Gallatin School MW 3:30-4:45
Spring 2009 715 Broadway, 527

K20.1532
LIVES IN SCIENCE

This course explores the nature and practice of science and the role of science in our society through the medium of biography and autobiography. If all goes as planned, the course should provide you with an introduction to the history of science since the seventeenth century, some insights into science as a creative activity, and an understanding of the social role of science and scientists in the modern world. Popular and fictitious accounts of scientists seem to fall on one side or the other of two extremes, either glorifying scientists as heroes of superhuman proportions, privy to secrets hidden from ordinary minds, or as tainted geniuses, all too willing to use their knowledge for evil, fame, or worldly gain. Although the subjects of our inquiry are all major contributors to modern science, our primary intention will be neither to praise scientific genius nor to criticize and demythologize. Our main goal will be to use the biographical and autobiographical accounts to gain understanding about the process of the creation of scientific knowledge, the nature of science as a career, and the mutual interactions between science and culture, including in the latter such issues as the influence of race, gender, politics, and social class. We will devote some time as well to discussing scientific biography as a genre.

Course requirements.
(1) Attendance, punctuality, and participation (15%). I will take attendance at each class. You are expected to attend all classes except for illness or emergency and to come to class on time. Three unexcused absences will be frowned upon; more than three will result in a reduction of your grade. Since this is a seminar, your active participation is required. Please bring to each class two questions or comments on the readings. These are not to be handed in, but you may be called upon to read your questions/comments before the entire class or in small groups.

(2) Six response papers (25%). We will be reading eight biographies/autobiographies. You are required to turn in a response paper (about two pages typed) on any six of the eight. These should be thoughtful reflections on the readings. Feel free to speculate, question, challenge, and probe. Your prose can be looser than for a formal essay, but something more disciplined than free association or an internet blog. Response papers are due no later than the beginning of class on the last day during which we will be discussing the book in question.

(3) Two essays, 6-8 pages each (60%). The first (25%) will be due Friday, March 13, and based on the course readings; the second (35%) will be due Thursday, May 7. You will have the option of combining course readings with outside sources for the second essay. Each essay should have a title and follow formal rules of style, grammar, and documentation. Details will follow. All written work must be your own. Any clear instance of plagiarism will result in automatic failure of this course and possible further disciplinary actions.

Gene Cittadino
715 Broadway, Room 412
Office hours: Mon. 12:30-2, Tues. 2-4, Weds. 12:30-2 & 5-6
(all other times by appointment only)
212-992-7774; e-mail: ec15@nyu.edu

Texts. The following are available in the NYU Bookstore and on reserve in the Bobst Library:

James Gleick, *Isaac Newton* (Random House; also available online through Bobst)
Madison Smartt Bell, *Lavoisier in the Year One* (W. W. Norton)
Charles Darwin, *Autobiography*, ed. by Michael Neve (Penguin)
Kenneth Manning, *Black Apollo of Science* (Oxford Univ. Press)
Gino Segré, *Faust in Copenhagen* (Penguin)
James Watson, *The Double Helix* (Simon & Schuster)
Evelyn Fox Keller, *A Feeling for the Organism* (Henry Holt)
Edward O. Wilson, *Naturalist* (Univ. of Chicago Press)

Note: The book by Paul White, *Thomas Huxley: Making the "Man of Science,"* is recommended only and is also available online through the Bobst Library.

The eight biographical and autobiographical works above will be our main texts, but there will be occasional supplemental readings. These will be either posted on Blackboard or handed out.

The following is a partial list of supplemental/recommended readings that will be made available over the course of the semester. It is not a requirement, but feel free to make use of any of these in your response papers or your essays.

Patricia Fara, "Framing the Evidence: Scientific Biography and Portraiture," in *The History and Poetics of Scientific Biography*, ed. Thomas Söderqvist (Hampshire, England: Ashgate, 2007), pp. 71-91.

Thomas L. Hankins, "Biography and the Reward System in Science," in *The History and Poetics of Scientific Biography*, pp. 93-120.

Thomas Söderqvist, "Existential Projects and Existential Choice in Science: Science Biography as an Edifying Genre," in *Telling Lives in Science*, ed. Michael Shortland and Richard Yeo (Cambridge: Cambridge Univ. Press, 1996), pp. 45-84.

James Moore, "Metabiographical Reflections on Charles Darwin," in *Telling Lives in Science*, pp. 267-81.

"Flemmie Pansie Kittrell" and "Roger Arliner Young" in Winnie Warren, *Black Women Scientists in the United States* (Bloomington: Indiana Univ. Press, 1999), pp. 153-74, 287-95.

"Georgina Dunston," "Lynda M. Jordan," and "Jennie R. Patrick," in Diann Jordan, *Sisters in Science* (West Lafayette, IN: Purdue Univ. Press, 2006), pp. 91-106, 129-40, 163-74.

Richard Feynman, "Los Alamos From Below," in *'Surely You're Joking, Mr. Feynman!'* (New York: W. W. Norton, 1985), pp. 107-136.

"Just Gossiping: Francis Crick," Lewis Wolpert and Alison Richards, *A Passion for Science* (Oxford: Oxford Univ. Press, 1988), pp. 80-95.

"Worlds Apart: Jared Diamond" and "Not All in the Genes: Richard Lewontin," in L. Wolpert and A. Richards, *Passionate Minds* (Oxford: Oxford Univ. Press, 1997), pp. 26-34, 102-110.

Chap. 2. "From Calling to Job," and Chap. 6. "The Scientist and the Civic Virtues," in Steven Shapin, *The Scientific Life: A Moral History of a Late Modern Vocation* (Chicago: Univ. of Chicago Press, 2008), pp. 21-46, 165-208.

Schedule of Topics and Readings

We will stick closely to this schedule, so try to plan ahead. The readings listed for a given date should be read before coming to class on that date. There may be slight changes in reading assignements from time to time, and suggestions for recommended reading as we go along.

W JAN 21 Introductions--The scientific life

M JAN 26 Isaac Newton: From Woolsthorp to Cambridge
Gleick, *Isaac Newton*, chaps. 1-4

W JAN 28 Light, corpuscles, and action at a distance
Gleick, *Isaac Newton*, chaps. 5-8

M FEB 2 Alchemy, theology, and the birth of the *Principia*
Required reading: Gleick, *Isaac Newton*, chaps. 8-12
"Newton's Dark Secret" (videotape)

W FEB 4 From Cambridge to London; assessing Newton's legacy
Required reading: Gleick, *Isaac Newton*, chaps. 13-15
Jefferson, "Declaration of Independence" (handout)

M FEB 9 Lavoisier: science and the state
Bell, *Lavoisier in the Year One*, chaps. 1 & 2

W FEB 11 Oxygen: what's all the fuss?
Bell, *Lavoisier*, chap. 3

M FEB 16 President's Day (no classes)

W FEB 18 The chemical and the French Revolutions
Bell, *Lavoisier*, chaps. 4 & 5

M FEB 23 Charles Darwin: the making of a naturalist, Part I
Darwin, *Autobiographies*, pp. 1-48

W FEB 25 Assessing a life in science
Darwin, *Autobiographies*, pp. 49-89 & Introduction by Michael Neve, ix-xxiii
Recommended reading: White, *Thomas Huxley*, chaps. 1-3

M MAR 2 Ernest Everett Just: South Carolina to Dartmouth College
Manning, *Black Apollo of Science*, chaps. 1 & 2

W MAR 4 Woods Hole, Chicago, and Europe: forging a career
Manning, *Black Apollo*, chap. 3 & pp. 157-63, 195-207

M MAR 9 Exile and return: unfulfilled promise?
Manning, *Black Apollo*, chaps. 6 & 7

W MAR 11 Physics and modernism: the 1920s
Segré, *Faust in Copenhagen*, Intro. & chaps. 1 & 2

F MAR 13 FIRST ESSAY DUE

MAR 16-20 Spring Break

M MAR 23 Faust and the front row
Segré, *Faust*, chaps. 3-7

W MAR 25 Revolution in physics
Segré, *Faust*, chaps. 8-10

M MAR 30 Resolution and aftermath
Segré, *Faust*, chap. 11-epilogue
"The Best Mind Since Einstein" (videotape)
Richard Feynman, "Los Alamos from Below"

W APR 1 James Watson: Quiz Kid searches for secret of life
Watson, *The Double Helix*, Preface and chaps. 1-5

M APR 6 Science in the fast lane: Watson, Crick, & Pauling
Watson, *Double Helix*, chaps. 6-17

W APR 8 Victory at what cost?
Watson, *Double Helix*, chaps. 18-Epilogue

M APR 13 Barbara McClintock: bucking the trend
Keller, *A Feeling for the Organism*, chaps. 1-4

W APR 15 Maize and solitude at Cold Spring Harbor
Keller, *A Feeling for the Organism*, chaps. 5-8

M APR 20 Belated recognition
Keller, *A Feeling for the Organism*, chaps. 9-12

W APR 22 Edward O. Wilson: the making of a naturalist, Part II
Wilson, *Naturalist*, Prelude and chaps. 1-3

M APR 27 Pensacola to Harvard to Orizaba
Wilson, *Naturalist*, chaps. 4-9

W APR 29 Organismic vs. molecular biology; Wilson vs. Watson
Wilson, *Naturalist*, chaps. 10-14

M MAY 4 Sociobiology, ants, and biodiversity; parting thoughts
Wilson, *Naturalist*, chaps. 15-18

R MAY 7 SECOND ESSAY DUE (no exceptions!)