The Botanical and Horticultural roots of pre-Darwinian Evolutionary Thought

Week 1: Introduction to course.

Week 2: The Evolution of Darwin's "Historical Sketch"

"Preface Contributed by the Author to this American Edition" in *On the Origin of Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life* by Charles Darwin (1860, first edition, fourth printing, New York).

"An Historical Sketch of the Recent Progress of Opinion on the Origin of Species" in *On the Origin of Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life* by Charles Darwin (1861, third edition, London).

"An Historical Sketch of the Recent Progress of Opinion on the Origin of Species" in *On the Origin of Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life* by Charles Darwin (1872, sixth edition, London).

Week 3: James Hutton – Agriculture

Pearson, P. N. 1998. Life and Dr Hutton. *Palaeontological Association Newsletter* 37: 17-18.

Pearson, P. N. 2003. In retrospect. *Nature* 425: 665.

Jones, J. 1985. James Hutton's agricultural research and his life as a farmer. *Annals of Science* 42: 573-601.

Hutton, J. 1794. *An investigation of the principles of knowledge: in three parts: and of the progress of reason, from sense to science and philosophy*. Read volume 2, pages 497-596.

Supplementary information to accompany the "In Retrospect" article on James Hutton's *The principles of Knowledge*. *Nature* website. This includes relevant extracts from the *Elements of Agriculture* (unpublished) by James Hutton.

Whithers, C. W. J. 1994. On Georgics and Geology: James Hutton's "Elements of Agriculture" and Agricultural Science in Eighteenth-Century Scotland. *British Agricultural History Society* 42: 38-48.

Week 4: William Herbert - Hybridization

Worsley, A. 1937. The biography of the Hon. and Rev. William Herbert. *Herbertia* 4: 13-22.

Traub, H. P. 1970. from William Herbert's Amaryllidaceae (reprint). Pages 5-8, 15-25, 85-89.

On the production of hybrid vegetables: with the result of many experiments made in the investigation of the subject. *Transactions of the Horticultural Society of London* 4: 15-31 (1822).

Herbert, W. 1837. *Amaryllidaceae*. Pages 16-20 and 335-348.

Herbert, W. 1846. *The Christian*. Pages 19-33.

Week 5: Constantine Rafinesque - Classification

[Gray, A.] 1841. Notice of the botanical writings of the late C. S. Rafinesque. *American Journal of Science and Arts* 40: 219-241.

Merrill, E. D. 1944. Foreword to reprint of "A Life of Travels" by C. S. Rafinesque. *Chronica Botanica* 8: 292-297.

Endersby, J. 2009. The Vagaries of a Rafinesque: imagining and classifying American nature. *Studies in History and Philosophy of Biological and Biomedical Sciences* 40: 168–178.

Rafinesque, C. S. 1833. Extract of a letter to Dr. J. Torrey of New York dated 1st Dec. 1882. *Atlantic Journal and Friend of Knowledge* 1: 163-164.

Rafinesque, C. S. 1836. *The World or Instability*. Pages 46-69, 228-229.

Rafinesque, C. S. 1836. *New Flora and Botany of North America.* Pages 3-22.

Rafinesque, C. S. 1836. *Flora Telluriana*. Pages 7-25.

Week 6: Leopold von Buch - Biogeography

Kottler, M. J. 1978. Charles Darwin's biological species concept and theory of geographic speciation: the Transmutation Notebooks. *Annals of Science* 35: 275-297.

Mayr, E. 1982. *Growth of Biological Thought*. Read pages 411-412.

Von Buch, C. L. 1836. *Description Physique des Iles Canaries*. Chapter on the flora of the Canary Islands, pages 116-152.

Wallace, A.R. "Species Notebook" entry on von Buch in *On the Organic Law of Change*. Annotated by J. R. Costa. Pages 208-209.

Darwin, C. R. "Notebook B" entry on von Buch in *Charles Darwin's Notebooks*. Edited by P. H. Barrett et al. Pages 209-210.

Wallace December 1860 letter to Darwin on von Buch. Link.

Week 7: Patrick Matthew – Natural Selection

Clark, J. F. M. 2010. Matthew, Patrick (1790–1874), arboriculturist and social reformer. In *Oxford Dictionary of National Biography*. Link.

Wells, K. D. 1973. The historical context of natural selection: the case of Patrick Matthew. *Journal of the History of Biology* 6: 225-258.

Weale, M. E. 2015. Patrick Matthew's law of natural selection. *Biological Journal of the Linnean Society* 115: 785-791.

Dagg, J. L. 2018. Comparing the respective transmutation mechanisms of Patrick Matthew, Charles Darwin and Alfred Wallace. *Biological Journal of the Linnean Society* 123: 864-878.

Matthew, P. 1831. *On Naval Timber and Arboriculture; With Critical Notes on Authors Who Have Recently Treated the Subject of Planting*. Pages 363-391.

[Anon.] March 3, 1860. Darwin on the origin of species. *Gardeners' Chronicle and Agricultural Gazette*, pages 192-193.

Matthew, P. April 7, 1860. Nature's law of selection. *Gardeners' Chronicle and Agricultural Gazette*, pages 312-313.

Darwin, C. April 21, 1860. Natural Selection. *Gardeners' Chronicle and Agricultural Gazette*, pages 362-363.

Matthew, P. May 12, 1860. *Gardeners' Chronicle and Agricultural Gazette* 433-434.

Loudon, J. C. 1832. Review of Matthew's Naval Timber. *The Gardener's Magazine* 8: 702-703.

Week 8: Alexander Moritzi and Frederic Gerard – Species Do Not Exist

Moritzi, A. 1842. *Reflexions sur l'Espèce en Histoire Naturelle*. Soleure. (Read everything except the chapters on minerals and mineralogy). [in translation]

de Beer, G. 1960. Alexander Moritzi, *Annals of Science* 16: 251-254.

Bange, R. and C. Bange. 1995. Frederic Gerard (1806-1857) un disciple de Lamarck et de Geoffroy Saint-Hilaire, theorien de l'evolution. *Bulletin de la Société de l'Histoire et d'Épistémologie des Sciences de la Vie* 2: 89-97. [in translation]

Gerard, F. 1844. De l'Espèce. In *Dictionnaire universel d'Histoire naturelle*. Edited by C. d'Orbigny. [in translation]

Week 9: Charles Naudin – Domestication and the Power of Selection

Naudin, C. 1852. Considérations philosophiques sur l'espèce et la variété. 1: 102-109. [in translation]

Marsa, V. D. and N. Cherchez. 1967. Charles Naudin, a pioneer of contemporary biology (1815-1899. *Journal d'Agriculture Traditionelle et de Botanique Appliquée* 14: 369-401.

Letters between Darwin and Hooker on Naudin. Link1. Link2.

Quatrefages, A. 1870. *Charles Darwin et ses Precurseurs Francais*. Paris. Pages 70-74. [in translation]

Week 10: Franz Unger and Matthias Schleiden – Cell Theory

Gliboff, S. 1998. Evolution, Revolution, and Reform in Vienna: Franz Unger's Ideas on Descent and Their Post-1848 Reception. *Journal of the History of Biology* 31: 179–209, 1998.

Mayr, E. 1982. *Growth of Biological Thought*. Read pages 390-391

Unger, F. 1847. *Chloris Protogaea: Beiträge zur Flora der Vorwelt* (Leipzig: Wilhelm Engelmann, 1847), pp. i–ii of "Vorwort." The foreword is dated 1840.

Unger, F. *Botanical Letters*. London. Read pages 91-116.

Unger, F. *Versuch einer Geschichte der Planzenwelt*. Wien. Read pages 329-349. [in translation]

Schleiden, M. 1848. "History of the Vegetable World," in *The Plant; A Biography*, London.

Week 11: Hewett Watson – A Dabbler?

Egerton. F. N. 2010. History of the Ecological Sciences, Part 36: Hewett Watson, Plant Geographer and Evolutionist. *Bulletin of the Ecological Society of America* 91: 294-312.

Egerton. F. N. *Hewett Cottrell Watson Victorian Plant Ecologist and Evolutionist*. Chapter 11.

Browne, J. 1980. Darwin's botanical arithmetic and the "principle of divergence." *Journal of the History of Biology* 13: 53-89.

Watson, H. C. 1836. *An Examination of Mr. Scott's Attack upon Mr. Combe's Constitution of Man*. London.

Watson, H. C. 1845. On the theory of "progressive development," applied in explanation of the origin and transmutation of species. *Phytologist* 2: 108-113, 140-147,161-168.

Letter from Watson to Darwin after publication of *Origin*. Link.

Week 13: Joseph Hooker – An Original Thinker?

Endersby, J. 2011. A life more ordinary: the dull life but interesting times of Joseph Dalton Hooker. *Journal of the History of Biology* 44: 611-31.

Hooker, J. D. 1859. *On the Flora of Australia, Its Origin, Affinities, and Distribution; Being an Introductory Essay to the Flora of Tasmania*. London. Pages i-xxvi.

Gray, A. 1860. [Footnote to the Editors of the *American Journal of Science and Arts*]. *American Journal of Science and Arts* 29: 1.

Bower, F. O. 1913. Sir Joseph Dalton Hooker. *Botanical Gazette* 55: 384-391.

Bellon, R. Joseph Hooker takes a "fixed post": transmutation and the "present unsatisfactory state of systematic botany", 1844–1860. *Journal of the History of Biology* 39: 1-39.

Hooker, Lyell, and Darwin correspondence on "credit" for Hooker. Link1. Link2.

Assignments and grading

Ten-minute powerpoint presentation on a pre-1859 evolutionist with follow-up discussion led by presenter(s). In the presentation, the following things must be covered: brief biographical information including intellectual training and career; effect of contributions to the development of evolutionary theory. 33% of final grade.

Reaction Statements: Every week, each student will submit by 10:00 P.M. the night before class a synopsis of what she/he discovered in the readings, what she/he thought was interesting about the readings, and a general reaction to the readings. These reaction statements should not be a simple rehash of what was read. No other literature (online or otherwise) is to be consulted for this piece of weekly writing. Consult what you have read and what is in your mind. There is no standard format for these writings. The goal is to develop your abilities to write about ideas and create interesting narratives and queries about the readings. Each reaction statement should be no more than a single-spaced page of text. Please include your name at the top of the page in the document and name the document: YOUR LAST NAME WEEK # and send to me at ned@oeb.harvard.edu. These submissions will be graded as follows: 10 points for a thoughtful essay, 5 points for a less-than-insightful essay and 0 points for no submission or a mediocre submission. 33% of final grade.

Oral participation in weekly discussions. 33% of final grade.