

The peripheral portion of the sympathetic nervous system is characterized by the presence of numerous ganglia and complicated plexuses. These ganglia are connected with the central nervous system by three groups of sympathetic efferent or preganglionic fibers, *i. e.*, the **cranial**, the **thoracolumbar**, and the **sacral**. These outflows of sympathetic fibers are separated by intervals where no connections exist. The cranial and sacral sympathetics are often grouped together owing to the resemblance between the reactions produced by stimulating them and by the effects of certain drugs. Acetyl-choline, for example, when injected intravenously in very small doses, produces the same effect as the stimulation of the cranial or sacral sympathetics, while the introduction of adrenalin produces the same effect as the stimulation of the thoracolumbar sympathetics. Much of our present knowledge of the sympathetic nervous system has been acquired through the application of various drugs, especially nicotine which paralyzes the connections or synapses between the preganglionic and postganglionic fibers of the sympathetic nerves. When it is injected into the general circulation all such synapses are paralyzed; when it is applied locally on a ganglion only the synapses occurring in that particular ganglion are paralyzed.

Langley,¹ who has contributed greatly to our knowledge, adopted a terminology somewhat different from that used here and still different from that used by the pharmacologists. This has led to considerable confusion, as shown by the arrangement of the terms in the following columns. Gaskell has used the term involuntary nervous system.²

Gray.	Langley.	Meyer and Gottlieb. ³
Sympathetic nervous system.	Autonomic nervous system.	Vegetative nervous system.
Cranio-sacral sympathetics.	Parasympathetics.	Autonomic.
Oculomotor sympathetics.	Tectal autonomies.	Cranial autonomies.
Facial sympathetics.	Bulbar autonomies.	
Glossopharyngeal sympathetics.		
Vagal sympathetics.		
Sacral sympathetics.	Sacral autonomies.	Sacral autonomies.
Thoracolumbar sympathetics.	Sympathetic.	Sympathetic.
	Thoracic autonomic.	
Enteric.	Enteric.	Enteric.

THE CRANIAL SYMPATHETICS.

The **cranial sympathetics** include sympathetic efferent fibers in the oculomotor, facial, glossopharyngeal and vagus nerves, as well as sympathetic afferent in the last three nerves.

The **Sympathetic Efferent Fibers of the Oculomotor Nerve** probably arise from cells in the anterior part of the oculomotor nucleus which is located in the tegmentum of the mid-brain. These preganglionic fibers run with the third nerve into the orbit and pass to the ciliary ganglion where they terminate by forming synapses with sympathetic motor neurons whose axons, postganglionic fibers, proceed as the short ciliary nerves to the eyeball. Here they supply motor fibers to the Ciliaris muscle and the Sphincter pupillæ muscle. So far as known there are no sympathetic afferent fibers connected with the nerve.

The **Sympathetic Efferent Fibers of the Facial Nerve** are supposed to arise from the small cells of the facial nucleus. According to some authors the fibers to the salivary glands arise from a special nucleus, the superior salivatory nucleus, consisting of cells scattered in the reticular formation, dorso-medial to the facial nucleus. These preganglionic fibers are distributed partly through the chorda tympani and

¹ Schäfer. Textbook of Physiology, 1900.

² Gaskell, W. H., The Involuntary Nervous System, London, 1916.

³ Die Experimentelle Pharmakologie, 1910.