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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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 full 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

I would, with Morel and Magnan, term a degenerative group. Members of this group are often called degenerates. These degenerates frequently exhibit, not only certain psychical characteristics (or stigmata), which stamp them as such, but also certain physical peculiarities of physiognomy and of cranial, bodily, and cerebral conformation (somatic stigmata). These are naturally more marked in some groups of the degenerative class than in others; the milder forms are not unfamiliar to us socially in the unbalanced, the cranky, and the eccentric, etc.—persons who all their life may hover on the borderland of insanity, while some would sooner or later exhibit a progressive psychical derangement, ending in delusions of persecution and allied forms of actual insanity. Reserving full details of these, however, for a separate communication, I now proceed to describe the actual cases and the specimens exhibited, which admirably illustrate the conditions of the cranium in epileptic idiocy and imbecility.

The most striking feature here is the noted cranial asymmetry. (This was shown in six skulls of such epileptics, which were demonstrated at the Leeds and West Riding Medico-Chirurgical Society in April, 1895, and the following cases will give in detail the corresponding cerebral anomalies:—)

CASE I.—F. C., male, epileptic imbecile. Had fits since the age of 4. The right arm is paralysed and somewhat arrested in growth, corresponding with sclerosis and atrophy of the left Rolandic area in the brain, but is able to some convulsive (tonic and clonic) movements when a fit occurred. Besides the Rolandic area in particular, the left cerebral hemisphere as a whole exhibits a general condition of smallness of convolutions (microgyria), and also a sclerosis of the convolutions generally. Corresponding with the general smallness of the left hemisphere there is a parallel atrophy of the right lobe of the cerebellum, all of which is strikingly obvious to the naked eye. And, correspondingly, there is also marked inequality and asymmetry of the two sides of the skull.

CASE II.—A. L. A., male, an epileptic idiot; fits since infancy, general. The left hemisphere was of fair size and development; the right hemisphere was microgyric, and sclerosed very uniformly and beautifully over the supramarginal, angular, occipital, precentral, and part of the temporo-sphenoidal regions (external and mesial surfaces), over an area corresponding very accurately to the distribution of the posterior cerebral artery. The anterior and middle cerebro-arterial areas had escaped this intensive and specialised change. The fissures of Rolando and the adjacent parts, as well as the frontal lobes, being equal on the two sides, the inequality between the posterior cerebral areas of the two sides was very striking. The cranium was also markedly asymmetrical, the right occipital pole being shorter posteriorly, and narrower and more attenuated postero-laterally.

There is a profound significance in this case. The parents of the child were drunken and dissolute tramps, both alcoholic and syphilitic, and the child was left behind to be brought up at the workhouse.

In a further and more extended inquiry I have frequently been struck with the alarming prevalence of an alcoholic etiology, combined sometimes with syphilis, in the parentage of such children. In the following genealogical tables, taken out of a large number of such cases which had come under my observation, some of these results are shown:

a. Male, chronic alcoholic, of coarse and brutal disposition; female, rather weak-minded, but no special neurosis.

Child stillborn.	Male, imbecile, very deficient in speech and awkward in gait.	Female, delicate health, has epileptic fits. Marked asymmetry of skull, squint-eyed.	Female, thin and delicate, infantile convulsions, died of phthisis.

b. Male, drunkard, lazy and dissolute; female, occasional careless drinker.

Male, epileptic, imbecile.	Idiot child, helpless, partially crippled.	Child stillborn.	Child stillborn.

My collection of genealogical tables is full of such histories as the above; space forbids the publication of more.

CASE III.—Epileptic imbecile. The brain condition is very similar to that of Case II, but the lesion is mainly on the opposite side—namely, atrophy and sclerosis of the area supplied by the posterior cerebral artery in the left hemisphere. The other features are analogous to those in Case 2, but in a less intense degree, being an imbecile, not an idiot.

CASE IV.—A. L., male, epileptic idiot. Microcephalic. In this case the cortical lesions are scattered, and the condition is one of disseminated microgyria, with sclerosis, affecting small territories, especially the upper frontal and the parieto-angular, but unevenly scattered through both hemispheres.

PATHOGENESIS

In these and many other cases of epileptic idiocy and

imbecility the pathological changes, both as revealed to the naked eye and to microscopic technique, are of a striking kind. The grosser defects are obvious not only to the naked eye, but to the touch and feel they present varying degrees of hardness and induration in connection with the sclerosis of the nerve substance, which is such a prominent feature in these brains. The morbid process in the brain underlying epileptic idiocy and imbecility I have stated shortly as follows:—“There is a sclerotic overgrowth of the neuroglia fibre cells (diffuse or focal, and in the latter case often corresponding to a particular vascular territory), with a corresponding slow irritation, destruction, and final atrophy of the nerve cells and fibres in the same area.”

The nerve cells specifically show various changes, some of which are (a) due to arrested or altered development, while other are (b) apparently of later origin. These will be now described. The former class (a) includes a defective type of evolution of the protoplasmic processes of the nerve cell (imbecile type of nerve cell), which I have very frequently found in these cases with the Golgi method. These defects exhibit all grades—from the gravest to a slight degree. Cells from the brains of epileptic imbeciles of adult age (20 and over) often show in considerable areas a development of the neurons or nerve cells not greater than that of a healthy child between the ages of 3 and 5. With the aniline blue-black stain these deficiencies of the protoplasmic processes can be also numerically shown. The cell body under such conditions retains its plump embryonic contour, the fewness and slenderness of its protoplasmic processes serving to accentuate this condition.

The intracellular changes are also of a striking sort, and consist of changes in both cell body and nucleus. These we have investigated with the toluidine (modified Nissl) and with the aniline methods. The changes as shown by the latter method have been described by Bevan Lewis in *Epileptic Idiocy (Brain)*. My own observations confirm them.

With the toluidine (modified Nissl) method we obtain further details of cell and nuclear structure, and they are as follows:

1. *Changes in the Nerve Cells.*—(a) An increase of the normal golden pigment at the base of the cell body. Often this pigment has a tendency not merely to accumulate at the base, but to get, as it were, disintegrated, and diffused throughout the cell-body. (b) A destruction of Nissl's granules in the areas invaded by the pigment. (c) A displacement of the nucleus towards the apex of the cell. (d) A thickening of the strands and knots in the intranuclear reticulum, and the production of a fine dust-like material ((? *débris*) in between the meshes of the reticulum. (e) A deeper staining of the nuclear structures. (f) A diminution in the deepness and distinctness of staining capacity of the Nissl's granules in the pyramidal and polymorphic cells of the affected parts.

2. *Changes in the Neuroglia Cells.*—The changes in the neuroglia fibre-cells can be best seen with the Golgi silver stain. In most of my specimens these changes are of a striking nature. They can be revealed, also, with the use of hæmatoxylin, and of aniline blue black combined with (or without) picro-carmin. The total number of brains of epileptic imbeciles and idiots I have examined till now comprise fourteen, the majority of these having been at the West Riding Asylum. It is by no means intended to state that these changes are restricted to the epileptics who are epileptic and feeble-minded. These sclerotic and nervous changes are also seen in epilepsy supervening later in life—that is, at the adolescent or adult period of life—and when the disease has been in existence for some years. The sclerotic change, however, is generally speaking not so advanced or so abundant in the hemispheres. Here and there diffuse strands and sheets of sclerosed tissue are seen, in some places concentrated into firm almost fibroid islets; in other places finely diffused throughout, and infiltrating the brain substance. Where these changes occur in the deeper cortical and neighbouring parts, the naked eye difference of colour between cortex and white substance is often lost, and the tissue so infiltrated feels firm, and even hard. Where several such spots or patches are aggregated the brain substance feels knotty when pressed.

Manifest atrophy of convolution, however, there need not be in these later cases. Microgyria is conspicuous by its

absence. Often indeed there is not only no attenuation or shrinking of the gyri, but, on the other hand, the gyri are not infrequently plump and of full size; nay, there is frequently a thickening or pseudo-hypertrophy of them, so that their sides seem to be more closely adpressed towards one another, while the tops of the convolutions are similarly pressed against the cranium (*dura* or *falx cerebri*), giving rise to a flattened or tableland-like appearance of the tops of the convolutions. And the fissures and sulci accordingly do not gape, but are reduced to the appearance of narrow and almost linear markings of the brain surface. These adult cases—at least some of them—without being actually imbecile, are somewhat weak-minded. The predominant character, however, is not the mere deficiency of intelligence (negative state), but the special positive character presented by the epileptic neurosis (positive character). I refer to the explosive condition of the nerve cell and the manner of its discharge of nerve currents. In the cell thus affected the balance between storage of nerve energy and discharge of nerve currents is altered in such a way that a condition is set up of the accumulation of nerve energy at an abnormally high potential (qualitative variation) within the cell, and a liability to explosive and violent discharges from time to time (periodic discharge). This epileptic or explosive condition of the nerve cell is parallel or approximates pathologically to the nutritive impairment of the third degree which I have described elsewhere.³ Etiologically and clinically, such nutritional anomalies are not unfamiliar to us; they may occur apart from epilepsy in some congenital forms of the criminal psychoses, while their later and acquired phases are shown in alcoholism (some types), especially abstinence, and also in some phases of adolescent insanity and of general paralysis of the insane.

I cannot close this part of the subject without referring to one case which I was fortunate to investigate under Professor Horsley in 1891, namely, a case of focal epilepsy in a child, in which the affected area of brain cortex was excised in the operation (after trephining), and the piece thus removed was placed in my hands for further investigation. The specimen had been in methylated spirit for some days before it reached me. This might have been thought to have been a disadvantage—and so it was for studying minutely certain of the nerve changes; but, on the other hand, the sclerotic changes could be well studied, especially after staining with hæmatoxylin and counterstaining with picro-carmin. (Specimens prepared with aniline blue-black were too diffuse in staining, and otherwise a failure to show detail.)

In all the specimens the whole depth of the cortex was pervaded by a fine diffuse sclerotic network, rather coarser and more abundant than the normal feltwork of neuroglia fibre cells; and in two places the cortex was beginning to pucker and shrink slightly as if contracted. Further progress of the disease might, I think, have led to the familiar sclerotic atrophy with microgyria of this part of the cortex, and probably to the development of a "cauliflower"-like patch. There were also two or three minute hæmorrhages beneath the pia, the areas being not more than half a millimetre in diameter. The diffuse sclerosis extended down to and involved the small portion of white substance which was excised with the cortex in the operation. The blood vessels were filled with red corpuscles, but I could find no dilatation, nor any notable changes in the vessel walls. The perivascular neuroglia network seemed rather more abundant than normal.

The nerve cells appeared of diminished abundance, and as yet did not show (with the methods employed) any special destruction or involvement of the protoplasmic processes close to the cell body; the distal parts of the processes could not be seen with the stains used, and therefore nothing can be said of them. The cell bodies, however, showed more free and more diffuse intracellular pigmentation than that of the normal child. (The nuclei seemed to show no special change with the methods used, nor could any vacuolation be demonstrated).

A bird's-eye view of all the cases examined showed that the type of lesion present in the before-mentioned cases was as follows:

(a) A diffuse sclerosis or overgrowth of the neuroglia fibre cells in the brain substance.

(b) A coextensive change in the nerve cells. This change was of two kinds—namely, negative and positive. The negative changes consisted in a defective development (fewness and slenderness) of protoplasmic processes—imbecile type of nerve cell; while the positive changes consisted of an increase in amount and diffusion of pigment throughout the cell body, especially its basal part, and a displacement of the nucleus towards the apex of the cell. Later changes were a gradual destruction and atrophy of the nerve-cell processes consequent upon or coextensive with the further overgrowth of the glia (sclerosis), until whole groups and islands of cells might be so destroyed.

There is thus a common pathogenic basis for epileptic idiocy and imbecility, and for focal epilepsy occurring in the child—namely, anomalies of growth and nutrition impressed upon the growing nerve cell as well as the neuroglia cell, and affecting predominantly this or that area of the brain frequently in territories corresponding to a particular vascular distribution.

In cases of epilepsy supervening in adult life, after the brain cells had attained complete development, the changes found were (as regards the nerve cells) only of the positive kind just mentioned. But, in addition, these very frequently exhibited intranuclear vacuolation of the cortical cells also, an observation of Bevan Lewis which I can fully confirm.

The significance of the changes especially associated with the epileptic neurosis (more particularly when occurring congenitally or in early life, and therefore entailing also a more or less obvious degree of mental impairment) is still more striking when we remember that "in the brains of simple—that is, non-epileptic—idiots and imbeciles, such lesions as the above were generally absent, and the convoluted forms might be and often were plump and well formed, though inclined to simplicity of arrangement." These are to be looked upon as general arrests of development, not complicated of course with the epileptic neurosis. Such arrests might be very pronounced, so as to entail speechless idiocy in the patient. The following case is such a one:

CASE V.—G. W. K., male, congenital idiot, not epileptic. He is speechless, uneducable, dirty, and degraded in his habits. He finally died of pthisis at the adult age of 30. The brain shows a plumpness and rotundity of the convolutions. The convolutions are less complex and sinuous than in a normal person; there is great deficiency of the tertiary and secondary sulci, so that the convolutions are very wide and full-looking. There is no local atrophy or sclerosis, and nowhere any condition like microgyria. Microscopically there is great defect of development of both pyramidal and polymorphic cells (imbecile type of cell).

In the brains of non-epileptic imbeciles sclerosis and microgyria are both conspicuous by their absence. When the epileptic neurosis is present, however, this process is also present. The positive or negative changes in the nerve elements themselves are present in varying degrees. It is in the combination of these two classes of pathological lesions that we find the surest indication, the seal as it were of epileptic idiocy or epileptic imbecility in the brain.

The bearings of these and other observations on the causation, prevention, and on the treatment of the insanities will form the subject of a future communication.

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FIBROMA OF THE OVARY AND OVARIAN LIGAMENT:

WITH PATHOLOGICAL AND CLINICAL REPORTS OF A SERIES OF
EIGHT CASES OF FIBROMA OF THE OVARY AND ONE OF THE
OVARIAN LIGAMENT, TREATED BY OPERATION.

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SOME ovarian fibromatous growths are insignificant; these are unimportant clinically, and have been discovered, as it were accidentally, *post mortem*. Dr. Joseph Wigglesworth, more than ten years ago, presented to me the ovary illustrated in section in Fig. 1. The three small central fibromata within