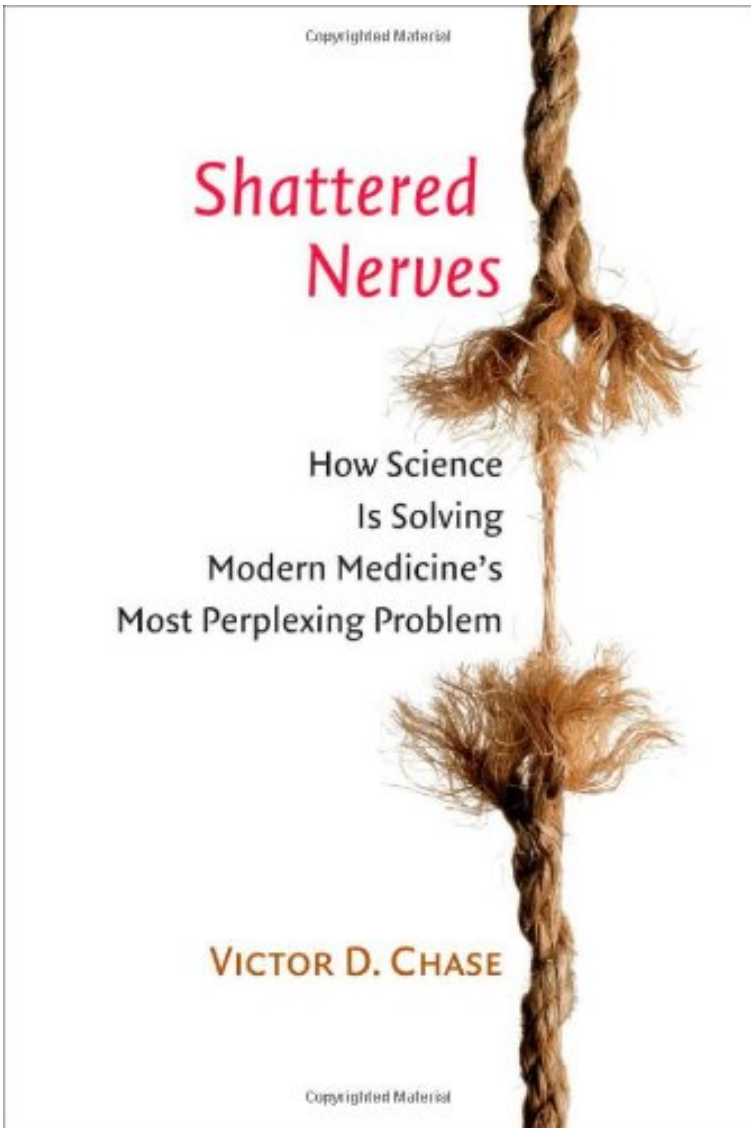
Shattered Nerves: How Science Is Solving Modern Medicine's Most Perplexing Problem

Victor D. Chase
*ePub | *DOC | audiobook | ebooks | Download PDF*



#3334723 in Books Johns Hopkins University Press 2006-11-26Original language:EnglishPDF # 1 9.00 x .90 x 6.00l, 1.23 #File Name: 0801885140312 pages | File size: 32.Mb

Victor D. Chase : Shattered Nerves: How Science Is Solving Modern Medicine's Most Perplexing Problem before purchasing it in order to gage whether or not it would be worth my time, and all praised Shattered Nerves: How Science Is Solving Modern Medicine's Most Perplexing Problem:

1 of 1 people found the following review helpful. A Great Adventure in Invention and Medical ScienceBy Peter

MeskinVictor Chase's history and up-to-date story of prosthetic implants is riveting. I found it to be a wonderful read for its selective history of prosthetic implants, cutting-edge science, and for the in-depth human side that he presents. The author's care and concern for the patients he interviewed comes across as much as his intimate understanding of the science he helps his readers to understand and appreciate. I'm saving my copy as a reference for when parts of me decide to head south...without passports.0 of 0 people found the following review helpful. Four StarsBy Edward M SchmidtExcelent book for someone entering the field of neuroprosthetics.0 of 0 people found the following review helpful. Alternates to Nerve Repair - Solutions I Never Knew Were PossibleBy KatieThe purpose of this review is to inform curious readers about the contents and overall style of the book Shattered Nerves by Victor Chase. Holistically, I will present a summary followed by the general style of the book and finally my own opinion of the contents and how it is written.Summary:First Part: This book begins with Chase thoroughly describing the advances in medical technology throughout centuries up to present day. He details through the most significant experiments and people who used all kinds of methods to solve the issue of paralysis and other nerve damage diseases. The concepts that were so crucial to bringing us to current day science in this area of neuroscience ranged from electricity and batteries to an understanding of nerves carrying current. Some experiments that led this growth in concepts were perhaps more crazy or dangerous than others, "Once he was able to use his battery to create a steady flow of electricity on demand, he went about testing the effects of that electricity on his own body. He found that `the current of the electric fluid ... excites not only contractions and spasms in the muscles, convulsions more or less violent in the limbs through which it passes in its course; but it irritates also the organs of taste, sight, hearing, and feeling, properly so called, and produces in them sensations peculiar to each.' In one particularly dramatic experiment, he placed two charged probes into his ears: `At the moment the circuit was completed I received a shock in the head, and a few moments later... I began to be conscious of a sound, or rather a noise, in my ears that I cannot define clearly; it was a kind of jerky crackling or bubbling, as though some paste or tenacious matter was boiling.' Wisely, he wrote, `I did not repeat this experiment several times.'" (p.39) Overall, despite the sometimes questionable decisions of the researchers, the concepts discovered moved science forward dramatically in order to bring us to the present-day ability of motor function in many diseases or injuries where it was once impossible.Later in the Book: Current-day research and clinical successes as well as some failures, are the main chunk of this lively read. Electrode implants are becoming common ways of helping to interpret the brain signals being sent to a non-functioning nerve site, to allow people who are missing function to regain it. Chase does a great job of detailing the different advances and medical availabilities that are being utilized to help those who have nerve damage through mostly anecdotes of people who have received the treatments. In the majority of the middle of this book, he goes through different areas of success in reviving motor capabilities or control, in areas such as hand movement, the ability of quadriplegics to stand and potentially walk again, cochlear implants and other major hearing advances for the deaf, and retinal implants. Chase then takes great time to explain the electrode and how it is being used as the new nerve in all of these advances, and then implementing prosthetic systems in the brain. He then moves from discussing motor nerve damage to brain diseases, such as Parkinson's disease; Chase explains deep brain stimulators and their effects in countering motor diseases that originate in the brain. Current research is being done to see if there is a way to use these brain stimulators to alleviate depression. Different successes have been seen so far in the implants, with the most extreme case being one patient fully recovering and setting up their own successful business. Finally, he discusses Alzheimer's and the possibility of an implant or a chip in the hippocampus that helps keep and restore memory. A man named Berger has done extensive research in trying to develop a hippocampus computer model in order to help recover the full functionality of it. The end of this book is an overview of the ethics behind these advances. Chase brings up the different ethical decisions and dilemmas researchers face in this area of neural prosthetic technology such as: "when is an implant ready for human testing? How can researchers ensure that human test subjects are made fully aware of the potential risks involved? Once these devices are approved for clinical use, who should receive them?" Different professionals opinions are surveyed and described, followed by a history of ways ethics have been implemented over the last century, including a description of the IRB and other common regulation codes and practices.Reading this Book (The Style): This book is written with the overall goal to provide a story of how nerves are being restored by science. Chase details the history of nerve repair, and then describes some of the most innovative and interesting ways that motor function and nerve repair is happening recently/currently. The history is extremely interesting, Chase does an incredible job at using humor and just purely amazing facts and research to keep you engaged and excited while reading through a seemingly "dry" subject such as the history of neural prosthesis. I actually think my favorite chapter of the book was "The Grandfather of Neural Prostheses", which details the history of one man and how his incredible genius mind impacted the development of numerous tracks within neural prosthesis. The ways he got invested in each of the fields is ridiculous, mainly he was interested and read some on the topic and all of a sudden was a genius in it and made a massive impact/breakthrough that most people are still basing their research on. I was blown away by how his story was presented almost every single page. Chase does this throughout the rest of the book - the topic is never boring to read through. Using stories of different patients, Chase presents the repairs in a very personal way, discussing through a person's life and how the technology being described was used to impact their life. Almost every chapter gives one or multiple stories of how

the technology was developed to the point of helping this particular person, and what has happened since.My Opinion: I have really enjoyed this book overall. There were a few topics that I was less-interested in, but as stated, Chase's use of stories keeps you engaged and frankly in awe of what modern medicine is able to accomplish and how people have really been helped with what you are reading about. I loved learning about so many different systems in the body without feeling like I was reading a textbook, and thinking of how I would act in similar situations was always an interesting thought process that kept me very interested in the book. I would definitely recommend this book to others, especially if one is not overwhelmingly knowledgeable about the nervous system. Chase does a really good job of explaining things on a simple level for understanding to form, and then makes you feel really smart that you are understanding how someone was given a cochlear implant, or how retina implants are being developed. I would absolutely suggest getting the book for a light read or even for a class learning more about advancement in neuroscience. It was very enjoyable but still helped solidify a lot of understanding of the brain and nerves and opportunities to improve both.

Once the stuff of science fiction, neural prosthetics are now a reality. Research and technology are creating implants that enable the deaf to hear, the blind to see, and the paralyzed to move. Shattered Nerves takes us on a journey into a new medical frontier, where sophisticated, state-of-the-art medical devices repair and restore failed sensory and motor systems. In a compelling narrative that reveals the intimate relationship between technology and the physicians, scientists, and patients who bring it to life, Victor D. Chase explores groundbreaking developments in neural technology. Through personal interviews and extensive research, Chase introduces us to the people and devices that are restoring shattered lives, from implants that enable the paralyzed to stand, walk, feed, and groom themselves, to those that restore bladder and bowel control, and even sexual function. Signals from the brains of paralyzed people are captured and transformed to allow them to operate computers. Brain implants hold the potential to resolve psychiatric illnesses and to restore the ability to form memories in damaged brains. This timely and important book also explores troubling boundaries between restoration and enhancement, where implants could conceivably endow the able-bodied with superhuman capabilities. Chase concludes this fascinating book with a provocative question: Just because we can, does that mean we should?

Devices that simulate, replace, or bypass nerves have the potential to help those disabled with nervous system and sensory disorders. Science and technology journalist Chase explores the world of these up-and-coming technologies. (Library Journal)Victor Chase has looked into the future of broken nervous systems and how we might fix themwith all of the corresponding hopes and perils. It is a fascinating book, both stimulating and exciting, and makes you think about what it means to be human. (Michael S. Gazzaniga, author of The Ethical Brain and member of the President's Council on Bioethics)A marvelous synthesis of new ideas. (V. S. Ramachandran, M.D., author of Phantoms in the Brain)[A] calm, competent, contemporary account of the development of devices to repair nervous systems responsible for the senses, movement and other functions. (New Scientist)Chase achieves his formidable aim, enabling the reader to make connections between scientific endeavor and its application to the lives of the vivid individuals to whom he introduces us. (Cerebrum)Comprehensive and easily readable... Shattered Nerves weaves a history of how a field evolves. (Nature Medicine)Best of 2006 (Library Journal)This is dramatic stuff... The book is a valuable introduction to an important subject. (SciAmMind)Because of the interdisciplinary nature of neural prosthetic research, this book will attract graduate students and professionals in medicine, engineering, chemistry, computer research. Perhaps those who could benefit the most from reading it, however, are bright undergraduates; the researchers' stories, and the discussion of the impact they have had on their research subjects' lives, may help college students in search of career direction. (Choice)Victor Chase eloquently discusses the 'human machine' and how the harmful effects of faulty wiring and misfiring electrics can be reversed by modern technology (Lancet)About the AuthorVictor D. Chase is a science and technology writer who has written for a variety of publications, including Air Space, IBMs Think Research, MITs Technology , Nature Medicine, Popular Science, Science Digest, National Forum, RD Magazine, Mechanical Engineering, and Environmental Health Perspectives.