

How Brain Arousal Mechanisms Work

How Brain Arousal Mechanisms Work

Paths Toward Consciousness

Donald Pfaff
The Rockefeller University



CAMBRIDGE
UNIVERSITY PRESS

Cambridge University Press & Assessment
978-1-108-43333-4 — How Brain Arousal Mechanisms Work
Donald Pfaff
Frontmatter
[More Information](#)



Shaftesbury Road, Cambridge CB2 8EA, United Kingdom
One Liberty Plaza, 20th Floor, New York, NY 10006, USA
477 Williamstown Road, Port Melbourne, VIC 3207, Australia
314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi – 110025, India
103 Penang Road, #05–06/07, Visioncrest Commercial, Singapore 238467

Cambridge University Press is part of Cambridge University Press & Assessment, a department of the University of Cambridge.

We share the University’s mission to contribute to society through the pursuit of education, learning and research at the highest international levels of excellence.

www.cambridge.org
Information on this title: www.cambridge.org/9781108433334
DOI: 10.1017/9781108377485

© Donald Pfaff and Sandra Sherman 2019

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press & Assessment.

First published 2019

A catalogue record for this publication is available from the British Library

ISBN 978-1-108-43333-4 Paperback

Cambridge University Press & Assessment has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

.....

Every effort has been made in preparing this book to provide accurate and up-to-date information which is in accord with accepted standards and practice at the time of publication. Although case histories are drawn from actual cases, every effort has been made to disguise the identities of the individuals involved. Nevertheless, the authors, editors and publishers can make no warranties that the information contained herein is totally free from error, not least because clinical standards are constantly changing through research and regulation. The authors, editors and publishers therefore disclaim all liability for direct or consequential damages resulting from the use of material contained in this book. Readers are strongly advised to pay careful attention to information provided by the manufacturer of any drugs or equipment that they plan to use.

Cambridge University Press & Assessment
978-1-108-43333-4 — How Brain Arousal Mechanisms Work
Donald Pfaff
Frontmatter
[More Information](#)

Dedicated to the work and memory of Professor Fred Plum, M.D.

Contents

Acknowledgments ix

<hr/>		<hr/>	
	Introduction	1	
1	Concept	6	
2	Giant Cells in the Medullary Reticular Formation	28	
3	Pons	39	
4	Midbrain	49	
5	Hypothalamus: Low Road	58	
6	Thalamus: High Road	68	
7	High Arousal	80	
8	Phase Transitions from Low GA States	94	
9	Roots of Consciousness and Its Disorders	107	
10	A Vertically Integrated System	115	
<hr/>		<hr/>	
	<i>Bibliography</i>	123	
	<i>Index</i>	153	

Acknowledgments

Insofar as this book puts forth a clear and well-reasoned set of arguments, the help of lawyer and former English professor Sandra Sherman must be recognized.

Thanks to Anna Whiting at the Cambridge University Press for conceiving of neuroscience books which contribute to neurology and to Nigel Graves, of the Press, for managing its production with great efficiency.

All of the book has benefited from the critical readings and suggestions from professors, to whom I am as grateful as a person can be. Professors Larry Abbott (Columbia), Jayanth Banavar (Oregon) and Randy Gallistel (Rutgers), Chapters 1, 10, and the Introduction; Peggy Mason (Chicago), Chapter 2; Clif Saper (Harvard), Chapters 3 and 4; Jack Feldman (University of California, Los Angeles), Chapter 3; James Herman (Cincinnati), Chapter 4; Rae Silver (Columbia), H. L. Haas (Heinrich-Heine University Düsseldorf, Düsseldorf, Germany) and Laszlo Zaborszky (Rutgers), Chapter 5; David Amaral (University of California Davis) and Avi Snyder (Washington University, St. Louis), Chapter 6; Randy Nelson (Ohio State) and Michael Baum (Boston University), Chapter 7; and Alex Proekt (Pennsylvania) and Peter Forgacs (Cornell), Chapter 8.

To all of these experts I am more than thankful.