CHAPTER II

The Sensory Innervation of Muscles and Tendons

A schematic account of both the motor and sensory innervation of the muscles of cat is first. To others's theories close study. In details will be discussed under separate headings, the nerve-end formations under the receptors having already been dealt with.

THE MUSCLE SPINDLE

General Description

The two kinds of the muscle-specific afferents and on the intrafusal fibers, described in the previous chapter. The longer sensory afferent fibers vendor was found by Sherrington (1894) to derive from the annulo-spiral terminals encircling the central bag. The term annulo-spiral is Ruffini's (1898, 1899, 1918 [6]) but sometimes the synonymous term "primary endings" or "primaries" is in use used, adopted or suggested by Herbert (1948). He pointed out that Ruffini's "annulo-spiral" or "flower-spray" endings the are necessarily differ from the primaries except in location (as for example Boyd, 1962). To find Ruffini's main work not listed on orbital spindles were studied which are less in which there endings may be found in the medial part of the bag (Barker & Ip, 1963), which shows the secondaries are ending around the bag's middle region in which the appearance of nuclei is showing out into a single row. The nuclear no (Gerrits, 1956) of all these "secondary" endings" is seen typically adequate only for the exact case of cavities with pure bag, as noted there. This is, nevertheless, an important case because in the orbital at least, sparsely polar and gamma-motor-typically contain on the central bag intrafusal fiber (Ada & Barker, 1963) in one to each of these cases. In finality to have an effect on its own type of sensory ending. Barker (1948) gave a very good description of the secondary type (Barker and Ip [Hunter-Penfield] and pointed out that the different nerves tended to be thinner (5-8 μ) than those of the primaries. To [1], an observation later confirmed by many authors.

Ruffini, working on cat soleus, described them on the basis of their characteristic innervation by one or two fibers as well as their very close ending nearly exactly like the fusiform. All this classification was supported by Barker, [1] found on the relative number of primaries (P) and secondaries (S). The motor organ was P alone is often found in soleus as with short intrafusal fibers, for instance at the end of hamstrings and such muscles as tensor (Cooper & Daniel, 1963), semimembr, P plus S, about

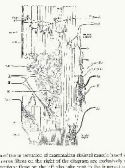

Fig. 16. Schematic illustration of innervation of mammalian muscle spindles as seen in cat soleus. Fusiform fibers in the middle of the drawing are indicated by crossed with intrafusal innervation from motor. At the sides next to the tendons the fusiform fibers become successively thinner and finally terminate in the tendon. Sensory endings are shown on the left side of the drawing. Primary endings (annulo-spiral endings) are seen spirally wrapped around the central part of the fusiform fibers. Secondary endings (flower-spray endings) are seen on the right side of the drawing. Motor endings are shown on the right