Biology 571 -- History of Biology -- Spring 2014

Dr. Stephen Threlkeld, Professor of Biology; 328 Shoemaker; 662-915-5803; stt@olemiss.edu; Office hours: MW 9-10:30 am, or by appointment.

Course Description History of major developments in biology from ancient to modern times, with emphasis on scientific methods, the role of technology, scientific communication, and societal impact.

Course readings Lois N. Magner 2002. A history of the life sciences. Third edition, revised and expanded. Marcel Dekker; Matthew Cobb. 2006. Generation. Bloomsbury; and other readings as assigned.

Course grading Grades will be based on class participation (reading, discussion, and in-class writing assignments 50%), and a take-home final examination (50%); graduate students taking the course will also be required to complete an independent research paper on a major figure or theme in the history of biology (combined in 50% of grade for participation).

Fig. 93.—Barnacle Geese.—Fac-simile of an Engraving on Wood, from the "Cosmographie Universelle" of Munster, folio, Basle, 1552.

Schedule of classes (200 Shoemaker Hall; TuTh 9:30-10:45 am) and assigned readings (M-Magner, C-Cobb, chapter numbers).

- **23 Jan** Introduction, course objectives and requirements

- **28 Jan** Generation: The process of science (Cobb, Prologue and Chs. 1 & 2, Magner, Ch. 5)
- **30 Jan** Generation: Experimental investigations (Cobb, Chs. 3 & 4; Redi)

- **4 Feb** Generation: Synthesis (Cobb, Chs. 5 & 6)
- **6 Feb** Generation: Impact of new technologies (Cobb, Chs. 7 & 8; Hooke)

- **11 Feb** Origins of the life sciences (Magner, Ch. 1; Hippocrates)
- **13 Feb** Biology among the Greeks and Romans to the Medieval and the Renaissance (Magner, Chs. 2 & 3; Harvey)

- **18 Feb** The Structure of Scientific Revolutions (Summaries of Kuhn on Blackboard; Magner, Ch. 4)
- **20 Feb** Pasteur's laboratory notebooks (Geison, Ch. 1) and studies of spontaneous generation (Geison, Ch. 5)

- **25 Feb** Spontaneous generation, continued (Geison, Ch. 5)
- **27 Feb** Pasteur's development of the anthrax vaccine (Geison, Ch. 6)

- **4 Mar** Pasteur and the rabies vaccine (Geison, Chs. 7 & 8)
- **6 Mar** Pasteur and the rabies vaccine, critiques of Pasteur's science (Geison, Perutz, Summers)

- **11 & 13 Mar** Spring Break

- **18 Mar** Geology, paleontology and the age of the earth (Magner. Ch. 8)
- **20 Mar** Early Naturalists (Readings on Blackboard) and background on the species concept

- **25 Mar** Darwin and Wallace, Blyth and Matthews
- **27 Mar** Originality of Darwin's contribution (Bowler 2009, Costa 2009)

- **1 Apr** Dawkin's Five Bridges
- **3 Apr** Genetics in the early days (Mendel)

- **8 Apr** Controversies about Mendel's work (Fairbanks and Rytting, 2001; Fisher, 1936; Other commentaries)
- **10 Apr** Early work in developmental biology -- Spemann-Mangold and other contributors (Magner, pp. 195-202; Sander and Faessler, 2001; Lenhoff, 1991)

- **15 Apr** Discovery of the structure of DNA (Hudson, Ch. 3)
- **17 Apr** Role of gender, collaboration, politeness, deceit

- **22 Apr** Twentieth century studies of origin of life (Oparin, Haldane, Miller, Cairns-Smith, Orgel)
- **24 Apr** Interview with Miller on 70th birthday; Russell, Hazen, Szostak

- **29 Apr** Science as a public process (Mooney, Ch. 4 and Epilogue)
- **1 May** Science as a public process, continued

- **8 May** Final examination and presentations, 8 am Thursday

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Last Modified: Thursday, 21 January 2014