

book review

Tales of science

Alexander Rich

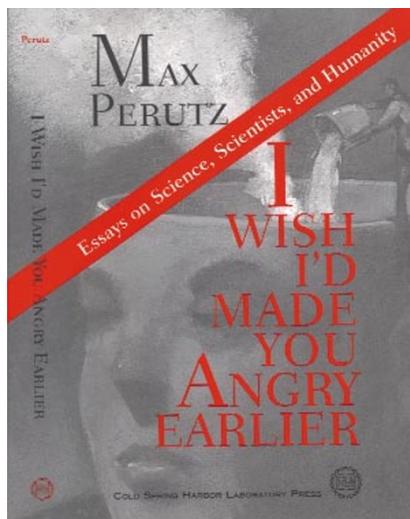
I wish I'd made you angry earlier: essays on science, scientists, and humanity by Max F. Perutz. Published by Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, USA; 1998. 354 pages, US \$39. ISBN: 0-87969-524-2.

At an age when most scientists think about retirement, the pioneering protein X-ray crystallographer Max Perutz has not only continued a vigorous research program, but has also taken on a second career as a book reviewer and essayist. Those who have read his stimulating and informative pieces in the *New York Review of Books* will be delighted with his recent collection of these supplemented by several essays in a book with the enigmatic title: "*I wish I'd made you angry earlier*".

The title comes from a short essay describing work in 1950 at the Cavendish laboratory in Cambridge, England, to uncover the helical fold of polypeptide chains. Perutz, together with his colleagues John Kendrew and Prof. W.L. Bragg, grappled with the problem of how the chains folded in α -keratin (or hair) and published their work without any firm conclusion about the correct fold. Shortly thereafter, Perutz was thunderstruck upon reading the brief paper by Linus Pauling and his colleagues proposing the α -helix. Perutz recognized that the model had an amino acid every 1.5 Å along the helical axis and that the spacing should show up in an X-ray diffraction pattern, but it had never been reported. Perutz took a piece of horsehair from a drawer, adjusted the angle in an X-ray beam and found the reflexion. On showing the results to Bragg, the Professor asked Perutz what had led him to this crucial experiment. Perutz answered that he had gotten mad at having missed discovering the beautiful structure. Bragg's prompt reply became the title of the book.

Although the reviews and essays are on a broad array of subjects, the book has a coherent focus on science, scientists and their interactions with society. The cast of characters includes many different scientists involved in crucial discoveries, illustrating their work through brief but pungent biographical sketches.

For example, Lisa Meitner, working in



Berlin, played a key role in the discovery of nuclear fission, but had to leave in 1938 because of Nazi persecution of Jews. Perutz's review of Meitner's biography is a splendid, concise account of the discoveries leading to the atomic bomb. It is further supplemented by reviews of the biography of Leo Szilard who patented the idea for a nuclear reactor in 1934 while fleeing from the Nazis, a memoir by Andrei Sakharov describing the Soviet bomb project and an account about Werner Heisenberg and the German atomic bomb program. Taken together, these give the reader an excellent précis of the events in the scientific community over 50 years ago, leading to the nuclear age.

A significant part of the book concerns the origins of molecular biology. A brief but vivid account of Linus Pauling's scientific life ("What holds molecules together?") strongly emphasizes the way he transformed chemistry by bringing it into three dimensions. Also included is a concise account of how Salvador Luria and Max Delbruck explained bacterial resistance to phage infection, thereby opening the field of bacterial genetics. A

particularly exciting essay ("How the secret of life was discovered") describes the work of the mild mannered, formally attired Oswald Avery and his colleagues who ultimately established in 1944 that DNA was the agent which transformed the *Pneumococcus* polysaccharide coat. It was clear that Avery knew that DNA was the "pure gene", a revolutionary discovery that led some nine years later to the work of Watson and Crick in Perutz's laboratory.

The most gripping essay in the book, and the longest, is "Enemy alien", an autobiographical account of Perutz's life in 1940. Coming from Austria, he had spent the preceding four years in Cambridge earning a Ph.D. on crystal studies of hemoglobin. Fearing sabotage, the British rounded up and imprisoned all 'enemy aliens' when World War II started. However, these were mostly refugees who had escaped from the Nazis, including a large number of Jews. Perutz and the younger men were shipped to a prison camp in Canada. His account of this gross injustice was made more graphic by the story of others whose ship was torpedoed and sank while being transported. After being released from prison, Perutz continued working in Cambridge. He describes a most amusing project during that period in which an attempt was made to create a floating airfield from ice mixed with sawdust. This autobiographical sketch is a mixture of tragic history and Keystone Cop comedy.

Perutz has a simple, direct writing style. He knows how to tell an interesting story, whether dealing with biography (such as Medawar, Haber, Djerassi or Jacob) or scientific discovery. He has an eye for the irony of life as well as its excitement. It is a satisfying read.

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