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Extreme Medicine: How Exploration Transformed Medicine in the Twentieth Century

By Kevin Fong M.D.



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Little more than one hundred years ago, maps of the world still boasted white space: places where no human had ever trod. Within a few short decades the most hostile of the world's environments had all been conquered. Likewise, in the twentieth century, medicine transformed human life. Doctors took what was routinely fatal and made it survivable. As modernity brought us ever more into different kinds of extremis, doctors pushed the bounds of medical advances and human endurance. Extreme exploration challenged the body in ways that only the vanguard of science could answer. Doctors, scientists, and explorers all share a defining trait: they push on in the face of grim odds. Because of their extreme exploration we not only understand our physiology better; we have also made enormous strides in the science of healing.

Drawing on his own experience as an anesthesiologist, intensive care expert, and NASA adviser, Dr. Kevin Fong examines how cuttingedge medicine pushes the envelope of human survival by studying the human body's response when tested by physical extremes. *Extreme Medicine* explores different limits of endurance and the lens each offers on one of the systems of the body. The challenges of Arctic exploration created opportunities for breakthroughs in open heart surgery; battlefield doctors pioneered techniques for skin grafts, heart surgery, and trauma care; underwater and outer space exploration have revolutionized our understanding of breathing, gravity, and much more. Avant-garde medicine is fundamentally changing our ideas about the nature of life and death.

Through astonishing accounts of extraordinary events and pioneering medicine, Fong illustrates the sheer audacity of medical practice at extreme limits, where human life is balanced on a knife's edge. *Extreme Medicine* is a gripping debut about the science of healing, but also about exploration in its broadest sense—and about how, by probing the very limits of our biology, we may ultimately return with a better appreciation of how our bodies work, of what life is, and what it means to be human.



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Extreme Medicine: How Exploration Transformed Medicine in the Twentieth Century By Kevin Fong M.D. **Bibliography**

- Sales Rank: #405994 in Books
- Brand: Penguin Books
- Published on: 2015-03-31
- Released on: 2015-03-31
- Original language: English
- Number of items: 1
- Dimensions: 8.00" h x 1.70" w x 5.30" l, 1.00 pounds
- Binding: Paperback

- 304 pages

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Editorial Review

From [Booklist](#)

Inner space, outer space, and regions in between—this is the sprawling subject matter of a book that celebrates the challenges of discovery. Fong, a physician with a background in astrophysics, engineering, and aerospace medicine, ably identifies the correlations and convergence of exploring extreme environments and predicaments and the human body. For example, he tethers an expedition to the South Pole with forthcoming medical applications of hypothermia. He links the disfiguring burns suffered by WWII aircraft pilots with the development of reconstructive plastic surgery. Fong focuses on the fragility of human physiology and efforts to protect it with advanced life-support systems. Along the way, readers learn about the rise of intensive-care units, human spaceflight, iron lungs and polio, a complete face transplant, and SARS. Exploration of any kind is risky business and at times seems irrational. It requires curiosity, innovation, and resiliency, and it pushes the limits of knowledge, territory, and biology. Fong makes the point that human survival has been and will continue to be closely connected to our compulsion to explore. - Tony Miksanek

Review

The Washington Post:

“Every chapter combines personal stories, dramatic medical history and clear, vivid science writing...Fong’s book presents daring moments in medicine along with lucid explanations of human physiology and of how medical professionals manage to keep people alive or pull them back from the brink. It should appeal to would-be astronauts, outdoor-lovers, mountain climbers, free-divers, armchair explorers, science enthusiasts, those working in the health professions or wondering about such a career—indeed, just about anyone with a heartbeat and a dash of curiosity.”

The Wall Street Journal:

“In *Extreme Medicine*, physician Kevin Fong reminds us that virtually everything we take for granted in lifesaving medical intervention was once unthinkable... Dr. Fong's engaging and fast-paced narrative is liberally sprinkled with his own harrowing experiences as a specialist in anesthesia and intensive-care.”

Discover:

“[Fong] weaves first hand, nail-biting ER experiences with gripping historical narrative as he recounts 100 years of breakthroughs...[Fong] looks forward as well: He offers tantalizing ideas about surviving long-term space travel and other possibilities that await us in our relentless quest to explore.”

Mother Jones:

“With clear, evocative prose, he takes readers to ocean depths and mountaintops, and also deep within our bodies, in this entertaining exploration of human limits.”

Kirkus Reviews (starred):

"A medical thriller of the first order."

Publishers Weekly:

"[An] eloquent history of how 20th-century science and medicine moved us toward 'improved survival'--and with it a better understanding of life and death...these are thrilling stories that describe the limits of human psychology."

Atul Gawande, surgeon and author of *Complications*, *Better*, and *The Checklist Manifesto*:

"In *Extreme Medicine*, the ever-intrepid Kevin Fong reveals the fascinating link between geographical exploration and medical innovation, with stories that are as strange and intriguing as they are illuminating."

Professor Brian Cox, author of *The Quantum Universe*: "It would be hard to find anyone better qualified to write a book on the limits of human physiology than Dr Kevin Fong. His experiences in human spaceflight at NASA, in frontline medicine, and his deep scientific knowledge, shine through. If you want to know what the human body can take, and why we must continue to push ourselves beyond the limit in the name of exploration, then read this book."

The Observer (UK):

"**Anatomy and physiology are elegantly explained**, not as abstract theory, but as counterpoint to gripping stories about survival against the odds. Real stories of life and near-death form the compelling backbone of the book. The book could easily have ended up as a series of Boy's Own tales of derring-do, but **Fong elegantly balances heroism with rationalism, courage with compassion, shock with humility and humor.**"

Guardian (UK):

"From the outset *Ice and Fire* is a **gripping read**. It's the kind of book you want to read peeking through cracks in your fingers; you want to look away, but not as much as you want to know what happens... I held my breath, I shed a tear, I laughed out loud, and I struggled to keep my lunch down at various points through this book, and that can only be a good thing."

Times Higher Education

(UK

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"Fong weaves together seemingly unconnected events in this world and beyond in a series of breathless vignettes... an appealing mix of academic eloquence and matey talk: ... In many ways, ***Ice and Fire* is the story of the 20th century**... We explore because we must, and if you have a sense of adventure and the miracle of life within you, then this book is for you."

Daily Mail:

"Fong has dramatic first-person accounts to give, and many more... he also proves himself to be a genuinely talented author... Fong has come up with an often **fascinating and actually rather inspiring account of western medicine's ever-increasing expertise.**"

About the Author

KEVIN FONG, M.D., holds degrees in medicine, astrophysics, and engineering. Founder of the Centre for Altitude, Space, and Extreme Environments, he lives in London.

Users Review

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Herman Deans:

This Extreme Medicine: How Exploration Transformed Medicine in the Twentieth Century are generally reliable for you who want to become a successful person, why. The main reason of this Extreme Medicine: How Exploration Transformed Medicine in the Twentieth Century can be one of the great books you must have is actually giving you more than just simple examining food but feed anyone with information that might be will shock your before knowledge. This book is handy, you can bring it everywhere and whenever your conditions at e-book and printed types. Beside that this Extreme Medicine: How Exploration Transformed Medicine in the Twentieth Century giving you an enormous of experience for instance rich vocabulary, giving you test of critical thinking that we all know it useful in your day activity. So , let's have it and revel in reading.

Ann Conley:

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William Brown:

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Century can make you experience more interested to read.

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