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978-0-521-84459-8 - The Correspondence of Charles Darwin, Volume 14 - 1866

Edited by Frederick Burkhardt, Duncan M. Porter, Sheila Ann Dean, Samantha Evans, Shelley Innes, Andrew Sclater, Alison Pearn and Paul White

Excerpt

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THE CORRESPONDENCE OF CHARLES DARWIN 1866

To George Howard Darwin [1866]

Dear George

Can you or any of your friends answer me this.¹ In a family of 10 5 of the children squinted & 5 did not & they came alternately—. ² But you must understand it is indifferent whether a squinter or a non squinter comes first. What I want to know is what are the chances against their coming alternately.³

Yours affec | Ch. Darwin | Ch. Darwin | Ch. Darwin⁴

P.S This case of the squinting & other such cases are real.

Endorsement: '66

L.S.

DAR 210.1: 1

¹ George Darwin was studying mathematics at Cambridge University (*Alum. Cantab.*).

² A case of squinting in five of ten siblings was reported in Streatfield 1857–9, and was referred to in Sedgwick 1861, which CD cited (in relation to a different subject) in *Variation 2*: 328 n. However, Streatfield stated that squinting affected only the boys among ten siblings, not that alternate children squinted. CD briefly discussed squinting in *Variation 2*: 9, in the chapter on inheritance, but relied exclusively on evidence provided by William Bowman.

³ At the top of the letter, George calculated a 1:126 chance of squinters and non-squinters being born alternately in a family of ten, by dividing twice the square of the factorial of five by the factorial of ten. At the end of his working, he multiplied 126 by two; the reason for this is unclear. George's reply to CD has not been found.

⁴ The letter is in the hand of CD's daughter Elizabeth. The signatures are copied from CD's own.

To a local landowner¹ [1866?]²

Dear Sir.

As you are now so little on your Farm, you may not be aware that the necks of your horses are badly galled, as I have been informed by two persons.³ I hope you will immediately attend to this, for though I sh^d be very sorry to give trouble or annoyance to yourself from whom I have always received much civility, I must for the sake of humanity attend to this.⁴ A conviction for working Horses with galled necks is easily obtainable, on sufficient evidence being produced & I was most

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unwillingly compelled, after vainly remonstrating with M^r Ainslie by letter on the subject, to get the Officer of the Royal Humane Soc. to come down here & attend to the case, & M^r Ainslie was fined by the Magistrates at the Bromley Session.—⁵ I sincerely hope that you will at once make enquiries & give strict orders to your Bailiff not to work any horse with a wounded neck⁶—

& | I remain | Dear Sir | Y^{rs} faithfully | Ch. Darwin

Draft

DAR 96: 27r

¹ The recipient has not been identified; he was apparently a farmer or landowner in Down or its neighbourhood.

² The year is conjectured from the endorsement ‘66’ in Francis Darwin’s hand.

³ CD’s informants have not been identified.

⁴ For CD’s interest in animals, and their humane treatment, see Atkins 1974, pp. 78–84, and n. 5, below. CD’s original wording of this sentence referred to his obligation ‘as a magistrate’ to become involved in this matter (see ‘Manuscript alterations and comments’).

⁵ In 1852, CD had arranged for an officer of the Society for the Prevention of Cruelty to Animals to inspect horses owned by Robert Ainslie of Tromer Lodge, Down (letter from Emma Darwin to William Erasmus Darwin, [23 April 1852] (DAR 219.1: 4)). CD refers, apparently in error, to the Royal Humane Society, which was established in 1774 to promote better techniques and resources for saving people from drowning (P. J. Bishop 1974). CD was himself a magistrate from 1857 (Milner 1994, pp. 90–4). For information on the Darwins’ involvement with the Royal Society for the Prevention of Cruelty to Animals and the campaign for humane vermin traps, see *Correspondence* vol. 11, Appendix IX. For the society’s emphasis on ‘humane’ objectives between 1837 and 1870, see Fairholm and Pain 1924, pp. 162–4.

⁶ The bailiff has not been identified.

From Charles John Robinson [1866?]¹

Harewood | Ross. Herefordshire

My dear M^r Darwin,

I cannot resist the pleasure of telling you how gratified I have been to hear of your restoration to health.

Your name was mentioned the other night at dinner at the Deanery² & my neighbour M^r. Herbert—(our County Court Judge)—in answer to my enquiries, gave me the very welcome news.³

I pay him a visit next week in order to meet your old friend Charles Whitley.⁴

In the few years that have passed since I last had the pleasure of seeing you I have had to endure many sorrows. The loss of my wife in her first confinement &—almost simultaneously—the death of my father & mother—have left me very solitary.⁵

If I am not wholly forgotten, allow me to offer my kind regards to M^{rs} & Miss Darwin as well as to yourself—⁶ for whom I trust there are many years of health & fame in store.

Yours very sincerely, | Charles J Robinson

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I have a small living (Norton Canon) in this county, where I am building a Vicarage house—restoring Church & School⁷ & otherwise following the ordinary imprudent course w^h. my brethren adopt.

DAR 176: 188

¹ The year is conjectured from the references to CD's improving health and to the dinner at Hereford Deanery. CD's health had been improving since the end of 1865, an improvement he attributed to treatment by Henry Bence Jones (*Correspondence* vol. 13, letter to T. H. Huxley, 4 October [1865] and n. 3). Robinson's informant about CD's health, John Maurice Herbert, had learned the news of the good effects of Jones's treatment 'some few months' before writing to CD in May 1867 (*Correspondence* vol. 15, letter from J. M. Herbert, 3 May 1867). The dinner at the Deanery is likely to have taken place some time before the death of Herbert's friend, the dean of Hereford, Richard Dawes, in March 1867; see *DNB* and *Correspondence* vol. 15, letter from J. M. Herbert, 3 May 1867).

² Robinson refers to the Deanery at Hereford.

³ Herbert, a Cambridge friend of CD's (*Correspondence* vol. 1), was a County Court judge on the South Wales circuit from 1847 to 1882 (*Modern English biography*). See also n. 1, above.

⁴ Charles Thomas Whitley had been at Shrewsbury School and Cambridge with CD; he was Herbert's cousin (*LL* 1: 166, *Modern English biography*).

⁵ Robinson's first wife has not been further identified. He later married Emma Harriet Agnes Crocker; they had four daughters by 1881. Robinson's parents were Eleanor Rocke and Charles Frederick Robinson of Ashcott, near Glastonbury. (*Biograph and Review* 6 (1881): 144–6.)

⁶ Robinson refers to Emma Darwin and Henrietta Emma Darwin; he had met them and CD at Ilkley, Yorkshire, in October 1859 (letter from Emma Darwin to William Erasmus Darwin, [24 or 31 October 1859] (DAR 210.6: 50)).

⁷ Robinson was vicar of Norton Canon, Herefordshire, between 1865 and 1877; on his building and restoration works see *Biograph and Review* 6 (1881): 144–6.

To Henry Bence Jones 3 January [1866]¹

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

Jan 3.

My dear Dr Bence Jones

I have a good report to make.² I am able now to walk daily on an average 3½ miles & often one mile at a stretch.³

My weight now with slight fluctuations keeps steady at the lowest point to which it has sunk.⁴ I feel altogether much more vigorous & active. I read more, & what is delightful, I am able to write easy work for about 1½ hours every day.⁵ The only drawback is that on most days 3 hours after luncheon or dinner, I have a sharpish headache on one side, & with bad flatulence lasting to the next meal.⁶ I forgot to say that taking the whole day, the flatulence is somewhat diminished especially on my better days. One day when my head & stomach were extra bad, in despair I took a cup of coffee without sugar, & it acted really like a charm & has continued to do so; for I now take a cup of coffee each day with luncheon or dinner, & I believe I have never once had headache and flatulence after the meal with coffee.⁷ I have transposed luncheon & dinner & made other changes, but as far as I can discover it is the coffee which is effectual. Under these circumstances may I try

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coffee with both luncheon & dinner. I have not yet much taste for common meat, but eat a little game or fowl twice a day & eggs, omelet or maccaroni or cheese at the other meals & these I think suit me best. I have not taken to [*2 words illeg*] much starch for I have such horror about acid.⁸

There is an odd change in my stomach, for the last 20 years coffee & cheese have disagreed with me, now they suit me eminently well.⁹ I took 10^g oxyde of Iron for a fortnight but did not miss it when I left it off 10 days ago: I will do as you like about retaking it.¹⁰ I have taken 10 drops of Muriatic acid twice a day (with Cayenne & ginger) for above 3 weeks & it suits me *excellently*.¹¹ May I continue it longer? I hope you will be pleased with my report. I shall be grateful for any further advice

yours very faithfully with | cordial thanks | Ch. Darwin

LS(A)

DAR 249: 86

¹ The year is established by the relationship between this letter and the letter from H. B. Jones, 10 February [1866].

² CD became a patient of Jones's during the summer of 1865; on Jones's recommendation, CD had begun a strict diet (see *Correspondence* vol. 13, letter to Asa Gray, 15 August [1865] and n. 12). CD reported some improvement in his condition in September 1865 (see, for example, *Correspondence* vol. 13, letter to J. D. Hooker, 27 [or 28 September 1865]). For further discussion of CD's health, see Bowlby 1990, Browne 1998, Colp 1998, and Browne 2002, pp. 262–9. See also *Correspondence* vol. 13, Appendix IV, for an account of CD's health in the preceding months.

³ In his notes on his health, submitted to John Chapman in May 1865, CD mentioned that he could not walk more than half a mile (see *Correspondence* vol. 13, Appendix IV). Emma Darwin's diary listed regular walks on the sandwalk (see Atkins 1974, pp. 25–6) between July and early October and walks of between 3 and 5½ miles between 5 and 17 October 1865 (DAR 242).

⁴ In the letter to J. D. Hooker, 27 [or 28 September 1865], CD recorded the beneficial effect of his loss of 15 lbs since starting Jones's diet (see *Correspondence* vol. 13). Emma Darwin's diary (DAR 242) shows CD's weight to have been in the range of 11 st. 2 lbs (156 lbs) to 11 st. 4 lbs (158 lbs) during August 1865. Thereafter, her weekly records show CD's progressive loss of weight to 10 st. 4 lbs (144 lbs) by early December 1865. His weight remained stable until late January 1866, rising later in the year to around 10½ st. (147 lbs). CD was about six feet in height (*LL* 1: 109).

⁵ In his notes on his health dated May 1865, CD wrote that reading caused his ears to ring and interfered with his vision (see *Correspondence* vol. 13, Appendix IV). CD also mentioned the problem in letters (see, for example, *Correspondence* vol. 13, letter to J. D. Hooker 27 [or 28 September 1865]). In his letter to J. D. Hooker, 22 December [1865] (*Correspondence* vol. 13), CD said he was able to write for an hour on most days. CD wrote in his 'Journal' that he resumed his work on *Variation* on 25 December 1865 (see *Correspondence* vol. 13, Appendix II).

⁶ In his May 1865 notes on his health, CD had stated that he seldom suffered from headaches, but noted his chronic flatulence (see *Correspondence* vol. 13, Appendix IV). CD subsequently underwent Chapman's ice treatment for flatulence and other problems (see *Correspondence* vol. 13, letter to John Chapman, 7 June 1865).

⁷ The entry in Emma Darwin's diary (DAR 242) for 8 December 1865 reads 'left off sugar'. No other references to the beneficial effects of coffee on CD's health have been found.

⁸ In 1864, CD's illness had caused him to vomit 'acid & morbid secretion' (see *Correspondence* vol. 12, letter to J. D. Hooker, [20–]22 February [1864]); these symptoms were treated with antacids by William Jenner (see *Correspondence* vol. 12, letter to J. D. Hooker, 13 April [1864] and n. 6). CD's

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continuing problem with acidity was recorded in the notes on his health of May 1865 (*Correspondence* vol. 13, Appendix IV and n. 5).

⁹ CD seems to have drunk coffee without problems as a young man (see, for example, *Correspondence* vol. 7, letter to W. D. Fox, 13 November [1858]).

¹⁰ CD began taking iron in 1864, Emma Darwin's diary (DAR 242) recording 'began iron' on 12 April, and 'began phosph. iron' on 21 August and 21 September. CD took phosphate of iron on Jenner's advice (see *Correspondence* vol. 12, letters from William Jenner, 15 October 1864 and 9 November 1864). It is not known when, or for what reason, CD started to take oxide of iron; contemporary preparations of oxide of iron and their medicinal properties are described in Royle and Headland 1865, pp. 139–43.

¹¹ Muriatic acid was the contemporary term for hydrochloric acid (Royle and Headland 1865, p. 49). A recipe for a remedy consisting of 'Oxley's essence of Ginger' and tincture of cayenne in brandy is given by CD in the letter to G. H. Darwin, 22 January 1873 (*Calendar* no. 8747). Cayenne is derived from species of *Capsicum* and was used for the treatment of gout and flatulence (Beasley 1865, p. 161). Ginger was valued for its beneficial effects on the stomach (Beasley 1865, p. 537).

From Emily Catherine Langton to Emma and Charles Darwin [6 and 7? January 1866]¹

Dearest Emma & Charles

I am so rapidly weaker I can lose no time in sending you all & Elizabeth my dearest farewell.² It is grievous to think I shall never see any of your dear faces. On New Year's day I knew this, and what a different world it seems to me.

What I want to say is that poor Susan feels my loss so cruelly—³ I left off this last night as I was too exhausted to go on—

I am grieved indeed at poor Susan's loneliness, but there seems no help.

My dearest husband will feel my loss too; *what a nurse he is*, if he was not deaf—⁴

Every body's love & goodness to me are past speech—

May God bless you all & may we meet hereafter.

E.C.L.—

Sunday.

The Wedgwood Museum Trust (Temporary deposit at Keele University): W/M202

¹ The date is conjectured from the reference to New Year's day; in 1866, the following Saturday and Sunday were 6 and 7 January. It is also possible that the letter was written on a later weekend in January. Emily Catherine Langton (Catherine) died in early February 1866 (see letter from J. D. Hooker, 4 February 1866 and n. 1).

² Sarah Elizabeth Wedgwood, known as Elizabeth, was Emma Darwin's sister and Catherine's cousin (Freeman 1978). Catherine had been in poor health since at least the time of her marriage to Charles Langton in 1863 (see *Correspondence* vol. 11, letter to J. D. Hooker, 25 [August 1863], and Wedgwood and Wedgwood 1980, p. 272). She had discussed her poor health and inability to pay social visits in a letter to Henrietta Emma Darwin of [November 1865] (DAR 219.8: 3).

³ Susan Elizabeth Darwin, CD and Catherine's sister, lived at the Mount (their childhood home) in Shrewsbury. She and Catherine had lived together there after their father's death in 1848 until Catherine moved to another house in Shrewsbury following her marriage to Charles Langton in 1863 (Freeman 1978).

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*January 1866*⁴ Catherine refers to Charles Langton.To Philip Lutley Sclater 6 January [1866]¹*Down. | Bromley. | Kent. S.E.*
Jan 6

Dear Sclater

I know that you are one of the busiest of men, but I want to beg a little bit of information & I trust to your kindness for I do not know to whom else to apply. Mr Swinhoe writes to me of a domestic race of duck in China as perhaps descended from *Anas poecilorhyncha*.² Now do you consider this form as deserving to be called a distinct species from *A. boschas* & may I quote your opinion??³

How does it differ? I suppose it has the curled tail feathers & wing-marks. Is it a native of China? I sh^d be very grateful for a few lines giving me information on these heads.⁴

Pray forgive me troubling you & believe me

yours very sincerely | Charles Darwin

P.S. After nine months inaction from illness, I have just begun to do a little work—⁵

LS(A)

American Philosophical Society (311)

¹ The year is established by the content of the postscript (see n. 5, below).

² CD probably refers to the missing portion of the letter from Robert Swinhoe, [before 1 October 1865?] (*Correspondence* vol. 13); the surviving portion includes a discussion of ducks, but not of *Anas poecilorhyncha*, the spot-billed duck of Asia. Robert Swinhoe, the British consul in Formosa (now Taiwan), had earlier informed CD of a supposed 'thorough race' of duck that had developed from hybrids of the muscovy duck (*Carina moschata*; then also *A. moschata*) and the Chinese domestic duck (see *Correspondence* vol. 10, letter from Robert Swinhoe, 12 November 1862).

³ No reply from Sclater has been found; in his discussion of breeds of domestic ducks and their descent from the mallard, *Anas boschas* (now *A. platyrhynchos*), in *Variation* 1: 276–87, CD did not cite information from Sclater or Swinhoe.

⁴ *Anas poecilorhyncha* is distributed throughout Asia. Its lack of curled tail-feathers distinguishes it from *A. boschas*, although both species have conspicuous wing patches (*Birds of the world* 1: 605, 607). CD mentioned *A. boschas*, but not *A. poecilorhyncha*, in *Variation*.

⁵ CD recorded being ill from 22 April until December 1865 (see *Correspondence* vol. 13, Appendix II).

From Ernst Haeckel¹ 11 January 1866Jena (Saxe-Weimar)
11. Januar 1866

Hochverehrter theurer Herr!

Indem ich Ihnen zunächst ein recht glückliches neues Jahr wünsche und vor Allem, dass Ihre theure Gesundheit wieder ganz gekräftigt werden möge, zeige ich Ihnen den Empfang Ihrer beiden freundlichen Briefe (vom 6. Dec. and 5. Jan.)²

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an, welche mir, wie alle Erinnerungen an Sie, stets von dem grössten Werthe sind und bleiben werden.³

Dass Sie meine letzten Arbeiten richtig empfangen haben, ist mir lieb.⁴ Mein Buchhändler (*Engelmann in Leipzig*) hatte (sie) schon im vorigen September an *Willia(ms & Norgate*) abgesandt.⁵ Der *Prot(ogenes) primordialis* (in dem Blatt: “(Sarcodkörper) der Rhizopoden”) ist Ihnen (hoffentlich) von besonderem Interesse.⁶ Ich g(laube, dass) solche Organismen (ganz hom(ogene) Eiweiss-Klumpen oder Protoplasma () im Anfange des organischen Lebens (auf der) Erde spontan entstanden sind, und (dass) sich aus ihnen durch “natural Sele(ction)”) zunächst verschiedenartige *Zellen* und daraus weiter durch Differenzirung die wenigen grossen *Hauptklassen* des Thier- und Pflanzen-Reichs gebildet haben, unter welche wir alle verschiedenen Organismen unterordnen können.⁷ Ich nehme solcher Hauptklassen (Typen, Branches, Embranchemens) ungefähr 10 oder 12 im Ganzen an und werde diese Annahme in meinem jetzt erscheinenden allgemeinen Buche dadurch zu beweisen suchen, dass ich einen ganzen *Stammbaum* (eine genealogische Tabelle) für jede derselben aufstelle.⁸ Der Druck dieses Buches schreitet jetzt rüstig vorwärts; indess wird es wohl immer noch einige Monate dauern, bis es erscheinen wird.⁹ Ein sehr wichtiges Capitel (*die allgemeinen Principien (u)nd Gesetze der embryonalen und der ihr (par)allelen palaeontologischen Entwicklung*) (will) ich noch ganz umarbeiten. Dieses und (einige an)dere Capitel habe ich schon (mehrere) male umgearbeitet.¹⁰ Aber es (ist se)hr schwierig, auf einem solchen (neuen) und uncultivirten Felde vorwärts (zu k)ommen. Es ist wie ein dichter (noch u)nbetretener Urwald, in welchem (da)s Unkraut der Vorurtheile und die (Dorn)en der Dogmen jeden Schritt aufhalten.

Wie viel ich mich bei dieser schweren Arbeit, die meine ganzen Kräfte in Anspruch nimmt, und mich dadurch zugleich am besten von meinem unglücklichen Schicksal ablenkt,¹¹ mich mit *Ihnen*, theuer Herr, beschäftige, können Sie denken, und jedesmal, wenn mir eine neue Entdeckung auf dem intellectuellen Gebiete der philosophischen Naturbetrachtung welches Sie uns neu eröffnet haben, gelungen ist, möchte ich nach Down. Bromley. Kent. springen, um mich mit Ihnen darüber zu unterhalten. Ich bin gewiss, dass Sie sich darüber freuen würden und weiss im Voraus, dass Ihnen mein Buch viele Freude machen wird. Denn es hat noch Niemand die *gesammte Morphologie* auf den von Darwin entdeckten Principien umgearbeitet und mit *Intensität* und *Consequenz* die Descendenz Theorie auf *alle Zweige* derselben anzuwenden versucht. Es ist mir aber sehr schwer, Ihnen jetzt *Einzelnes* daraus mitzutheilen, da das Ganze eine fortlaufende *Kette philosophischer Untersuchungen* bildet.

Als lehrreichsten Beweis, zu welchen Thorheiten das Dogma von der Species-Constanz, und die teleologisch-dogmatische Behandlung der Morphologie führt, setze ich in meinem Buche den Ansichten von *Darwin* stets diejenigen von *Agassiz* gegenüber, welcher in der That das Maximum von Verkehrtheit und von unnatürlicher Behandlung der Natur geleistet hat.¹² Da aber seine Ansichten immer noch viele Anhänger finden, sieht man, wie weit wir noch im Allgemeinen zurück sind.¹³

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Meine öffentlichen Vorlesungen “über Darwins Theorie” sind, wie ich Ihnen wohl schon geschrieben habe, in diesem Winter die besuchtesten von allen Vorlesungen, die hier gehalten werden,¹⁴ und ich hoffe, dass ich dadurch viele fruchtbare Samenkörner ausstreue, welche zu kräftigen Stützen der Descendenz-Theorie heranwachsen werden.

Ich habe nun noch eine grosse Bitte, mein theurer Herr, die ich Ihnen schon lange vortragen wollte. Einer meiner lebhaftesten Wünsche ist, ein grösseres Portrait von Ihnen zu besitzen. Zwar habe ich über meinem Schreibtische die grössere Photographie (ohne vollen Bart) hängen, welche der zweiten Ausgabe Ihres Werkes vorgebunden war;¹⁵ und darunter habe ich die *vortreffliche* kleinere Photographie, welche Sie mir vor 2 Jahren zu schicken die Güte hatten.¹⁶ Allein die erstere ist gewiss schlecht, und die zweite zu *klein*, um mich zu befriedigen. Ich habe schon in allen Buchhandlungen in Berlin und anderen grösseren Orten gefragt, ob keine grössere Lithographie oder Photographie von Ihnen existirt, habe aber keine bekommen können. Vielleicht giebt es eine solche in England, und Sie würden mir eine ausserordentliche Freude machen, wollten Sie mir eine solche schicken. Ich bekomme sehr oft Besuch von vielen Schülern und Freunden, welche Ihr Bild sehen wollen, und ich bin dann immer betrübt, dass Ihre kleine Photographie (mit vollem Bart) nicht viermal oder sechsmal vergrössert werden kann. Um die kleine Photographie (in Visiten-Karten-Format) bin ich schon oft gebeten worden. Wenn Sie mir von dieser etwa $\frac{1}{2}$ oder 1 Dutzend schicken könnten, so würde ich Ihnen dafür ebenso viele Photographien von deutschen Verehrern Darwins und Anhängern seiner Lehre zurück-schicken. Entschuldigen Sie meine, vielleicht kindische Bitte; aber sie liegt mir zu sehr am Herzen.¹⁷

Beifolgend lege ich eine Photographie von mir vom vorigen Oktober bei, damit Sie sehen, wie alt ich in 2 Jahren geworden bin.¹⁸

Indem ich Ihnen, theurer Herr, von ganzem Herzen die baldigste Kräftigung Ihrer Gesundheit wünsche, damit Sie uns und der Wissenschaft noch lange erhalten bleiben mögen, bleibe ich | von ganzem Herzen | Ihr treulichst ergebener | Ernst Haeckel.

DAR 166: 41

¹ For a translation of this letter, see Appendix I.

² For the letter to Haeckel of 6 December [1865], see *Correspondence* vol. 13; the letter to Haeckel of 5 January 1866 has not been found.

³ CD and Haeckel had been corresponding since 1863 or earlier. Their earliest extant correspondence refers to earlier letters (see *Correspondence* vol. 11, letter to Ernst Haeckel, 30 December [1863] – 3 January [1864]).

⁴ In his letter of 11 November 1865, Haeckel listed three publications that were to be sent to CD (see *Correspondence* vol. 13). These were Haeckel 1865a, 1865b and 1865c, all papers on marine invertebrates of the class Coelenterata. A lightly annotated copy of Haeckel 1865a, inscribed by the author, is in the Darwin Pamphlet Collection–CUL. CD’s copy of Haeckel 1865b was listed in CD’s library catalogue (DAR 240), but was not listed in later catalogues. It has not been found in the Darwin Library–CUL or at Down. In his letter to Haeckel of 6 December [1865], CD acknowledged receipt of two

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other papers of Haeckel's (Haeckel 1864 and 1865d). For a discussion of the role of Coelenterata in nineteenth-century debates over zoological classification and theories of descent, see Winsor 1976.

- ⁵ Wilhelm Engelmann was a publisher of scientific books (*NDB*; see also *Correspondence* vol. 13, letter from Ernst Haeckel, 11 November 1865). Williams & Norgate, booksellers and publishers of Covent Garden, London, and of Edinburgh, specialised in foreign and scientific literature (*Modern English biography* s.v. Williams, Edmund Sidney).
- ⁶ The reference is to Haeckel 1865a, a paper on rhizopods in which his newly discovered primitive species, *Protogenes primordialis*, was described and illustrated. Haeckel had previously drawn CD's attention to this 'organism', emphasising its significance for his transmutation theory (see *Correspondence* vol. 13, letter from Ernst Haeckel, 11 November 1865 and nn. 11 and 12); a protoplasmic aggregate, without differentiation, organisation, or nucleus, it was able to surround and assimilate foreign bodies, and to reproduce by simple division (Haeckel 1865a, pp. 360–3). It is not recognised in modern taxonomic literature.
- ⁷ In his book *Generelle Morphologie der Organismen*, published later in 1866, Haeckel classified *Protogenes primordialis* in a new phylum, the Monera, comprising the most basic forms of life; he argued that the Rhizopoda might have evolved from a *Protogenes* species (Haeckel 1866, 2: XXII–XXIII). The taxonomic hierarchy proposed by Haeckel reflected CD's transmutation theory, being based on descent from primitive life forms (Haeckel 1866, 2: XVII–XXII; see also n. 8, below). For discussions of Haeckel's theories of protoplasm and the development of living organisms from inorganic matter, see Rehbock 1975 and Rupke 1976. On the Victorian debates over spontaneous generation, see Strick 2000.
- ⁸ The reference is to Haeckel 1866. Haeckel had previously written to CD about his work on this book (see *Correspondence* vol. 12, letter from Ernst Haeckel, 26 October 1864 and n. 8, and *Correspondence* vol. 13, letter from Ernst Haeckel, 11 November 1865 and n. 4). Inside the back cover of the second volume are eight genealogical trees, drawn by Haeckel, displaying the possible relationships among all living organisms. The first tree summarises all subsequent trees and has a central section representing the kingdom of 'Protista' (including unicellular organisms, fungi and sponges) flanked by the animal and plant kingdoms. Haeckel showed eleven main classes (subkingdoms): six within the plant and five within the animal kingdom (for a definition of Haeckel's taxonomic categories, see Haeckel 1866, 2: 374–91). Haeckel's evolutionary trees established a standard iconography for phylogeny (see, for example, S. J. Gould 1990, pp. 263–7). Their epistemological significance is considered in Bouquet 1995, pp. 47–51. CD earlier used a tree-like diagram to illustrate the divergence of offspring from parental types (*Origin*, facing p. 117; see also Winsor 1976, pp. 172–4). For Haeckel's theoretical discussion of his phylogenetic categories, see Haeckel 1866, 2: XVII–XX, XXXI–XXXII, XLVIII–L, and 406–17.
- ⁹ Haeckel 1866 was published on or after 14 September 1866, the date appearing at the foot of the foreword.
- ¹⁰ Haeckel probably refers to chapter 21, 'Begriff und Aufgabe der Phylogenie' (Concept and function of phylogeny; Haeckel 1866, 2: 303–22), in which he developed arguments in support of the principle that ontogeny recapitulates phylogeny: 'During its own rapid development . . . an individual repeats the most important changes in form evolved by its ancestors during their long and slow palaeontological development' (Haeckel 1866, 2: 300; translated in S. J. Gould 1977, p. 76). For an extensive modern examination of Haeckel's attempted theoretical connection of long-term evolutionary change with short-term growth and development, and a comparison with CD's views, see S. J. Gould 1977.
- ¹¹ After Haeckel's wife, Anna Sethe, died on 16 February 1864, Haeckel wrote to CD: 'a stroke of fate has destroyed all prospects of happiness in my life, and . . . I shall pursue the one goal in my life, namely to disseminate, to support and to perfect your theory of descent' (English translation; see *Correspondence* vol. 12, letter from Ernst Haeckel, 9 [July 1864]; see also *Correspondence* vol. 13, letter from Ernst Haeckel, 11 November 1865 and n. 13).
- ¹² There are approximately ten references to Louis Agassiz in Haeckel 1866; most make no direct comparison with CD. For more on Agassiz's and Haeckel's interpretations of taxonomic hierarchies, and their differing implications for evolutionary theory, see Bryant 1995, pp. 197–202 and 207 *et seq.*

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Excerpt

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10

January 1866

- ¹³ For Agassiz's views on the constancy of species, and his arguments against CD and Haeckel during the 1860s, see Morris 1997. On support for Agassiz's anti-Darwinian rhetoric in the early 1860s, see Lurie 1960, pp. 309–11.
- ¹⁴ According to Haeckel, over 150 people from a wide range of disciplines regularly attended his public lectures on CD's theory in the academic year 1864 to 1865 (see *Correspondence* vol. 13, letter from Ernst Haeckel, 11 November 1865). Records of the university of Jena indicate that 120 people attended the lectures on Darwinian theory given by Haeckel in the main lecture theatre during the winter of 1865 to 1866 (Uschmann 1959, pp. 43–6, 196–8).
- ¹⁵ This photograph, procured from London by the German publisher, E. Schweizerbart'sche Verlagsbuchhandlung, was used as the frontispiece to the second German edition of *Origin* (see *Correspondence* vol. 10, letter from E. Schweizerbart'sche Verlagsbuchhandlung, 7 June 1862 and n. 5); it was taken by Maul & Polyblank, *circa* 1857. The photograph is reproduced as the frontispiece to *Correspondence* vol. 8.
- ¹⁶ Haeckel refers to the first photograph of CD with a beard, taken in 1864 by his son William Erasmus Darwin. The photograph is reproduced as the frontispiece to *Correspondence* vol. 12. See *ibid.*, letter to Ernst Haeckel, 19 July [1864] and n. 7.
- ¹⁷ CD exchanged photographs with many of his correspondents during the 1860s (see *Correspondence* vols. 9–13, and Browne 1998, pp. 253–80).
- ¹⁸ The photograph has not been found. However, there is a portrait of Haeckel dated 1865 at the Ernst Haeckel Haus in Jena. An earlier portrait, presumably taken during 1863, was sent to CD in summer 1864, and included Haeckel's late wife, Anna Sethe (see *Correspondence* vol. 12, letter from Ernst Haeckel, 10 August 1864; see also *ibid.*, plate facing p. 280).

To Fritz Müller 11 January 1866

Down. | Bromley. | Kent. S.E.
Jan 11 1866

My dear Sir

I received your interesting letter of Nov 5. some little time ago,¹ & despatched immediately a copy of my Journal of researches.² I fear that you will think me troublesome in my offers; but have you the 2nd German Edition of the *Origin*? which is a translation with additions of the 3rd English Ed.³ & is I think considerably improved compared with the 1st Ed.⁴ I have some spare copies which are of no use to me & it w^d be a pleasure to me to send you one, if it w^d be of any use to you. You w^d never require to re-read the book, but you might wish to refer to some passage. I am particularly obliged for your photograph, for one likes to have a picture in one's mind of any one about whom one is interested.⁵ I have received & read with interest your paper on the Spunge with horny Spicula.⁶ Owing to ill-health & being busy when formerly well, I have for some years neglected periodical scientific literature & have lately been reading up & have thus read translations of several of your papers;⁷ amongst which I have been particularly glad to read & see the drawings of the *Metamorphoses of Peneus*. This seems to me the most interesting discovery in embryology which has been made for years.⁸

I am much obliged to you for telling me a little of your plans for the future; what a strange but to my taste, interesting life you will lead when you retire to your estate on the Itajahi!⁹ You refer in your letter to the facts which Agassiz is collecting, against our views, on the Amazons.¹⁰ Though he has done so much for