lone was injected once a week for the period of 8 weeks. In the control cases in which prednisolone was not given, nerve regeneration was impaird by scar formation. In the "prednisolone" cases the axons were found to be regenerating neatly into the lumen of the arterial graft.

In conclusion, it has been found that early neurolysis, early washing of the injected locus and administration of prednisolone and Durabolin are effective on regeneration of the nerve paralyzed by experimental drug injection.

35. On the Changes of the Blood Pressure, Respiratory Movements, Cardiac Movements and so on due to the Electrical Stimulation of the Hypothalamus, Midbrain and Medulla Oblongata in Cats

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Observations were made on 112 cats under nembutal (25-35 mg/k) anesthesia. Using the stereotaxic instruments the changes of the blood pressure, respiratory movements, cardiac movements, and so on caused by the electrical stimulation (square wave) of the hypothalamus, midbrain and bulb were observed. In order to trace the points of the electrode in brain, the Nissl's staining method was used.

The points of the rise in blood pressure were located at the ventral and medial parts of the hypothalamus and at the anterior and dorsal parts of it there were seen the fall in blood pressure. In midbrain the rise in blood pressure were seen only at the points in the central gray matter. In bulb at the level of the rostral section of the olivary nucleus the rise responses in blood pressure were seen at points in the central gray matter and the lateral part of the reticular formation, and the fall responses were found at the medial part of the reticular formation.

The points of the acceleration of the respiratory movements were located at the anterior and medial parts of the hypothalamus and the inhibitory responses were seen at the dorsal and posterior parts of it in general. At the points of the reticular formation in midbrain clear inhibitory responses were obtained in respiratory movements. In bulb, contrary to the responses of the blood pressure, the acceleratory responses were obtained at the medial part of the reticular formation

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and the inhibition at the lateral part of it.

The acceleration of the endopressure in cardia were found at the points of the lateral part of the hypothalamus. In bulb the points of the acceleration in cardia were gathered at the central gray matter and the medial part of the reticular formation.

36. Neurophysiological Studies of Spasticity

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In order to analyse the mechanism of spasticity following hemisection of the spinal cord, experiments were carried out on 24 adult cats.

Observations were made 4 to 28 weeks after the hemisection of the spinal cord at the level of Th8.

1. Marked augmentation of monosynaptic as well as polysynaptic reflexes by stimulation of either the tibial or peroneal nerves were observed in the hemisected side without exception.

2. Early recovery curves of extensor monosynaptic reflexes were obtained in the hemisected side which may be another expression of the augmented monosynaptic reflex activities. Intensified post tetanic potentiation was also observed in the hemisected side, although its duration was somewhat shorter in the hemisected side than in the control side.

3. As to the results obtained by means of intracellular microelectrode technique, motoneurones in the hemisected side showed a tendency of more rapid decline of resting membrane potentials and action potentials.

However, the most striking result was that as many as 27 among 43 motoneurones (62.8%) in the hemisected side showed reflex discharges following stimulation of both extensor and flexor afferent nerve fibers, whereas none in the control side showed such dual responses.

This may be direct physiological evidence to indicate that collateral sprouts from dorsal sensory nerve fibers have made aberrant connections with motoneurones.

4. No significant difference in the discharge patterns of gamma motoneurones was observed between hemisected and control sides, excepting the fact that 5 among 29 gamma motoneurones (17.6%) in the hemisected side showed reflex discharges following stimulation of both the tibial and peroneal nerves.

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