Thank you, Max

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I Wish I'd Made You Angry Earlier. Essays on Science, Scientists, and Humanity
Max Perutz

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When reflecting on science, most scientists think of important discoveries, but it is equally important and fascinating to understand the scientists, their personalities and passions, and the cultural and political

backdrop against which science is done. Max Perutz's book *I Wish I'd Made You Angry Earlier* is a wholly captivating book that explores all these aspects of science. It describes science and ideas simply and lucidly, bringing scientific endeavours to life, and reflecting on people and humanity with warmth and wisdom. Importantly, the book lets us steal a glimpse at Max Perutz, the man.

Max was born in Vienna in 1914. He left Austria in 1936 for Cambridge, England, where he remained until his death in February 2002, at the age of 87. Max carried out research and continued writing up to the end of his life, except for a short period during the Second World War when he was interned as an enemy alien. He was one of the founding fathers of molecular biology in Europe, and spent 50 years with what he called his 'mistress'—studying the structure and function of the oxygen-carrying blood protein haemoglobin, for which he was awarded the Nobel Prize in Chemistry in 1962. Max was not only a brilliant scientist, but as the book testifies, he was also a true Renaissance man as well as an eloquent writer. Few could tell a good scientific story like he could.

The book is a collection of 38 essays written during the past 30 years of the author's

life. It is an expanded version of a collection published under the same title in 1998. These essays explore an impressive range of topics and are grouped under four headings: 'Ploughshares into swords', 'How to make discoveries', 'Rights and wrongs' and 'More about discoveries'. The articles in the first three sections were written for the *New York Review of Books*, the *London Review of Books* and other journals for the layman. Most of the essays in 'More about Discoveries' were addressed to scientists. The book also contains Max's collection of 'wise sayings', and a warm portrait of Max by his friend and professional colleague Sir John Meurig Thomas. Max's own description of his book cannot be bettered: "Science is no quiet life. This book includes detective stories, tales of conflict and battle, a woman's love affair with crystals, a man's gruesome fascination with poison gas, cancer cures as Nobel Laureates' geriatric illusions, an onslaught on social relativists, a war hero's anticlimactic homecoming that led to a Nobel Prize, phantom perils threatening to poison us, and real perils conquered by silent heroes. Peter Medawar preached that 'science at all levels of endeavour is a passionate enterprise and the pursuit of natural knowledge a sortie into the unknown'. If my book convinces readers of the truth of this dictum, it will have served its purpose." To this I would add that the book also serves as a history of the discoveries and great scientists of the late nineteenth and twentieth centuries.

The curious title of the book is taken from an essay about the discovery of the α -helix. This essay is a few pages in length and reads like a detective story. Fifty years ago, the key to understanding the structure of proteins lay in elucidating the ubiquitous fold that had been deduced to be present in proteins from X-ray-diffraction patterns. However, these diffraction patterns did not contain sufficient data to define the precise structure. Perutz describes his frustrating model-building efforts with John Kendrew, and the shock and disappointment of discovering on a Saturday morning a paper just published by Linus Pauling and Robert Corey that seemed to have the answer. A few hours later, after much turmoil, he had an idea—the idea

that would substantiate the model of his rivals with X-ray data. He describes how he stormed into Lawrence Bragg's office the following Monday morning (Bragg had pioneered X-ray crystallography and was Max's boss) to show him his X-ray-diffraction picture. When Bragg asked Max what had made him think of the crucial experiment, Max told him it was sparked off by his fury at having missed out on building the beautiful structure proposed by Pauling and Corey. Bragg's prompt reply was: "I wish I'd made you angry earlier!"

The majority of the essays in the book portray great scientists, many of whom were Nobel Prize winners: physicist Lise Meitner in 'Splitting the atom', chemist Fritz Haber in 'Friend or foe of mankind?', immunologist Peter Medawar in 'High on science', chemist and humanitarian Linus Pauling in 'What holds the molecules together?', crystallographer Dorothy Hodgkin in 'A passion for crystals', molecular biologists James Watson and Francis Crick in 'How the secret of life was discovered', and many more. These portraits are particularly enlightening because Max knew many of the characters personally. Of Watson and Crick he wrote, "Like Leonardo [da Vinci], they seemed to achieve most when working least. This was their way of attacking a problem that could be solved only by a tremendous leap of imagination supported by profound knowledge. Imagination comes first in both artistic and scientific creations. But in science Nature always looks over your shoulder. To paraphrase Winston Churchill, 'In science you do not need to be polite, you only need to be right.'"

I Wish I'd Made You Angry Earlier is a fascinating book to dip into and read a story, or to read from cover to cover. In particular, I urge young scientists to read this book to get a perspective on their scientific heritage and to understand that science is a passionate pursuit.

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