

Handbook of Parkinson's Disease

Edited by
WILLIAM C. KOLLER



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Introduction

James Parkinson's description of the shaking palsy, written in 1817, is now considered a medical classic. Its acclaim derives from the author's unusually vivid and accurate description of the constellation of symptoms as well as the recognition of the evolution and progression of the disorder which now bears his name. Less well appreciated is Parkinson's motivation in undertaking the task of writing his monograph. As stated in the final section:

Before concluding these pages, it may be proper to observe once more, that an important object proposed to be obtained by them is, the leading of the attention of those who humanely employ anatomical examination in detecting the cause and nature of diseases, particularly to this malady. By their benevolent labours its real nature may be ascertained, and appropriate modes of relief, or even of cure, pointed out.

During much of the 150 years following Parkinson's challenge to the research community few, if any, advances toward understanding the nature or providing means of effective relief from the disease occurred. However, in the past twenty years this has changed remarkably with significant and impressive progress toward reaching the goal which he had set. Indeed, there has been a virtual explosion of research interest and a continuous flow of new information about movement disorders in general, and Parkinson's disease in particular. As a result we now have a more precise delineation of Parkinson's disease as a clinical entity with established morbid anatomy and biochemical changes. The major symptoms have been correlated with a deficiency of striatal dopamine and are re-

versible by restoring the action of this neurotransmitter by pharmacological agents. Hence its treatment is on a sound, rational footing. Most importantly, new concepts concerning its etiology and pathogenesis have come to the fore which hold the possibility of leading to methods of prevention or halting the progression of this enigmatic disorder.

This volume conceived and edited by Dr. Koller brings into sharp focus the developments of fundamental and clinical knowledge which have occurred in parkinsonism in general, and Parkinson's disease in particular, over the past two decades. Drawing on a large cadre of active investigators from a variety of disciplines of the neurosciences in the United States and abroad, an in-depth state-of-the-art volume in this field has been developed. It is in every respect a handbook, one which is as useful to the clinician responsible for the everyday care of the patient, as it is to the investigative scientist.

Melvin D. Yahr, M.D.

New York City, N.Y.

February 1987

Preface

Parkinson's disease is a common chronic neurologic illness of adult life. Its insidious onset, slow progression, and prolonged course make it likely that physicians of diverse specialties will at some time be caring for parkinsonian patients. The many difficulties associated with long-term treatment make management of Parkinson's disease exceedingly challenging even for the experienced practitioner.

Parkinson's disease is the prototypic illness in which a neurotransmitter disturbance has been identified. This discovery led to an effective therapy approach. Yet suffering and disability continue in many parkinsonian patients. Recent advances in our understanding of the pathophysiology of Parkinson's disease and the introduction of new therapies give renewed hope that Parkinson's disease may one day be controlled.

It is the purpose of this book to present up-to-date information on the many aspects of Parkinson's disease. It is hoped that this volume will serve as a reference source for those seeking answers to questions on Parkinson's disease. The recent increase in our knowledge of this disorder makes this effort timely.

Appreciation and thanks are extended to the authors and other investigators who have contributed to our knowledge of Parkinson's disease. Undoubtedly their research efforts will one day eliminate the human misery of those who suffer from Parkinson's disease.

William C. Koller

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Contents

Introduction	<i>Melvin D. Yahr</i>	iii
Preface		v
Contributors		vii

1 A History of Parkinson's Disease	Kenneth Laurence Tyler	1
2 Epidemiology	Reijo J. Marttila	35
3 Classification of Parkinsonism	William C. Koller	51
4 Genetics	Anthony E. Lang	81
5 Pathophysiology and Clinical Assessment of Motor Symptoms in Parkinson's Disease	Joseph Jankovic	99
6 Mental State	Richard Mayeux	127
7 Autonomic Nervous System Disorders	Caroline M. Tanner, Christopher G. Goetz, and Harold L. Klawans	145
8 Sensory Dysfunction	Stuart R. Snider and R. Sandyk	171
9 Diagnosis and Treatment of Parkinsonian Dysarthria	Anthony G. Micoch	181

10	Pathology	209
	<i>Ellsworth C. Alvord, Jr. and Lysia S. Forno</i>	
11	Neurochemistry	237
	<i>G. Frederick Wooten</i>	
12	Neurotransmitter Receptor Alterations	253
	<i>Mark M. Voigt and George R. Uhl</i>	
13	MPTP and Animal Models of Parkinsonism	267
	<i>Richard E. Heikkila, Patricia K. Sonsalla, M. Victoria Kindt, and Roger C. Duvoisin</i>	
14	Animal Models Used to Evaluate Potential Antiparkinsonian Drugs	281
	<i>John H. Gordon and William C. Koller</i>	
15	Etiology	297
	<i>J. William Langston</i>	
16	Anticholinergics and Amantadine	309
	<i>José A. Obeso and J. M. Martínez-Lage</i>	
17	Levodopa	317
	<i>Niall P. Quinn</i>	
18	Pharmacokinetics of Levodopa: Clinical Implications	339
	<i>John G. Nutt</i>	
19	Mechanism of Action of Levodopa	357
	<i>Eldad Melamed</i>	
20	Sleep Disorders	371
	<i>Paul A. Nausieda</i>	
21	Therapy with Dopaminergic Drugs in Parkinson Disease	381
	<i>Peter A. Le Witt</i>	
22	Monoamine Oxidase Inhibitors	403
	<i>Andrew John Lees</i>	
23	Stereotactic Surgery	421
	<i>George Selby</i>	
24	Brain Grafting	437
	<i>Mark J. Perlow</i>	
25	Rehabilitation Approach	455
	<i>Susan E. Kase and Cheryl A. O'Riordan</i>	

CONTENTS

xiii

26 Psychosocial Aspects

465

Bonnie E. Levin and William J. Weiner

Appendix

475

Index

493

183

1

A History of Parkinson's Disease

KENNETH LAURENCE TYLER

Harvard Medical School, and Massachusetts General Hospital, Boston, Massachusetts

Paralysis agitans almost seems to have appeared sui generis with Parkinson's description in 1817. The nosologists of earlier centuries may have seen patients with this type of disorder and certainly recognized specific components of the disease. One can, for example, find mention of "tremor" in the Hippocratic corpus and in the works of Celsus and Galen. In his monograph on shaking palsy, Parkinson referred to earlier writings by Sylvius de la Boë, Juncker, Sauvages, and van Swieten. Sylvius de la Boë (1680) was one of the first to separate clearly a species of tremor that occurred during a voluntary act from tremor occurring at rest. In the 18th century, Sauvages (1768) and van Swieten (1749) also made similar distinctions. Parkinson credited Gaubius (1758) and Sauvages (1768) with early descriptions of the festinating gait that he saw in his patients (see Parkinson, 1817, Sanders, 1880). Rereading these early descriptions, one is struck by their essentially fragmentary nature. Physicians before Parkinson may have seen cases of "paralysis agitans" yet it was Parkinson who finally captured its essence in a fashion that is compelling and obvious to the modern reader.

The details of James Parkinson's life (1755-1824) have never been better outlined than by W.H. McMenemey in a bicentenary volume of papers on James Parkinson edited by MacDonald Critchley (1955). Parkinson was a general practitioner who regularly contributed clinical papers on various subjects to medical journals. Among the topics on which he wrote were hydrophobia, gout, the effects of lightning, and typhoid fever! A paper on "Diseased Appendix Vermiformis" (1812) dates as one of the earliest contributions on this subject (Fig. 1). Parkinson also wrote several books on medical subjects designed for popular consumption including: *Dangerous Sports* (1800), *The Villager's Friend and Physician* (1800), *Hints for the Improvement of Trusses* (1802) and *Medical*

CASE
OF
DISEASED
APPENDIX VERMIFORMIS,

By JOHN PARKINSON, SURGEON, ESQ.

COMMUNICATED

By JAMES PARKINSON, Esq.

Read January 21, 1812.

A PREPARATION of diseased appendix vermiformis in my possession, was removed from a boy about 5 years of age who died under the following circumstances.

He had been observed for some time, to decline in health, but made no particular complaint, until two days before his death, when he was suddenly seized with vomiting, and great prostration of strength. The abdomen became very tumid and painful upon being pressed: his countenance pale and sunken, and his pulse hardly perceptible. Death, preceded by extreme restlessness and delirium, took place within 24 hours.

Upon examination, the whole surface of the peritoneum was found inflamed, and covered with a

FIGURE 1 Title page of article on appendicitis communicated by James Parkinson and written by his son.

Admonitions, with Observations on the Excessive Indulgence of Children (1799). He even prepared a guide for medical students (*The Hospital Pupil*, 1800). He was the author of a thoughtful monograph entitled, *Observations on the Act for Regulating Mad-Houses* (1811), produced after he was unjustly accused of falsely committing a woman to an asylum (Fig. 2).

Although Parkinson's many medical writings suggest that he had a busy career as a physician, his interests were eclectic. He was one of England's foremost early paleontologists, and his two books on the subject, *Organic Remains of a Former World* (1811) and *Outlines of Oryctology* (1822) (11) were considered

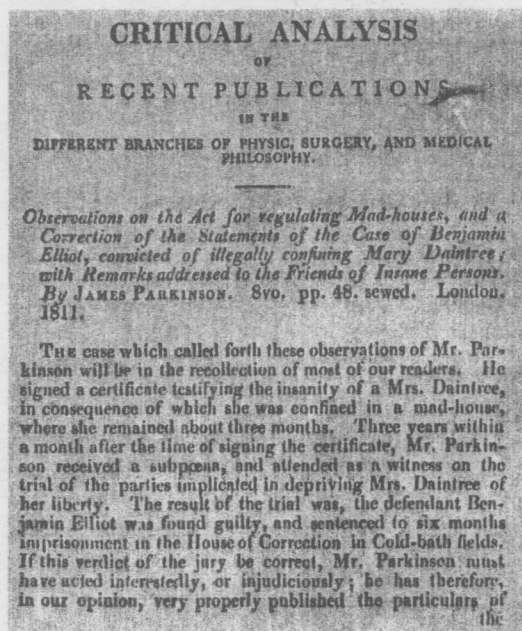


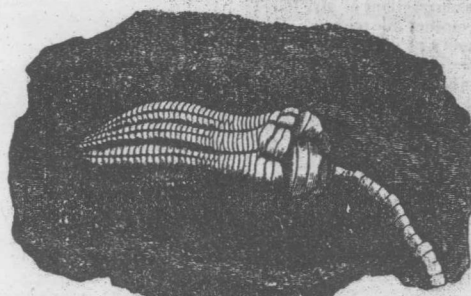
FIGURE 2 Title page of a review of Parkinson's *Observations on the Act for Regulating Mad-Houses*.

important works by his contemporaries (Fig. 3). Another contribution, *The Chemical Pocket-Book* (1799) was equally well received and went through several editions (Figs. 4,5).

Perhaps the most fascinating part of Parkinson's career was neither scientific nor medical in nature. Writing under both his own name and the pseudonym "Old Hubert," he published nearly a dozen political pamphlets in the period between 1793 and 1795. These appeared in the aftermath of the French Revolution, when England was in a state of political turmoil. "Reform societies" and "revolutionary clubs" were organized and members began to campaign for parliamentary reform. Parkinson joined several of these including the "Society for Constitutional Information" and the "London Corresponding Society." The goals of these societies seem surprisingly mild by today's standards. Members protested against the "intolerable grievance" of paying "numerous, burthensome and unnecessary" taxes. They rebelled against inequities in the system of parliamentary representation, which effectively disenfranchised millions of people. They called for an end to the specialized system of elections in which individuals voted for only a small minority of parliament, the majority of

ORGANIC REMAINS OF A FORMER WORLD.
 AN
EXAMINATION OF THE MINERALIZED REMAINS
 OF THE
VEGETABLES AND ANIMALS
 OF THE
ANTEDILUVIAN WORLD;
 GENERALLY TERMED
EXTRANEOUS FOSSILS.

By **JAMES PARKINSON.**
 IN THREE VOLUMES.



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AND LACKINGTON, ALLEN, AND CO. LONDON BY S. A. R.

FIGURE 3 Title page of *Organic Remains of a Former World*, Parkinson's classic early work on paleontology.

members being elected by small groups of electors representing incorporated townships and other privileged groups. They noted that fewer than 500 privileged voters in the county of Cornwall elected nearly the same number of representatives to parliament as all three million people in Scotland (McMenemey, 1955).

The reaction of the established government to the reform societies was anything but tolerant. Thomas Paine's *Rights of Man* (1790, 1792) was banned, and serious consideration was given to the idea of going to war in an effort to restore the French monarchy. Edmund Burke was one of the leading supporters of the conservative policies of the established government. "Old Hubert" became one