

## Topic    BRAIN OF MAMMALIA

The brain reaches its highest development in mammals with better integration and mastery over the environment. The cerebral hemispheres reaching in status of a dominant integrating part of the brain and acting as coordinating centres of the brain. The cerebral hemispheres in prototheria are smaller and smooth like that of reptiles. In metatheria, they are larger and smooth. In most eutherians, the cerebral hemispheres are immense, projecting forwards above the olfactory lobes and backwards above the olivacephalon and midbrain and divided into lobes. They have convolution on the surface so that there are ridges or gyri and depressions or sulci. The outer layer or cortex of the cerebrum is composed of gray matter. The right and left cerebral hemispheres are connected with one another by a broad white commissure, called the corpus callosum. The olfactory lobes are small compared with those of lower vertebrates.

The olivacephalon consist of a dorsal epithalamus, a lateral thalamus, and a ventral hypothalamus. A pineal gland is present on the roof of the olivacephalon, but it shows no eye-like structure. Thalamus is an important relay centre. Hypothalamus is very important in mammals and consist of four parts. These are the infundibulum forming the stalk and posterior lobe of the pituitary, the optic chiasma, where right and left optic nerves cross enroute to the brain; and the mammillary bodies, which integrate olfactory impulses. The hypothalamus

controls a great many mammalian functions including blood pressure, sleep, water content, fat and carbohydrate metabolism, body temperature and possible rhythmic activities such as moult, migration and pituitary secretion.

The midbrain in mammals is of less importance than in lower vertebrates, in which it is really the brain centre. It is divided into four prominences, called the corpora quadrigemina. The two superior lobes are concerned with sight, whereas the inferior lobes are probably concerned with hearing. The III Ventricle or iter of midbrain is a laterally compressed vertical passage called the cerebral aqueduct.

The Cerebellum, which is the centre of control of body movement, is most highly developed in mammals. Its surface is convoluted and it is divided into a number of lobes: central lobe or vermis, two lateral lobes and two outer floccular lobes. Beneath the cerebellum is a typical mammalian structure the pons. This relay centre is a conspicuous feature of the ventral midbrain. Pons Varolii have crossing or decussating fibres connecting opposite sides of the cerebellar cortex. These are the transverse nerve fibres.

The medulla oblongata lies ventrally, and much thickened. It has a dorsal posterior choroid plexus below which is the fourth ventricle joined in front to the iter and behind to the central canal. The medulla has centres for regulation of digestion, respiration and circulation.

