

MENDEL. THE MAN, THE WORK, THE LEGACY

A book review

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Science has its martyrs and and it has its saints. Of the latter, few deserve a higher altar than Brother (later Abbot) Gregor Mendel, the Father of Genetics.

Figure 1. An undated portrait of Gregor Mendel. This and the other figures are digitized images from (1920s?) postcards in the author's collection. The three postcards were credited to M. Hofer and printed in Praha.

Simon Mawer has written a superb biography of Mendel (Gregor Mendel.

Planting the Seeds of Genetics. Abrahams, New York, 2006). The book is a companion to a traveling exhibition cosponsored by the Chicago Field Museum and by The Mendel Museum of Brno, Czech Republic. In a relatively short text, 176 pages in the soft-cover edition, the book narrates Mendel's life, his work and findings, and finally it provides a follow up of Mendelian genetics into modern-day molecular genetics.

It would be difficult to write in a clearer style, or been at the same time more concise and more comprehensive. The author brings to life remote, forgotten pieces of information that are however, significant to the better understanding of Mendel's work. Mendel's life is reviewed from his childhood marred by cruel poverty to his refuge into the sheltered (to a point) life of the cloister. The book describes Mendel's incredibly painstaking and methodical experimental work and his touch of genius in using a numerical approach to the collecting and analysis of data. He was not only creating Genetics, he was creating Biostatistics. This in the middle 1860s, at the time of the American Civil War, before DNA (originally called "nuclein") had been discovered by Friedrich Miescher in 1869 (not by Watson and Crick, Wilkins and Franklin in the 1950). This was before Walther Flemming described the process of mitosis in 1882, which is to say long crucially important phenomena such as chromosomal segregation and cross-over could even be suspected to exist.



Figure 2. The famous pea garden at the monastery of Brno. Mendel's statue can be seen at the far left, indicating the picture was taken years after Mendel's death and when he was already been recognized as a giant of modern biology.

We microscopists may ask, what is in this book regarding Mendel's microscopic work? Not much. But what is there is of interest. The back of the soft cover edition brings a very good color picture of Mendel's microscope (figure 3 is an alternative illustration of the same microscope). It is a brass stand with tripod base, divisible objective, an extra objective, and bull's eye. The most unusual and charming feature is a hat for the the ocular. Yes, a Mongolian-style miniature leather hat for the ocular, red with a rim of white fur! Hats of similar design are worn by ladies (mostly) in the winter every big city. But on a microscope? The closest approximation would be the wooden caps placed on top of some 17th century microscopes.



Figure 3. Another postcard from the Praha series showing “one of his microscopes”, as well as Mendel’s eyeglasses. The small object at the right of the mirror is the leather cap. In a modern color photograph, such as that in Mawer’s book the cap becomes a visually very attractive object with touches of white, black and red.

Besides the picture of the microscope there is an illustration showing a box of slides, but other than reporting that Mendel used the microscope to study grains of pollen, little is said on this aspect of Mendel’s work. The limitation is understandable, there is only so much that can be said on any particular point in a book that covers 150 years of research in 176 pages.

The “mendelian” chapters are excellent and most informative, and the same can be said of what is like a bonus in this book, the history of genetics after Mendel. Those chapters, six in total, present a lucid, exciting, even fascinating view of the progress of cellular and molecular genetics. They tell first of the re-discovery of Mendel’s findings, decades after his death, and of the coalescence, difficult at first, between the postulates of the Darwinian theory with the mendelian postulates (no, Mendel did not write the Mendelian “laws”!). The 20th century saw the momentous birth of molecular genetics. It started with Avery’s 1944 experiments demonstrating that DNA was indeed “the substance of heredity” and culminated with the theoretical work of Watson and Crick that provided the seminal model of DNA structure (“We just found the secret of life!” Crick, never unnecessarily modest, bragged at the local pub). What followed in molecular biology was beautiful; we are living it today. Likely, it will lead to the creation of complex life in the laboratory in the next few decades. All of this derives, step by laborious step, from the experiments carried by a priest in a small monastery garden in the city of Brno.

If I sound excited in reviewing this book is because I am. The book grows as the story grows; the name of the very famous are mentioned, their work explained clearly and put in perspective as links in a golden chain. But also the unjustly forgotten are given their dues. These include Nettie Stevens who in 1905 postulated that the x-chromosome was a sex determinant, and the 19 year-old Columbia undergraduate, Arthur Sturtevant who in 1913 was the first to map genes along a chromosome. Tragedy has its place in these pages too. Generous reference is made of Nikolai Vavilov, the outstanding Russian geneticist that died a political prisoner in Stalin’s gulag. He was ac-

cused of following Mendel's teachings, the "fake products of the Catholic Church (!) and Capitalism." Science has its martyrs.

Simon Mawer is the author of several books of fiction and non-fiction. These include 1997 "Mendel's Dwarf," that although fiction, relates in subject to the present book. In conclusion, it can be said with certainty that the present book will be read with pleasure by anyone who loves biology, the science of life.