

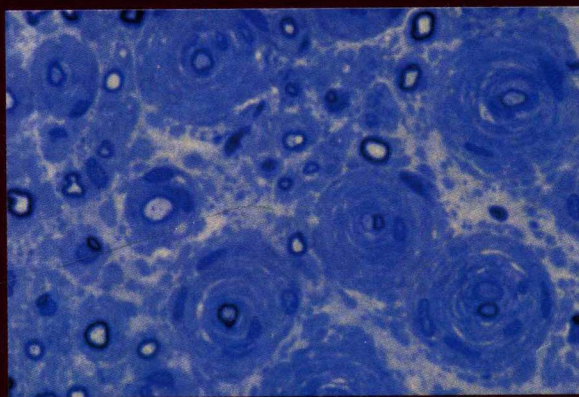
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PERIPHERAL NEUROPATHY

FOURTH EDITION



Peter J. Dyck
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PERIPHERAL NEUROPATHY

FOURTH EDITION

Volume 2

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Preface

More than a decade has passed since the third edition of *Peripheral Neuropathy*. The editors have found it necessary to create an essentially new textbook in order to encompass the rapid, exciting advances in neurobiology, molecular genetics, chemical and cellular pathology, and treatment. With the exception of chapters on gross anatomy, the compound action potential of the sural nerve in vitro, and the chapter on progressive muscular atrophy, most chapters are completely rewritten to produce the broadest and most up-to-date reviews of the neurobiology of the nerve and its diseases. The editors hope that the readers will find the new edition comprehensive and informative. The only credit the editors take is for their choice of authors, who are authorities in their fields. We are deeply grateful for their hard work and new insights.

As in previous editions, we honor a pioneer and friend who has made major contributions to our understanding of nerve biology and disease. In the first edition, Wilhelm Krücke, of Frankfurt am Main, was chosen as he was considered to be the Dean of Neuropathology of peripheral nerve. It was not surprising that in his Introduction he mentioned the contributions of T. Schwann (description of the myelin cell named after him), A. Waller and R. Cajal (key contributors to cellular events of nerve fiber degeneration), L. Ranvier (the node that bears his name), A. Gombault (segmental demyelination), R. Virchow (inflammation), and P. Weis (axonal flow). For the second edition, we honored Fritz Buchthal, who along with E. H. Lambert, pioneered clinical nerve conduction and clinical electromyography. It is of some interest that these new techniques have become so informative that the earlier use of direct nerve and muscle stimulation with galvanic and faradic currents (Duchenne, and later Erb) are hardly mentioned in modern textbooks. In this fourth edition, Kiernan and colleagues (Chapter 5) argue that these earlier approaches (or modifications) might still be used in specific indications. J. Z. Young, the special mentor of one of us (PKT), wrote the Introduction to the third edition. Young

(with P. K. Thomas) had returned to the old technique of teasing peripheral nerve fibers—a methodology that remains useful and is extensively described in Chapter 32.

In the present edition, we honor Henry deF. Webster. Harry characterized the ultrastructural features of mammalian nerve both in development and after maturation, and provided early studies of pathologic alteration in disease. His electron micrographs in Peters, Palay, and deF. Webster, "The Fine Structure of the Nervous System: The Neurons and Supporting Cells" (W. B. Saunders, 1976), remains as an example of how it should be done.

Quite unfairly to authors whose chapters are not mentioned here, we list some of the special coverage. Sally Lawson in her chapter on dorsal root ganglion (spinal ganglion) neurons, reviews sensory properties, electrophysiology, differences between non-nociceptor and nociceptor somas, immunocytochemical properties, trophic factors, cytokines, receptors, ion channels, membrane properties, genes, and injury reactions—a real tour de force! Jackie Wood makes the case for a third nervous system (in addition to the central and peripheral nervous systems), the enteric system. An insight into the system is crucial for the understanding of diseases affecting the gut. The chapter by A. G. Engel provides a concise review of the diseases of the neuromuscular junction. His electron micrographs of pathologic alterations are unmatched. The chapters on quantitating neuropathic impairment, disability, symptoms, outcomes, and quality of life as it relates to neuropathy are more focused on neuropathy and more comprehensive than discussed elsewhere. Ian Grant's chapter on differential diagnosis of neuropathy is an important read for physicians who want to improve their diagnostic ability. The sections on inherited motor, motor and sensory, and sensory and autonomic neuropathies have undergone major changes. Comprehensive and detailed reviews are focused first on clinical features (inheritance and natural history pattern, population, level and pathologic type of neuron involvement, electrophysiologic and pathologic characteristics) followed by molecular

genetic causes. P. James B. Dyck emphasizes the need to recognize that diabetic neuropathy is not a single disorder. Discussing diabetic radiculoplexus neuropathies, he stresses underlying immune mechanisms and the possible benefit of immune-modulating therapy. The chapter on necrotizing vasculitis of the peripheral nervous system by Michael Collins and John Kissel is a definitive and beautifully illustrated contribution. In the pathology chapter, we include the new approaches used in identifying not only the focal or multifocal abnormality of proximal nerves, but also the underlying cause. Many chapters deal with an increasing emphasis on diagnosis and management of diseases of the autonomic nervous system. The strong support of P. A. Low, MD is acknowledged.

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I (PJD) hereby also acknowledges the heroic help of Nok (Sam) Ponsford, M.D., who stepped in to help when one of us, her husband (PKT), developed a stroke, and other health complications, during the editing of this book. Colleagues from The Royal Free Hospital also helped. NOK and PK—thank you. One of us (PJD) is grateful for the forbearance of Isabelle, Ernest Carl, Fred Howard, P. James B., and M. Katharine E. and to grandchildren (Sophie, Jacob, Chloe, and Abbie), and to Marian and Scott.

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