been found in *Rhizoctonia*. The little spore-like bodies seem, however, rather to be conidia than true spores; and we have yet to ascertain what is the real character of these destructive parasites.

[To be continued.]

LIII.—*On the Cerebral Characters of Man and the Ape.*

By Prof. Richard Owen.

[Plates XIX. XX. XXI.]

To the Editors of the Annals and Magazine of Natural History.

Gentlemen,

It may be acceptable to those who desire to know the facts of the observed differences between the structure of the brain in the lowest race of Man and in the highest race of Ape to be able to compare the figures of the parts as seen and delineated by Tiedemann*, Vrolik, and Schroeder van der Kolk†, at a period before the authors of 'Vestiges of Creation' and 'Natural Selection' had revived the question of the transmutation of species, and by anatomists investigating and recording the facts without reference to, or apparently a thought of, the question whether Man be or be not a descendant of the Ape.

I therefore send exact copies of the figures of the smallest Negro's brain, figured by Tiedemann in the 'Philosophical Transactions' for 1836, and of the brain of the Chimpanzee, figured by the Dutch anatomists in the Transactions of the Royal Netherlands Institute for 1849. Figs. 1 and 2, Pl. XIX., show the brains of the Negro‡ and the Chimpanzee of the natural size, and the relative size of the cerebrum to the cerebellum, as observed by Schroeder van der Kolk and Vrolik§ in the Chimpanzee (*Troglodytes niger*). Figs. 1 and 2 in Pl. XX. show the extent to which the cerebellum is overlapped by the cerebrum, by means of a vertical section of the brain of the Negro‖, and by a like section of the brain of the Chimpanzee¶. Fig. 3. Pl. XX. is a copy of fig. 4. plaat 2 (*tom. cit.* Schroeder van der Kolk and Vrolik), showing the extent of the development of the lateral ventricle and its principal eminences in the brain of the Chimpanzee.

* "On the Brain of the Negro compared with that of the European and the Orang utan," Phil. Trans. 1836.

† "Ontleedkundige nasparingen over de gedaante en het Maaksel der Hersenen van den Chimpanse." Nieuwe Verhandlingen der erste Klasse van het Koningl. Nederlandsche Instituut, &c. Amsterd. 4to.

‡ Tiedemann, *loc. cit.* tab. 32.

§ *Loc. cit.* pl. 1. fig. 2.

‖ Tiedemann, *loc. cit.* pl. 33.

¶ Schroeder van der Kolk and Vrolik, pl. 2. fig. 1.

My own dissections of the brains of the Chimpanzee, and Orang utan, and of a partially decomposed one of the Gorilla, have assured me of the accuracy of the Dutch anatomists' figures, as rightly and truly representing the degree to which the brain in the Ape approaches in size and structure to that in Man; save that, in the Gorilla, in connexion with its greater proportional muscular development, the proportional size of the cerebellum is larger than in the Chimpanzee and Orang; and in that respect both the latter Apes seem to approach nearer to Man.

But the difference, as compared with the Negro, is so much greater than is that observable between any two steps in the descending series from the Chimpanzee to the Lemur—or, in other words, the rise in cerebral development is so great and sudden in the Negro, especially when the bulk of Man's body is considered*, that it seems to me to constitute one and the most important of the differential structural characters between the Human and Ape kinds.

In the brief definitions used in systematic zoology for groups characterized on such differences, the meaning of terms must be defined; and this I was careful to do in my Paper on the primary distribution of Mammals according to cerebral characters†. I had previously, with other anatomists, used the term 'posterior lobe' of the cerebral hemisphere in a somewhat vague sense; knowing, as Cruvelhier, Todd, and others have stated, that there was no natural boundary marking out a posterior lobe from the so-called middle lobe in the human brain. To make my meaning clear, when it became especially requisite to do so, I therefore proposed a definition from internal structure and relative position, and signified the '*posterior lobe*' as that "which covered the posterior third of the cerebellum and extended beyond it." The accepted definitions in Human Anatomy, of the 'posterior cornu' of the lateral ventricle and its eminence the 'hippocampus minor,' were so precise and determinate, that propositions regarding them could not, I thought, be mistaken. As it seems, however, that they have been, I here quote from a late and deservedly esteemed compendium of descriptive Anthropotomy ‡: "The 'posterior cornu,' or digital cavity, curves backwards into the substance of the posterior lobe, its direction being backwards, outwards, and then inwards. On its floor is seen a longitudinal eminence which corresponds with a deep sulcus between two convolutions: this is called the 'hippocampus minor'" (p. 463).

* From known physiological necessity, the brain is relatively large in immature and small warm-blooded Vertebrates.

† Proceedings of the Linnæan Society, 1857.

‡ Anatomy, Descriptive and Surgical, by Henry Gray, F.R.S. 8vo, 1858.

A transverse eminence,' called *pes accessorius* or *eminentia collateralis* (by the Dutch anatomists termed 'pes hippocampi minoris'), is "placed between the hippocampus major and minor at the junction of the posterior with the descending cornu" (p. 465). This latter part is indicated "als aanduiding van den kleinen vogelklaaw (*pes hippocampi minor*) (pl. 2. fig. 4 *e*)," p. 9 *. There is no continuation of the lateral ventricle curving backwards, outwards, and inwards, nor any eminence accompanying it in those directions and extent, in any known Ape.

However, I have no more doubt that my fallible fellow-labourers in anatomical science have spoken the truth, as they conceived it, in affirming the higher Apes to possess the 'posterior lobes,' 'posterior horn of the lateral ventricle,' and 'hippocampus minor,' than that I believe myself to be enunciating a strictly scientific truth when, agreeably with the definitions of those parts, I affirm them to be peculiar to the human species.

I am, Gentlemen,

Your obedient Servant,

RICHARD OWEN.

EXPLANATION OF THE PLATES.

PLATE XIX.

Fig. 1. Upper surface of the brain of a Negro, nat. size. (Phil. Trans. 1836, pl. 32, Tiedemann.)

Fig. 2. Upper surface of the brain of a Chimpanzee, nat. size (Nieuwe Verhandlingen der erste Klasse van het Koningl. Nederlandsche Instituut, plaat 1. fig. 2; Schroeder van der Kolk and W. Vrolik): *c*, cerebrum; *b*, cerebellum.

PLATE XX.

Fig. 1. Left moiety of a bisected brain of a Negro, nat. size. (Phil. Trans. 1836, pl. 33, Tiedemann.)

Fig. 2. Left moiety of a bisected brain of a Chimpanzee, nat. size. (Nieuwe Verhandlingen, &c., plaat 2. fig. 1; Schroeder van der Kolk and W. Vrolik.)

Fig. 3. Right moiety of a dissected brain of a Chimpanzee, showing the lateral ventricle, nat. size. (*Ib.* pl. 2. fig. 4; *ib.*)

In this and the following figure—*a*, corpus striatum; *p b*, tænia hippocampi; *c*, hippocampus major; *d*, descending cornu of ventricle; *e*, pes accessorius, seu pes hippocampi minoris; *f*, hippocampus minor; *g*, posterior horn of lateral ventricle.

PLATE XXI.

Right moiety of a dissected Human brain, showing the lateral ventricle, nat. size. (Gray, Anatomy, Descriptive, &c., 8vo, p. 462. fig. 244.)

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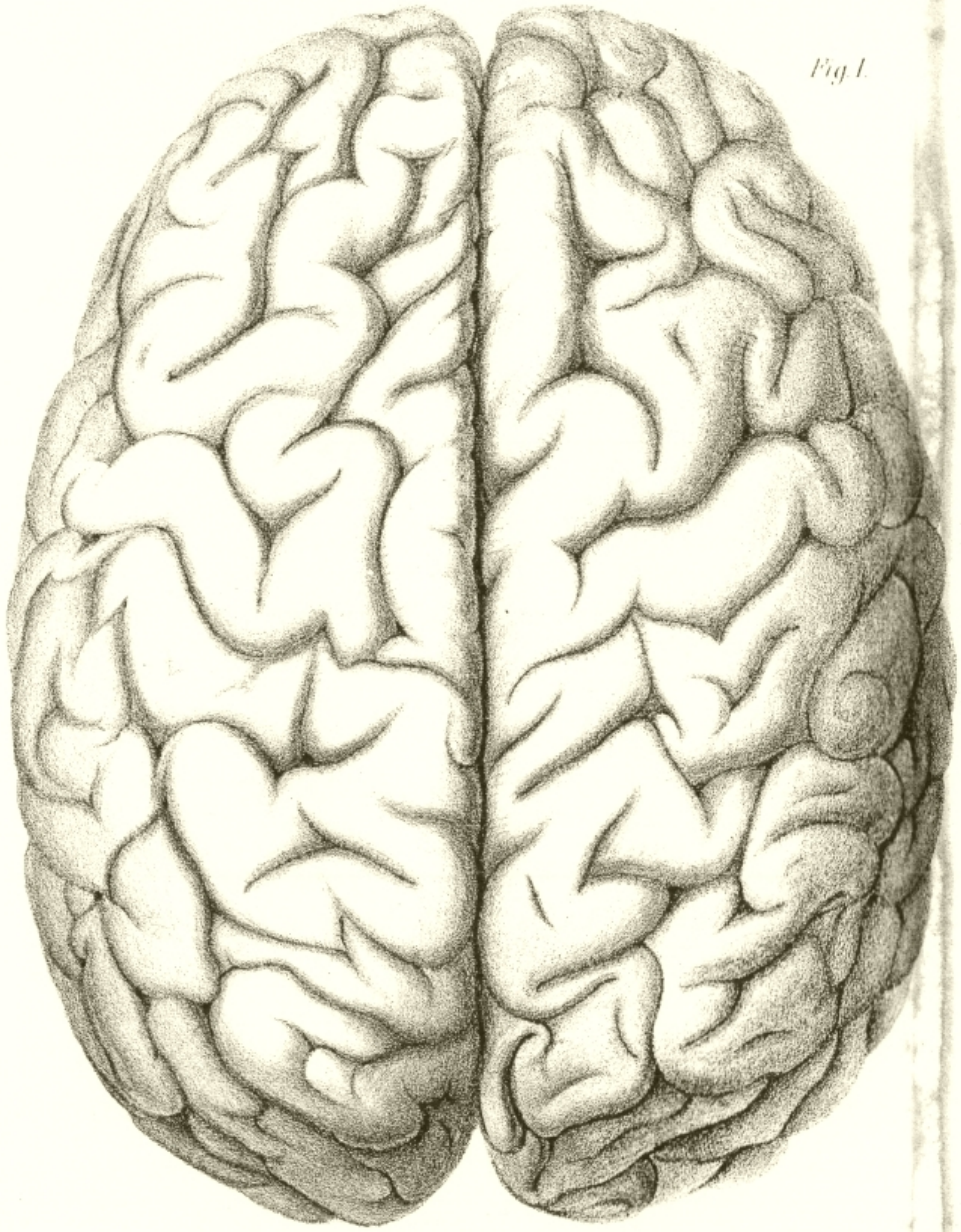
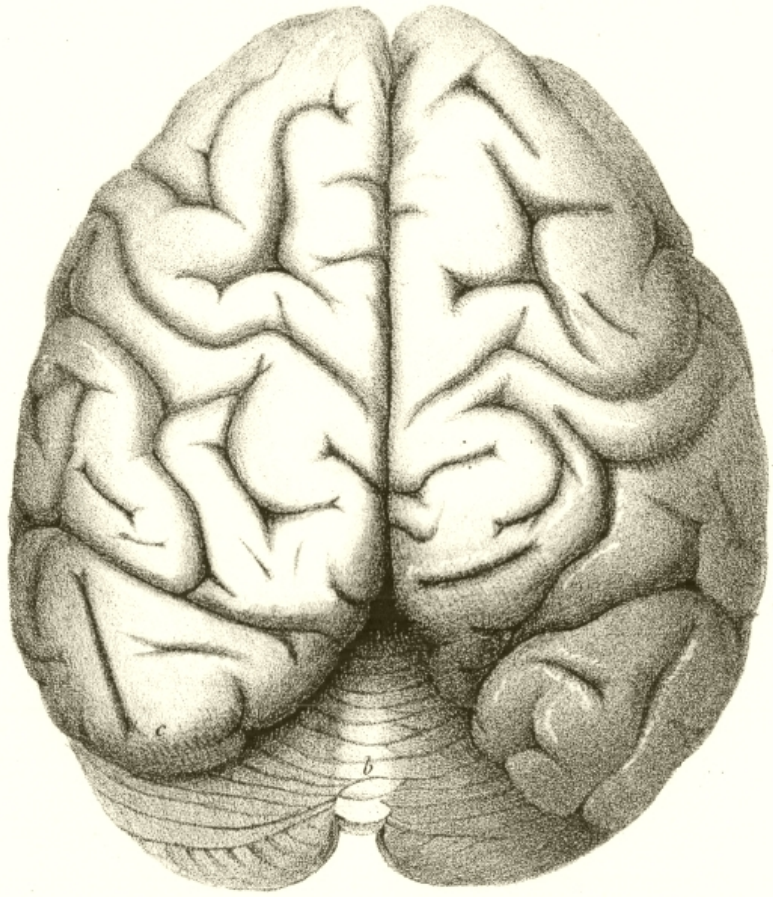
* Ontleedkundige, &c., *loc. cit.*

Fig. 1.



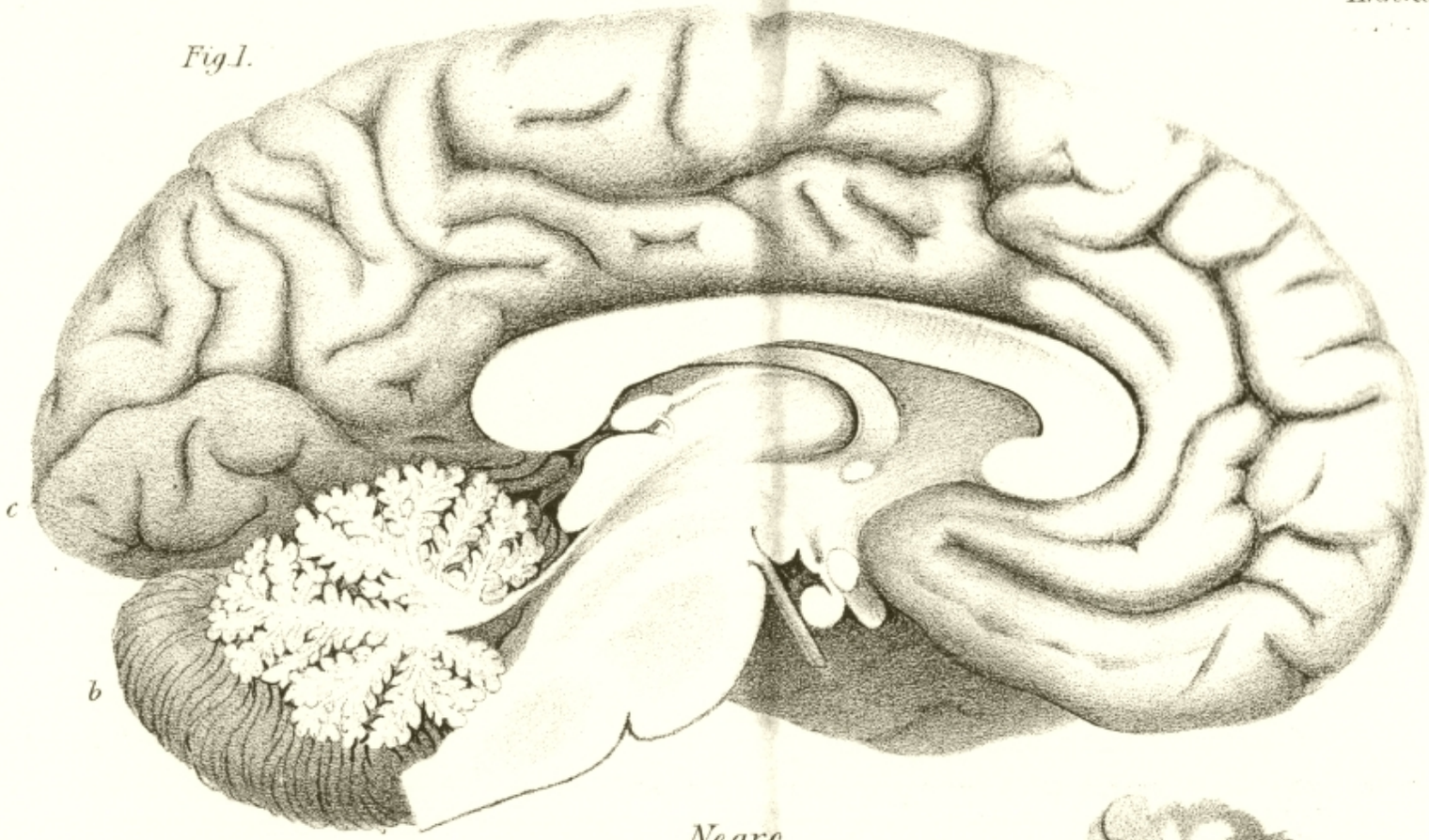
Negro.

Fig. 2.



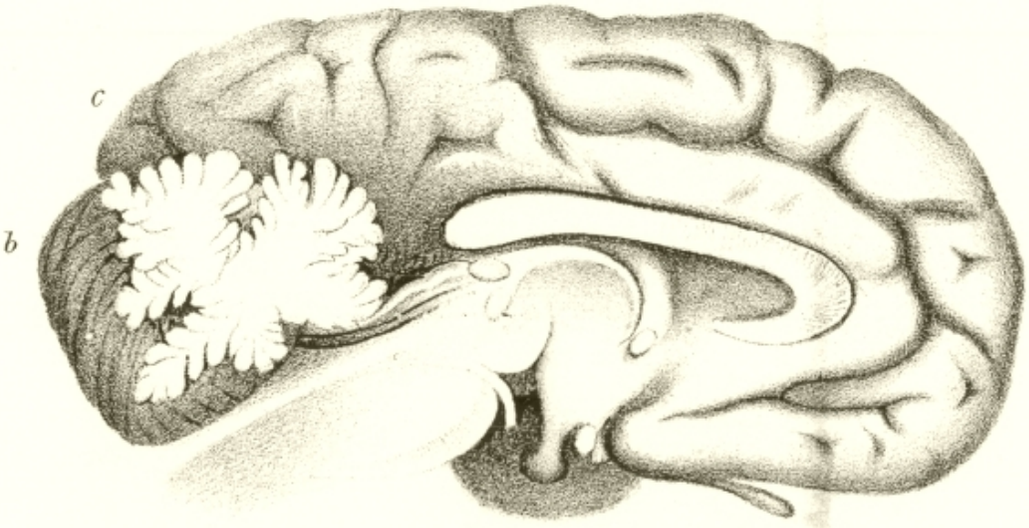
Chimpanzee.

Fig. 1.



Negro.

Fig. 2.



Chimpanzee.

Fig. 3.