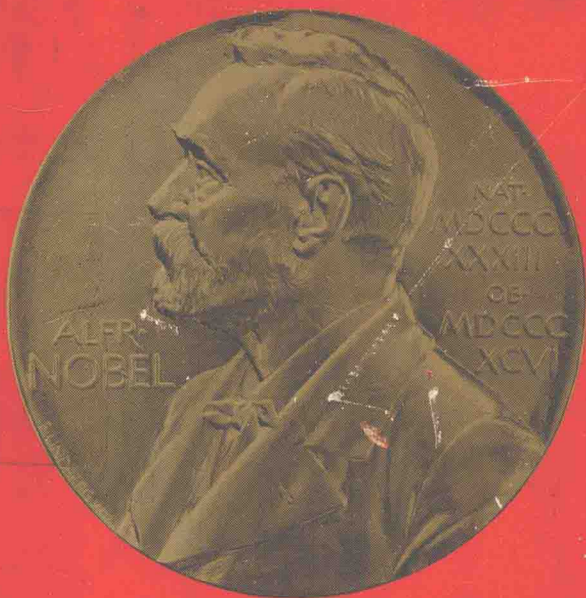


# Nobel Symposium I

## Muscular Afferents and Motor Control

Edited by

RAGNAR GRANIT



Almqvist & Wiksell Stockholm

# Muscular Afferents and Motor Control

*Proceedings of the First Nobel Symposium  
held in June 1965 at Södergarn on the island  
of Lidingö in the County of Stockholm*

*Edited by*

**RAGNAR GRANIT**

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## Preface

The idea of starting Symposia as a form of activity run by the Nobel Foundation was discussed at meetings between the Board of Directors of the Foundation and members representing the Nobel Committees appointed by the institutions responsible for the Awards. In particular and for obvious reasons it has interested the two scientific institutions, the Royal Swedish Academy of Science voting the prizes in Physics and Chemistry, and the Royal Caroline Medico-Surgical Institute which elects the prize winners in Physiology or Medicine. Lord Adrian (below, p. 15), in his inaugural address to this Symposium, has also spoken highly of this initiative, and nowadays all scientific workers are agreed on the value of such meetings, provided they be designed so as to keep the number of active participants modest, the subject reasonably restricted and the matching of participants to subject is given due consideration.

The First Nobel Symposium is an experiment designed to put these principles into practice. The Royal Swedish Academy of Science initiated a chain reaction when it decided to place at my disposal 20,000 Sw.Kr. for this purpose. Soon the Caroline Institute and the Board of Directors of the Nobel Foundation followed suit and together added half that amount. The Swedish Medical Research Council declared itself prepared to support travelling expenses for a number of invited guests. Finally the Svenska Handelsbanken made the extremely handsome offer of placing at the disposal of the Symposium 'Södergarn', its centre for recreation and residential courses on the island of Lidingö, 20 minutes by car from Stockholm. This offer was gratefully accepted and Södergarn provided the Symposium with board and lodging, a lecture hall, conference rooms, lovely weather, open country and delightful walks along the shore of the Askrike fjord.

The Bank added to its generosity by entertaining the Symposium at a dinner in their headquarters overlooking the old harbour of Stockholm. After dinner President Browaldh of the Svenska Handelsbanken delivered a much-appreciated discourse on the structure and problems of modern Sweden.

The theme of the First Nobel Symposium links up with that of the Symposium held at the Golden Jubilee of Hong Kong University in 1961. Professor David Barker (Durham), then at Hong Kong, was responsible for the initiative and the organization of that meeting and its proceedings were published as



the book *Symposium on Muscle Receptors* (Ed. D. Barker, Hong Kong University Press, 1961). The Nobel Symposium represents an expansion of the subject to include 'motor control', meaning that the role of the central nervous system was to be given greater prominence than was the case at Hong Kong. It will emerge from the present volume that since 1961 a great deal has been added to our subject, new experiments, fresh ideas, constructive thinking. Thus the Nobel Symposium was fully justified in having been called into existence, also with due regard to scientific matters alone.

The Inauguration (see below) of the Nobel Symposium took place at the Royal Swedish Academy of Science. After the formal ceremonies, the two first papers of these Proceedings were presented. The others were read and discussed at Södergarn, in their present order of appearance.

It was decided not to publish the lively discussions that took place, unless the discussants themselves wanted it and were prepared to deliver signed contributions. Deprived of the local colour provided by time, surroundings and personalities, discussions tend to lose their essential character of being links in a chain of arguments run behind the lines of the printed papers. An exception has been made for an effort to connect muscle spindle anatomy to recent physiological work, as reviewed below. On the last day of the Symposium there was in addition a special discussion on nomenclature.

The list of persons to whom the Nobel Symposium owes a debt of gratitude would be very long if an attempt were made to enumerate all those who have given of their time and interest in order to aid in the grafting of this fresh shoot to the old stem of the Nobel Foundation. Without mentioning any names I thank them all and sundry.

This Symposium owes a special debt of gratitude to President Tore Browaldh and Director Eric Lindström of the Svenska Handelsbanken for placing the great resources of their organization at our disposal and to the Staff at Södergarn, headed by Miss Kerstin Ekestubbe.

Dr. Bernard Waltman, guest worker at the Nobel Institute for Neurophysiology, kindly offered his services in the editing of this volume.

For kind permission to reproduce figures from a number of different publications we owe a debt of gratitude to: *Acta Physiologica Scandinavica*, *American Journal of Physical Medicine*, *Archiv für Psychiatrie und Nervenkrankheiten*, *Archives Italiennes de Biologie*, *Archives of Neurology* (Amer. Med. Ass.), Elsevier Publishing Company, *Experientia*, Institut de France de l'Académie des Sciences, *Journal of Neurophysiology* (Amer. Physiol. Soc.), *Journal of Physiology*, *Life Sciences* (Pergamon Press), Macmillan Company, *Nature*, Stanford University Press, *Uppsala Läkareförenings Förhandlingar*.

Ragnar Granit