D. N. Nasonov and collaborators have recently [3] questioned the existence of subordinating influences of the central nervous system on the physiologic properties of the peripheral nerve trunks. Their views were based on the fact that subordinating influences had been demonstrated by the use of transection or ligation of the nerve. Since such interference with the nerve represents not only interruption of connection of its distal part with the central nervous system but also a traumatic influence inflicted on the nerve itself, the changes in the physiologic properties of the nerve induced by such procedure may be the result not only of interruption of its connection with the brain but also of trauma to the nerve itself.

The question concerning the existence of subordinating influences of the central nervous system on the nerve can only be resolved by such experiments in which action is directed against the central nervous system with preservation of its connection with the nerve under investigation, i.e., without transection or ligation of the latter.

Experiments of this sort have been described by P. E. Motsnyi [2] who concludes that Sechenov inhibition as well as direct stimulation of the sympathetic trunk in frogs lead to lowering of accommodation of the sciatic nerve. However, the conclusions made by the author do not follow from his data as we found on analysis of the myograms presented in his paper. Motsnyi assesses the accommodation of the nerve by the ratio of two values—the height of muscular contraction in a nerve-muscle preparation in response to stimulation of the nerve with square-wave current (Nₜ) and the height of such contraction in response to stimulation of the nerve by exponential current of a certain height (Nₑ), i.e., Nₜ : Nₑ.

As the author mentions, Nₜ is an index of excitability and Nₑ an index of accommodation. This method is permissible, although it is more expedient to measure accommodation not with a single gradient of current rise, but several, since that determines the whole accommodation curve. But when such a method is used it is necessary to take into account that a change in the ratio Nₜ : Nₑ indicates a change brought about by a change in Nₑ. The myograms presented in Motsnyi's work however, show that in his experiments Nₑ and not Nₑ underwent changes, while the latter remained almost unchanged. Consequently, the changes described in Motsnyi's paper refer not to accommodation but to the excitability of the nerve on square-wave stimulation. This, of course, does not exclude the possibility that changes in accommodation also took place; but determination of several points along the accommodation curve, which was not done by the author, is necessary for detailed judgement.

The question regarding subordinating influence of the higher centers on the rate of accommodation of peripheral nerve thus remains open and still requires experimental confirmation.

EXPERIMENTAL METHODS

In our experiments the subordinating influence of the higher centers on the accommodation of peripheral nerve was investigated with determination of the accommodation curve using 4 gradients of stimulating current.
rise, viz.; successive connection of capacities of $1/1000$, $1/100$, $1/10$ and $1 \mu f$. Prior to determination of the excitability threshold of the nerve with respect to these gradients its threshold with respect to square-wave stimulation (rheobase) was measured; minimal contraction of the muscle served as index. Experiments were performed on thalamic frogs (extraction of cerebral hemispheres by the I. M. Sechenov method). We studied changes in accommodation in the presence of Sechenov inhibition (application of a crystal of rock-salt to the sectioned optic thalami for 2 minutes) and also on stimulation of the skin of the dorsal surface of the shin by applying to it a piece of filter paper ($1 \times 1 \text{ cm}$) moistened with a 0.5% solution of sulfuric acid. The preparation was placed into a moist chamber; the experiments were begun 1-1$rac{1}{2}$ hours later. In the early experiments stimuli were applied at 1 minute intervals during the determination of the rheobase and accommodation; in subsequent experiments half-minute intervals were used since this did not affect the values obtained.

**EXPERIMENTAL RESULTS**

Our experiments demonstrated that in the presence of Sechenov inhibition marked lowering of accommodation takes place, chiefly with respect to stimulating currents of small gradient; with capacities of $1/10$ and $1 \mu f$ the threshold is halved and more. The rheobase is lowered slightly, by approximately 25-30%. Unlike P. E. Motnyi, we observed these changes over a prolonged period; after removal of the salt crystal from the sectioned optic thalami the changes continue to grow and then slowly diminish and return almost to the initial values after 40-60 minutes (Fig. 1, A). The fact that Motnyi observed a change in the ratio $N_2 : N_4$ only during stimulation of the sectioned optic thalami is probably accounted for by the fact that he did not determine the whole accommodation curve but only one of its points which, moreover, was close to the rheobase.

![Fig. 1. Effect of Sechenov inhibition on accommodation of the sciatic nerve in frog. A) Thalamic preparation. Nerve accommodation curve; 1) before and 2) during Sechenov inhibition; 3) 10 minutes after and 4) 25 minutes after removal of rock-salt from optic thalami. B) Thalamic preparation. Similar experiment with nicotine-blocked sympathetic trunk; 1) before and 2) during Sechenov inhibition.](image-url)

Slowing of accommodation in Sechenov inhibition is also noted when the spinal cord is transected in the lower thoracic region. Following painting of the sympathetic trunks with a 1% solution of nicotine, Sechenov inhibition no longer induces a change in nerve accommodation (Fig. 1, B); in this respect our data diverge from Motnyi's data who continued to observe the described phenomenon after section of all r.r. communicantes leading to the sciatic nerve.