rabbit, of the methods of inoculation which he has introduced, that we are indebted for the means of investigating with ease and certainty the phenomena of this disease, which previously had been most difficult and inconclusive.

These experiments were performed at the Brown Institution, and I must express my hearty thanks to Professor Horsley, F.R.S., for the facilities and assistance he has so kindly afforded me, in this and other investigations.

A considerable portion of the cost of material for this investigation was defrayed by a grant from the Association for the Advancement of Medicine by Research.

EXPLANATION OF PLATE.

Fig. 1. Encephalon of rabid rabbit, intensely and unusually congested, the dura mater removed. The site of inoculation is perceptible at *x*, by slightly increased congestion.

Fig. 2. Tongue, larynx, and part of trachea, of the same rabbit, showing deep congestion.

Fig. 3. Stomach of a similar rabbit, showing the veins of the serous coats much distended, together with numerous and moderately large hæmorrhagic spots, distinctly marked in a typical manner, as described in text.

"A Further Minute Analysis, by Electric Stimulation, of the so-called Motor Region of the Cortex Cerebri in the Monkey (*Macacus sinicus*)." By Charles E. Beevor, M.D., M.R.C.P., and Victor Horsley, B.S., F.R.C.S., F.R.S. Received June 16, 1887.* (From the Laboratory of the Brown Institution.)

(Abstract.)

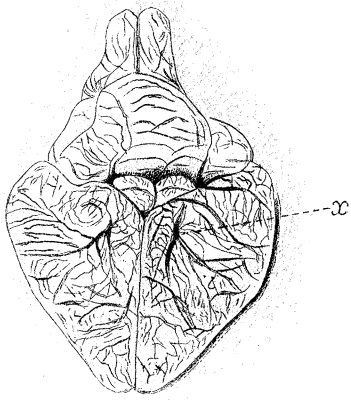
The present research, of which the following is a brief abstract, is in continuation of an investigation which we commenced two years ago, the first part of which is about to be published in the 'Philosophical Transactions.'

In our former paper we described the results of a minute analysis, obtained by electrical excitation, of that part of the cortex in which Professor Ferrier had previously shown that the movements of the upper limb were chiefly represented.

In the present paper the same mode of analysis has been employed for the investigation of the parts of the cortex grouped around the before-mentioned area.

Mode of Excitation.—The mode of excitation was the same, with a slight alteration, as that which we previously adopted.

* Received and read June 16th in abstract only. Full paper received August 12, 1887.



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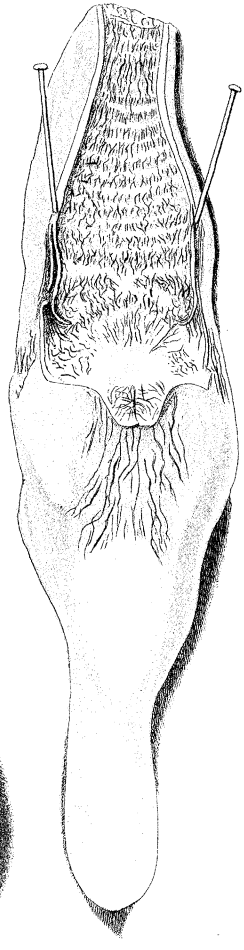

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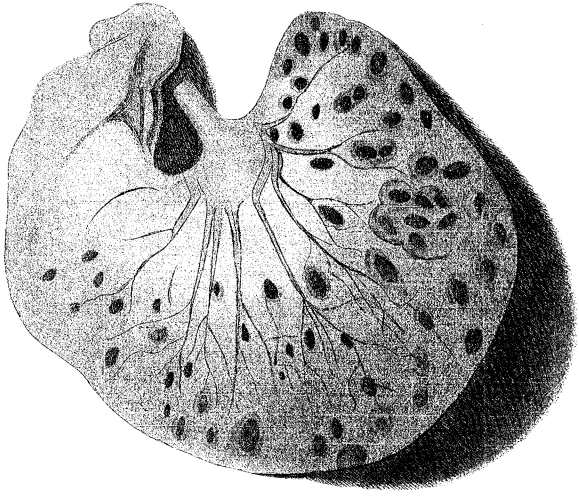

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Mode of Subdivision of the Cortical Surface.—As before, we have again arbitrarily divided the cortical surface into minute areas 2 mm. square, and thus 73 centres were formed and subjected to excitation. Altogether 23 experiments have been made, the animals being invariably anæsthetised with ether.

Anatomy.—The region explored comprised the gyrus coursing in front of the whole length of the precentral sulcus; the posterior third of the middle frontal convolution; the posterior half of the superior frontal convolution; the upper end of the ascending frontal convolution, and the whole of the ascending parietal, except the lower half of its anterior border.

Topography of Representation.

The parts of the body which are represented in the region thus defined are as follows, viz.:—

(*a.*) The head and eyes.

(*b.*) The lower limb.

(*c.*) The upper limb.

(*a.*) *Head and Eyes.*—The representation of the important movement of turning the head and eyes to the opposite side is situated in a broad zone extending up along the whole length of the precentral sulcus and over the posterior half of the middle and superior frontal convolutions respectively as far as the margin of the hemisphere.

(*b.*) *Lower Limb.*—The movements of the lower limb are represented in the posterior fifth of the superior frontal, the upper third of the ascending frontal, and the upper third of the ascending parietal convolutions.

(*c.*) *Upper Limb.*—In our former paper the account of the representation of the upper limb was necessarily incomplete, owing to its fusion with that of neighbouring centres. This we have now accomplished, and the area for the movement of the upper limb may consequently be defined as being centralised in the middle of the ascending frontal convolution, from which point it reaches into the middle frontal. Upwards it extends slightly into the superior frontal convolution and backwards over the lower two-thirds of the ascending parietal convolution as far as the intra-parietal sulcus.

General Conclusions.

By exploring the above-mentioned areas with minimal stimulation (see previous paper) we have ascertained—

(1.) The *Primary Movement.*

(2.) The *March, i.e.*, the sequence of movements following the primary movement.

(3.) The *Character of the Movements.*

These facts have been ascertained for each of the 73 centres examined. It is obviously impossible here to indicate even the general conclusions thus arrived at, owing to the large number of separate observations which cannot be briefly collated. Reference must therefore be directed to the original paper.

The expenses of the research were defrayed by a grant from the British Medical Association.

"The Influence of Stress and Strain on the Physical Properties of Matter. Part I. Elasticity—*continued.* The Velocity of Sound in Metals and a Comparison of their Moduli of Longitudinal and Torsional Elasticities as determined by Statical and Kinetical Methods."

By HERBERT TOMLINSON, B.A. Communicated by Professor W. GRYLLS ADAMS, M.A., F.R.S. Received April 29,—Read June 16, 1887.

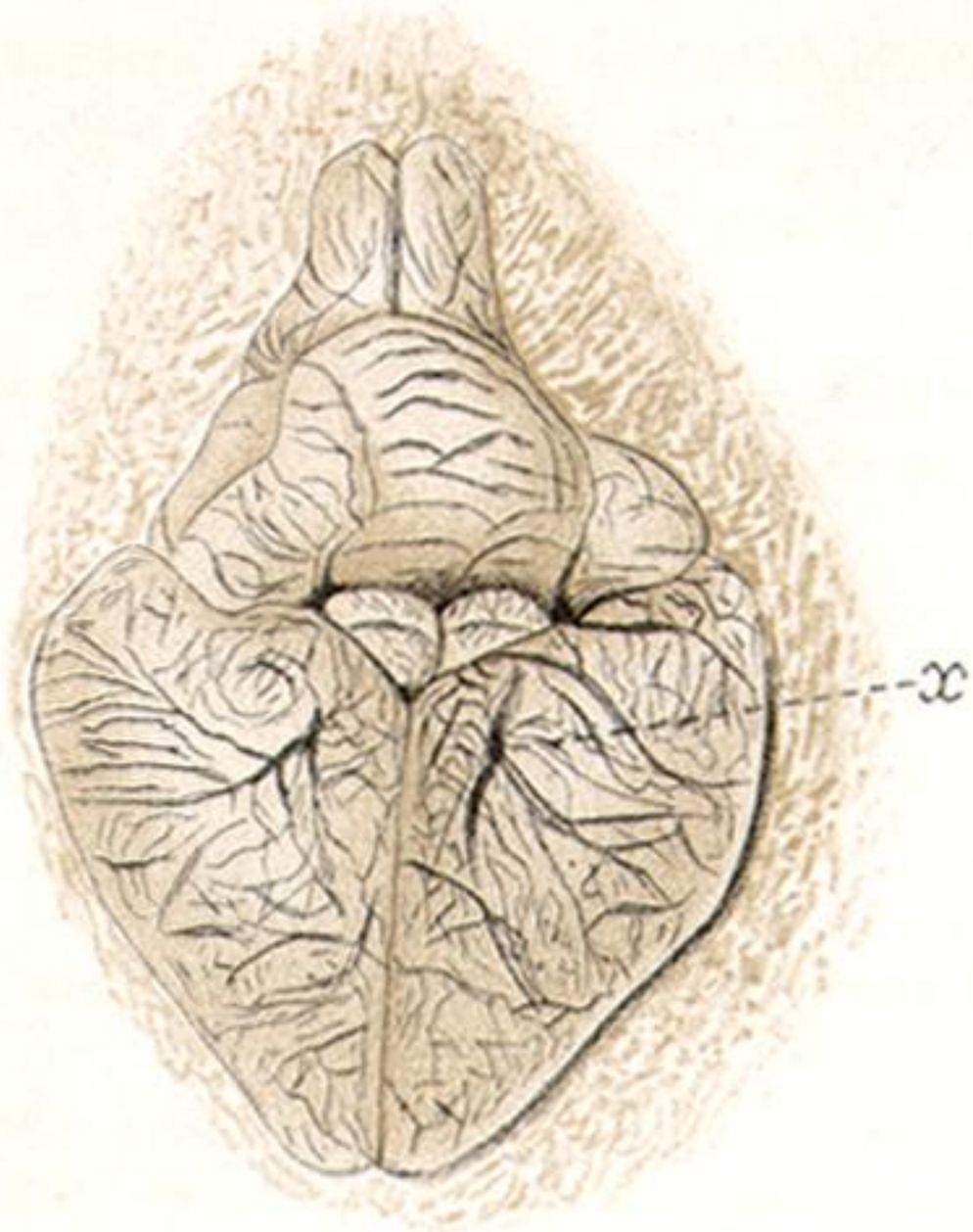
[PLATE 2.]

We owe to Wertheim* a series of carefully executed experiments on the longitudinal elasticity of metals both by statical extension and by longitudinal and transverse vibrations. From these researches it would appear that the values of the moduli of longitudinal elasticity as determined for several metals by the first of these three methods are, as might be expected, less than those obtained by the other two. The differences, however, are very much greater than can be accounted for by the heating and cooling effects of contraction and elongation, and the author has already pointed out what he believes to have been in a great measure the cause of these discrepancies.† As a few observations made with two or three different metals had seemed to him to show the possibility of obtaining more concordant results, he was encouraged to extend his investigations to other metals, and moreover to institute a comparison between the values of torsional elasticity which could be obtained by statical and kinetical methods. It had originally been the author's intention to use the same specimens of the various metals as were employed in his previous experiments on moduli of elasticity and electrical conductivity,‡ but on applying to Messrs. Johnson, Matthey and Co. to have these specimens fused and redrawn, he was informed that what was desired would be almost if not quite impossible, inasmuch as several of the metals if fused in small quantities would be rendered too brittle for the

* 'Annales de Chimie,' vol. 12, 1844.

† 'Phil. Trans.,' vol. 174, 1883 (Part 1), p. 14.

‡ *Loc. cit.*



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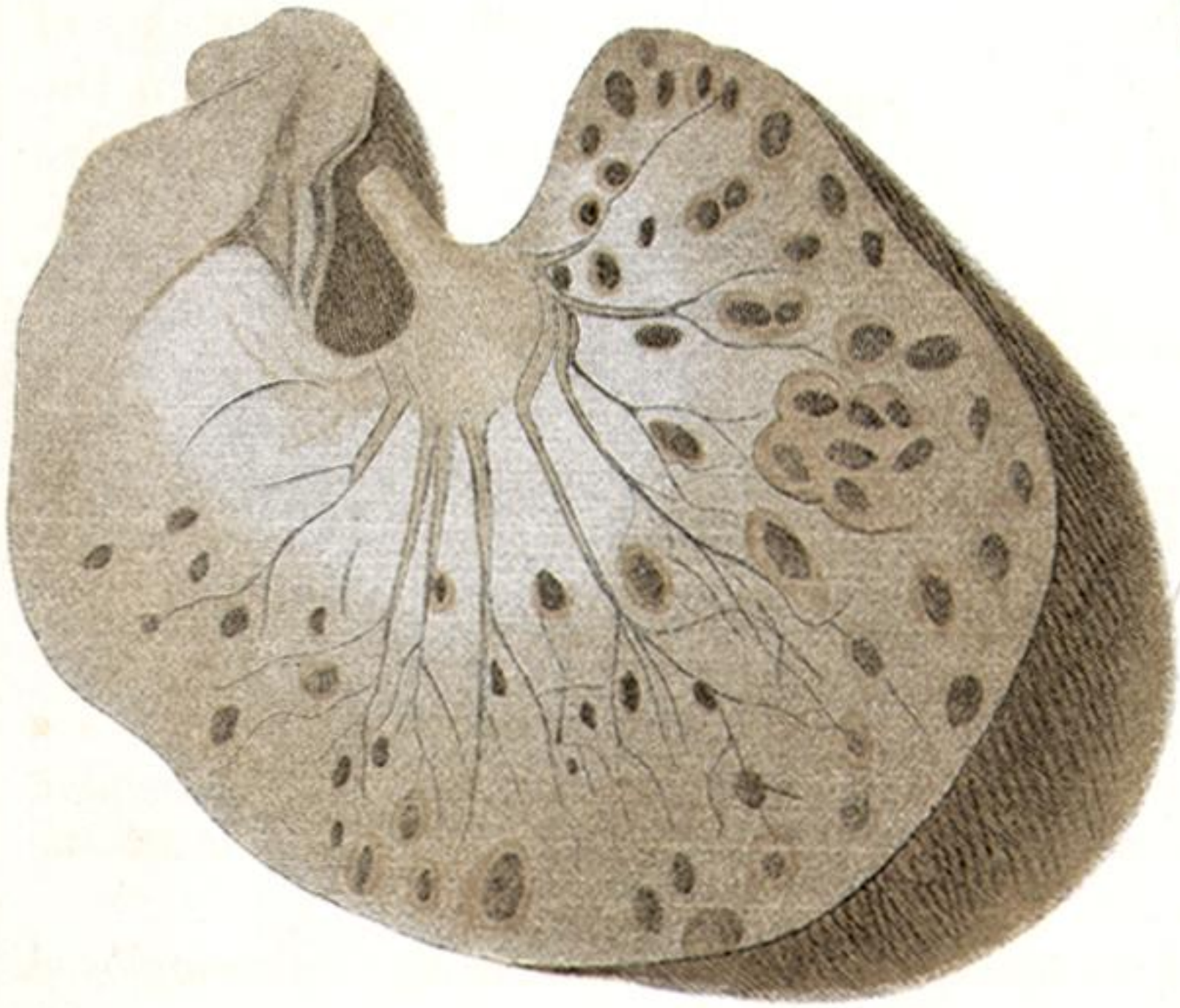

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EXPLANATION OF PLATE.

Fig. 1. Encephalon of rabid rabbit, intensely and unusually congested, the dura mater removed. The site of inoculation is perceptible at *x*, by slightly increased congestion.

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