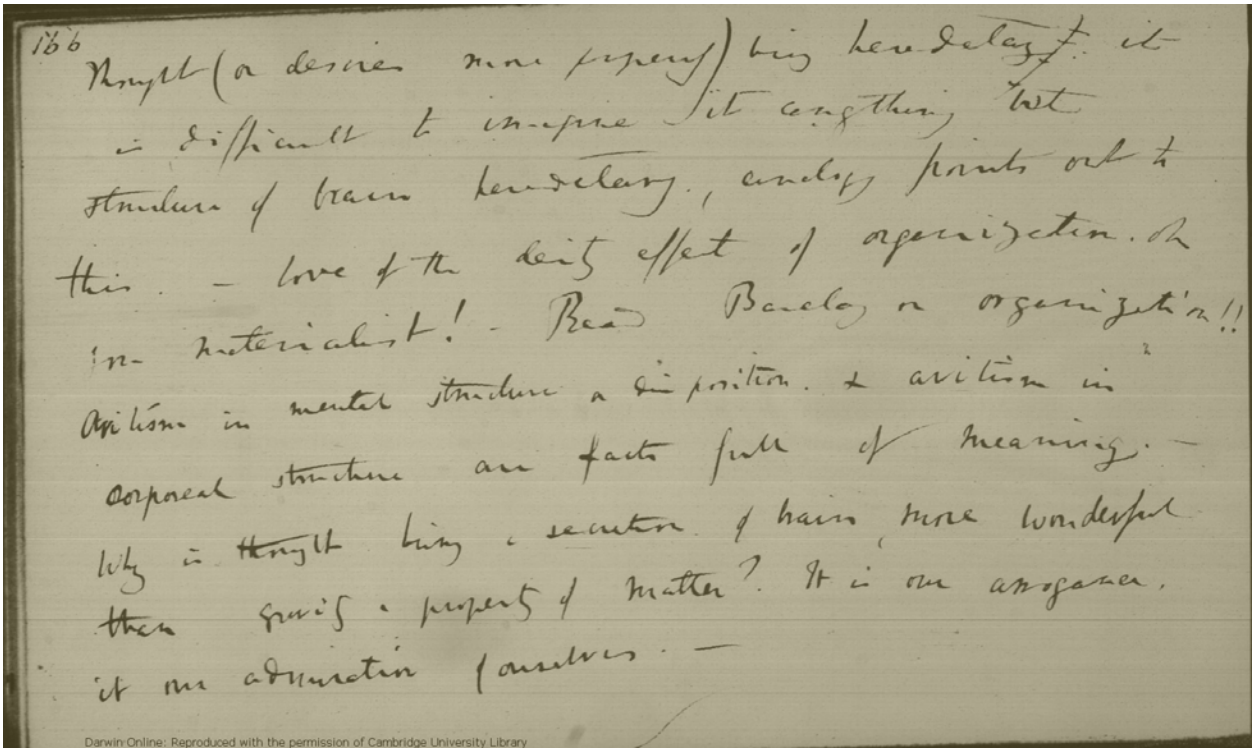
Freshman Seminar 24p: Getting to Know Darwin
Fall 2012 Harvard College/ Professor William (Ned) Friedman

Excerpts from Charles Darwin's *Notebook C*
http://darwin-online.org.uk/content/frameset?itemID=CUL-DAR122.-&viewtype=side&pageseq=1

Page 166
Thought (or desires more properly) being hereditary it is difficult to imagine it anything but structure of brain hereditary, analogy points out to this. — love of the deity effect of organization, oh you materialist! Read Barclay[1] on organization!! Avitism[2] in mental structure a disposition & avitism in corporeal structure are facts full of meaning. — Why is thought being a secretion of brain, more wonderful than gravity a property of matter? It is our arrogance, it our admiration of ourselves. —

[1] John Barclay. An Inquiry into the opinions, ancient and modern, concerning life and organization, Edinburgh 1822.

[2] Avitism means relating to ancestors.



Page 166 from Charles Darwin's *Notebook C*

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

Excerpts from Charles Darwin's *Notebook M*

http://darwin-online.org.uk/content/frameset?viewtype=side&itemID=CUL-DAR125.-&pageseq=1

Page 46

When a muscle is moved very often, the motion becomes habitual & involuntary.— when a thought is thought very often it becomes habitual & involuntary,— that is involuntary memory, as in sleep.— a new thought arises?? compounded of the involuntary thoughts.— An intentionally[a] recollection of anything is solely by association, & association is probably a physical effect of brain the «similar remark» thoughts, being functions of same part of brain, or the tendency to habit of producing a train of thought.—

[a]An intentionally] 'An' *over* 'Are'.

Page 52

…Even the worm when trod upon turneth, here probably there is no feeling of passion, but muscular exertion consequent on the injury & consequently excited action of heart.— now this is the oldest ‹her› inherited & therefore remains, when the actual movement does not take place.— A start[a] is HABITUAL movement to avoid any danger— Fear, shamming death, or running

[a]A start] 'A' *over* 2 *vertical lines*, *probably part* 'H'.

Page 53

away. accompanied with want of muscular exertion, palpitation, voiding urine because done by some animals in defence, &c

Starting must be habitual «*involuntary*» movement from wish to avoid some danger— but it is instinctive because Nancy[1] tells me very young babies start at anything they hear or see. which frightens. them.— Now every animal moves quickly away from any sudden sound or noise, & therefore brain has been accustomed to send a mandate to the muscles & when the noise comes it cannot help doing it.—

Fanny Hensleigh[2] doubts whether young babies start.— . If children wink. it is instinct
Fear must be simple instinctive feeling: I have awakened

[a]**Fanny . . . instinct**] *added grey ink.*

1. Nancy: The children's nanny at Shrewsbury.
2. Fanny Hensleigh. See Wedgwood, Frances [Fanny].

Page 54

in the night, being slightly unwell & felt so much afraid though my reason was laughing & told me there was nothing, & tried to seize hold of objects to be frightened at.— (again diseases of the heart are accompanied by much involuntary fear) In these cases probably the system is affected, & by *habit* the mind tries to fix upon some object: — When a man, child or colt has once been frightened & started much more apt, this partly owing to heart? readily taking same movements, senses being on the look out, & the conveying means _____

Page 55
from the senses to the mind being more alive.— How is it. with people nervous from illness., ‹the› it must be an excited action in the involuntary mind which is startled.— My Father says he should think that in old people, in their dotage, who sing the songs & tales of infancy, it is very doubtful whether they could recollect these same things from any effort of will whilst their minds were sound.

Page 57
The sensation of fear is accompanied by «troubled» beating of heart, sweat, trembling of muscles, are not these effects of violent running away, & must not ‹this› «running away» have been usual effects of fear.— the state of collapse may be imitation of death, which many animals put on.— The flush which accompanies passion & not sweat is the ‹state› effect of short — but violent action.—[1] To avoid stating how far, I believe, in Materialism, say only that emotions, instincts degrees of talent, which are heredetary are so because brain of child resemble, parent stock.— (& phrenologists state that brain alters)

1. Note similarity of this paragraph to Erasmus Darwin 1794, 1:57, ‘. . . the whole skin is reddened by shame, and an universal trembling is produced by fear; and every muscle of the body is agitated in angry people by the desire of revenge.’

Page 58
It is known that birds learn to sing & do not acquire it instinctively. may not this be connected with their power of acquiring language.— Hensleigh. W.[1] says that babies know a frown very early in life, ‹before they› (I think I have seen same thing before they could understand. what frowning means)

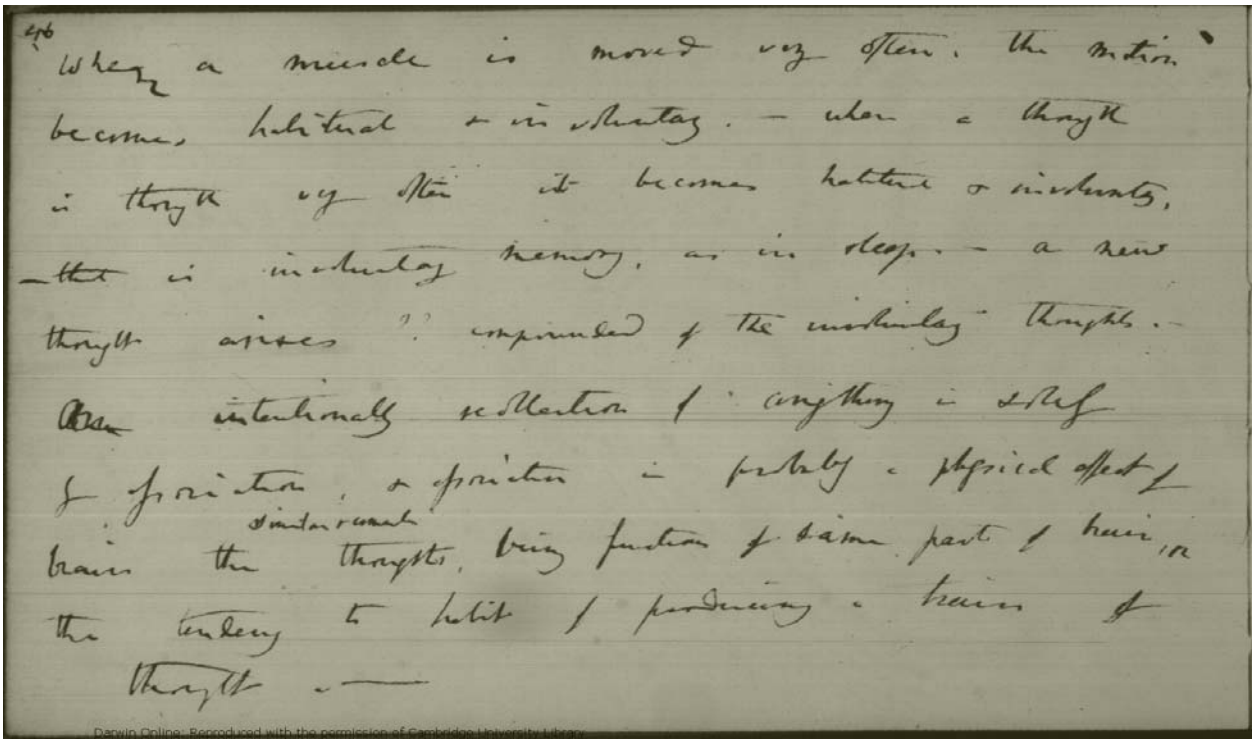
if so this is precisely analogous or identical, with bird knowing a cat, the first it sees it.— it is frightened without knowing why— the child dislikes the frown without knowing why—[2] a man

1. Hensleigh Wedgwood: (1803−1891), son of Bessy & Josiah Wedgwood II.
2. See also Erasmus Darwin 1794, 1:146, ‘. . . children long before they can speak, or understand the language of their parents, may be frightened by an angry countenance, or soothed by smiles and blandishments.’

Page 59
as in Guy. Mannering[1] , feels, pleasure. in seeing the scenes of his childhood without knowing why—had not conscious of recollecting it— this may be nearest approach to ‹the› such instincts which full grown men can experience—

Instinctive walking of animals. that is the ready movement & co-relation of the proper muscles. may be illustrated by the extreme difficulty of moving muscles in different way from what they have been accustomed to, in certain actions— the difficulty of getting on a horse on the left side (not good example,) because leg is right handed.—

1. Walter Scott, 1815, 3:26, ‘It is even so with me while I gaze upon that ruin; nor can I divest myself of the idea, that these massive towers and that dark gateway . . . is not entirely strange to me. Can it be that they have been familiar to me in infancy, and that I am to seek in their vicinity those friends of whom my childhood has still a tender though faint remembrance, and whom I early exchanged for such severe taskmasters?’



Page 46 from Charles Darwin's *Notebook M*

Letter 2226a Frederick (a) Smith to Darwin

26 Feb 1858

Brit Museum
26th. Feby. 1858.

My dear Sir

Your ant with the bright red head is as you suspect the F. sanguinea—the other is F. rufa.f1 *Sanguinea* may be known readily by examining the facial area which is *dull* or *semiopake*— in *F. rufa* it is < >*sing* & more angulated— [DIAGRAM HERE] frontal area frontal area

I should think it is rather too early for predatory attack, when I saw a foray of the kind it was when the nest of F. nigra had pupæ of workers in it—f2 just now I suspect only larvas or pupas of males & female are to be met with—you will have the best chance Morng or Eveng. during the <rest> of the day, you will not see anything of the kind—a dull day is as good as Morng or Eveng.—f3

I have before me a comb of a Sps. of Polistes,f4 and in *this* as in *all combs* in which a separate foundation is laid for each cell—the hexagonal form rises from a cup-shaped foundationf5 so that the origin of each angle begins at the same point of the curve and therefore if the cupshaped base is removed—the basal edge must be [DIAGRAM HERE] in nests of some Brazilian wasps. (Polybia)—the first comb is protected by an outer covering thus— [DIAGRAM HERE] on this covering the next layer of cells are built and here I have seen hexagonal bases to the cells, the walls rising at once perpendicular from the anglesf6

believe me, yours f<aithf>ully | Fredk <Sm>ith

Footnotes

f1 CD may have visited Smith during his stay in London, 16–20 February (see letter to J. D. Hooker, 23 February [1858]). Smith described the known species of British ants in F. Smith 1854 and revised this list in F. Smith 1857. Annotated copies of these works are bound together in the Darwin Pamphlet Collection–CUL. *Formica rufa* was the most common British ant, whereas *F. sanguinea* had been found only in certain areas of southern England (F. Smith 1854, pp. 101, 103).

f2 CD must have asked Smith about an appropriate time to watch out for ants making a ‘maurauding expedition’ to capture larvae of other species of ants to turn into ‘slaves’. CD described such expeditions in *Natural selection*, p. 513.

f3 CD’s interest in the slave-making ant, *F. sanguinea*, had been stimulated by reading Smith’s account of the subject (F. Smith 1854). In CD’s copy of the work, Smith’s description of a similar attack on a nest was marked (p. 99).

f4 Smith had exhibited the nests of a Brazilian species of the wasp *Polistes* at a meeting of the Entomological Society on 1 June 1857 (*Transactions of the Entomological Society of London* n.s. 4 (1856–8), Proceedings, p. 77). Smith believed that *Polistes* originally constructed a hexagonal cell, not, as George Robert Waterhouse suggested, cylinders that later became hexagons (see letter from G. R. Waterhouse, 13 February 1858). Smith subsequently expressed these views at a meeting of the Entomological Society on 7 July 1858 (*Transactions of the Entomological Society of London* n.s. 5 (1858–61), Proceedings, p. 35).

f5 At this point in the letter there is a diagram, which has not been reproduced because of the fragmentation of the manuscript.

f6 CD examined these nests, according to a note in DAR 48 (ser. 2): 21: May /58/ Saw in Glass-case B. Mus. a Polistes nest, in which some of [‘combs’ *del*] cells produced with cylinders.— saw cylindrical base made by Bees, but F. Smith does not know of any [‘cylin’ *del*] spherical cells.— He showed me that outside cells of wasps nest had traces of angle & says this is so even in 3 first cells formed by female wasps.— Polybia makes cells either concave or quite flat on roof over previous comb. CD underlined twice in pencil the passage: ‘He showed me … traces of angle’.

Letter 2235a Darwin to Frederick (a) Smith
[before 9 Mar 1858]**f1**

[Down]
–
(1) In your work on Bees, you state that you have seen stray *workers* inhabiting the nest of a distinct species.f2 Have you ever seen a stray *fertile* female *Bombus* inhabiting the nest of other species?f3

(2) In Ants, which do not make slaves, have you ever seen stray workers of one species inhabiting the nest of another species?f4

(3) Do you believe that Formica sanguinea always & invariably makes slaves; or is it only an occasional yet frequent instinct?f5

(4) In relation to the habit of F. nigra & cunicularia, when acting as slaves to to F. rufescens, of feeding their masters, do you know whether F. nigra & cunicularia actually feed their own Queens or males in their own nests? or do the Queens & males of these species feed themselves on food brought by the workers?f6

Footnotes

f1 CD evidently sent Smith this list of queries, which Smith answered and returned. The date is based on the inclusion of information from the memorandum in chapter 10 of CD's species book (see n. 4, below). CD recorded the completion of the chapter on 9 March 1858 ('Journal'; Appendix II).

f2 F. Smith 1855.

f3 Smith wrote '**never**' on the letter.

f4 Smith wrote: 'Not stray workers—there are communities of *Myrmica nitidula* & *M. muscorum* that live in harmony with Formica rufa I never saw stray workers in nests of *non-slavemaking* species—'. CD included this information as a note to his discussion of slave-making ants (*Natural selection*, p. 511n. 1).

f5 Smith wrote: 'I believe always I never myself met with a community without numbers of other species (say about eight in twenty)—no one has recorded any different habit—'.

f6 Smith wrote: 'This question I cannot answer—as I never saw slaves entering or issuing from the nests of their masters I am induced to believe they are employed in carry in the eggs brood &c above or below in the nests as the temperature requires also in enlarging the nest &c—the food of the community appears to be supplied by the workers of sanguinea alone—I have seen hundreds of them on young larch trees attending on a black swollen Aphis.'

Letter 2265 Darwin to W. E. Darwin
[26 Apr 1858]**f1**

Moor Park, Farnham | Surrey
Monday Night

My dear old Gulielmus

I was very glad to get this morning your note forwarded here from Down.— Your expedition to Kensington seems to have been rather a failure: I wish I had asked you to look out whether there were in the Museum specimens of Papers for Walls; there used to be at Marlborough House.—f2

I see at the last meeting of the Royal Soc., Claudet brought forward a wonderful new invention of throwing a pair of stereoscopic figures into a *single*, magnified one on ground glass, & this image, without any instrument stands out in relief & several people can view it at once.—f3

I sent off by today's post a draft for 50 guines to Mr. Wilson.—f4

I have been here since Tuesday: it has not done me so much good hitherto as before, but yet has much rested me: with 2 or 3 exceptions they are a horrid dull set here; but I amuse myself by loitering about the Park, which is very wild & lonely, so just suits me; & everything looks quite beautiful with this lovely weather. There is an exquisite mixture of ancient Scotch Firs & very old mag-nificent Birches.—f5 I pass my time
chiefly in watching the ants, & I find that though many thousands inhabit each hillock, each seems to know all its comrades, for they pitch unmercifully into a stranger brought from another ant-hill.f6

I shall be extremely curious to hear about the Belgiman:f7 by wonderful luck there is here an Hungarian exile, who is going back to his country soon, & he promises to observe about stripes in Hungary & to write to me.— I am very tired & stupid, so good night my dear old fellow

Yours affecty | C. Darwin

If you have opportunity read the "Three Chances"— it is very clever, & part very amusing.—f8

Footnotes

f1 The Monday after CD's arrival at Moor Park ('Journal'; Appendix II).

f2 Marlborough House, originally the London residence of Sarah Churchill, Duchess of Marlborough, had for a number of years housed the government's Museum of Manufactures. In 1857, the museum and the Schools of Art and Design, which were also located there, were moved to new premises in South Kensington, irreverently known as the 'Brompton Boilers'. A large picture gallery was built next to the relocated Museum of Manufactures to house new acquisitions and bequests, while a collection of Joseph Mallord William Turner's paintings remained at Marlborough House until 1861 (Weinreb and Hibbert eds. 1983).

f3 Antoine François Jean Claudet had demonstrated his technique for creating stereoscopic photographs at a meeting of the Royal Society on 10 March 1858 (*Proceedings of the Royal Society of London* 9 (1857–9): 194–6). William Darwin was a keen amateur photographer (see *Correspondence* vol. 6, letter to W. E. Darwin, [before 11 September 1857]).

f4 William Greive Wilson was William Darwin's tutor, with whom he was living. The payment of 50 guineas was entered in CD's Account book (Down House MS) and dated 30 April 1858. CD probably made the entry after his return from Moor Park on 4 May and forgot the exact date on which he had sent the money draft.

f5 Moor Park had formerly been the residence of William Temple; the grounds were subsequently remodelled by Lancelot ('Capability') Brown. It possessed a large deer park, fine landscaped grounds, and a well-established plantation of fir trees.

f6 See preceding letter. CD kept a note of his experiments on the recognition of individuals among ant communities (DAR 205.11 (2): 106), which reads in part: I took several times some hill-ants (*F. rufa*) from their own nest & placed them on another; they were always extremely much agitated & were instantaneously attacked by the inhabitants: whereas when I returned several of the same lots to their own nest, they seemed immediately to recognise their comrades & be recognised by them. The note was marked 'Ch. 10', the chapter of CD's species book on the instincts of animals (see *Natural selection*, pp. 470–1 and 574–5).

f7 CD had asked William Darwin to look out while he was in Norfolk for cart-horses with dorsal stripes (letter to W. E. Darwin, 11 [February 1858]).

f8 See letter to Emma Darwin [25 April 1858].

Letter 2306 Darwin to J. D. Hooker
13 [July 1858]

Miss Wedgwoods | Hartfield | Tunbridge Wellsf1

13th.

My dear Hooker

Your letter to Wallace seems to me perfect, quite clear & most courteous. I do not think it could possibly be improved & I have today forwarded it with a letter of my own.—f2

I always thought it very possible that I might be forestalled, but I fancied that I had grand enough soul not to care; but I found myself mistaken & punished; I had, however, quite resigned myself & had written half a letter to Wallace to give up all priority to him & shd. certainly not have changed had it not been for Lyell's & yours quite extraordinary kindness. I assure you I feel it, & shall not forget it.

I am **much** *more* than satisfied at what took place at Linn. Socy— I had thought that your letter & mine to Asa Gray were to be only an appendix to Wallace's paper.—f3

We go from here in few days to sea-side, probably Isle of Wightf4 & on my return (after a battle with Pigeon skeletons) I will set to work at abstract, though how on earth I shall make anything of an abstract in 30 pages of Journal I know not, but will try my best.f5 I shall order Bentham:f6 is it not a pity that you shd. waste time in tabulating vars; for I can get the Down schoolmaster to do it on my return & can tell you all results.f7

I must try & see you before your journey; but do not think that I am fishing to ask you come to Down., for you will have no time for that.

You cannot imagine how pleased I am that the notion of Natural Selection has acted as a purgative on your bowels of immutability. Whenever naturalists can look at species changing as certain, what a magnificent field will be open,—on all the laws of variation,—on the genealogy of all living beings,—on their lines of migration &c &c.

Pray thank Mrs. Hooker for her very kind little note, & pray say how truly obliged I am, & in truth ashamed to think, that she shd. have had the trouble of copying my ugly M.S.f8 It was extraordinaryly kind in her.—

Farewell my dear kind friend— Yours affectly | C. Darwin

I have had some fun here in watching a slave-making ant, for I could not help rather doubting the wonderful stories, but I have now seen a defeated marauding party, & I have seen a migration from one nest to another of the slave-makers, carrying their slaves (who are *house* & not field niggers) in their mouths!f9

I am inclined to think that it is a true generalisation that when honey is secreted at one point of circle of corolla, if the pistil bends it always bends into line of gangway to the honey.— the Larkspur is good instance in contrast to Columbine.— if you think of it, just attend to this little point.—f10

Footnotes

f1 CD and Emma Darwin had joined their children at Sarah Elizabeth (Elizabeth) Wedgwood's home on 9 July 1858 ('Journal'; Appendix II).

f2 The letters have not been found. Alfred Russel Wallace mentioned having received letters from CD and Hooker in a letter to his mother, dated 6 October 1858 (Marchant 1916, 1: 71). An extract from that letter is given in Wallace 1905, 1: 365: I have received letters from Mr. Darwin and Dr. Hooker, two of the most eminent naturalists in England, which have highly gratified me. I sent Mr. Darwin an essay on a subject upon which he is now writing a great work. He showed it to Dr. Hooker and Sir Charles Lyell, who thought so highly of it that they had it read before the Linnean Society. This insures me the acquaintance of these eminent men on my return home. Wallace's notebook for the period (Linnean Society archives, MS 180, p. 14), lists the table of contents of CD's species book (*Natural selection*, pp. 25–32). CD probably included this information in the letter mentioned here.

f3 The communications read at the Linnean Society meeting on 1 July 1858 were ordered as follows: first, the letter from Hooker and Lyell to the Linnean Society; second, an extract from CD's essay of 1844 (*Foundations*, pp. 87–93); third, the enclosure from CD's letter to Asa Gray, 5 September [1857] (see Appendix III); and fourth, Wallace's essay entitled 'On the tendency of varieties to depart indefinitely from the original type' (see Appendix IV).

f4 The Darwin family left Sussex for the Isle of Wight on 16 July 1858 ('Journal'; Appendix II). Emma Darwin's diary records that they spent the night of 16 July in Portsmouth and arrived in Sandown on the evening of 17 July.

f5 See letter to J. D. Hooker, 5 July [1858].

f6 Bentham 1858. CD was anxious to tabulate the work for his study of varieties in large and small genera (see *Correspondence* vol. 6, letter to J. D. Hooker, 9 December [1857]).

f7 Ebenezer Norman compiled the tables from various botanical and entomological catalogues that CD used for calculating the ratio of varieties in large and small genera (see letter to J. D. Hooker,12 January [1858], n. 10, and *Correspondence* vol. 6, letter to J. D. Hooker, 22 August [1857]).

f8 Frances Harriet Hooker apparently made a fair copy of the draft of CD's letter to Asa Gray beforeit was read at the Linnean Society on 1 July 1858 (see n. 3, above). There were several small emendations to the text, possibly introduced by Frances Hooker or by CD when the proof-sheets of the paper came to him. See Appendix III.

f9 See letter from Frederick Smith, 26 February 1858, and letter to Frederick Smith, [before 9 March 1858]. CD's notes on his observations at Hartfield, dated 11–14 July, are in DAR 205.11(2): 90–3. CD continued observing ants while on the Isle of Wight; these notes are in DAR 205.11(2): 94.

f10 See letter to Asa Gray, 4 July 1858.

Letter 2413 Darwin to Emma Darwin
[25 Apr 1858]f1

[Moor Park]
Sunday

My dearest W.

I am very sorry to hear that you are headachy. A scheme just comes into my head. viz, that when I am back, that you shd. come here for a fortnights hydropathy. Do you not think it might do you real good? I could get on perfectly with the children.— You might bring Etty with you.f2 Think of this my own dearest wife. Ah Mammy, I wish you knew how I value you; & what an in-expressible blessing it is to have one whom one can always trust—one always the same, always ready to give comfort, sympathy & the best advice.— God bless you my dear, you are too good for me.

Yesterday I was poorly: the Review & confounded Queen was too much for me;f3 but I got better in evening & am very well today. I cannot walk far yet; but I loiter for hours in the Park & amuse myself by watching the Ants: I have great hopes I have found the rare Slave-making species & have sent a specimen to Brit. Mus. to know whether it is so.—f4 I have finished Beneath the Surface & it is very poor.f5 I have begun the Three Chances, & this a strange powerful novel, written by one with plenty of "gumption".—f6

Thanks for Charlotte's note, which I have burnt.f7

I have got some more letters to write, though I wrote six longish ones yesterday so farewell my best & dearest of wives | C. D.

Mrs. Lane agrees with me that the Betrothed is by a man.f8 She coolly added that Beneath the Surface was so poor that it must have been written by a man!

Footnotes

f1 The Sunday after CD's arrival at Moor Park hydropathic establishment ('Journal'; Appendix II). The date is confirmed by CD's reference to a review of army troops by Queen Victoria (see n. 3, below).

f2 Henrietta Emma Darwin, aged 15, had undergone treatment at Moor Park on two occasions in 1857 (see *Correspondence* vol. 6).

f3 Queen Victoria reviewed the troops at Aldershot camp, near Farnham, on Friday and Saturday, 23 and 24 April 1858 (*The Times*, 26 April 1858).

f4 CD had asked Frederick Smith, an entomologist at the British Museum, to identify several ant specimens (see letter from Frederick Smith, 26 February 1858). *Formica sanguinea*, the only slave-making species in England, had previously been found only in Hampshire and at Weybridge in Surrey (F. Smith 1854, p. 103). CD continued to observe ants throughout 1858 and 1859 (DAR 205.11 (2): 88–107).

f5 Probably a mistake for *Below the surface: a story of English country life* ([Elton] 1857).

f6 The *Three chances* was an anonymous novel published by Smith, Elder and Company in 1858.

f7 Charlotte Langton was Emma Darwin's sister.

f8 The author of *The letters of a betrothed* (London, 1858) was in fact Marguerite A. Power. Mrs Lane was the wife of Edward Wickstead Lane, proprietor of the hydropathic establishment at Moor Park.

Letter 2456 Frederick (a) Smith to Darwin
30 Apr 1859

British Museum.
30th. April. 1859.

My dear Sir

In answer to your queries I may first observe that I have watched the colonies of F. sanguinea carefully in the beginning of May—about the middle of June & in the middle of August—the greatest number of slaves I have found <(>more than once) at the latter <per>iod—but I never observed any Slave-Ant either issue from or enter the nest—f1 I have seen them repeatedly *carried in* in their perfect condition—and *once* in the larvæ & pupæ state— I have frequently watched them in the morning—ie before 10 oclock—as at that hour the sun got round and shone on the South when the ants disappeared—and again came forth in the afternoon about < > o-clock

I have been induced from my own observations to consider them—Household-Slaves—which perform some drudgery in the nest—f2 You are at perfect liberty <to> quote the results of my imperfect observations—but I know that it only at *intervals* when certain observations can be made.—f3

<I> only discovered Stylops in <An>drena <nigro>-oeneae —this bee is plentiful about London and elsewhere— I have examined hundreds in the hope of seeing it Stylopized —but until the present month on Good Friday—I never took that species infested—f4 I think our F. sanguinea is Hu<ber's> surely Nylander— Foerster Myer or Schenck—who have so industriously collected the European Sps must have taken the allied Sps if any existed—f5

Yours sincerely | Fredk Smith

C. Darwin Esq

Footnotes

f1 Smith's observation was cited by CD in *Origin*, p. 220. See also letter to Frederick Smith, [before 9 March 1858].

f2 CD cited this observation in *Origin*, p. 220.

f3 CD stated in *Origin*, p. 220, that he was 'much indebted for information on this and other subjects' to Smith.

f4 Female insects of the family Stylopidae are parasitic within the body of bees belonging to the genus *Andrena*. Smith refers to *A. nigro-aenea*. He had described the infestation of this species by *Stylops melittæ* in F. Smith 1855, p. 72, but had remarked that: 'it is remarkable that amongst the number of species which I have captured attacked by *Stylops*, I never found *A. nigro-ænea* infested by the parasite.' CD's annotated copy of F. Smith 1855 is in the Darwin Library–CUL.

f5 Smith refers to Jean Pierre Huber's description of *Formica sanguinea*, as given in J. P. Huber 1810. The ant is rare in England but, in Smith's opinion, definitely the same species; he described it inF. Smith 1854 and in F. Smith 1858, pp. 6–7. William Nylander, Arnold Förster, Gustav Mayr, and Adolf Schenk were German entomologists renowned for their work on European ants. Smith cited their works

frequently in F. Smith 1858. CD listed F. Smith 1858 among the books he read during 1859 (see *Correspondence* vol. 4, Appendix IV, 128: 24), and his notes on the work are in DAR 205.11 (2): 83–5. CD's notes on his observations of ants, from May 1858 to July 1859, are in DAR 205.11(2): 88–95.

f6 The annotation refers to chapter 10 of CD's species book (*Natural selection*, pp. 466–527), which dealt with the 'mental powers and instincts of animals'.

Letter 3266 Darwin to H. W. Bates
25 Sept [1861]

Down. | *Bromley.* | *Kent. S.E.*

Sept. 25th

My dear Sir

Your letter, like every one that I have received from you, has been a mine of wealth & has interested me greatly.f1 But first for the most important point, viz your Book of Travels, & I hearily rejoice that you intend publishing.f2 I shd. think that you could not have a more respectable or pleasanter publisher than Mr Van Voorst.—f3 At the same time, I apprehend, there can be no doubt that Murray has **much** greater power of getting large distribution. Murray has the character of being a very liberal paymaster & I am sure I have found him most liberal & pleasant to deal with. Of course every publisher will be cautious with a new author. If your Book should turn out popular (& there is some little mere luck in this) it would be a thousand pities that it shd. not be in hands that could press its sale. I cannot remember that Mr V. Voorst has ever had very large sale for any of his Books.— On other hand Mr V. V. would better appreciate your scientific character than Mr Murray.—f4 This is all the advice I can give; except that I rejoice I went to Murray with the Origin.—f5

By the way here is case in point! Colburn did not value my Journal of Researches & would never, I am sure, have published a second Edit. I took it from Colburn & sold it to Murray & it has long & *great* sale up to present day.—f6 — If you shd. decide on Mr Murray, & if you would so like I shall be most happy to write to Mr. Murray & can most truly tell him how much I appreciate the force of intellect & knowledge & style of your letters to me.—f7 What terms he would offer you I cannot conjecture: he would, no doubt, wish to see some M.S.— As an old hackneyed author let me give you a bit of advice, viz to strike out every word, which is not quite necessary to connect subjects & which would not interest a stranger. I constantly asked myself, would a stranger care for this? & struck out or left in accordingly.— I think too much pains cannot be taken in making style transparently clear & throwing eloquence to the dogs. I hope that you will not think these few words impertinent.— (I would sell only 1st. Edition.)—f8

Now for a few words on Science.— Many thanks for facts on Neuters. You cannot tell how I rejoice that you do not think what I have said on subject absurd.—f9 Only 2 persons have ever noticed it to me!— Viz the bitter sneers of Owen in Eding. Review, & my good friend & supporter Sir C. Lyell, who could only screw up courage to say “well you have manfully faced the difficulty”.—f10

What a wonderful case of Volucella, of which I had never heard; I had no idea such a case occurred in nature: I must get & see specimens in Brit. Museum.—f11 I hope & suppose you will give a good deal of Nat. History in your Travels; everyone cares about Ants— more notice has been taken of Slave Ants in the Origin that of any other passage.—

I fully expect to delight in your Travels. Keep to simple style as in your excellent letters,—but I beg pardon I am again advising.

What a capital paper yours will be on mimetic resemblances.—f12 You will make quite a new subject of it.— I had thought of such cases as a difficulty. & once when corresponding with Dr. Collingwood, I thought of your explanation; but I drove it from my mind, for I felt that I had not knowledge to judge one way or the other. Dr. C., I think, states that the mimetic forms inhabit same country; but I did not know whether to believe him.—f13 What wonderful cases yours seem to be.— Could you not give a few

woodcuts in your Travels to illustrate this?— I am tired with hard's day's work— so no more, except to give my sincere thanks & hearty wishes for the success of your Travels.—

My dear Sir | Yours sincerely | C. Darwin

Endorsement: Endorsement: `1861!

Footnotes

f1 See letter from H. W. Bates, [before 25 September 1861].

f2 CD had encouraged Bates to write an account of his eleven-year-long travels in the Amazon basin in South America (see letter to H. W. Bates, 4 April [1861]).

f3 John Van Voorst, the owner of Van Voorst publishing house in Paternoster Row, London, was a major publisher of works on natural history.

f4 Bates's work, *The naturalist on the river Amazons*, was published by John Murray in 1863.

f5 Charles Lyell had served as an intermediary in CD's negotiations with John Murray over the publication of *Origin*. See *Correspondence* vol. 7, especially the letters to Charles Lyell, 28 March [1859] and 30 March [1859], and to John Murray, 31 March [1859].

f6 The publishing firm of Henry Colburn, of Great Marlborough Street, London, had published CD's account of the *Beagle* voyage (*Journal and remarks*) in 1839 as volume 3 of Robert FitzRoy's *Narrative of the surveying voyages of His Majesty's Ships Adventure and Beagle*. Later in the same year, Colburn reissued the work separately under a new title, *Journal of researches* (see *Correspondence* vol. 2). For CD's displeasure with Colburn over the handling of the publishing of *Journal of researches*, see *Correspondence* vol. 3, letters to John Murray, 17 March [1845] and 12 April [1845]. Murray had issued a new printing of the work, the tenth thousand, in 1860 (see Freeman 1977, pp. 31–40).

f7 See *Correspondence* vol. 10, letter to John Murray, 28 January [1862].

f8 Bates was unaware of the practice of selling the publication rights for a specific edition (see letter from H. W. Bates, 30 September 1861).

f9 The reference is to the discussion in *Origin* of how natural selection could account for the existence of neuter insects, a problem that CD admitted had at first seemed `insuperable, and actually fatal to my whole theory' (*Origin*, p. 236). Using the sterile worker ants as his model, CD suggested that even though they were unable to propagate their own kind, `selection may be applied to the family, as well as to the individual, and may thus gain the desired end.' (*ibid*., p. 237).

f10 The reference is to Richard Owen's review of *Origin* ([R. Owen] 1860b, pp. 524–6). For a reference by Charles Lyell to the discussion in *Origin* of `working ants', see *Correspondence* vol. 7, letter from Charles Lyell, 3 October 1859.

f11 The information on *Volucella*, commonly known as the hover-fly, was included in the letter from H. W. Bates, [before 25 September 1861]. See also letter from H. W. Bates, 30 September 1861. In November 1861, CD visited the British Museum and examined the exhibition of South American insects collected by Bates (see letter to J. D. Hooker, 25 November [1861]).

f12 A paper by Bates on mimetic butterflies was read before the Linnean Society of London on 21 November 1861 (Bates 1861b).

f13 The reference may be to Cuthbert Collingwood's paper on what he called `homomorphism' or `representative form' (Collingwood 1860a). Collingwood had sent CD a copy of the work, which is in the Darwin Pamphlet Collection–CUL. See letter to Cuthbert Collingwood, 14 March [1861]. CD may also have read another of Collingwood's papers on this topic (Collingwood 1860c).

Letter Unnumbered Darwin to Arabella Buckley
16 August [1880]

Cambridge
Aug. 16th

My dear Miss Buckley

It is an entire blunder of Mr Packard. I have described briefly in Origin the slave making process, as seen by myself.— I have, however, remarked (speaking from memory) that apparently *F. sanguinea* does not attend so much to Aphides in England as on the continent.—

My dear Miss Buckley | Yours sincerely | Ch. Darwin

Archival Location: University of Chicago Library