

peduncle. Sir Richard Owen makes use¹ of this and other facts connected with the extension of the pineal body into or towards the cranium in these Fishes and in Reptiles in support of the hypothesis that the conario-hypophysial tract represents the passage of the gullet to the neural aspect of the body and the formation of a neural mouth. But additional interest has quite recently attached to the pineal body by the discovery, as the result of independent research, both by H. W. de Graaf² and W. Baldwin Spencer³ during the year 1886 of a mesial pineal eye in the Lacertilia. By these naturalists the mesial foramen in the parietal bone in this group of Reptiles has been seen to be occupied by an eye, and Mr. Spencer has worked out in a number of species of Lizards the structure of this eye and its connections, from which it would appear that the pineal eye is connected by an elongated stalk or peduncle with the thalamencephalon. This peduncle grows out of the optic thalami; at first it passes upwards in the interval between the cerebral hemispheres and the optic lobes, and then runs forwards on the dorsal aspect of the cerebrum, to end in the mesial eye, situated in the parietal foramen.

In the Mammalia this apparatus has practically disappeared, and is represented only by the aborted structure which we call the pineal body, though it should be stated that in the Horse, as M. Chauveau has pointed out,⁴ it may occasionally assume larger dimensions, and project backwards so as almost to touch the cerebellum. But in the Seals to some extent, and in the Walrus in a more remarkable manner, the pineal body has retained a greater magnitude than is customary in Mammals. The direction, however, which this body takes in these Mammalia is different from that of the stalk of the pineal eye in the Lizards. For in these Reptiles the direction of the peduncle is at first upwards and then forwards, so as not to overlie either the optic lobes or the cerebellum, whereas in the Walrus and Seals the direction of growth is always backwards. Two factors may operate in the cranial cavity of the Walrus and Seals to induce the backward direction to which I have referred, viz., the growth of the tense unyielding tentorium, and the backward development of the hemispheres of the cerebrum. Through lying subjacent to the tentorium the growth of the elongated pineal body in the direction either of the parietal bone or of the superior part of the occipital bone is effectually prevented, and the only course which it can take is towards the cerebellar region of the occiput. Similarly the posterior development of the cerebral hemispheres, which overlie both the optic lobes and the cerebellum, would by the compression of the pineal body between the cerebrum and cerebellum assist in giving it a backward direction. It is possible, also, that these same factors may operate in producing the aborted condition of this body which one finds in the Mammalia as compared with the Lizards. For the pressure exercised by the growth

¹ *Rep. British Assoc.*, York, 1881, p. 719; *Aspects of the body in Vertebrates and Invertebrates*, Lond., 1883.

² *Zool. Anzeiger*, March 29, 1886.

³ *Quart. Journ. Micr. Sci.*, October 1886.

⁴ *Traité d'Anatomie comparée des animaux domestiques*, 1857, p. 650, fig. 177.