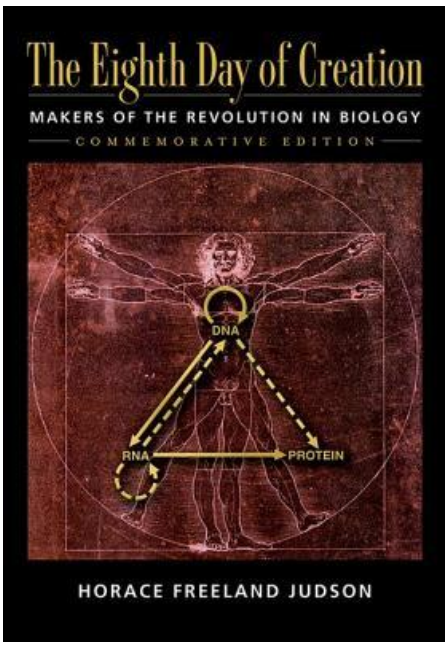

The Eighth Day of Creation

Horace Freeland Judson

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The Eighth Day of Creation Horace Freeland Judson
In this classic book, the distinguished science writer Horace Freeland Judson tells the story of the birth and early development of molecular biology in the US, the UK, and France. The fascinating story of the golden period from the revelation of the double helix of DNA to the cracking of the genetic code and first glimpses of gene regulation is told largely in the words of the main players, all of whom Judson interviewed extensively. The result is a book widely regarded as the best history of recent biological science yet published.

This commemorative edition, honoring the memory of the author who died in 2011, contains essays by his daughter Olivia Judson, Matthew Meselson, and Mark Ptashne and an obituary by Jason Pontin. It contains all the content added to previous editions, including essays on some of the principal historical figures involved, such as Rosalind Franklin, and a sketch of the further development of molecular biology in the era of recombinant DNA.

The Eighth Day of Creation Details

Date	:	Published January 1st 1996 by Cold Spring Harbor Laboratory Press (first published May 1st 1979)
ISBN	:	9780879694784
Author	:	Horace Freeland Judson
Format	:	Paperback 720 pages
Genre	:	Science, Biology, Nonfiction, History, History Of Science, Genetics

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From Reader Review The Eighth Day of Creation for online ebook

Kapil Amarnath says

The Eighth Day of Creation (*TEDoC* for short, published in 1979) is a scientific history that shows how we get from vague misunderstanding to established scientific theory. The particular case that Horace Freeland Judson chronicles is the molecular biology revolution that happened between the 1940s and the early 1970s and echoes into present day biological research. The greatness of *TEDoC* lies in its deep, liberal arts approach. To Judson, anything that affects the course of scientific advancement needs to be followed to its roots.

The novelty of the *TEDoC* is that Judson does not single out science as being coldly logical and separate from other human endeavors. Scientific progress is inextricably intertwined with the personalities and the relationships of the people involved, the culture within the field, and the political milieu. To elaborate these complexities, Judson conducted hundreds of hours of interviews with all of the scientists involved and reproduces parts of lab notebooks (!) and letters. Along with him, we learn how it felt to arrive at a conceptual breakthrough, or to have an “intellectual bond of the highest intensity.” I am a scientist, and it was exhilarating to see Judson engage with some of the giants of 20th century science like Linus Pauling, Francis Crick, Sydney Brenner, Jacques Monod, Francois Jacob, and Max Perutz. The aggregation of conversations and descriptions of each of these scientists make a convincing argument that their specific personalities were crucial to their scientific advances.

Though the facts of molecular biology covered by the book could be summarized in a couple of pages, almost every one of the book’s 616 pages contains a nugget of wisdom about the practice of science. An example is Judson's description of a scientist as "a scout rather than a homesteader.” In a short phrase, Judson captures the two research tacks of a scientist: the ’scout,’ who is much better at opening a new area rather than digging down in the details of an established field (the ‘homesteader’). Experiments are described in as much detail as necessary. We repeatedly are made to understand what was the missing link in the theory, and the experimental or conceptual logic that filled it in. The only time the book gets bogged down is in the buildup to the determination of the genetic code, in which Judson prints too many letters that contain the minutia of Crick's and Brenner's lives.

Far from being a book that’s in the weeds, *TEDoC* contains two chapters that capture the conceptual questions that underlie biology. In Chapter 4, “TH Morgan’s Deviation and the Mystery of Life,” Sydney Brenner, in just 4 pages, completely and clearly describes the major questions in biology and potential pitfalls in the current (January 1971) practice of it. It is 2016 at the writing of this review and the major questions and problems in the way of progress *remain exactly the same*. Yet these seemingly important points go unremarked in seminars and graduate education. In the Epilogue, Judson attempts to encapsulate the main contributions of the molecular biology revolution to biology and in the process grapples with biological specificity. Both Chapter 4 and the Epilogue should be required reading for all biologists.

TEDoC gets the details of experiments and the emotional feel for people and places correct, while extending to the limits of our understanding. It is undoubtedly one of the best popular scientific books ever written.

Maria says

It took me forever to read this book. The history of the science is interesting (as well as the science itself). My biggest complaint is that Judson spends time telling us what he had to drink while he interviewed people or where he met them the first time. It almost feels like instead of simply writing the history he wanted to be part of it but couldn't so now he drops all the names of the people he met while writing the book. Also, the story isn't told strictly chronologically so if you pick it up expect to jump around in time a bit. I ended up having to write a timeline as I read it to keep things straight, his constant mentioning of the year he interviewed people is somewhat detracting from trying to put the science (which generally happened anywhere from 30 to 5 years before the interview) in a historical context. Good Luck!

The real Amy says

Absolutely fantastic book, and even better journalism, though Judson styles himself an historian, not a journalist. Don't know why, nothing wrong with journalism. The quality of the interviews is terrific, the writing's wonderful (particularly when he's being reasonably straight about it and not indulging a novelist-manquee urge), and I'm enormously impressed by the amount of science teaching he manages to do -- and allow his interviewees to do -- without becoming didactic. Am grateful for the long quotes.

The DNA story's wonderful, the Monod history's un-put-downable, the portrait of Pauling's indelible. First half of the RNA story's a bit endless & shapeless and all Crick. I understand the idea of putting across the sense of bewilderment, loose ends, & the problem's lack of useful handles, but it does go on. Haven't got to the 70s mol bio story yet.

He's got an epilogue on the Rosalind Franklin story, which has unfortunately been allowed to hijack the double-helix story -- not terribly surprising, since it's good drama, but not very good science history. Anyway he weighs the case of sexism at MRC and finds none; I think he missed important subtleties of sexism in labs and antisemitism in England.

Plan to spend a while on it.

Gregory Brokaw says

Just read the author's obituary in the NYTs. Was reminded how much I was enthralled by this book when I read it in 1996 or so.

Dave says

This is a fascinating book though it can be a very slow read for the non-scientist reader! For example, it took over a week to complete one particular page as I had to go and read up on the Bohr effect, haemoglobin's structural changes in response to oxygen stimulation, to grasp the significance of the advances in understanding of the protein. There were many more such instances, albeit less extreme.

However, the book's breadth of scope and depth of research made for an comprehensive overview of the birth of molecular biology. The book is divided into three main sections: the discovery of DNA, of RNA and the discovery of the structure of proteins. A short section in the text, together with the two-page appendix,

provide the most concise but clear explanation of Fourier analysis I've ever read.

The book's especially interesting because it describes, not only the scientific advances and how they happened, but the personalities behind the names. Judson spent considerable time with every significant character in the story and paints a vivid sketch of their strengths while not ignoring their flaws. However my lingering impression is of the modesty and integrity of the dedicated - okay, probably that should be stubborn - men (mainly men and only a few women, unlike today) doggedly investigating their chosen subjects. Our debt to them, in the advances they made, is enormous.

Luke says

The scientific process as embodied in the creation of a whole new field (molecular biology) from the intersection of many others (physics, chemistry, biology, information), this is a stunning project of interviews, recollections, and re-tracing the experimental and conceptual false starts and breakthroughs in uncovering the physical nature of genetics.

Grzegorz Chrupa?a says

The Eighth Day of Creation by Horace Freeland Judson is about the exciting epoch in the 1940s, 50s and 60s when scientists such as Max Delbrück, Francis Crick, James Watson, Jacques Monod, François Jacob, Max Perutz and others were discovering the secrets of life.

It is based on many many hours of interviews with the principal characters involved and goes into the science in considerable detail. It's one of the best books I've read in a while, and I'm surprised it was not on my radar until recently. Highly recommended.

Dennis Yamashita says

First published in 1979, I first read EDoC when I was in high school (and lent my original copy to my step daughter, Rae). I am currently re-reading the 1996 republished, expanded edition from Cold Spring Harbor Laboratory Press. Many advances in molecular biology have been made since this early journalistic story, but EDoC captures the exciting interplay of insights, theory, data, false starts, and ultimate successes that drove the early stages of the field. Judson provides balance by including interviews of many of the scientists associated with the discovery of the structure of DNA, the subsequent elucidation of the genetic code, and mechanisms of gene regulation including Watson, Crick, Wilkins, Chargaff, Perutz, Pauling, Donahue, Brenner, Jacob, Messelson, and Monod. Franklin was not interviewed since she died in 1958, but much documentary evidence of her contributions including lab notebook entries, interim research reports, and accounts are included.

Alan Parker says

The best book on the history of science that I have ever read, and I have read quite a few. Beautifully written,

detailed account of the start of molecular biology. The key characters were repeatedly interviwed and their accounts interwoven to create a dramatic story of how it all happened. Wonderful.

John says

A wonderful account of the beginnings of molecular biology. The science is totally understandable to lay readers (well my N for that is small) but rigorous enough to be recommended by my development bio prof. Judland found the luminaries of the field and recorded their stories and contradictions in a fascinating way.

Marc Perry says

This book was assigned as a supplemental or recommended text (i.e., not a required text) in our full year Biochemistry course for Biochemistry Majors at UC Berkeley in 1980-1981. It is difficult for me to think of another scientific book that has had such a profound impact on my development and career. If you enjoy reading about the history of science (especially 20th century science) then in my opinion this book is absolutely a "must read." If you are trained as a molecular biologist, geneticist, or biochemist, then I think you will find reading this book well worth your while. Horace Freeland Judson (whom I believe was a Prof. at Princeton at the time) followed these people around in the lab, interviewed them incessantly, and followed up with letters and phone calls, and manages to capture and present the palpable excitement of unraveling the structure of DNA and deciphering the genetic code in a way that no one has ever done before, or since. One of my absolutely favourite books of all time (this review was posted from Cambridge, UK, on a trip where I visited 'The Eagle' Pub that Jim Watson and Francis Crick ran into to announce that they had discovered the secret of life. The Cavendish Laboratories, which was at that time the site of the Medical Research Council's Laboratory of Molecular Biology, stands to this day (2011).

Andy Love says

An excellent history of biochemistry in the 20th century, covering all the wrong turns and breakthroughs involved in the discovery that genetic material was made of DNA, not proteins, the unraveling of the genetic code (including the role of George Gamow), and the determination of the structure of hemoglobin. He also goes over the discovery of the structure of DNA, a story already covered by "The Double Helix," but Judson's treatment of the material is complementary, covering the details of Pauling's competing efforts to find the structure of DNA.

Bruce says

The science itself is fascinating, the description of the scientific process indispensible. For such a great book, it is maddeningly flawed in that, in many spots, the science is sprayed, not explained. Example: "The high-resolution map of oxyhemoglobin showed a weak, diffuse peak for the last amino-acid residue but one, tyrosine 145B, and no sign of histidine 146B. The carboxyl terminals were free to move. The low resolution map of the deoxy form, though, showed a faint loop of density extending from the carboxyl end of the beta chain..." Nowhere near a sufficient foundation was laid for this. Diagrams are far too sparse (1979 ed.). This

book deserves a good rewrite and to be reread many years hence.

Woodward Library says

Patrick Keeling, Professor, Botany recommends . . .
The eighth day of creation : makers of the revolution in biology by Horace Freeland Judson

Why is this a favourite book?

I borrowed Horace Judson’s The Eighth Day of Creation from my graduate advisor when I was a student, and it had a big impact on how I saw my work and where it fit into the big picture. It is a history of how molecular biology was invented, and seeing where all these ideas and insights that I took for granted came from was really an eye opener for me.

Animesh says

This is an area that I know too well. I have been personally acquainted with many of the protagonists described in this book--Novick, Watson, Brenner, Stahl, Meselson, Luria, Khorana, to name a few--and so to read the history of the discipline that never ceases to fascinate me since the age of 14 when I first came to know of DNA was a treat indeed.

The history of molecular biology as we know today began probably with Delbruck and Pauling, but a continuous line of intellectual descent can be traced from the physicists Ratherford, Bragg, Bohr, Szilard and Schroedinger on the one hand, and from geneticists Haldane, Beadle, Lederberg, Hershey and Luria on the other. The history of DNA from the geneticist's heritage was traced well by the author Horace Freeman Judson, but the intellectual descent from the physicist's side perhaps not adequately beyond the influence of Schroedinger, Pauling and Delbruck. The book is an engaging story of the making of molecular biology, which does not end with DNA but goes on to explore the early phases of molecular biology including the discovery of messenger RNA, coding, the French effort to understand the regulation of genes. It is scholarly as well as engagingly entertaining. The author depends heavily on interviews of the protagonists, nearly all of whom were alive at the time the book was written. Some of the information are startling...for example we learn that Haldane had anticipated the isotopic density labeling experiment for addressing the mechanism of replication of the genetic material some twenty years before the famous Meselson-Stahl experiment (and had published this conjecture in an editorial written in a newspaper of all places!!), though Haldane had (erroneously) assumed protein, not DNA, to be the genetic material. [Stahl had never read that article by Haldane, as he told me later when I asked Stahl about it]

It is an exciting read--thrilling, if you ask me--if you wish to know how the science of life came to be what it is today.
