till May 5th, when she became more conscious, but made no attempt to speak or even utter any sound. She could not be induced to protrude her tongue. She did not attempt to respond or show that she understood any simple request, and appeared to be perfectly word deaf. She took no notice of written sentences held before her. The right arm was rather rigid. At the necropsy the third frontal and the lower part of the ascending frontal convolution were found to be healthy, both externally and on section; but the lower part of the ascending parietal, together with the whole of the supramarginal and angular gyri and the two upper temporal convolutions, were completely softened throughout. The softening extended to, and partly involved, the outer part of the thalamus and the corpus striatum; it also extended backwards slightly into the occipital lobe. The right hemisphere showed no focal lesion of any kind.

Here, then, there was complete loss of speech as a result of destruction of the auditory and the visual word centres in the left hemisphere, together with some adjacent tracts of brain tissue, which lasted continuously for just over three weeks.

My second case belonging to this group is one of a very extraordinary nature in many respects, the patient having lived over eighteen years after his seizure, and his speech defects having remained constant throughout almost the whole of this period. His spontaneous speech was limited to a few words, and, though he was neither word deaf nor word blind, both the auditory and the visual word centres of the left hemisphere were completely destroyed. The record of this remarkable case, together with illustrations of the brain, will be published in the forthcoming volume of the *Transactions of the Royal Medical and Chirurgical Society for 1897*.

My object in these lectures—after laying down some general principles needful, as I consider, for the proper understanding of speech defects, and culminating in my non-recognition of any distinct and separate "centre for concepts," such as many postulate—has been to limit myself to a definite set of problems concerning the functional relations of the four cortical word centres. I have striven to show that the over-weening importance attached by many to the functions of Broca's centre is not justified by facts—that too many disabilities have been supposed to result from its destruction by some, and that the power of independent activity ascribed to it by others does not exist. I have tried to show the way in which these views have influenced others to deny the existence of a cheiro-kinæsthetic centre and the fallacious nature of many of the arguments on which they rely. Again, while alluding to the unsatisfactory nature of the nomenclature at present in vogue, I have tried to show that the so-called "sensory aphasia" of Wernicke has no claim, as he supposed, to an independent existence, but really includes a large number of distinct conditions, each of which has to be studied separately and in detail. The great importance of the auditory word centre has been dwelt upon, as well as the variety of defects produced by functional and structural derangements of this region, and also by its isolation. A study of these results, taken in conjunction with that of the less varied defects resulting from disease and from isolation of the visual word centre, led to some novel conclusions. We have seen the enforcement of the view to which we had previously been driven as to the comparative powerlessness of Broca's centre alone; we have found evidence for the existence of an unexpected possible amount of functional substitution between the visual and the auditory word centres for the production of speech and writing respectively; and, still more surprising, we have found reason for believing that both auditory word centres are accustomed to act upon Broca's region for the production of speech—as well as much evidence tending to favour the view that even in comparatively simple perceptual and intellectual operations very extensive cortical areas in both hemispheres of the brain are called into simultaneous activity.

I can only say, in conclusion, that my best thanks are due and are given to the College for the opportunity that has been afforded me of submitting the results of my labours to its consideration, and to you all for the patient manner in which you have listened to minute details which, I fear, must have been often wearisome and somewhat difficult to follow.

REFERENCES.

⁴⁵ *Loc. cit.*, p. 101. ⁴⁶ For instance, in Nos. 44, 45, 47, 49, 50, and 52 in Mirallié's list of cases included under the heading "Cécité Verbale" (pp. 152-157). ⁴⁷ *Comptes Rendus de la Société de Biologie*, 1891, p. 200. ⁴⁸ *Loc. cit.*, p. 197. ⁴⁹ *Mémoires de la Société de Biologie*, 1892, p. 13. ⁵⁰ *Archiv für Psychologie und Nervenkrank-*

heiten, 1891, p. 358. ⁵¹ It is worthy of note that both Kussmaul and Spamer seem to think that this is the ordinary way in which writing is affected (see Kussmaul, *loc. cit.*, p. 777). ⁵² *Zeitschrift für Ethnologie*, 1874. ⁵³ *Med. Chir. Trans.*, 1872, p. 162. ⁵⁴ *Brain as an Organ of Mind*, 1880, p. 645. ⁵⁵ *American Journal of Medical Science*, March, 1891, p. 219. ⁵⁶ *De l'Aphasie*, 1885, pp. 77-90. ⁵⁷ *Fortschritte der Medizin*, 1886, p. 463. ⁵⁸ *Mémoires de la Société de Biologie*, February 27th, 1892. ⁵⁹ *The Disorders of Speech*, 1894, p. 340. ⁶⁰ *Jahrbuch für Psychiatrie*, 1892, p. 242. ⁶¹ Déjerine is inclined to think that achromatopsia may be produced by lesions in the lingual and fusiform lobules. If the hemianopsia were complete, however, from destruction of the "optic radiations," there could be no achromatopsia. ⁶² *Loc. cit.*, p. 191. ⁶³ *Brain*, 1888, p. 488. ⁶⁴ *Loc. cit.*, pp. 87-89. ⁶⁵ The tapetum may perhaps include the commissural fibres between the two visual word centres, and it is specially stated in Redlich's case that the fibres were in part degenerated, as also were the forceps major, which probably includes the fibres connecting the two half-vision centres with one another. ⁶⁶ *BRITISH MEDICAL JOURNAL*, 1896, 1, p. 1242. ⁶⁷ These are Nos. 5 and 31 of Mirallié's list. ⁶⁸ *Med. Chir. Trans.*, 1878, p. 147. ⁶⁹ *Comptes Rendus de la Société de Biologie*, 1891, p. 167. ⁷⁰ *Bulletin de la Société Anatomique*, 1882, pp. 324-338.

CÆSAREAN SECTION: RECOVERY.

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On October 15th, 1896, I saw the patient, aged 22, in consultation with Dr. Charles Knott, of Southsea. She had reached the full term of pregnancy, and had been in labour some hours. Her height was 4 feet 5 inches, forehead somewhat prominent, and teeth badly developed. She appeared a well-nourished woman, but mentally weak. The joints were normal; the limbs muscular, well developed, and free from distortion, except a slight antero-posterior curvature of both femurs. The well-marked lumbar curvature of the spine, with the convexity forwards, is exhibited in the figure. The

pelvis measured in circumference, just above the trochanters, 31 inches; the pubic symphysis was prominent and the arch compressed. On internal examination the pelvis was found considerably contracted; the antero-posterior diameter measured 2½ inches, and the transverse about 3 inches. Her mother stated that she had never had any serious illness.

The patient was at once admitted into the hospital, and my colleagues kindly met me in consultation. After an unsuccessful attempt to extract the child by craniotomy, Cæsaean section was performed without delay. Unfortunately at the commencement of the operation an accident occurred with the electric lighting of the hospital, and all the stages, after the abdominal incision, had to be done by the aid of candles. The placenta was attached to the fundus of the uterus, and its position was made out by palpation before the organ was incised. The uterus was not lifted out of the abdominal cavity, but flat sponges were placed between it and the

abdominal wall, and it was opened by a clean vertical incision. After the delivery of the child, the hand was passed into the organ and the cervix carefully examined. Two rows of catgut sutures were applied to secure the uterine wound, and the hæmorrhage was arrested by careful sponge pressure before closing the external incision. The abdominal wall was united with three layers of continuous catgut sutures, and a superficial row of interrupted silk stitches. The vagina was cleansed from blood clot, and wiped out with antiseptic gauze, and a piece saturated with iodoform emulsion was inserted into the canal. The abdomen was dressed just as after an ordinary ovariectomy.

No sickness followed the operation, and the temperature never rose to 101°. The patient sat up at the end of the fourth week, and left the hospital soon afterwards in good health.

REMARKS.

The surgical treatment of labour, associated with severe pelvic deformity, has been in British practice mainly regulated by the possibility or otherwise of performing a mutilating operation. Craniotomy has been successfully accomplished in cases in which the conjugate diameter has measured less than 2 inches, and the transverse 3 inches, or a little over. Dr. Playfair states¹ that on the Continent Cæsarean section has been selected when the antero-posterior diameter measured 2½ inches; and that some foreign authors, in cases where the child has been known to be alive, have recommended its performance, even when the conjugate diameter amounted to 3 inches. From these statements it is evident that the practice of different countries has been hitherto marked by considerable variation, and that obstetricians have regarded the diameters of the pelvis as their chief guide. Whenever examination has clearly revealed that a patient was labouring under considerable deformity a careful estimation of the pelvic dimensions was accepted as the essential basis for settling the question between craniotomy and Cæsarean section; and if it could be demonstrated that sufficient room existed for the delivery of a collapsed cranium by forcible extraction, craniotomy has been generally recognised in this country as the correct procedure.

Up to the present time British practitioners have regarded craniotomy as the safer alternative for the mother in all cases of severe pelvic distortion. Variable results, however, have been recorded by different authorities, and statistics prove that it must be considered a very risky operation. Dieterman, of Berlin, has given an account of 239 craniotomies, with a mortality of 12 per cent. His own mortality from 1882 to 1887 he states to have been 9.4 per cent. Recent statistics from Leipzig present a mortality of 8 per cent. In the report of Guy's Lying-in Charity it is mentioned that the mortality after craniotomy from 1865 to 1875 amounted to 6 out of 18 cases, or 33.3 per cent. In the report of the same charity, from 1875 to 1885, 24 cases are reported with 4 deaths, or a mortality of 16.6 per cent.

I have been unable to obtain any reliable information respecting the comparative mortality of craniotomy and Cæsarean section in this country, and it is my opinion that any existing statistics would prove at the present time practically valueless, as abdominal section followed by extraction of the fœtus though an artificial opening in the parietes of the uterus has frequently been performed when the patient has been exhausted by delay, and after many unsuccessful efforts to deliver the child piecemeal *per vias naturales*. This is, doubtless, the explanation of the high mortality of the operation up to recent times. Fifty-five years ago Dr. Edward Rigby wrote²: "There is no doubt but that in England it has been peculiarly unsuccessful.....and there is every reason to suppose that the chief cause of its want of success in this country has been the delay in performing it. In France and some other nations upon the European Continent the Cæsarean operation has been and continues to be performed where British practitioners do not think it indicated; it is also had recourse to early, before the strength of the mother has been exhausted by the long continuance and frequent repetition of tormenting though unavailing pains, and before her life is endangered by the accession of inflammation of the abdominal cavity."

The separate results of these operations in the future will help to define clearly when craniotomy or any other form of

mutilating operation is justifiable, and how far it is likely to be superseded by Cæsarean section. The recent records of abdominal section received from America are very favourable. Dr. W. Myers³ gives a statement of twenty operations, resulting in the saving of eighteen mothers, a mortality of 10 per cent.; nineteen of the children were also saved, mortality 5 per cent.

Surely the indications for selecting craniotomy are very different now from what they were before the modern developments of abdominal surgery; and we can rightfully anticipate that recent advances will exercise an increasing influence upon this question. In the near future, I believe that Cæsarean section will prove as safe a surgical proceeding as craniotomy to the mother, and that it will be practised more generally in this country.

Unfortunately I must admit that there may be circumstances in which delivery by craniotomy is the only possible method of treatment. Cæsarean section requires all the preparation and all the surgical appliances which are essential for any other abdominal operation, and the surroundings of the patient may render it impracticable. Cases of great emergency may sometimes happen in distant parts of the country where little help is available, and where the requisites for a serious surgical procedure cannot be obtained. Under these conditions, a mutilating operation may be the only proceeding which can be resorted to with the hope of saving the life of the mother.

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¹ Principles and Practice of Obstetrics. ² System of Midwifery. ³ Transactions of the American Association of Obstetricians, p. 241.

THE PATHOGENESIS OF EPILEPTIC IDIOCY AND EPILEPTIC IMBECILITY.

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THE subject of abnormalities of convolution in the brains of the insane and the cranial anomalies or irregularities correlated thereto are of profound importance to neurological and alienistic physicians, and may also not be devoid of interest to the general practitioner. In the present paper¹ I propose to deal with a special class of such abnormalities (*a*) of the cranium, and (*b*) of the cerebral hemispheres and convolutions, which is of frequent occurrence in some forms of insanity and mental deficiency; and to explain its origin and mode of evolution (pathogenesis). The forms dealt with are as follows: (1) Simple, non-epileptic idiosyncrasy; (2) epileptic idiosyncrasy; (3) simple, non-epileptic imbecility; (4) epileptic imbecility.

The idiocies and imbecilities viewed from the standpoint of etiology and pathology embrace a large number of varieties. I propose, however, to exclude from our research all cases of cerebral hæmorrhage, tumours, porencephaly, traumatism, etc., involving gross destructions of the brain tissue *ab extra*, for these would make our study of the subject unnecessarily complicated. A simple classification of the insanities is needed before we can form an idea of the position our cases occupy in the scheme of classification; and such a classification, which I now present, is as follows:

Dividing the insanities into two great classes or series, at one end of which hereditary (or congenital) vice of organisation so preponderates as to result in profound arrests and enfeeblements of cerebral (psychical) evolution, we find that at this end of the series come the idiocies and the imbecilities. The insanities at the other end of the scale include such clinical forms as the simple *vesaniæ* (mania, melancholia, stupor), the toxic insanities (alcoholic insanity), etc. These would occur in or affect brains of fully formed cerebro-psychical development, and hence they would not be comparable to those resulting from early developmental arrests like the idiocies and imbecilities. They would not, and as a rule do not, present any striking anomalies of cerebral conformation or convolution, and many of them might for convenience of designation be included under the term "acquired" insanities, or phrenopathies.

Between these two extremes of the series, however, a large intermediate group of insanities exists—a group which