the absence of any injury in almost all the cases, and secondly, the fact that the first lumbar is the most frequently affected vertebra. In one case both transverse processes of this vertebra showed a distinct gap. The

Fig. 1.—Showing a typical pseudo-fracture of the first lumbar transverse process.

epiphyses of the transverse processes are not united until the twenty-fifth year, and in the embryo there is a costal element in connexion with the transverse process of the first lumbar. Occasionally this develops into a rudimentary

Fig. 2.—First lumbar, showing gaps in both transverse processes.

supernumerary rib, in fact the transverse processes are homologous with the first part of the ribs, and the appearance of such rudimentary ribs would correspond with the condition seen in some of these cases. Incomplete ossifica-

Fig. 3.—Rudimentary ribs attached to first lumbar vertebra. (After Allen Thomson.)

tion of the processes would also, of course, account for the transparent gap seen in some of the processes. All the six cases I have mentioned were those of adults, the youngest being about 20, the oldest nearly 60 years old.

The importance of such abnormalities in claims under the Workmen's Compensation Act was, of course, obvious from the first, but another aspect lately came to my notice in a case where a surgeon proposed to cut down upon and remove what had been diagnosed as an ununited fracture of a transverse process.

The accompanying diagrams show the appearance seen in most of the cases referred to.

A CASE OF TETANUS TREATED WITH INTRASPINAL INJECTIONS OF MAGNESIUM SULPHATE.

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THE following is the record of a case of tetanus treated with intraspinal injections of magnesium sulphate:

A boy, aged 8 years, was admitted into the Great Northern Hospital on the morning of September 3rd, 1912.

History of Illness.

Quite well previous to August 30th. On that day did not seem well, and noticed some difficulty in opening the mouth.

On August 31st had "some kind of fit" and fell down.

On September 1st and 2nd had attacks of pain, becoming rigid, but with no loss of consciousness. The jaw remained stiff after the attacks.

Previous History.

No fits previously and no illnesses. One month ago fell and cut right side of head, and three weeks ago fell and cut chin. Both cuts slight.

Condition on Admission.

Well developed boy. Conscious and understands perfectly. Mouth tightly shut. Slight "risus sardonicus." Neck rigid. No squint. Ocular movements perfect. Pupils equal and react to light and accommodation. No head retraction. Body rigid. Arms and legs stiff but easily moved and flexed. Knee-jerks present on both sides. No cuts or septic foci. The temperature was 98° F. and the pulse 112 and regular.

During the afternoon of September 3rd he had several slight spasms, during which he cried out, and became rigid, with slight opisthotonos. In the early part of the night the spasms became very frequent. In these the mouth was tightly shut, there was marked risus sardonicus and opisthotonos, and apparently great pain.

Treatment.

Lumbar puncture was then performed, and 10 c.cm. of cerebro-spinal fluid, which was under considerable pressure, were withdrawn. Without removing the needle there was then injected into the subdural space 3 c.cm. of a sterilized 25 per cent. solution of magnesium sulphate. Following this the spasms ceased, and the patient had a quiet night.

On September 4th the temperature rose to 101.4°. The pulse remained between 100 and 120. There were no spasms during the day, and the mouth could be slightly opened. There was still general rigidity. On the 5th the temperature fell from 101° to 99°. There were no spasms, and the mouth could be opened a little further. Towards evening pain in the neck returned. On the 6th the general rigidity became more marked, and the teeth could scarcely be parted. The temperature was normal, and the pulse 100. A patch of herpes developed on the lower lip. The injection of magnesium sulphate was repeated.

On the following day the temperature rose to 100°, and fell again. During this and the next few days the rigidity became gradually less, and the spasm of the jaw diminished. The patient became able to say a few words consecutively, and was able to swallow custard on the 9th. On the 10th he complained again of pain in the neck, the jaw became stiffer, and there was one slight spasm. A third injection of magnesium sulphate was given. This was followed the next day by a rise of temperature to 101°, but the spasm and rigidity gradually diminished from this date, and no more attacks of spasm occurred. The pulse fell gradually. On September 13th 10 c.cm. of antitetanic serum were injected subcutaneously.

For about ten days there was severe headache, but this passed off, and the patient was allowed to get up on September 26th, and was discharged on October 3rd.

He has since remained in good health.

Remarks.

No septic focus was found when the patient was admitted, but the diagnosis of tetanus appears undoubted. Many cases of treatment by injections of magnesium sulphate into the subdural space have been recorded. Series of cases have been published from Egypt where the organism is much more prevalent than here. The results

are claimed to be good, although it must be remembered that the percentage mortality from tetanus in Egypt is not so high as in the British Isles. The percentage mortality is less the longer the period of incubation, and where this is between three and four weeks the mortality in the British Isles is about 50 per cent. For an adult a dose of 6 c.cm. of a 25 per cent. solution in distilled water may be given. This contains $1\frac{1}{2}$ grams (about 22 grains) of magnesium sulphate.

As the injection of antitetanic serum has proved to be of very little curative value in tetanus, the injection of magnesium sulphate in this manner is certainly worth a good trial. The withdrawal of cerebro-spinal fluid is doubtless an additional advantage.

I have to thank Dr. Alexander Morison, into whose ward the patient was admitted, for his kind permission to publish this case.

CAESAREAN SECTION, WITH ESPECIAL REFERENCE TO THE RARER INDICATIONS FOR THE OPERATION.*

By W. H. MAXWELL, M.A., M.B.CAMB., F.R.C.S.ENG.

THE title of this paper was suggested to me by the circumstance that, while it has fallen to my lot to perform this operation four times during the last two years, in none of these four cases, curiously enough, has the indication for it been that for which I suppose something like 90 per cent. of Caesarean sections are performed—namely, pelvic contraction. The three cases upon which my remarks are based form an interesting series, in that each illustrates certain points of importance to the student of what one may perhaps be allowed to call the “higher obstetrics.” My personal experience of Caesarean section is relatively small; I have done the operation myself five times, and have had the opportunity of assisting at it in seven other cases. My own five cases have been unattended by a fatality; of the other seven, two died, the cause of the fatal issue being, as I shall point out later, apparently identical in both. In the first case that came under my observation the operation was done by my old friend the late Mr. E. H. Douty, of King's College, Cambridge, in Addenbrooke's Hospital in 1896.

For some reason or other, in South Africa we meet with few examples of the higher degrees of pelvic contraction; hence Caesarean section and kindred operations are called for somewhat rarely. I must make it clear that in speaking of Caesarean section I refer entirely to the classical operation of Säger and Porro—that is to say, what should be designated “anterior transperitoneal hysterotomy”—my experience of the various modifications suggested, of which “vaginal” Caesarean section seems the most extolled, being *nil*. With this premise I will proceed to a brief description of the three cases referred to.

CASE I.

Mrs. M., aged 40, married twelve years, had had four children, of whom three were living still, and two miscarriages. She was admitted into the Queen Victoria Hospital for Women early one morning in labour, and her arrival intimated to me by a telephone message from the matron to the effect that she had examined and “could not find the os.” Not, perhaps, without an inward smile, I obeyed the summons, and on making a vaginal examination likewise was unable to find the os. Finally, on introducing my arm, under light anaesthesia, nearly to the elbow, the partially dilated os could be made out lying right up in the lumbar region, the impression being that a very large rounded tumour was obstructing the pelvis and pushing the cervix upwards and backwards. The patient said (in explanation of a median abdominal cicatrix) that an operation had been done a year before in the General Hospital, but she was ignorant of its nature. Telephone inquiries elicited the fact that the operation had consisted in a direct “ventral fixation,” and the nature of the case was now evident, the “tumour” being merely the body of an extremely anteverted uterus, which, in fact, was almost in an inverted position. It was fairly obvious that extraction of the child *per vias naturales*, even dead, was wellnigh, if not altogether, impossible, and my colleague, Dr. Gordon Grant, who saw the case, confirmed this opinion. I therefore decided on Caesarean section. The patient was prepared as quickly as possible, the child, a

healthy full-term male, extracted without any difficulty, and the placenta and membranes removed; the womb was then drawn out through the abdominal incision and carefully sutured. Haemorrhage was negligible in quantity throughout and subsequent contraction was excellent. The mother made an uneventful recovery and was able to nurse the child as usual.

It was noteworthy in this case that, in spite of the almost incredibly anteverted position of the uterus, one was not troubled during the operation by any obvious adhesions or other sources of difficulty. Hitherto in performing the—often very useful—operation of ventral fixation or hysteropexy (in contradistinction to the “indirect” operation of Gilliam and its countless modifications) I have always had in my mind the fear lest it might—as it certainly does—interfere with subsequent pregnancy, unless great care be taken to pass all sutures well down on the anterior uterine wall; and not a few cases have been published in which recurring abortions seem to have followed the operation; but I had never realized before that such an extreme malposition of the uterus could result as to demand Caesarean section. About two years ago, however, there was published in the BRITISH MEDICAL JOURNAL¹ by Dr. Amand Routh a carefully collected series of eight cases similar to the one I have just described. I can only say that had I not seen the condition before delivery in this case I should have felt somewhat sceptical as to the validity of the indications for the operation. Possibly a similar suspicion might arise in the minds of many as regards the next case to which I have to refer.

CASE II.

Mrs. T., aged 34 years; married five years; one child living aged 4 years. Had had a “bad miscarriage” eight months previously. This patient was sent into the Queen Victoria Hospital one afternoon with a diagnosis of placenta praevia, by her medical attendant, Dr. Brebner. When I saw her soon after admission she appeared pale, but not markedly exsanguine; there were no pains and not the slightest sign of dilatation of the cervix; the general indications were those of about six and a half months pregnancy, the fetal heart being audible. She had bled a good deal, and I decided that something ought to be done on the following day.

During the night she had steady and almost continuous bleeding, and when I saw her at 6 a.m. she was in an extremely grave condition, partly, it appeared, owing to cardiac failure supervening on pretty severe haemorrhage. There was still not sufficient dilatation of the cervical canal to admit even the tip of a finger, and her condition was so bad that it seemed doubtful whether we could get her alive on to the operating table. Saline infusion (subcutaneous and rectal) improved the pulse a little, but it was tolerably obvious that any attempt at an *accouchement forcé* must result in death from the further haemorrhage inevitable during extraction of the uterine contents; I therefore decided upon Caesarean section as giving her a better chance. This was performed in the usual manner, saline infusion being kept up during the operation. The uterus was opened with the greatest possible rapidity after being drawn right out through the parietal incision; the child, followed by the placenta and membranes, was removed, with an astonishing absence of haemorrhage, in about three minutes from the start. The pulse practically disappeared, but was restored by filling the peritoneal cavity with warm normal saline solution while the stitching up of the uterine wound proceeded, another jugful being introduced just before closing the abdominal incision. The only loss of blood worth mentioning came from the placental site after removal of the uterine contents, but good contraction prevented any great loss.

For the first twenty-four hours it seemed very doubtful whether the patient would recover, as the cardiac condition gave rise to grave anxiety; but after this she improved so rapidly that she was able to sit up by the seventh day, and her recovery was not retarded by any complication. The child, of course, though delivered alive, was not viable. I should mention that the placenta, as far as a hurried examination allowed one to determine, was as nearly “central” in position as it could possibly be.

The great point of interest in this case lies in the consideration of *placenta praevia* as an indication for Caesarean section. The question has, of course, been raised often enough; and while it is usually admitted that on purely theoretical grounds Caesarean section should be the ideal treatment in certain cases, yet the general consensus of opinion appears to condemn this operation as a practicable line of treatment owing to the absence of any reliable method of gauging, in any given case of placenta praevia, how much or how little difficulty and danger the condition is going to cause. Any one who has had an even moderately extensive experience of this dangerous complication must have observed that many cases do extremely

* Read before the Witwatersrand Division of the Transvaal Branch of the British Medical Association.