the movements were reflex and in the other direct.

The fact that the ocular movements are still attainable on stimulation of the occipito-angular region, after complete removal of the frontal region, shows that they are not necessarily indicative of the association of those cortical centres, but may be due, if they are not always so, to the excitation of the oculo-motor centres of the corpora quadrigemina.

The occipito-angular region is the visual area of the cortex—complete destruction of this area in the one hemisphere causes permanent hemiopia to the opposite side by paralysis of the corresponding parts of both retinæ; while bilateral destruction causes complete and enduring blindness of both eyes. The sensibility of the eyeball is intact, and the ocular movements are absolutely unimpaired. There is no impairment of the sensibility or the motor power of the limbs. The other special senses are unaffected. If the destruction of the occipito-angular region is incomplete unilaterally or bilaterally, the resulting hemiopia in the one case is not enduring, nor is the blindness permanent in the other. Destruction of the angular gyrus, in combination with the occipital lobe, is the only lesion which causes a permanent result.

In a monkey in which Ferrier had completely destroyed both angular gyri, it was noted that for four days the animal was absolutely blind; then there were evidences of returning vision, and it was observed vision was better in every part of the periphery than in the centre. Objects held directly before the eyes and at a little distance were apparently not clearly seen and never laid hold of with precision; and the animal when examining any object always held it at full arm's length from its eyes. The phenomena observable in this animal were such as would be best explained by impairment or loss of central vision; for it is well known that when central vision is lost or impaired in man, objects are better seen at a distance than close at hand, and less distinctly when the eyes are immediately converged on them. It appears, therefore, that the symptoms resulting from bilateral destruction of the angular gyrus are best explained on the supposition that the angular gyri are more particularly related to the area of distinct vision, and accordingly with the macula lutea. The facts of disease in man render it necessary to assume that the region of the yellow spot is represented in each hemisphere, though more in that on the opposite side than on the same side, and the probability is that the area for clear vision is represented mainly in the angular gyrus of the opposite hemisphere. The results of Ferrier's experiments seem to show that the angular gyrus has relations with both eyes; the crossed action, however, is the only one which is clearly demonstrated in the lower animals.

A distinguishing test between tract and central hemiopia consists in determining whether a pencil of light thrown on the blind side of the retinæ induces contraction of the pupil or not. As the optic tract is the path of the fibres which excite pupilliary contraction through the oculo-motor centres, as well as those which excite visual sensation of the cortex, lesion of the optic tract will cause not only hemiopia, but also paralysis of the reflex reaction of the pupils to light; whereas lesion of the cortical centres will cause hemiopia, but leave intact the pupillary reaction.

There can be no question that in man and monkeys there is decussation of the optic tracts in the chiasma.

The angular gyri are more particularly the centres for clear vision, each mainly for the eye of the opposite side. Whether the other portions of the retinæ, upper, lower, outer, and inner, are specially represented in corresponding regions of the occipital lobe cannot be said as yet to have been established. It is doubtful whether there are on record any cases of strictly cortical lesions of the occipital lobe proper, accompanied by hemiopia, apart from direct or indirect implication of the optic radiations.

Irritative lesions of the angular gyrus occasionally give rise to optic illusions or flashes of light, followed by temporary amblyopia, while destructive lesions of the angular gyrus, more particularly in the left hemisphere, are generally associated with the special form of sensory aphasia termed word-blindness. Word-blindness is not necessarily accompanied by any noteworthy affection of visual sensation, though in some cases where the lesion of the occipito-angular region is more extensive, there may be