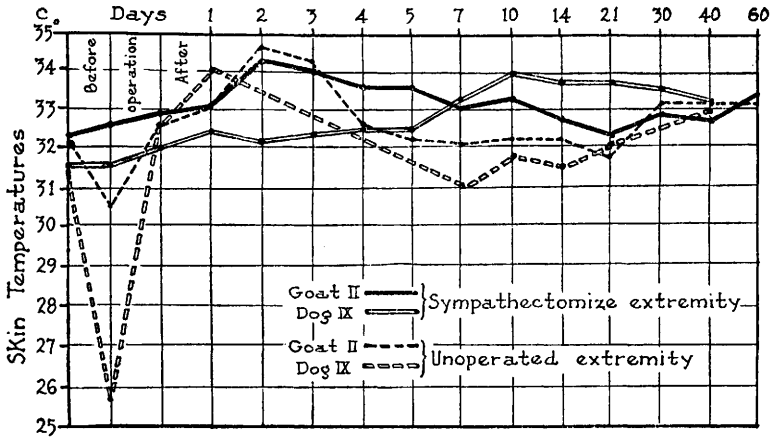

FIG. 1.

conducted upon normal animals and to overcome this objection a precisely parallel experiment to the human cases of residual paralysis in anterior poliomyelitis was sought, and from Doctor Hudson of the bacteriological department of the University of Chicago a half grown monkey with open epiphyses and complete symmetrical residual paralysis of both lower extremities from anterior poliomyelitis was obtained. The same procedures have been carried out upon this animal, but too short a time has elapsed to draw any definite conclusions. At present (2 months after the operation) the growth (0.2 cm. in both tibiae) has been too small to permit accurate comparative measurements.

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Fiber Connections of Clarke's Column (Nucleus Dorsalis)

I. J. PASS. (Introduced by A. T. Rasmussen.)

From the Department of Anatomy, University of Minnesota.

The anatomical and functional relationships of Clarke's column *(Nucleus dorsalis)* have been long disputed. Several men, upon the basis of comparative studies, have argued that it is visceral sensory. In fishes, this cell column connects with a well demonstrated visceral sensory nucleus in the cerebellum. Furthermore, Clarke's column is found in the thoracic and upper lumbar levels, just where visceral afferent fibers are relayed into the cord via the white rami.

Most modern authors, however, assume that Clarke's column is somatic afferent because it contributes fibers to the spino-cerebellar tracts which terminate in the cerebellar cortex.

The real nature of Clarke's column must be determined by its peripheral connections as well as by the termination of the fibers arising from it. In connection with the first point, we have found that section of the dorsal roots of the large nerves of the hindlimb of the cat (which contain practically no visceral afferent fibers), shows by the Marchi method, after 10 days to 2 weeks of degeneration, many fine degenerated fibers swinging into the lower end of Clarke's column.

In regard to the second point, we have succeeded in obtaining in several cats, small well-circumscribed lesions which throw light upon the course of the fibers leaving Clarke's column. In one cat we were so fortunate as to destroy completely one nucleus without involving any adjacent gray matter. Marchi preparations of this animal's cord showed numerous degenerated fibers swinging out toward each lateral column. Sections above the lesion showed these fibers becoming concentrated in the spino-cerebellar tracts which terminate largely in the vermis. A second cat in which parts of both nuclei alone were destroyed, gave similar results. These facts considered together, support the proprioceptive nature of Clarke's column, unless one postulate the existence of a cerebellar visceral sensory nucleus in the cat.

Our work further clarifies the problem of the course of the fibers arising from Clarke's column. A unilateral lesion, destroying one nucleus and passing ventrally to the central canal so as to interrupt all fibers crossing from the opposite nucleus, gave equal numbers of degenerated fibers in Flechsig's tract of each side, indicating, apparently, that all the fibers arising from this cell column in the cat cross to the opposite side. This conclusion was further verified by a lesion which passed between the 2 nuclei without destroying any significant part of either one, but completely interrupting the dorsal gray commissure. This lesion resulted in equal numbers of degenerated fibers on both sides of the cord. The number of fibers was equal to that obtained from a complete destruction of the nucleus of one side, plus the dorsal gray commissure over the same longitudinal extent and at the same level of the cord.