended that efforts should be made to increase flexion by direct pressure on the sinciput with the fingers in the vagina; such manipulations, however, have the disadvantage that they are difficult and, to be effective, must be carried out over such a long period that there is considerable risk of introducing infection.

In a minority of cases, comprising possibly 15 per cent., flexion of the head is imperfect to the extent that the course of labour is influenced adversely, and in proportion, as a rule, to the amount of deflexion which is present. Such lack of flexion may, in the first place, arrest or delay the head at the pelvic brim, or, at a later stage, may result in the occiput remaining obliquely posterior or rotating backwards into the hollow of the sacrum.

Arrest at Pelvic Brim.

Although delay at the pelvic inlet is not uncommon, it is only in a small proportion of cases, unless a pelvic contraction coexists, that progress is seriously impeded at this level. When this occurs manual rotation of the head should be carried out. No attempt, however, should be made immediately thereafter to complete the delivery with forceps. With the patient anaesthetized the temptation to apply forceps "tentatively" is hard to overcome, but while the head is still free it is difficult to obtain a secure and safe forceps application; moreover, with rare exceptions, the cervix in such cases is still incompletely dilated, so that to follow up correction of the malposition at this stage by the immediate application of forceps necessarily commits the attendant to a formidable operation which may end in failure or disaster. In this type of case, accordingly, after the head and body have been rotated, no further immediate intervention is advisable, nor in most cases is it necessary, for, in contrast to the previous delay, progress is, as a rule, gratifying and sometimes dramatic.

Arrest on Pelvic Floor.

Posterior rotation of the occiput into the hollow of the sacrum almost invariably causes an impasse which Nature cannot overcome, and when it occurs an attempt should be made to relieve the obstruction as soon as its nature is recognized.

The manoeuvre of manual rotation, first described by Smellie nearly two hundred years ago,³ is now so familiar that it is unnecessary to do more than summarize briefly the more important points in its technique: (1) The patient is placed preferably in the lithotomy or crossed position. (2) That hand is employed which can most conveniently grasp and rotate the head—for example, the left hand in a right occipito-posterior position, and vice versa. (3) Before rotation is attempted the head should be dislodged upwards a little and flexed, so that it may turn more easily. (4) An attempt should be made simultaneously to rotate the body by external manipulations or by passing two fingers of the hand in the vagina beyond the head and on to the anterior shoulder of the child. (5) To maintain the head in the corrected position the right blade of the forceps may usefully be introduced first, instead of, as is usual, the left, in cases in which the head, after rotation, tends to slip back into the posterior position.

In exceptional cases the head may be so firmly embedded in the tissues of the pelvic floor that manual rotation fails. In this event an attempt may be made to effect rotation of the head with forceps, the instrument thereafter being re-applied and delivery completed; alternatively the head may be extracted face to pubes. The former of these methods is advocated by many, but to be achieved successfully and safely demands a high degree of manipulative skill, and most writers insist that this operation should be attempted only by the expert. In less skilled hands a deliberate delivery face to pubes is probably attended by less danger of serious injury to the soft parts and to the child. In such cases extraction is materially facilitated and the extent of soft tissue injury controlled by an oblique perineotomy on one or on both sides.

It will be conceded, I think, that the uneasiness with which one contemplates the occipito-posterior case in general has its origin in the difficulty which a persistent occipito-posterior may cause. This is illustrated in the following table, which refers to patients delivered in the Edinburgh Royal Maternity Hospital.

TABLE I.—Analysis of 750 Cases of Dystocia due to the Occipito-Posterior Position.

	Termination.	
	Spontaneous Forward Rotation.	Failure to Rotate.
Maternal mortality	Nil	2.0 per cent.
Foetal mortality... ..	2.7 per cent.	22.3 ..
Puerperal morbidity	6.5 ..	22.3 ..

It is further true that mal-rotation is not seldom the culminating embarrassment in a labour which from its commencement has been tedious and difficult, and it should be emphasized again that the primary cause of such difficulty is imperfect flexion of the head. It is important, therefore, to attempt to assess, as far as is practicable and at as early a stage as possible, the degree to which flexion is satisfactory or otherwise, for in this way the case in which mal-rotation of the occiput is likely to occur may often be recognized in advance. Deficient flexion may occasionally be suspected before engagement occurs by noting that the occipital and sincipital prominences are equally pronounced and at the same level at the pelvic brim, while vaginal examination may reveal descent of the sinciput in advance of the occiput with caput formation far forward at the vertex. These signs, however, are difficult to recognize and interpret unless the conditions are favourable and the attendant is experienced in abdominal and vaginal examination. More precise and reliable premonitory evidence is available at an early stage in about 80 per cent. of those cases in which anterior rotation of the occiput fails to occur. This consists in the presence of one or more of three phenomena, each of which is directly due to the relative extension of the head. An analysis⁴ based on 750 occipito-posterior cases treated in the Edinburgh Royal Maternity Hospital showed that:

1. In cases in which the membranes ruptured prematurely the occiput remained posterior in 74 per cent., while spontaneous forward rotation occurred in only 26 per cent.

2. In cases in which there was delay in the engagement of the head the occiput remained posterior in 77 per cent., rotating forwards in only 23 per cent.

3. In a third group the foetal heart was heard not only in the flank, but also in the opposite lower quadrant of the abdomen in front, pointing to an attitude of deflexion with throwing forward of the chest towards the mother's anterior abdominal wall; in 76 per cent. of these cases assistance was required because of non-rotation or mal-rotation, the occiput going forward in only 24 per cent. Where the groups overlapped, so that two or more of these signs were present together, the occiput remained posterior in rather more than 80 per cent. On the other hand, the normal mechanism was observed to occur in rather more than 90 per cent. of the cases in which the head engaged normally and the membranes remained intact till towards the end of the first stage of labour.

TABLE II.—Analysis of 750 Occipito-Posterior Cases delivered in Edinburgh Royal Maternity Hospital.

	No. of Cases in which Noted.	Termination.	
		Mal-rotation or Non-rotation.	Spontaneous Forward Rotation.
Early rupture of membranes ...	197	145 (74 %)	52 (26 %)
Delayed engagement of head ...	139	107 (77 %)	32 (23 %)
Foetal heart also anterior	103	78 (76 %)	25 (24 %)
Normal engagement and rupture of membranes at or near full dilatation of os	332	33 (10 %)	299 (90 %)

Summary.

The practical bearing of these observations on the treatment of the occipito-posterior case may be summarized as follows:

1. Delayed engagement of the head, especially in the last week of pregnancy in a primigravida, implies relative extension, which may interfere with descent and ultimately produce mal-rotation of the occiput. The value of Buist's pads consists in the fact that it is precisely in this type of case which is potentially troublesome that they are most frequently successful.

2. Where the head engages normally and the membranes remain intact till towards the end of the first stage a satisfactory degree of flexion may be inferred, and it is probable that the occiput will rotate forward spontaneously if given time. In this group, which comprises the majority of occipito-posterior cases, conservatism may confidently be practised.

3. In the majority of persistent occipito-posterior cases there are clear indications at an early stage of labour that this complication is likely to occur. It would appear reasonable, therefore, where such warning signs exist, to anticipate the difficulty associated with backward rotation by correction of the mal-position at or near the commencement of the second stage of labour—that is, before the head becomes firmly embedded in the tissues of the pelvic floor. Such intervention is called for in not more than approximately 10 per cent. of all occipito-posterior cases, and is warranted only when a diagnosis of faulty flexion can be

made with certainty. In these, however, the avoidance of needless suffering and of the difficulties and dangers incident to the management of the impacted mal-rotated head seems to justify a departure from the policy of conservatism otherwise so generally applicable.

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GLANDULAR FEVER.

BY

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When glandular fever develops in its characteristic clinical form it is easily recognized by its epidemic character, its tendency to affect children and young adults, its sudden

In the present epidemic we have seen twelve cases of glandular fever, and through the courtesy of our colleagues we have notes of several others. Although the main facts of glandular fever are adequately described in current textbooks, and have lately been concisely put together by Dr. Tidy,⁵ we have been impressed by the difficulties which may be experienced in making a diagnosis in the absence of a differential blood count, and particularly with the similarity to paratyphoid infections which some cases show.

Description of an Illustrative Case.

A female, aged 38 (patient seen with Dr. F. B. Hobbs). The onset was sudden on March 25th, with aching pains in the head, neck, and back, symptoms of slight respiratory catarrh, and, in

CHART 1.

onset, persistent fever, mild constitutional disturbance, swelling of the lymphatic glands and spleen, and lymphocytosis. In any case of persistent fever, therefore, especially when there is enlargement of lymphatic glands, the possibility of glandular fever needs to be borne in mind.

The disease may present considerable difficulties in diagnosis when it appears sporadically, as it did at the beginning of the present epidemic, and these difficulties

general, the sensation of having an attack of influenza. She felt feverish on and off for four days, but the temperature was not taken until March 29th, when it was found to be 102° F., and she took to bed. The temperature chart, which begins on the fifth day of the disease, shows the long-continued fever and its somewhat irregular course until the seventeenth day, after which it shows the characteristic morning remission and evening rise (Chart 1). The pains disappeared after a few days in bed, and, apart from profuse sweating at night and a slight feeling of

CHART 2.

are accentuated by the varied clinical forms which the disease may take. In fact, cases of glandular fever may differ so much from the usual form of the disease that they have been described as infectious mononucleosis and benign lymphoblastosis, while others have been regarded as examples of lymphocytic reaction to acute local infections, chiefly of the upper respiratory tract. Longcope,¹ for instance, in reporting ten cases of the disease in 1922, was of the opinion that there was no proof of the identity of glandular fever and infectious mononucleosis. Tidy and Daniel,² on the other hand, maintained the identity of these several conditions, and in a critical review Tidy³ came to the conclusion that there was no evidence of sepsis as a cause of lymphocytosis. By his observations of the disease Tidy has done much to establish it as a clinical entity, and a monograph recently published by Glanzmann⁴ supports his view.

malaise with the evening rise of temperature, the patient felt remarkably well during the rest of the illness. A papular rash like that of typhoid fever appeared on the trunk on the tenth day, and continued to appear for four or five days. The tongue was coated. There was slight constipation and abdominal distension. The pulse rate was 82 to 92. A Widal reaction on the fourteenth day was negative. Enlargement of the cervical glands was noted on the fourteenth day, and the possibility of glandular fever was first suggested. A blood count made on the following day showed an absolute lymphocytosis.

Discussion.

This case illustrates many of the main features of the disease in our experience of the present epidemic.

The disease appears as an acute infection with a sudden onset, but with relatively slight constitutional disturbance. The regular morning remissions of temperature are well shown in Chart 2 (the case of a girl, aged 15, seen with