

life of the ganglion cells of the anterior horn is in a certain degree dependent on the integrity of the corresponding afferent neurones, which influence them in some way.

So long as the nucleus has not escaped from the cell-body there is some hope for the neurone, so that in this case the cell is not necessarily doomed as is the nerve fibre beyond the point of section. Of course degeneration may sometimes go on to the actual death of a large proportion of the cells in any nucleus.

Figure 12 illustrates this. On the left one may see a representation of a normal lateral geniculate body; on the right the cell bodies are atrophic, or have entirely disappeared in consequence of an extensive lesion in the temporal and occipital lobes of the corresponding side.

Turning again to normal anatomy and physiology it is clear that by means of these recent investigations on the neurones, we have been able to get a truer classification of nerves and a juster conception of brain nuclei.

An examination of Figure 13, which is a schematic representation of the trigeminal nerve, shows that it is not essentially different in its sensory part from an ordinary spinal afferent nerve. The Casserion ganglion corresponds to the spinal ganglion, but of course here represents really an aggregation of three ganglia. Its afferent axones pass inwards as do the posterior roots of the spinal nerve and, as in the last case, divide each into two branches which arborise around a new set of neurone bodies, constituting a form of grey matter known as *substantia gelatinosa*. Such a centre is plainly very different from an ordinary *motor nucleus*. The former may be designated a nucleus of termination, the latter a nucleus of beginning. The motor

FIG. 9. Wallerian or secondary degeneration of nerve fibres after section. i, normal nerve fibre; ii and iii, fibres showing different degrees of degeneration; S, neurilemma; m, medullary sheath; A, axone; k, nucleus of neurilemma cell; L, marking of Lautermann; R, node of Ranvier; mt, drops of myelin; a, remains of axone; w, proliferating cells of neurilemma. Somewhat schematic (after Thoma).

portion of the 5th nerve represented in this figure springs from an ordinary collection of motor ganglion cells such as one finds in the anterior horns of the spinal cord, while its axones form an ordinary motor nerve answering exactly to a motor nerve of the spinal region. Sometimes, as in the case of the vagus nerve, the ganglion may be some little distance down on the trunk and the cell bodies therein of a form corresponding to that in the spinal ganglia of the immature animal; that is to say, bipolar.

In Figure 14, a number of interesting relations are diagrammatically represented in a form necessary to the neurone concept. On the right