

M. MONNIER

# FUNCTIONS OF THE NERVOUS SYSTEM

VOLUME 3

GENERAL PHYSIOLOGY  
SENSORY FUNCTIONS  
AND PERCEPTION

# FUNCTIONS OF THE NERVOUS SYSTEM

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## Preface

This volume on sensory functions is the third of a tetralogy devoted to the functions of the nervous system. It is written by the same author, in co-operation with some co-workers; a few contributions are provided by specialists whose outlook is closely related to the author's, this selection ensuring a greater unity throughout the book. The same plan and functional concept have been adopted for nearly all the chapters, as in the previous volumes. The *first* part introduces the principles of general sensory physiology, including methods of investigation, functions of the receptors, sensory pathways and centres, data processing at the various levels (M. Fallert), functional significance of the senses. The *second* part deals first with the general sensibility, i.e. somaesthesia, including the senses of pain, warmth and cold, touch, stataesthesia and kinaesthesia, with their integrated organisation at thalamo-cortical level. The *third* part is concerned with the special senses: taste, smell, hearing, vestibular sense of position and movement, vision, with its elementary and integrative properties. The latter, allowing discrimination of light, colour, position, distance, patterns and movement, constitute the *fourth* part of the volume, devoted to perception, with additional contributions by M. Meulders and R. Tissot.

Volume I was devoted to the *Autonomic functions* and volume II to the *Motor and psychomotor functions*; volume III, concerned with *Sensation and perception*, establishes the transition to the Psychic functions, to be dealt with in the last volume (IV). Both the sensory and perceptual functions may be expressed in subjective and objective terms and investigated by psychological, psycho-physical, neurophysiological and anatomical methods. They require sensory afferents and sensory motor integrative mechanisms. The transitional aspect of the perceptual functions motivated our decision to include perception already in this volume, instead of volume IV, devoted to psychic functions. For the same reason, we included the psychomotor functions in volume II (treating of motor functions), since psychomotor behaviour relies on motor and sensory motor mechanisms. This anticipation does not exclude a later discussion of the perceptual and psychomotor functions in volume IV, since both require a sensorimotor integration at higher level.

The linear increase of publications issued in the past ten years on sensory physiology made a selection of the bibliographic quotations necessary. Preference was given to contributions which, by a new methodological and conceptual approach, substantially promoted our knowledge of the sensory and perceptual functions. For the more recent period (1970-1974), the reader will find, at the end of the book, important addenda of both texts and references.

We hope that this work, with its numerous figures and selective bibliography, will provide the information required by advanced and post-graduate students, assistants, physicians, teachers and research scientists concerned with sensory problems in physiology, neurophysiology, biology, pharmacology, neuro-anatomy, neurology, ophthalmology, otology, electro-encephalography and psychology.

It is a pleasant duty to thank all co-workers who kindly devoted time to this work. I am grateful to my assistants for their help in bibliographic investigations: A. Böhmer, E. Holroyd-Doveton, P. Polc, R. Sauer, C. Schweizer, J. Wyler-Harper and P. Wolf. Furthermore I am greatly indebted to Mr E. Mosimann for reference work and photographic reproduction, to our secretaries N. Bächlin, M. Rudin, D. Beutler, and to Mrs G. Monnier for general supervision. Last but not least, I wish to express my gratitude to my editors, particularly to Mr J. G. M. Klijn, Mr J. Hoedeman and their co-workers, who greatly contributed to the 'happy birth' of this book.

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