

**Freshman Seminar 24p: Getting to Know Darwin**  
Spring 2017 Harvard College/GSAS: 128119  
**HUH Room 125 & Arnold Arboretum Weld Hill Research Building**

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**Course Description:** In this seminar, we will read a selection of Darwin's publications (including parts of Darwin's seminal work, *On the Origin of Species*), as well as his private correspondence, paying close attention to the man behind the science as revealed by his writings. We will get to know Charles Darwin—the avid breeder of pigeons, lover of barnacles, devoted father and husband, gifted correspondent and tactician, and remarkable backyard scientist. In this latter vein, we will reproduce ten of Charles Darwin's classic Down House experiments that were central to making his case for natural selection and evolution in *On the Origin of Species*, as well as his many other books on natural history. Field trips to the Arnold Arboretum of Harvard University, the Museum of Comparative Zoology, and a local pigeon fancier will provide the setting for recreating a selection of the myriad observations of organisms and their interactions with the environment and each other that made Darwin the master of minutia and provided the foundation for his grand synthesis of evolutionary pattern and process. Each week, we will also read, react to (through writing), and discuss Darwin's published writings and letters.

**Text Books** (Available at The Coop):

1. *Darwin's Origin of Species: A Biography* by Janet Browne
2. *The Annotated Origin: A Facsimile of the First Edition of On the Origins of Species* by Charles Darwin with an introduction by James T. Costa
3. *Autobiography of Charles Darwin 1800-1882* ed. by Bora Barlow

**Readings:** Readings for each class are listed on the syllabus. Readings not in the two main text books are available on the Canvas course site.

**Additional Readings:** Additional readings will be posted on Canvas on the Syllabus page in the Assignment section by class date. You can download or print these readings.

**Reaction Statements:** Every week, each student will submit by 9:00 am on the day of class (by emailing both Ned and Kristel) a synopsis of what he/she discovered in the readings, what he/she thought was interesting about the readings, how effective the readings were in making the central point, and a general reaction to the readings. There is no standard format for these writings. The goal is to develop your abilities to write about ideas and develop interesting narratives and queries about the readings. Except for the last

submission, 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. Please name the document: YOUR LAST NAME WEEK #.

**Academic Integrity:** Students are expected to abide by the FAS policy on Academic Dishonesty. The policy is available in the student handbook and is located on-line at:

<http://handbook.fas.harvard.edu/icb/icb.do?keyword=k79903&pageid=icb.page418752>

**Accommodations for Students with Disabilities:** Students needing academic adjustments or accommodations because of a documented disability must present their Faculty Letter from the [Accessible Education Office](#) (AEO) and speak with the professor by the end of the second week of the term, September 13. Failure to do so may result in the Course Head's inability to respond in a timely manner. All discussions will remain confidential, although Faculty are invited to contact AEO to discuss appropriate implementation.

**Class Locations:** Class will be held in the Herbaria (HUH) Seminar Room 125 and at The Arnold Arboretum. There will also be field trips. The location of each class is indicated on the class schedule.

**Cambridge (van pick-up at 6 Prescott Street):** Meet at 2:00 PM in front of Morton Prince House (6 Prescott Street). You will be dropped back in Cambridge at **6:00 PM.**



HUH Room 125 Meet in Herbaria (HUH) Seminar Room 125 at 2:00 PM.



## Class Schedule

### Week 1 – January 27

**Topic:** Course overview; introduction of the teaching team; background on Charles Darwin

**Meet:** HUH Room 125

**Read:** *Darwin's Origin of Species: A Biography*; Janet Browne, pages 1 – 83

**Submit:** One-page reaction statement to readings

**Down House Science:** Begin experiments with seeds and salt water

### Week 2 – February 3

**Topic:** The young Charles Darwin: Bryozoans and the tensions between professors and students in joint research endeavors; the Plinian Society; meet Mr. Arthrobalanus

**Meet:** Cambridge (van pick-up at 6 Prescott Street)

**Read:** Archival materials on Darwin in medical school at the University of Edinburgh; Darwin at Cambridge University; Darwin and his love of barnacles

**Read:** Grant, R.E. 1827. Notice regarding the Ova of the *Pontobdella muricata*, Lam. *The Edinburgh Journal of Science* Vol. VII. April-October: 160-161, index and Plate II.

**Read:** Grant, R.E. 1827. Observations on the Structure and Nature of *Flustra*. *The Edinburgh New Philosophical Journal* April-October: 337-342

**Submit:** One-page reaction statement to readings; signed field trip release forms

**Down House science at the Arnold Arboretum:** Bryozoans and barnacles

### Week 3 – February 10

**Topic:** Variation under domestication

**Meet:** Cambridge (van pick-up at 6 Prescott Street)

**Read:** Darwin, C. R. 1859. *On the Origin of Species*, chapter 1

**Read:** Archival materials on pigeon fanciers in the 1850s

**Submit:** One-page reaction statement to readings

**Down House Science:** Field trip to meet pigeons and a pigeon fancier

### Week 4 – February 17

**Topic:** Instinct and the evolution of the mind

**Meet:** HUH Room 125

**Read:** Darwin, C. R. 1859. *On the Origin of Species*, chapter 7

**Read:** Archival materials on slave-making ants (notebooks, correspondence)

**Submit:** One-page reaction statement to readings

**Down House science at the Museum of Comparative Zoology:** Slave-making ants

### **Week 5 – February 23**

**Topic:** Biogeography

**Meet:** Cambridge (van pick-up at 6 Prescott Street)

**Read:** Darwin, C. R. 1855. Does sea-water kill seeds? *Gardeners' Chronicle and Agricultural Gazette* no. 15: 242.

**Read:** Darwin, C. R. 1855. Does sea-water kill seeds? *Gardeners' Chronicle and Agricultural Gazette* no. 21: 356-357.

**Read:** Darwin, C. R. 1857. On the action of sea-water on the germination of seeds. *Journal of the Proceedings of the Linnean Society of London (Botany)* 1: 130-140.

**Read:** *On the Origin of Species*, chapters 11 and 12

**Read:** Darwin, C. R. 1882. On the dispersal of freshwater bivalves. *Nature* 25: 529-530.

**Read:** Archival materials on Darwin's observations of seed longevity in seawater (notebooks, correspondence)

**Submit:** One-page reaction statement to readings

**Down House science at the Arnold Arboretum:** Continue experiments with seeds and salt water (sow seeds in greenhouses); three tablespoons of pond mud; duck's feet and snails

### **Week 6 – March 3**

**Topic:** Orchids, "a flank movement against the enemy"

**Meet:** HUH Room 125

**Read:** Darwin, C. R. 1862. *On the Various Contrivances by Which British and Foreign Orchids are Fertilised by Insects*, Chapter 1

**Read:** Archival materials on Darwin's orchid observations (notebooks, correspondence)

**Submit:** One-page reaction statement to readings

**Down House science in the OEB greenhouses, the Botany Museum, the Botany Libraries, and the Harvard University Herbaria:** Orchids, the coevolution of plants and their pollinators; a pencil and orchid pollinia; Harvard's glass flowers; Harvard University Herbaria; beer hops and their agricultural management from the 16<sup>th</sup> century to Darwin's time

### **Week 7 – March 10**

**Topic:** Climbing plants, including beer hops

**Meet:** Cambridge (van pick-up at 6 Prescott Street)

**Read:** Gray, Asa. 1858. Note on the coiling of tendrils of plants. *Proceedings of the American Academy of Arts and Sciences* 4: 98-9.

**Read:** Darwin, C. R. 1875. *On the Movements and Habits of Climbing Plants*, chapter 1

**Read:** Archival materials on climbing plants (notebooks, correspondence)

**Submit:** One-page reaction statement to readings

**Down House science at the Arboretum:** Observations of hops and other climbing plants; video time-lapse photography

### **Spring Break – March 11-19**

### **Week 8 – March 24**

**Topic:** Carnivorous plants

**Meet:** Cambridge (van pick-up at 6 Prescott Street)

**Read:** Darwin, C. R. 1875. *Insectivorous Plants*, Chapters 17 and 18

**Read:** Archival materials on Darwin's observations of carnivorous plants (notebooks, correspondence)

**Read:** *Darwin's Origin of Species: A Biography*, Janet Browne, pages 84 - 117

**Submit:** One-page reaction statement to readings

**Down House science at the Arboretum:** Insectivorous plants – what do they eat? *Utricularia* and others

### **Week 9 – March 31**

**Topic:** Darwin observes Darwin

**Meet:** HUH Room 125

**Read:** Darwin, C. R. *The Autobiography of Charles Darwin* (edited by N. Barlow)

**Read:** Archival materials on Darwin and Darwin's family correspondence about writing and publication of autobiography

**Submit:** One-page reaction statement to readings

**Down House science:** no experiments

### **Week 10 – April 7**

**Topic:** Power of movement in plants—Charles Darwin and his son Francis discover plant hormones

**Meet:** Cambridge (van pick-up at 6 Prescott Street)

**Read:** Darwin, C. R. 1880. *The power of movement in plants*, chapter 9

**Read:** Archival materials on Darwin's experiments on plants with his son (notebooks, correspondence)

**Submit:** One-page reaction statement to readings; signed field trip release forms

**Down House science at the Arboretum:** Experiment to examine heliotropism in grasses

### **Week 11 – April 14**

**Topic:** Worms!

**Meet:** Cambridge (van pick-up at 6 Prescott Street)

**Read:** Darwin, C. R. 1840. On the formation of mould. *Transactions of the Geological Society* (Ser. 2) 5: 505-509.

**Read:** Darwin, C. R. 1881. *The formation of Vegetable Mould, Through the Action of Worms*, chapters 1 and 3

**Read:** Archival materials on Darwin's observations of worms (notebooks, correspondence)

**Submit:** One-page reaction statement to readings

**Down House science at the New England Conservatory:** Can worms hear? Bassoons, whistles, and pianos in the cause of experimental science

### **Week 12 – April 21**

**Topic:** Recapitulation and conclusion (discussion)

**Meet:** Cambridge (van pick-up at 6 Prescott Street)

**Read:** Darwin, C. R. 1859. *On the Origin of Species*, chapter 14

**Read:** Archival materials on Darwin's terrible digestive system (notebooks and correspondence)

**Submit:** Five-page reflection on Charles Darwin

**Down House digestive science at the Arnold Arboretum:** Potluck dinner and examination of Darwin's digestive problems based on recipes from Emma Darwin's Recipe Book; final tally for seeds and seawater