DESCRIPTION
OF THE
DISSECTION OF A BRAIN,
IN WHICH THE
CORPUS CALLOSUM, FORNIX AND SEPTUM LUCIDUM WERE
IMPERFECTLY DEVELOPED.

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IN the summer of 1847, whilst dissecting the brain of a boy, who died of pleurisy in St. Bartholomew's Hospital, I met with a remarkable deficiency in the development of the corpus callosum, an account of which may be interesting to this Society.

Nothing unusual was discerned in the shape of the skull, or in the condition of the dura mater; and in size, weight, and external appearance, the brain itself was normal. On separating the anterior lobes, however, it was at once apparent that there existed a very unusual condition of the corpus callosum, of which a considerable portion was wanting anteriorly. Upon observing this condition, the cerebral matter was carefully sliced down to a level with the corpus callosum, and, a rough sketch of the appearances being made, the brain was immersed in strong alcohol, for the purpose of hardening it. At the expiration of several months, when the spirit had rendered it tolerably firm, Mr. Paget kindly assisted in making a minute examination of its structure,

and in recording those appearances which seemed most worthy of note.

In its general proportions, the brain approximates to the healthy standard, the convolutions presenting the usual form and arrangement. The antero-posterior diameter of the cerebrum, in the middle line, is six inches and eight-tenths, and the transverse diameter of each hemisphere, three inches. The greatest transverse diameter across the anterior lobe is two inches and six-tenths, the same admeasurement of the posterior lobe being two inches and seven-tenths.*

On gently separating the hemispheres, the inner parts of the anterior halves of the lateral ventricles are exposed, traversed by the anterior cerebral artery, running in its ordinary direction from before backwards. The lateral ventricles lie widely open, there being no vestige of a membrane covering them, though it is probable that something of the kind must have existed during life, and have been torn away in removing the brain from the skull. In the place of the corpus callosum there appears, in this view, above the cavity of the ventricles, only such a transverse band of medullary matter as might represent its posterior half. The antero-posterior length of this imperfect corpus callosum, measured in the mesial line, is only one inch and a half, there remaining, from its front or anterior border to the anterior margin of the anterior lobe, a space of not less than three inches and a quarter. The posterior margin of the corpus callosum is distant two inches from the posterior border of the posterior lobe. This posterior margin, which is two-eighths of an inch in width, is as smoothly rounded as usual, and is in thickness one-eighth of an inch, whilst that of the anterior border is only one-twelfth of an inch.

The anterior border of the corpus callosum is continued

* The drawing which accompanies this paper, by Mr. Delamotte the Librarian to St. Bartholomew's Hospital, very correctly represents the appearances, after the upper part of each hemisphere had been removed, and portions of the brain had been peeled off to show the course of its fibres.

forwards on each side in a thin rounded margin; these, as they proceed, at first diverge, and then, converging and bending downwards, become continuous with a portion of white substance representing the knee and inferior reflected portion of the corpus callosum. In this way is enclosed a space or fissure, in the position usually occupied by the middle of the anterior half of the corpus callosum, the septum lucidum and anterior part of the fornix. In form, this fissure is nearly quadrilateral, and in dimensions as follows:—Its length 1·9 of an inch, its width in front ·85, and behind ·45 of an inch. By this means the cavities of the lateral and third ventricles are widely exposed, so as to exhibit the following parts: in front and in the middle are seen the upper surfaces of the knee and inferior reflected portion of the corpus callosum bending backwards; on each side of this are the inner parts of the corpora striata; and behind the anterior commissure, parts of the anterior crura of the fornix, and the anterior or inner portions of the optic thalami, with the cavity of the third ventricle distinct between them.

The firm condition of the brain permitted a tolerably accurate examination of the course and arrangement of the fibres composing the corpus callosum, which was, of course, both interesting and important.

The fibres which enter into the formation of the posterior and entire portion of the corpus callosum run in a transverse and parallel direction into the masses of cerebral substance on each side, exactly as is usual in a healthy brain: those of the posterior free margin, however, after proceeding in a like manner outwards into the substance of the hemispheres, bend backwards and diverge somewhat, and then seem to re-unite so as to enclose the cavity of the posterior horn of the lateral ventricle. The fibres anterior to these in position pass into the substance of the brain, first transversely, then forwards, and then sweep downwards by the outer borders of the corpora striata and optic thalami.

That part of the corpus callosum which is perfect on each side of the fissure seems to be composed of fibres, all of

which run in the usual course, transversely outwards, the most anterior taking a direction forwards and downwards into the substance of the anterior lobes, affording, as in the case published by Mr. Paget, in Vol. xxix. of the Transactions of this Society, an additional confirmation of the correctness of Burdach's remark, that "many fibres from an anterior part of one hemisphere go to a somewhat more posteriorly situated part of the other."

It is interesting to trace, in a vertical section of the brain along the mesial line, the posterior and perfect border of the corpus callosum reflected downwards and forwards to be connected with the fornix, which, however, is very imperfect in condition, insomuch that it is not more than half an inch in length, and extends no further forward than the transverse lines marking the junction of the anterior and posterior horns of the corpora quadrigemina. The sides of the fornix are continued on each side into a tenia hippocampi, but its soft condition rendered it impossible to trace its continuity with the convolutions of the hippocampus. The imperfect portion of the corpus callosum also consists of transverse fibres, from the under portion of which their laminae can be separated, and which are traceable downwards to the lamina cinerea, and appear to consist of longitudinal fibres.

From the description which has been given, it will easily be understood that there is no sign of a septum lucidum or fifth ventricle, and that it is principally the middle and anterior portion of the fornix which is wanting.

The patient whose brain exhibited this peculiarity of structure was named Thomas Platt, and at the time he died was fifteen years old. He was brought up and educated at the Foundling Hospital, a circumstance which, while it afforded an opportunity of ascertaining the condition of the boy's own mind, necessarily precluded the possibility of obtaining any evidence as to that of his parents.

He is described, at the hospital, to have been civil and well-conducted, but exceedingly slow in acquiring knowledge in the school. About three years before his death, he

received a serious injury to the head from the blow of a cricket ball, which confined him to the hospital for twelve months, at the expiration of which time he had completely recovered his usual health, and was apprenticed to a cabinet-maker. I could not learn that either his character or his intellect was at all affected by this accident.

The person to whom he was apprenticed informed me that the boy could read and write well when required, though prone to fall asleep when thus occupied, a propensity which was a constant subject of ridicule with the other boys in the shop. It was found extremely difficult to teach him his trade, or to engage him in any mental exercise; though in making bargains and in obtaining full value for his money he showed a remarkable degree of acuteness. When suddenly questioned upon any subject he would appear bewildered, and require some moments consideration before being able to give a distinct reply, exhibiting in this, as in other respects, rather a sluggishness than an actual deficiency of mind.

Mr. Paget's paper on "Imperfect Corpus Callosum" entered so fully into the literature of the subject, as to leave no field for further research, there not having been, as far as I am aware, any cases recorded to which he has not alluded; and with regard to the physiological and metaphysical inquiries arising out of their consideration, I have purposely refrained from referring to them.

It is a point worthy of observation, however, that the mental condition of the patient whose case forms the substance of this paper presents, in several particulars, a complete antithesis to that of the girl who fell under Mr. Paget's notice. Neither of them can be said to have been of healthy mind, and yet the mental deficiency was of an opposite character in each.

In the girl, the peculiarity was "vivacity, and a want of caution, showing themselves in a habitual rapidity of action, and want of forethought, deliberation and attention;"

whilst in the boy it was a disproportionate degree of caution and want of vivacity, showing themselves in an extreme slowness, amounting almost to stupidity.

EXPLANATION OF PLATE III.

This plate exhibits the relation of the various parts, as described in the preceding paper on "Malformation of the Brain."