History of mathematics

History of mathematics: internalist, externalist, social, cultural

Helena Durnová

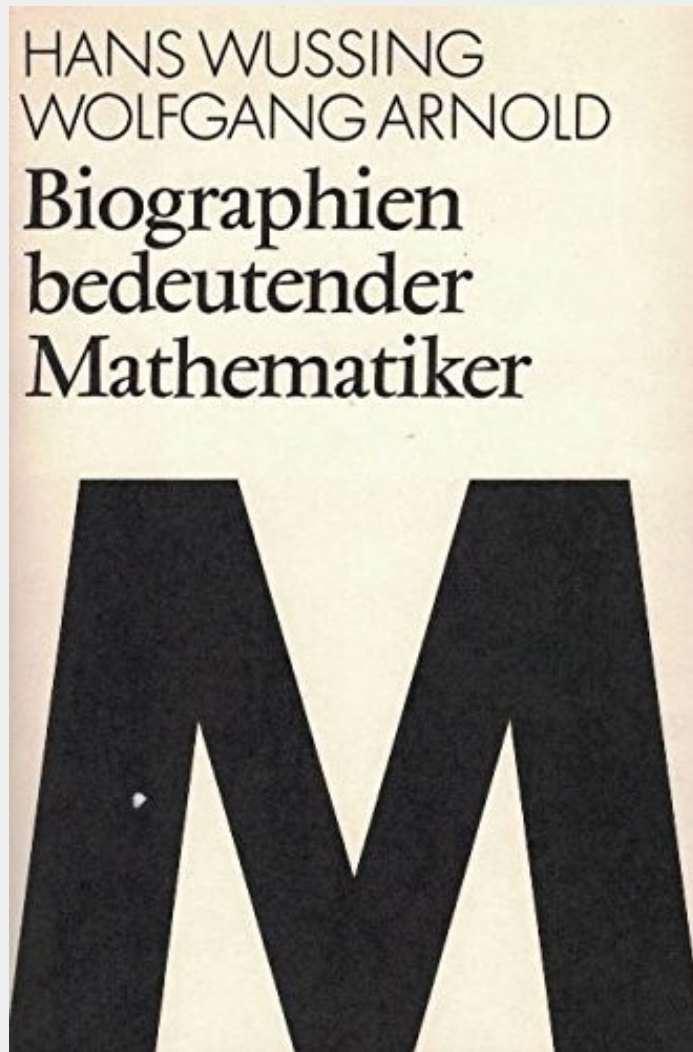20 February 2025

Purpose of this lecture

- Inspiration for your book presentations next week

- Talking about books you probably will not read, because they are in German, French, and Russian (in translation)

- Different authors: also fiction writers

- Different styles:

  - Compendium, Handbook, Monograph,

  - Textbook, Popular book

- Different readerships:

  - Historians of mathematics, mathematicians

  - Children, Students, the Public

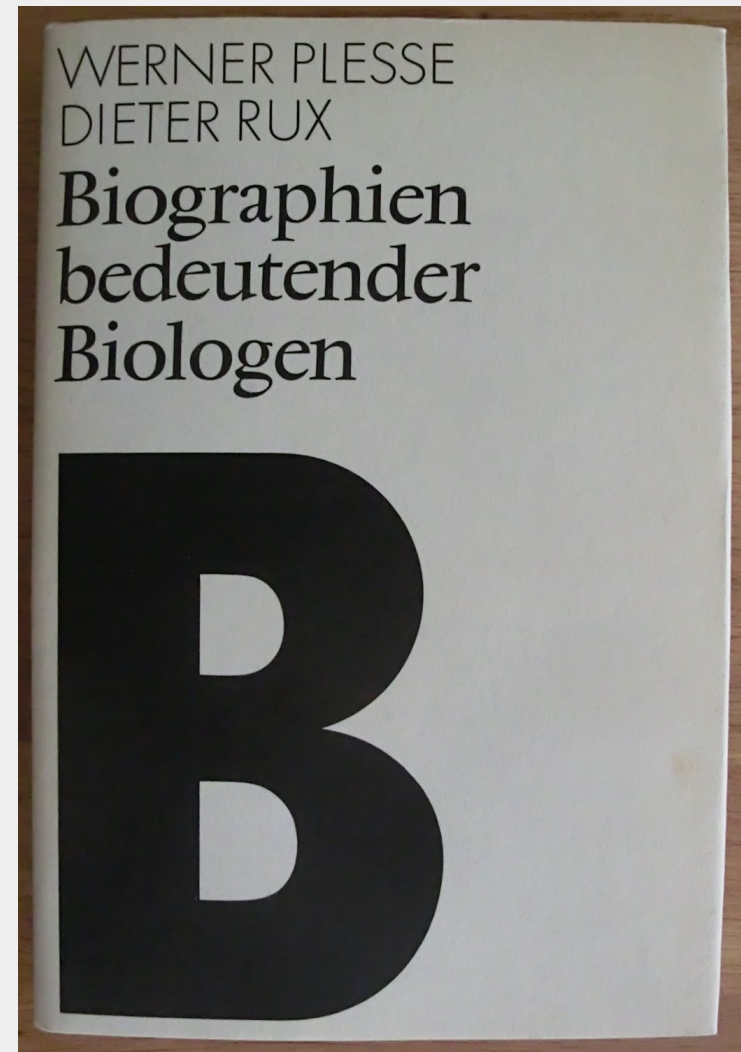# Hans Wussing (1927-2011)

- German historian of mathematics

- Worked in the GDR (Eastern Germany)

- Famous for writing about Mathematicians on postage stamps

- Mathematics in the Antiquity

- Lectures on History of Mathematics (for future maths teachers)

- Biographies of significant mathematicians
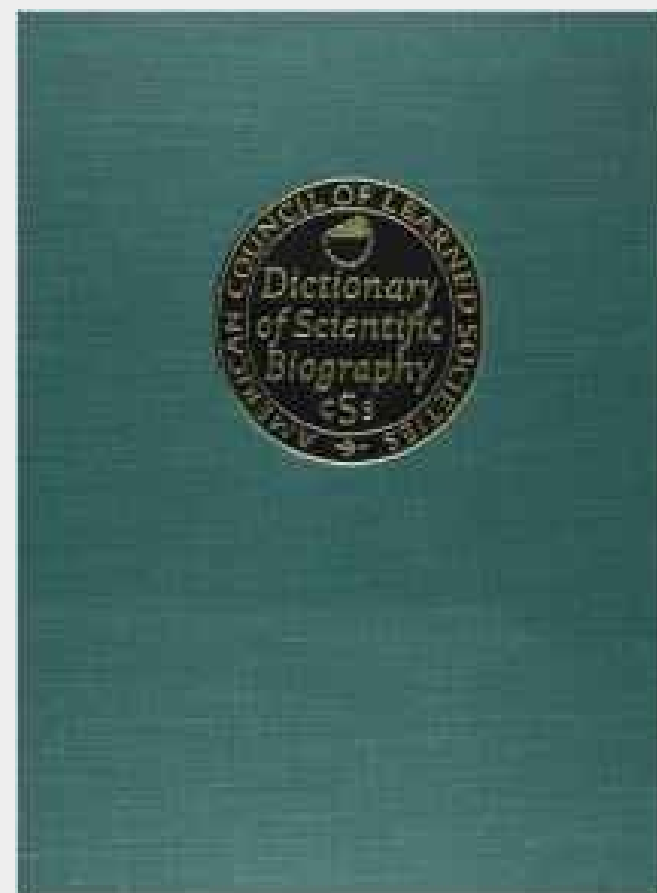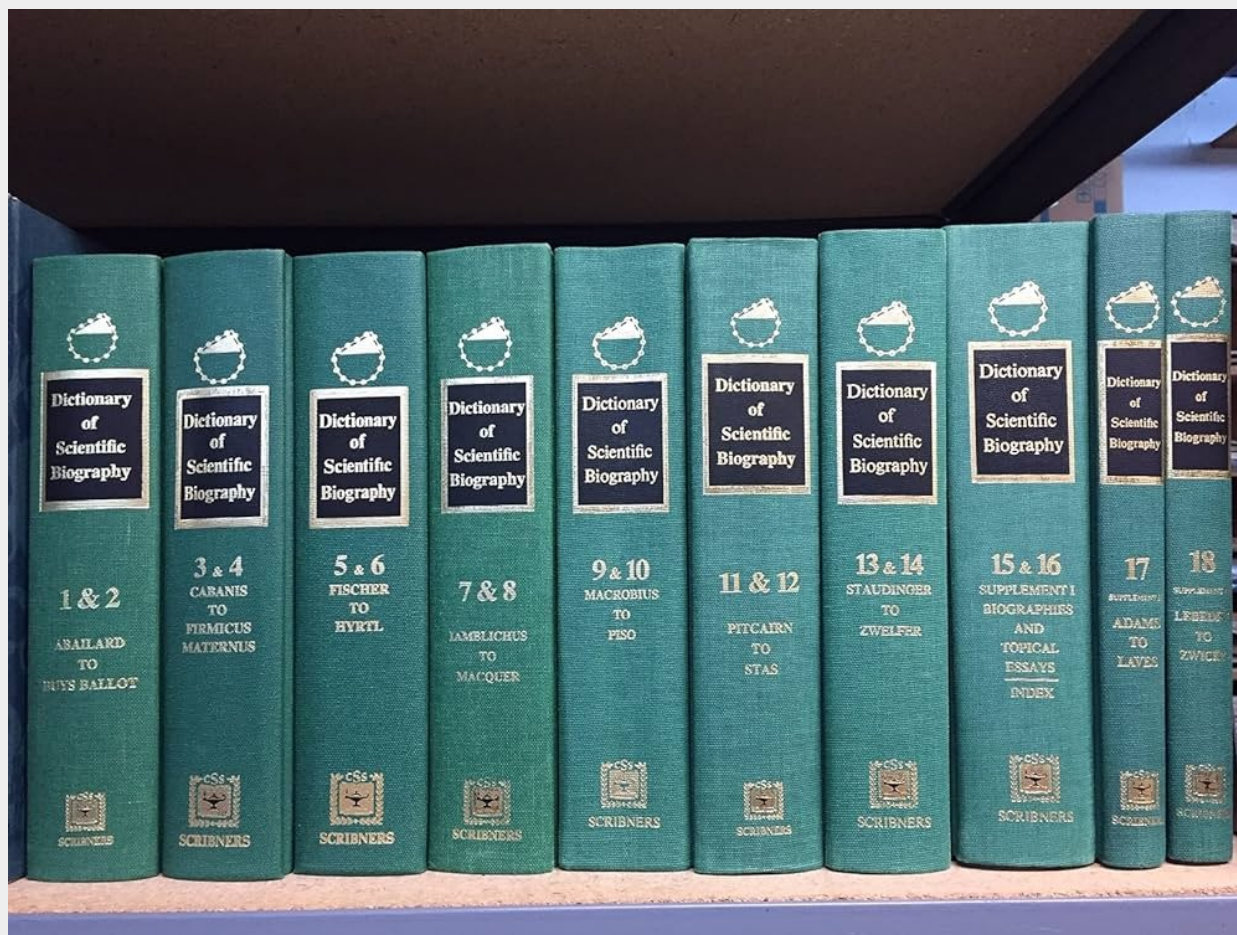
Biographical dictionaries
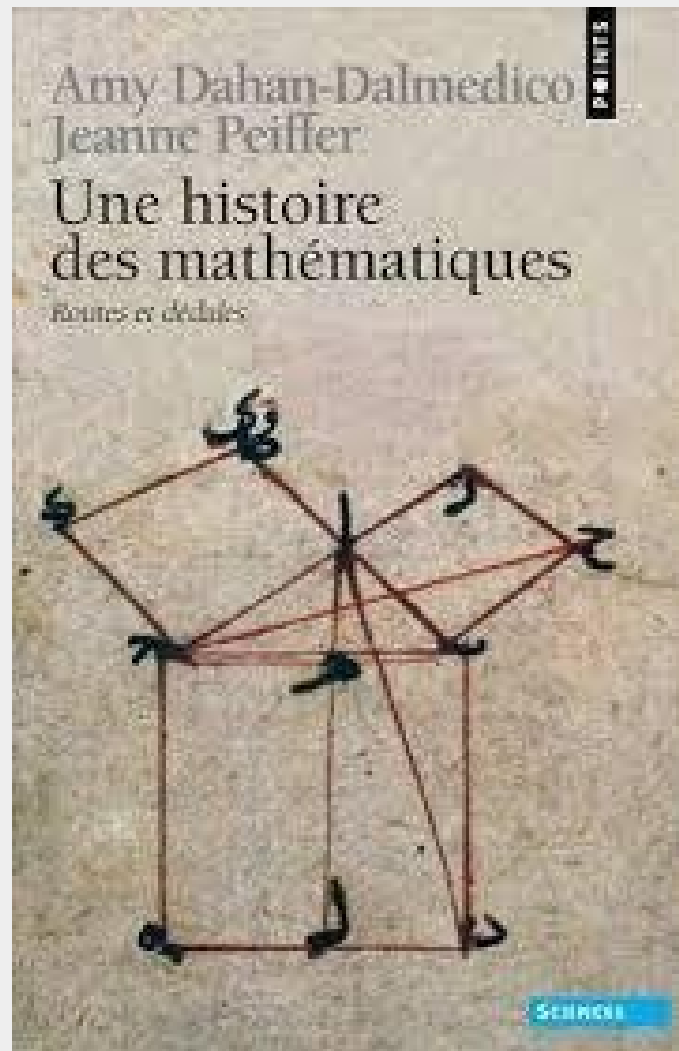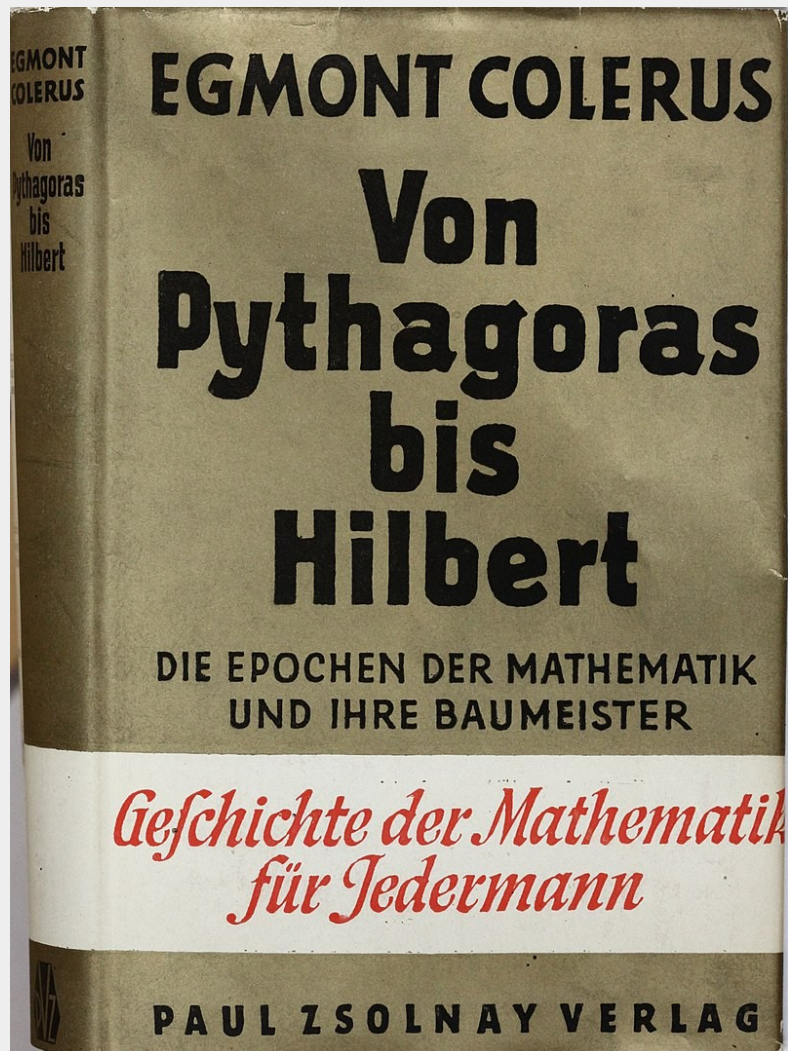
Dictionary of Scientific Biography

Une Histoire des Mathématiques. Routes at dédales. (1982)

- Authors: Amy Dahan-Dalmedico, Jeanne Pfeiffer

- Translation into Russian: 1986

- Criticism in the Russian edition: weird choice of topics, missing information about Russian and Soviet scientists, etc.

- 8 chapters: Panorama; Greece; Figures and geometry; Classical Algebra; Big changes; The notion of a function; Between algebra and geometry; New objects.
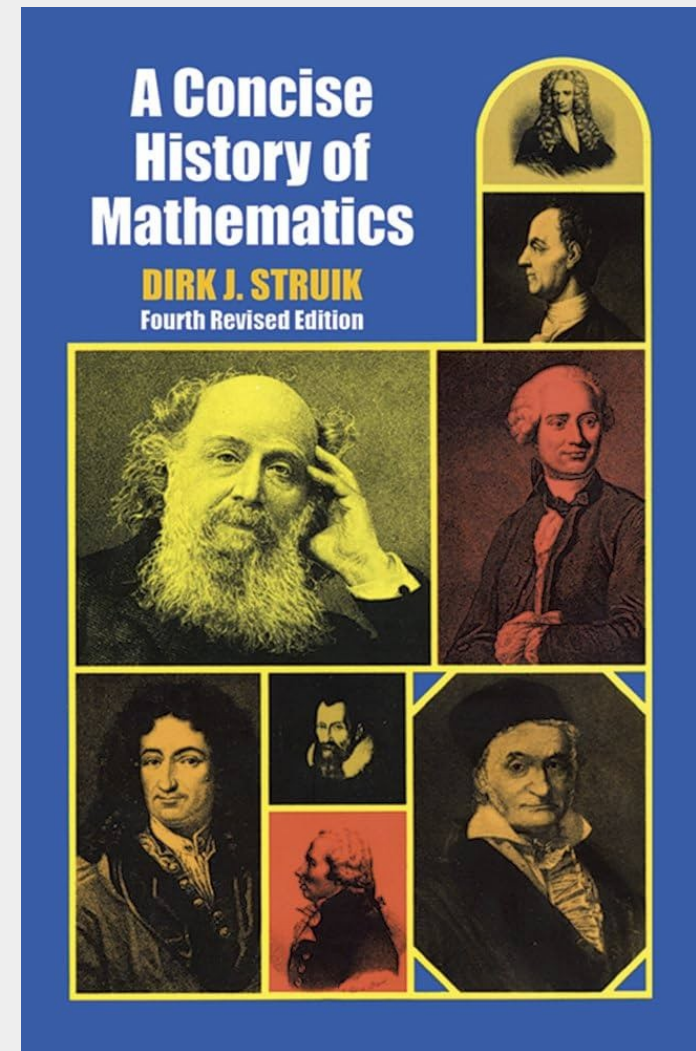
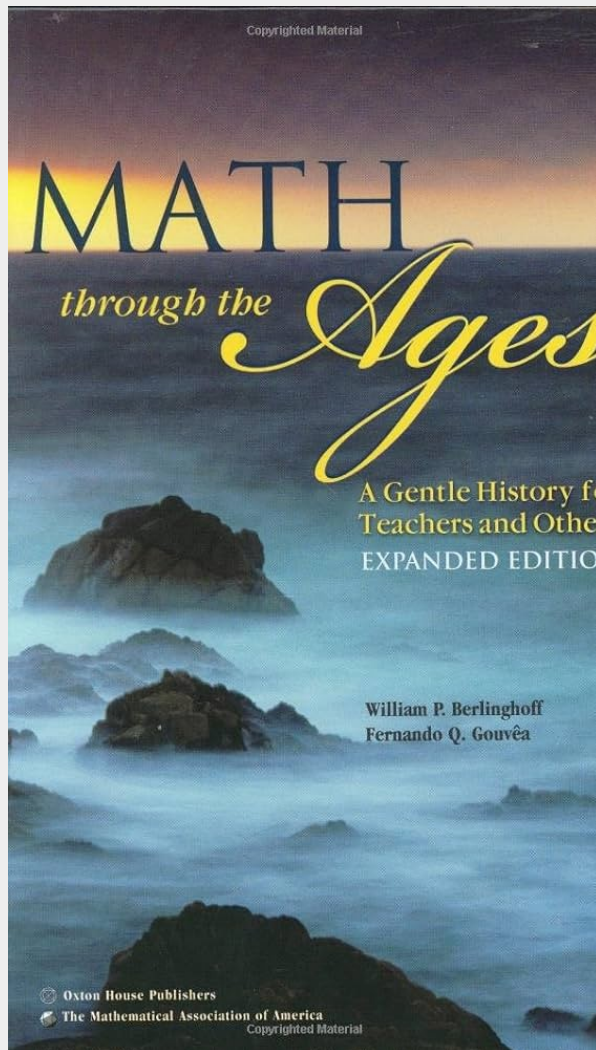# Egmont Colerus (1888-1939)

- German edition: 1940

- Translated into Italian (1941) as *Piccola Storia Della Matematica*

- *Pythagoras; Euklid; Archimedes; Apollonios von Perga. Diophantos; Alchwarizmi; Leonardo von Pisa; Nicole von Oresme; Vieta; Jost Bürgi; Descartes; Jean Victor Poncelet; Evariste Galois; Carl Friedrich Gauss; Bernhard Riemann; David Hilbert*

A Concise history of mathematics (Dirk Jan Struik)

- Beginnings

- Ancient Orient

- Greece

- Beginnings – western Europe

- 17th century

- 18th century

- 19th century

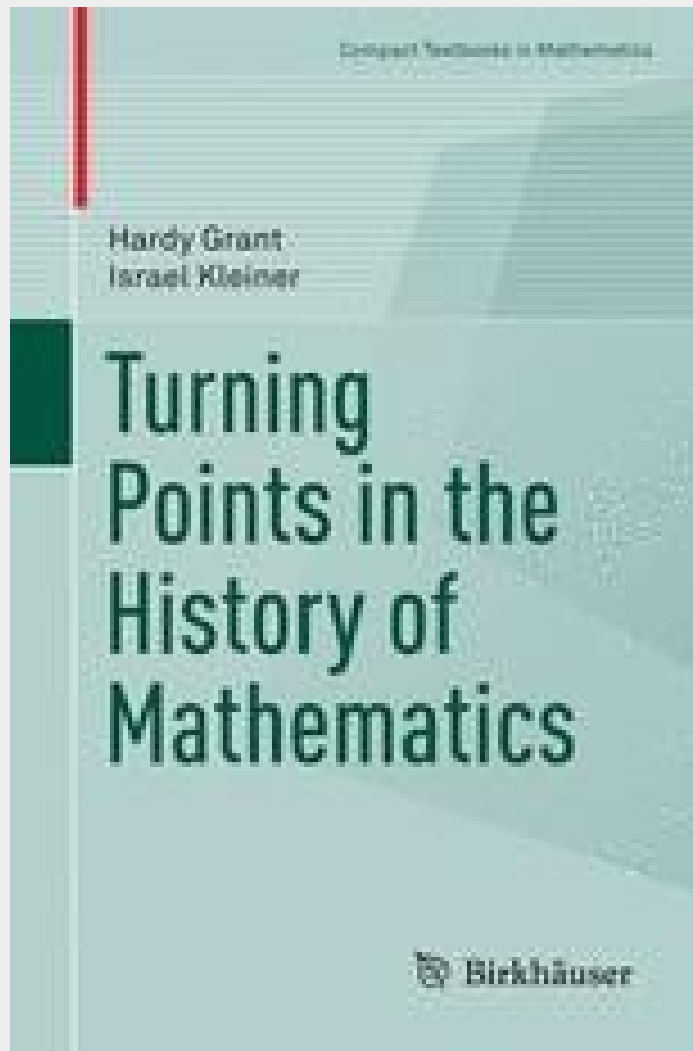- Main periods in history of mathematics

Math through the Ages:
A Gentle History for Teachers and Others

- Beginnings

- Greek Mathematics

- Meanwhile in India

- Arabic Mathematics

- Medieval Europe

- The 15th and 16th centuries

- Algebra comes of age

- Calculus and Applied Mathematics

- Rigor and Professionalism

- Abstraction. Computers…

- Mathematics Today

Turning points in the history of mathematics (Grant & Kleiner 2015)

- Axiomatics – Euclid and Hilbert

- Solution by radicals

- Analytic geometry

- Probability (games to theory)

- Calculus

- Gaussian integers

- Noneuclidean geometry

- Hypercomplex numbers

- The Infinite

- Philosophy of mathematics

- Some further turning points

Writing history of mathematics essay

- Topic and question

  - Your own question, but may be on an "old" topic

  - How did it happen? What is the story?

- Sources

  - GOOD: but what is a good source? Paper vs. Internet is not the right distinction

  - For your essay, they should be easily available

- Advice?

  - Get the chronology right

  - Do not use words like "naturally", "obviously", etc., nor superlatives

  - Explain why you would like to know about the particular topic

  - Use footnotes: History floats on footnotes.