Freshman Seminar 24p: Getting to Know Darwin
Fall 2012 Harvard College/Professor William (Ned) Friedman

Letter 1661Darwin to J. D. Hooker
7 Apr [1855]

Down
Ap. 7th.

My dear Hooker

I wrote this morning to thank for the Rhododendrums.—

I have begun my seed-salting experiments,f1 & I shd. be extremely much obliged if you would tell me what kinds you would expect to be *most easily killed* by sea-water besides the Cruciferæ, which I had thought wd. be so, & which you confirmed; I had meant to have asked, but quite forgot, when I last saw you.—f2

If you can mention any that are easily procured, as Agricultural or Garden or flower seeds,—please enumerate **Just a few**.— Secondly will you tell me, at a *guess*, how long an immersion in sea-water you shd. *imagine* wd. kill the more susceptible seeds? Should you expect a week's fair immersion wd. destroy any of them?

I have looked in Lindleys Vegetable K. & understand what is meant.f3

Will you be so kind as to send me a brief note in answer, as I may thus be sooner put out of my pain, & end my experiments, which I daresay you think as foolish, as my splendid idea, that the Coal-plants lived in salt-water like mangroves which made you so savagef4

Adios | C. Darwin

My notions sometimes bring good; Dr. Davyf5 has been experimenting at my request, (in order to see how fishes' ova might get transported) on the retention of vitality; & he found that salmon's ova, exposed for 3 whole days to open air, & even some sun-shine, & they produced fine young fish. Dr. D. has sent a paper to Royal Soc. on the subject.—

N.B. Remember to ask about my *distinct* case of "a lady in N. America" who saw fishes' spawn adhering to a Ditiscus.f6

Footnotes

f1 CD's notes on his seed-salting experiments are in DAR 27.1 (ser.7): 1–23. Experiments were begun on 30 March 1855 (f. 7v.). Some notes dated 15 March 1855 and headed '**Casual** *notes* on my collection of seeds.' are in DAR 46.2: 3–4.

f2 CD had visited Hooker at Kew during his four-day visit to London, 20 to 24 March 1855 (letter to C.J. F. Bunbury, [20 March 1855], n. 1, and letter to Miles Joseph Berkeley, 7 April [1855]).

f3 This sentence follows a deleted passage in which CD said that he did not know which seeds were albuminous (see Manuscript alterations and comments). John Lindley's *Vegetable kingdom* divided dicotyledonous plants (exogens) into those orders whose embryos are furnished with abundant albumen and those with none or only a moderate amount (Lindley 1846, p. 246). Lindley believed the distinction to be as fundamental as that between oviparous and viviparous animals. To CD, the embryos with abundant albumen would be those most likely to last the longest under adverse conditions.

f4 The origin of coal was the subject of heated correspondence with Hooker in May 1847. See *Correspondence* vol. 4, letters to J. D. Hooker, [1 May 1847] and [6 May 1847]. CD's seed-salting experiments were in part prompted by a statement in J. D. Hooker 1853–5, 1: xx: 'I cannot think that those who, arguing for unlimited powers of migration in plants, think existing means ample for ubiquitous dispersion, sufficiently appreciate the difficulties in the way of the necessary transport.' Hooker recorded how he was then led to speculate on the possibility of a former landmass connecting, at various times and places, New Zealand with Chile, Australia, the Antarctic, and the several neighbouring Pacific islands. CD, on the other hand, entertained the possibility that seeds and young plants and the ova of fish could be transported by a number of means, including birds and other animals, by the air, by ice, and by floating in sea-water.

f5 See letters to John Davy, 25 March [1855] and 26 March [1855].

f6 CD had received an account of a water-beetle carrying the ova of fish on its legs through Richard Chandler Alexander, a botanist and acquaintance of the Hooker family. See letter from M. H. Morris to R. C. Alexander, 17 June 1855.

Letter 1669 Darwin to J. D. Hooker
19 Apr [1855]

Down Farnborough Kent
Ap. 19th.

My dear Hooker

Thank you for your List of R.S. candidates, which will be very useful to me.—f1

I have thought a good deal about my salting experiments, & really think they are worth pursuing to a certain extent, but I hardly see the use (at least the use equivalent to the enormous labour) of trying the experiment on the immense scale suggested by you.— I shd. think a few seeds of the leading orders, or a few seeds of each of the classes mentioned by you with albumen of different kinds wd suffice to show the *possibility* of considerable sea-transportal. To tell whether any particular insular Flora had thus been transported would require that *each* species shd. be examined. Will you look through these printed lists,f2 & if you can mark with *red* cross, such as you would suggest. In truth I fear I impose far more on your great kindness, my dear Hooker, than I have any claim; but you *offered* this, for I never thought of asking you for more than a suggestion. I do not think I could manage more than 40 or 50 kinds at a time, for the water I find must be renewed every other day, as it gets to smell horribly: and I do not think your plan good of little packets of cambric, as this entangles so much air. I shall keep the great receptacle with salt-water with the 40 or 50 little bottles, partly open, immerse in it in the cellar, for uniform temperature.— I must plant out of doors, as I have no green House.—

I told you I had inserted notice in Gardeners Chronicle; & to day I have heard from Berkely that he has already sent an assortment of seeds to Margate for some friend to put in salt-water; so I suppose he thinks the experiment worth trying as he has thus so very promptly taken it into his own hands.—f3 Reading this over it sounds as if I were offended!!! which I need not say is not so.—

I may just mention that the seeds mentioned in my former note have all germinated after 14 days immersion, *except* the cabbages all dead, & the Radishes have had their germination delayed & several I think dead; *Cress* still all most vigorous.— French Spinach, oats, barley, Canary-seed, Borage, Beet have germinated after 7 days immersion.—

It is quite surprising that the Radishes shd have grown, for the salt-water was putrid to an extent, which I cd not have thought credible had I not smelt it myself, as was the water with the cabbage-seed.—

Most truly your’s | C. Darwin

I lean to the notion of taking the list of introduced plants in Asa Gray just as it stands, but wait till I hear from you to calculate: tell me whether you care to hear result.—

Footnotes

f1 See letter to J. D. Hooker, 13 April [1855], n. 1.

f2 Possibly the two catalogues issued in 1855 by John Cattell, seedsman in Westerham, Kent, which are preserved in DAR 46.2: 1–2. They are heavily annotated by CD in ink and pencil. See letter to J. D. Hooker, 13 April [1855], n. 6. There is no evidence that Hooker marked the lists.

f3 Miles Joseph Berkeley also sent a notice to the *Gardeners' Chronicle and Agricultural Gazette*, no. 17, 28 April 1855, p. 278. In his notice, Berkeley commented on CD's request for information and described experiments carried out by immersing bags of seeds in fresh sea-water. These experiments, carried out by a friend, George Henry Hoffman of Margate, were further reported in the *Gardeners' Chronicle and Agricultural Gazette*, no. 35, 1 September 1855, p. 580.

Letter 1680 Darwin to J. D. Hooker
11 May [1855]

Down Farnborough Kent
May 11th

My dear Hooker

I have just received your note. I am most sincerely & heartily glad at the news it contains & so is my wife.f1 Though the income is but a poor one, yet the certainty, I hope, is satisfactory to yourself & Mrs. Hooker. As it must lead in future years to the Directorship, I do hope you look at it, as a piece of good fortune. For my own taste I cannot fancy a pleasanter position, than the Head of such a noble & splendid place, far better, I shd. think than a Professorship in a great town.—f2 The more I think of it, the gladder I am. But I will say no more; except that I hope Mrs. Hooker is pretty well pleased.—

Just to answer your remarks in your note. The article on Job, is in Westminster Review, October 1853, article IV:f3 I could lend it you, & bring it up with me, if you can wait, for I doubt whether I shall come up for next Philos. Club for that is the day, when about 40 salted seeds "come due", & you wd. be surprised at the time which my little experiment takes, as I do everything with my own hand.—

As the Gardeners' Chronicle put in my question, & took notice of it,f4 I think I am bound to send, which I had thought of doing next week, my first report to Lindleyf5 to give him the option of inserting it; but I think it likely that he may not think it fit for a Gardening periodical. When my experiments are ended, (shd the results appear worthy) & shd. the Linnean Journal not object to the previous publication of imperfect and provisional reports, I shd. be *delighted* to insert the final report there; for it has cost me so much trouble, that I shd. think that probably the result was worthy of more permanent record than a newspaper; but I think I am bound to send it first to Lindley.f6 permanent record than a newspaper; but I think I am bound to send it first to Lindley.f6 I begin to think the floating question more serious than the germinating one; & am making all the enquiries which I can on subject, & hope to get some little light on it.

Thanks for information about Kerguelen insects; it will save me plaguing the museum men.—f7 The two sexes of moth is very curious.—f8

I shd. think Binney wd. be excellent for R. Soc:—f9

I hope you managed a good meeting at the Club.— The Treasurership must be a plague to you, & I hope you will not be Treasurer for long; I know I wd. much sooner give up the Club, than be its Treasurer.—

Farewell Mr. Assistant Director & dear friend | C. Darwin

I will not mention subject of Directorship to anyone.—

Footnotes

f1 Hooker had been appointed assistant director of the Royal Botanic Gardens, Kew. The appointment was not officially announced until July (see *Gardeners' Chronicle and Agricultural Gazette*, no. 27, 7 July 1855, pp. 451–2).

f2 An allusion to Hooker's disappointment at losing the election to the chair of botany at Edinburgh University in 1845 (see *Correspondence* vol. 3, letter to J. D. Hooker, [5 or 12 November 1845]).

f3 An anonymous article published in the *Westminster Review* n.s. 4 (1853): 417–50, praising the new school of biblicalcriticism emerging in Germany. The author was James Anthony Froude (*Wellesley Index* 3: 620). Froude complained that English scholars shrank from investigating the Bible as a secular text.

f4 See letters to *Gardeners' Chronicle*, 11 April [1855], and to J. D. Hooker, 19 April [1855].

f5 John Lindley was editor of the *Gardeners' Chronicle*.

f6 CD's report, 'Does sea-water kill seeds?', was published in the *Gardeners' Chronicle and Agricultural Gazette* on 26 May 1855 (see letter to *Gardeners' Chronicle*, 21 May [1855]). CD presented a more extensive report at the Linnean Society on 6 May 1856 (see *Collected papers* 1: 264–73).

f7 See letter to J. D. Hooker, 7 March [1855], and letter from J. D. Hooker, [before 17 March 1855] and n. 4.

f8 Probably the single species of moth found by Hooker on Kerguelen Land and mentioned in *Natural selection*, p. 292. Hooker described it as apterous (letter from J. D. Hooker, [before 17 March 1855]).

f9 Edward William Binney had published extensively on the Midland coal formations and their plants. He and Hooker had written a paper on fossil plants in bituminous formations (Binney and Hooker 1855). See letter from J. D. Hooker, 25 August 1854. Binney was elected a fellow of the Royal Society in 1856.

Letter 1681Darwin to J. D. Hooker
15 [May 1855?]**f1**

Down.
15th

My dear Hooker

You have been a very good man to exhale some of your satisfaction in writing two notes to me,—you could not have taken a better line in my opinion,—but as for showing your satisfaction in confounding my experiments, I assure you I am quite enough confounded—those horrid seeds, which, as you truly observe if they sink they wont float.—

I have written to Scoresbyf2 & have had a rather dry answer, but very much to the purpose & giving me no hopes of any law unknown to me which might arrest their everlasting descent into the deepest depths of the ocean. By the way it was very odd but I talked to Col. Sabinef3 for 1⁄2 an hour on the subject, & could not make him see with respect to transportal the difficulty of the sinking question! The bore is if the confounded seeds will sink, I have been taking all this trouble in salting the ungrateful rascals for nothing.—

Everything has been going wrong with me lately; the fish at the Zoolog. Soc. ate up lots of soaked seeds, & in imagination they had in my mind been swallowed, fish & all, by a heron, had been carried a hundred miles, been voided on the banks of some other lake & germinated splendidly,—when lo & behold, the fish ejected vehemently, & with disgust equal to my own, *all* the seeds from their mouths.—f4

But I am not going to give up the floating yet: in first place I must try fresh seeds, though of course it seems far more probable that they will sink; & secondly as a last resource I must believe in the pod or even whole plant or branch being washed into sea: with floods & slips & earthquakes; this must continually be happening, & if kept wet, I fancy the pods &c &c wd. not open & shed their seeds.—f5

Do try your Mimosa seeds at Kew.

I had intended to have asked you whether the Mimosa scandens & Guilandina Bonduc grows at Kew to try fresh seeds.— R. Brown tells me he believes 4 W. Indian seeds have been washed on shores of Europe.f6 I was assured at Keeling isld. that seeds were not rarely washed on shore:f7 so float they must & shall! What a long yarn I have been spinning.—

I am glad to hear of the elections for the Club,f8 but very sorry about De la Rue:f9 he does not appear like a gentleman, but all that he says at the Council seems very gentlemanlike & nice: I would not have the blackballing of such a man on my conscience for a couple of hundred guineas: what a mortification for him.—

Goodbye my dear Hooker | Ever yours | C. Darwin

If you have several of the Loffoden seeds,f10 do soak some in tepid water & get planted with utmost care: this is experiment after my own heart with chances 1000—to 1 against its success.— Are they of the so-called Mimosa scandens?—

Footnotes

f1 Dated on the basis of CD's fish-feeding experiment (see n. 4, below).

f2 William Scoresby, the Arctic explorer, was an authority on the temperature and properties of sea-water, particularly in the northern oceans.

f3 Edward Sabine. CD visited London during the first week in May (Emma Darwin's diary and letter to W. D. Fox, 7 May [1855]).

f4 Described in a note dated 5 May 1855 in DAR 205.2: 115. For the text of the note, see letter to W. D. Fox, 7 May [1855], n. 5.

f5 In a note dated 17 May 1855 (DAR 27.1 (ser. 7): 13), CD recorded the following experiment: In evening put quite open seed-heads of Tussilago farfara & Leontodon taraxicum into salt-water: they soon began to close by next morning heads closed. Their seeds floated whilst quite fresh., & this not owing to pappus, as seed itself rose first. Put old pods of Laburnum which were widely [*interl*] gaping into S.W. & they almost completely closed. so that seed cd not fall out.— Pods of Broom & Kidney Bean did not ['sink' *del*] open.— none of these pods sunk.— Heads of Luzula, with seed nearly ripe floated. The Compositæ sunk after a few days & every seed sunk, (even the capsule of Seakale after a few days in Hookers cellar Lit.

f6 CD had expressed interest in this case reported in *Correspondence* vol. 3, letter from J. D. Hooker, 12 December 1844. The reference is to Robert Brown's account of the seeds of *Guillandina bonduc* in Brown 1818, p. 481.

f7 CD visited the Keeling Islands during the *Beagle* voyage in April 1836. See *Correspondence* vol. 1.

f8 The members elected to the Philosophical Club of the Royal Society were George Busk, Thomas Henry Huxley, George Gabriel Stokes, and John Tyndall.

f9 Warren De La Rue, son of Thomas De La Rue, a printer, had invented the first envelope-making machine. He had been elected a fellow of the Royal Society in 1850 and was a member of the council. Bonney 1919, p. 41 n., states that at the meeting of 10 May 1855, 'a candidate was proposed, but not elected'.

f10 See letter from J. R. Crowe, 27 September 1855. The Loffoden Islands, off the north Norway coast, are now known as the Lofoten Islands.