

From the description given it will be seen that the largest nerve roots, and consequently the largest spinal nerves, are attached to the cervical and lumbar swellings of the medulla spinalis; these nerves are distributed to the upper and lower limbs.

Connections with Sympathetic.—Immediately beyond the spinal ganglion, the anterior and posterior nerve roots unite to form the **spinal nerve** which emerges through the intervertebral foramen. Each spinal nerve receives a branch (**gray ramus communicans**) from the adjacent ganglion of the sympathetic trunk, while the thoracic, and the first and second lumbar nerves each contribute a branch (**white ramus communicans**) to the adjoining sympathetic ganglion. The second, third, and fourth sacral nerves also supply white rami; these, however, are not connected with the ganglia of the sympathetic trunk, but run directly into the pelvic plexuses of the sympathetic.

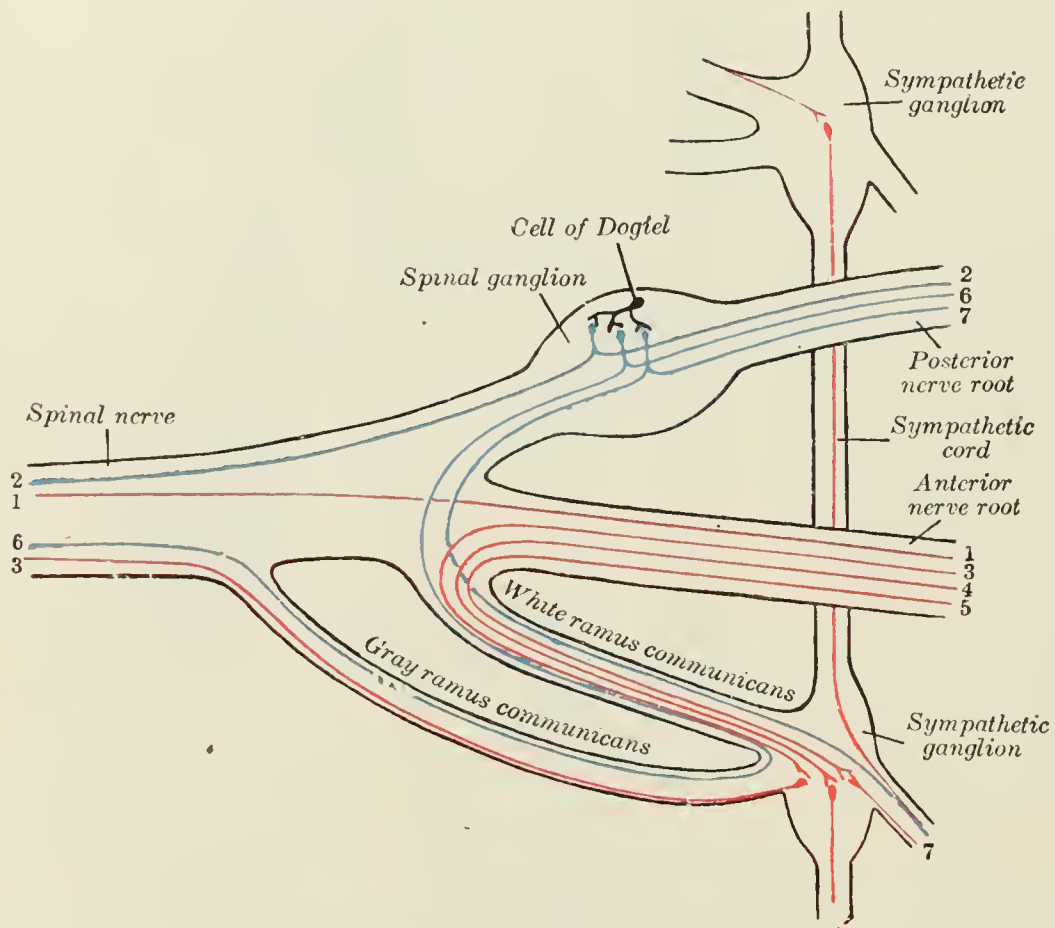


FIG. 799.—Scheme showing structure of a typical spinal nerve. 1. Somatic efferent. 2. Somatic afferent. 3, 4, 5. Sympathetic efferent. 6, 7. Sympathetic afferent.

Structure.—Each typical spinal nerve contains fibers belonging to two systems, viz., the **somatic**, and the **sympathetic** or **splanchnic**, as well as fibers connecting these systems with each other (Fig. 799).

1. The **somatic fibers** are efferent and afferent. The *efferent fibers* originate in the cells of the anterior column of the medulla spinalis, and run outward through the anterior nerve roots to the spinal nerve. They convey impulses to the voluntary muscles, and are continuous from their origin to their peripheral distribution. The *afferent fibers* convey impressions inward from the skin, etc., and originate in the unipolar nerve cells of the spinal ganglia. The single processes of these cells divide into peripheral and central fibers, and the latter enter the medulla spinalis through the posterior nerve roots.

2. The **sympathetic fibers** are also efferent and afferent. The *efferent fibers*, preganglionic fibers, originate in the lateral column of the medulla spinalis, and are conveyed through the anterior nerve root and the white ramus communicans to the corresponding ganglion of the sympathetic trunk; here they may end by forming synapses around its cells, or may run through the ganglion to end in another of the ganglia of the sympathetic trunk, or in a more distally placed ganglion