

CONSCIOUSNESS

such it is dependent on the normal structure of the corresponding psychic organ, the brain.

Physiological observation and experiment determined twenty years ago that the particular portion of the mammal-brain which we call the *seat* (preferably the *organ*) of consciousness is a part of the cerebrum, an area in the late-developed gray bed, or cortex, which is evolved out of the convex dorsal portion of the primary cerebral vesicle, the "fore-brain." Now, the morphological proof of this physiological thesis has been successfully given by the remarkable progress of the microscopic anatomy of the brain, which we owe to the perfect methods of research of modern science (Kölliker, Flechsig, Golgi, Edinger, Weigert, and others).

The most important development is the discovery of the *organs of thought* by Paul Flechsig, of Leipzig; he proved that in the gray bed of the brain are found the four seats of the central sense-organs, or four "inner spheres of sensation"—the sphere of touch in the vertical lobe, the sphere of smell in the frontal lobe, the sphere of sight in the occipital lobe, and the sphere of hearing in the temporal lobe. Between these four "sense-centres" lie the four great "thought-centres," or centres of association, the *real organs of mental life*; they are those highest instruments of psychic activity that produce thought and consciousness. In front we have the frontal brain or centre of association; behind, on top there is the vertical brain, or parietal centre of association, and underneath the principal brain, or "the great occipito-temporal centre of association" (the most important of all); lower down, and internally, the insular brain or the insula of Reil, the insular centre of association. These four "thought-centres," distinguished from the intermediate "sense-centres"