

Topic Brain of Birds (e.g. pigeon).

The brain of birds shows a considerable advance over that of reptiles. In shape it is short, broad and rounded. The olfactory lobes are extremely small and degenerate due to poor sense of smell. The cerebral hemispheres are very large and covers the olivoccephalon and optic lobes. Its size is due to enlargement of the corpus striatum rather than the cerebral cortex. The cerebral cortex is smooth. The size of corpus striata makes the lateral ventricles small. The olivoccephalon is covered dorsally by the cerebral hemispheres and cerebellum. It has a small dorsal pineal body, an anterior choroid plexus and a narrow third ventricle. The thalami are highly developed and are connected by fibres to the corpus striata and spinal cord.

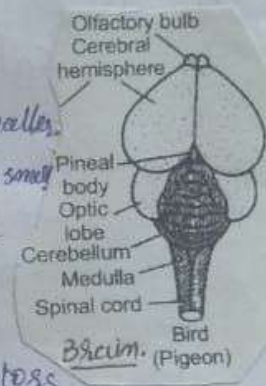
The midbrain is highly developed with exceptionally large rounded optic lobes. This seems to be correlated with the remarkable powers of sight that birds possess.

The cerebellum is larger than in reptiles and is deeply fissured, although it is not as large as in mammals. Ventral to cerebellum, the avian brain shows the beginning of the development of a pons. In the cerebellum masses of nerve cell bodies form nuclei so that it has outer layers of gray matter and an inner mass of white matter, forming a branching pattern called arbor vitae. A small projection of the fourth ventricle extends into the cerebellum. It controls equilibrium and movements in all planes during flight. ~~the~~

The medulla oblongata is broad in front and narrow behind. There is a well-marked ventral flexure, where it passes into the spinal cord. It encloses the fourth ventricle or myelocoel, which communicates with the 3rd ventricle of the brain in front and the central canal of the spinal cord behind. The thin roof of this cavity forms the posterior choroid plexus. The later is entirely covered by the cerebellum. The sides and floor of the fourth ventricle are thick.

Functions.

1. Olfactory lobes control the smell. These are smaller in size, therefore birds are less dependent upon smell.
2. Cerebrum controls the voluntary functions of the body.
3. Cerebrum has a number of sensory areas to receive the sensory stimuli from the receptors and to interpret them.
4. Cerebrum is the seat of will power, memory and intelligence.
5. Corpora striata control instinctive behaviour.
6. Optic thalami act as relay centres and conduct the nerve impulses to cerebrum.
7. Diencephalon coordinates involuntary functions of body.
8. Infundibulum forms a part of pituitary gland.
9. Anterior choroid plexus secretes cerebro-spinal fluid.
10. Pineal body acts as an endocrine gland and secretes melatonin hormone to control the synthesis of melanin in the pigment cells.
11. Cerebellum coordinates voluntary movements.
12. Cerebellum maintains equilibrium during flight due to highly developed power of muscular coordination.
13. Medulla controls the involuntary visceral functions through a number of centres like cardiac centres, respiratory



coarctes etc.

14. posterior choroid plexus secretes cerebrospinal fluid
15. pons varolii coordinates the muscles of two sides of the body.

In some birds, a band of transverse nerve fibres, called pons, is developed on ventral side of cerebellum. Its nerve fibres connect in cerebellum with cerebral cortex.
