

THE CORRESPONDENCE OF CHARLES DARWIN  
1867To *Athenæum* 1 January 1867Down, Bromley, Kent  
Jan. 1, 1867.

I was glad to see in your paper of the 15th ult. that you have allowed “A Great Reader” to protest against books being sold uncut.<sup>1</sup> He is obliged to own that many persons like to read and cut the pages at the same time; but, on the other hand, many more like to turn rapidly over the pages of a new book so as to get some notion of its contents and see its illustrations, if thus ornamented. But “A Great Reader” does not notice three valid objections against uncut books. In the first place they sometimes get torn or badly cut, as may be seen with many books in Mudie’s Library;<sup>2</sup> and I know a lady who is habitually guilty of cutting books with her thumb. Secondly, and which is much more important, dust accumulates on the rough edges, and gradually works in between the leaves, as the books vibrate on their shelves. Thirdly, and most important of all, for those who not merely read but have to study books, is the slowness in finding by the aid of the index any lost passage, especially in works of reference.<sup>3</sup> Who could tolerate a dictionary with rough edges? I have had Loudon’s ‘Encyclopædia of Plants’ and Lindley’s ‘Vegetable Kingdom’ in constant use during many years,<sup>4</sup> and the cloth binding is still so good that it would have been a useless expense to have had them bound in leather; nor did I forsee that I should have consulted them so often, otherwise the saving of time in finding passages would have amply repaid the cost of binding. The North Americans have set us the example of cutting and often gilding the edges.<sup>5</sup> What can be the reason that the same plan is not followed here? Is it mere Toryism?<sup>6</sup> Every new proposal is sure to be met by many silly objections. Let it be remembered that a deputation of paper-manufacturers waited on Sir R. Peel, when he proposed to establish the penny postage, urging that they would suffer great loss, as all persons would write on notepaper instead of on letter sheets!<sup>7</sup> It is always easy to suggest fanciful difficulties. An eminent publisher remarked to me that booksellers would object to receiving books cut, as customers would come into their shops and read them over the counter; but surely a book worth reading could not be devoured in this hasty manner.<sup>8</sup> The sellers of old books seem never to object to any one studying the books on their stalls as long as he pleases. “A Discursive” remarks in your paper that booksellers would object to books being

supplied to them with their edges cut, as they would thus “relinquish an obvious advantage in palpable evidence of newness.”<sup>9</sup> But why should this objection be more valid here than in America? Publishers might soon ascertain the wishes of the public if they would supply to the same shop cut and uncut copies, or if they would advertise that copies in either state might be procured, for booksellers would immediately observe which were taken in preference from their counters. I hope that you will support this movement, and earn the gratitude of all those who hate the trouble and loss of time in cutting their books, who lose their paper-cutters, who like to take a hasty glance through a new volume, who dislike to see the edges of the pages deeply stained with dust, and who have the labour of searching for lost passages. You will not only earn the gratitude of many readers, but in not a few cases that of their children, who have to cut through dry and pictureless books for the benefit of their elders.

Charles Darwin.

*Athenæum*, 5 January 1867, pp. 18–19

<sup>1</sup> Most books and periodicals in Britain were sold with uncut pages. A letter to the *Athenæum*, 15 December 1866, p. 803, signed by ‘A Great Reader’, asked for the ‘opinion of the literary world’ as to whether a ‘period of civilization’ had not arrived ‘when the readers of books and periodicals might reasonably ask that they should be delivered from the publishers ready cut’. CD told Joseph Dalton Hooker that he had then, ‘like an ass’, sent a long letter to the *Athenæum* urging publishers to cut the pages (see *Correspondence* vol. 14, letter to J. D. Hooker, 28 [December 1866] and n. 6). For Hooker’s response and his criticism of British publishers as ‘Penny-wise Pound foolish, Penurious, Pragmatical Prigs’, see the letter from J. D. Hooker, [29 December 1866].

<sup>2</sup> CD refers to Mudie’s Select Library of New Oxford Street, London, a subscription lending library. For the Darwin family’s use of Mudie’s as a source of books, see Browne 2002.

<sup>3</sup> CD noted this last problem when urging his publisher, John Murray, to have the pages of the fourth edition of *Origin* cut (see *Correspondence* vol. 14, letter to John Murray, 15 July [1866]).

<sup>4</sup> There is an annotated copy of John Claudius Loudon’s *Encyclopædia of plants* (Loudon 1841) in the Darwin Library–CUL (*Marginalia* 1: 504–6). A copy of John Lindley’s *Vegetable kingdom* (Lindley 1853) is listed in CD’s Library catalogue (DAR 240), but it has not been found in the Darwin Library–Down or the Darwin Library–CUL.

<sup>5</sup> Beginning in the 1850s, North American publications had their pages trimmed after binding (see Tebbel 1972, pp. 260–1). CD had earlier written to Thomas Henry Huxley concerning the *Natural History Review*, ‘Do inaugurate a great improvement, & have pages cut, like the Yankees do’ (*Correspondence* vol. 11, letter to T. H. Huxley, 10 [January 1863]). See also *Correspondence* vol. 13, letter to Charles Lyell, 21 February [1865].

<sup>6</sup> CD’s reference is to the association of the Conservative, or Tory, party with opposition to change or reform.

<sup>7</sup> Stationers objected to the establishment of the penny postage in 1839, allegedly because they feared that government issue of franked envelopes would affect their sales; however, this deputation protested to the Whig administration preceding Robert Peel’s Tory administration (see Hill 1880, 1: 348). Peel was not prime minister until 1841, but when various other protests were raised against the penny postage in 1842, he refused to abandon it (*ibid.*, p. 449). See also Fryer and Akerman eds. 2000, 2: 715–16, 759–60.

<sup>8</sup> CD refers to a comment made by his publisher, Murray, in his letter of 18 July [1866] (*Correspondence* vol. 14).

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<sup>9</sup> Another reply to the letter in the *Athenæum* of 15 December (see n. 1, above) was signed 'A Discursive'; the author suggested that only the lateral edges be cut, leaving the top edges uncut (see *Athenæum*, 22 December 1866, p. 848).

From Fritz Müller 1 January 1867

Desterro, Brazil,  
January 1<sup>th</sup> 1867.

My dear Sir

In my last letter (Decbr. 1<sup>th</sup>) I told you that *Oncidium flexuosum* is sterile with own pollen; more than 80 flowers of 8 plants, which were fertilized with own pollen (taken either from the same flower or from a distinct flower of the same panicle or from a distinct panicle of the same plant) yielded not a single seed-capsule; the flowers fell off about a week after fertilization.— But what is still more curious, pollen and stigma of the same plant are not only entirely useless to, but even act as a poison to each other!<sup>1</sup> Thus, four or five days after fertilization a brownish colour appears on the adjoining surface of the pollen and stigma and soon afterwards the whole pollinium is rendered dark-brown.<sup>2</sup>

This is not the case when you bring instead of own pollen, the pollen of widely different species on the stigma of *Oncidium flexuosum*. Among others I tried the pollinia of *Epidendrum Zebra*<sup>3</sup> (nearly allied to, or perhaps not specifically distinct from *Ep. variegatum*).<sup>4</sup> Of course no seed-capsules were produced; 8–9 days (in one out of about 20 flowers 12 days) after fertilization the germs began to shrink, but even then the pollen and its tubes which sometimes had penetrated in the upper part of the germ, had a perfectly fresh appearance, rarely showing a very faint scarcely perceptible brownish colour.— The pollinia of *Ep. fragrans* also I found to be perfectly fresh, as well as their tubes after 5 days stay in the stigmatic chamber of *Oncidium flexuosum*.

The poisonous action of own pollen becomes still more evident, on placing on the same stigma two different pollen-masses. In a flower of *Oncidium flexuosum*, on the stigma of which I had placed one own pollen-mass and one of a distinct plant of the species, I found five days after the former brown, the latter fresh; in some other flowers 4 or 5 days after both the pollen-masses were brown, and I think, although my experiments are not yet quite decisive, that own pollen will always kill the pollen of another plant when placed on the same stigma.— Now compare this destructive action of own pollen with that of *Epidendrum* (species allied to *variegatum*).

Debr. 15 I placed on the stigmas of some flowers of *Onc. flexuosum* one pollen-mass from a distinct plant of that species and one of *Epidendrum*.— Debr. 21<sup>th</sup> both the pollen-masses fresh melting with numerous tubes.— Dec. 26 both the pollen-masses dissolved into single pollen-grains, most of which have long tubes; numerous tubes of either pollen descend half way down the germen; the pollen-mass of *Epidendrum* is to be reconnoitred only by the unaltered caudicula. Dec. 30 the

germs of the two resting flowers (all the others having been dissected) are slightly curved to one side; this side, probably that of the Ep.-pollen swelling to a lesser degree than the other.<sup>5</sup>

I suspect that the sterility with the same plants pollen will be very common among Vandaeae and one of the principal causes of them seeding so badly; for the several specimens of most of these plants grow scattered in the forests, at great distance from one another and thus the chance of pollinia being brought from a distinct plant is not very great.<sup>6</sup>

I already observed a second instance of this sterility, and of the mutual poisonous action of the same plants pollen and stigma. I found a large raceme of a *Notylia* with more than sixty aromatic flowers. The slit leading to the stigmatic chamber is less narrow in this second species than in that mentioned in one of my former letters and a single pollen-mass might be introduced rather easily.<sup>7</sup> I fertilized (Dec. 12<sup>th</sup> 13<sup>th</sup> 14<sup>th</sup>) almost all the flowers with pollen from the same raceme. Two days after fertilization the flowers withered and I found that the pollen-masses were dark brown and had not emitted a single tube. You see the poisonous action of own pollen is here much more rapid, than in *Oncid. flexuosum*. There remained eight flowers, which had not been fertilized, and these I fertilized (Decbr. 19<sup>th</sup> 20<sup>th</sup>) with pollen-masses from a small raceme of a different plant of the species. Two of them I afterwards dissected and found the pollen fresh and having emitted numerous tubes. The other six have now fine swelling pods.<sup>8</sup>

Very different from the innocent pollen of *Ep. Zebra*, that of *Notylia* is as deleterious to *Oncidium flexuosum* as are this latter plants own pollinia. Dec. 14 I placed on the same stigma of *Oncidium flexuosum* one pollen-mass from a distinct plant of that species and one of *Notylia*. Decbr. 21: the latter was brown as well as the neighbouring part of the stigma; the *Oncidium* pollen-mass was nearly fresh; only on the side towards the *Notylia*-pollen a brownish stripe began to make its appearance between pollen-mass and stigma.<sup>9</sup>

Strange as the destructive action of own pollen may appear, it may be easily shown to be of real use to the plant. If flowers are sterile with own pollen and if the introduction of own pollen-masses into the stigmatic chamber prevents, as it does in *Oncidium* and *Notylia* the subsequent fertilization by other pollinia, it must be injurious to the plant to waste anything in the nutrition of flowers rendered useless by the introduction of own pollinia, and useful to become rid of them as soon as possible.<sup>10</sup> This view is confirmed by a comparison of *Oncidium* and *Notylia*. Decbr. 21<sup>th</sup> I fertilized on a panicle of *Oncidium flexuosum* 36 flowers (12 with own pollen, 24 with pollen from a distinct plant). Decbr. 24<sup>th</sup> before any difference had appeared between the two kinds of pollen the peduncles and germs of 55 not fertilized flowers of this panicle were withering and discoloured yellowish, while all the fertilized flowers had green swelling germen. The panicle had about 160 flowers.

In *Notylia* on the contrary, when about  $\frac{5}{6}$  of the flowers of a raceme were fertilized with own pollen, they all fell off in a few days without injuring even one

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of the not fertilized flowers. In *Notylia* fertilization is much easily effected a week or so after the expansion of the flowers, the entrance of the stigmatic cavity being open.

As to *Notylia* I may add that nectar is secreted at the base of the bracteae and also at the base of the upper sepalon. I found nectar at the base of the bracteae in a small species of *Oncidium* also.<sup>11</sup>

At last I have gratified my wish of examining myself the wonderful genus *Catasetum*.<sup>12</sup> I had three fine racemes of the male *Catasetum mentosum* and one raceme with only three flowers of *Monachanthus* (probably of the same species).<sup>13</sup> In this *Catasetum* a membrane connects the antennae with the interior margin of the stigmatic chamber. The ovula are scarcely more rudimentary than in *Monachanthus*, and not so much so, as in many other *Vandaeae*. The stigmatic surface is not viscid at all; but notwithstanding pollen-masses (from the same as well as from a distinct plant and also from *Cattleya Leopoldi*), when introduced, began to dissolve into groups of pollen grains and to emit tubes, some of which were 2<sup>mm</sup> long, . . . the flowers withered.—<sup>14</sup>

The female flowers, of a uniform green colour, are much like those of *Monachanthus viridis*, but the anther is much smaller. There is a *pedicellus* and *disk*; the disk is brown, and *quite dry*; the pedicellus white, elastic, *not connected with the pollen-masses!* On touching it, the pedicellus is ejected at some distance assuming the form of a hemicylinder.<sup>15</sup> The anthers do not open (at least they had not done so some days after the expansion of the flowers, long after the pedicelli having been ejected). The pollen-masses consequently remain enclosed; although being much smaller, they resembled in shape those of *Catasetum* and had a small caudiculus. I brought three of these pollen-masses into the stigmatic chamber of *Catasetum*, where they emitted numerous pollen-tubes. Unfortunately I had cut off the raceme of *Catasetum*, in order to preserve it from insects, and thus I am unable to say whether the pollen of *Monachanthus* may as yet be able to fertilize the ovules of *Catasetum*.—Certainly insects can never effect this fertilization. At all events this seems to me to be one of the most interesting cases of rudimentary organs. We have on the one hand in *Monachanthus* a disk, a well developed elastic pedicellus, caudiculi and apparently good pollen, we have on the other hand in *Catasetum* a stigmatic surface able to cause this pollen to emit its tubes, and apparently good ovules and in spite of all this—from the dryness of the stigma and disk and from the pedicelles not connected with the enclosed pollen-masses an utter impossibility of fertilization.<sup>16</sup>

When the pollen-masses of *Catasetum* are introduced into the entrance of the stigmatic cavity of *Monachanthus*, they peep out at half their length; but in the course of the first days they are allowed, as it were, entirely, and the stigma is shut. This swallowing of the pollen-masses is also to be observed in *Cirrhaea* and here it is easy to see how it is effected. The stigmatic cavity has a very narrow transversal slit into which only the very tip of the long pollen-masses may be introduced. Under the slit the cavity widens gradually and continues into a large canal occupying the center of the columna; this canal is empty, while the upper part of the stigmatic

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Excerpt

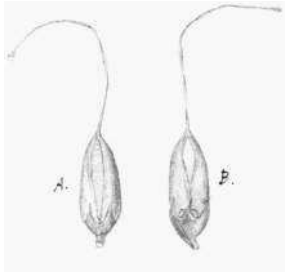
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cavity is filled with loose viscid cells. Now the tip of the pollen-masses in contact with the humid stigma swells and thus is forced down into the wider inferior part of the stigmatic cavity and at last into the canal of the columna. Of course, what at first sight appears contradictory, the thickest pollen-masses must be swallowed first. Thus Decbr. 25<sup>th</sup> at 7<sup>h</sup> in the morning I fertilized two flowers of *Cirrhaea* with dry pollen-masses of another plant of the species (collected Decbr. 3<sup>d</sup>), four flowers of the same raceme with fresh own pollen-masses and one flower with a much larger pollen-mass of *Gongora* (*bufonia*?).<sup>17</sup> This latter had disappeared at 3<sup>h</sup> in the afternoon, when the others peeped out half their length; at 7<sup>h</sup> in the evening all had disappeared, with exception of one of the old pollen-masses of which a small part as yet peeped out.

I enclose some seeds of our two species of *Gesneria*; they are, as you see, very small and may probably be blown at a great distance by the wind. Now there is in the seed-capsules a very fine contrivance preventing the seeds from falling to the ground without the action of the wind.<sup>18</sup> The two valves remain united at the tip, and the pod only opens by two longitudinal slits, on its upper and under surfaces.



The slit on the under side (A) is shut by two rows of hairs inserted on the margins of the valves. So you may conserve the open pods for a long time without a single grain falling out, whereas by blowing you will drive them out in a moment. In some other cases, in which hairs on the valves, or hair-like processes on the orifice of the capsule are combined with exceedingly small seeds (as in a great number of Orchids, in most Hepaticae, in the peristome of mosses) their use seems to be different from what it is in *Gesneria*.<sup>19</sup>

I am to start to-morrow for a botanical excursion on the continent, where I intend to spend a couple of weeks and whence I hope I shall not return without some interesting news.

With every good wish and profound respect believe me, dear Sir, very sincerely yours | Fritz Müller.

ALS incomplete and draft<sup>20</sup>

Möller ed. 1915–21, 2: 104–9; DAR 157a: 104

CD ANNOTATION

Below signature: 'Desterro Jan 1, 1867'

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- <sup>1</sup> In his letter of 1 December 1866 (*Correspondence* vol. 14), Müller described his observations of the stigmatic chamber, pollinia, and ovaries in *Oncidium flexuosum* flowers pollinated by the same flower or by a flower from a distinct plant. CD included the information on the poisonous action of own-pollen, and noted that *O. flexuosum* was only fertile with pollen of flowers from a different plant, in *Variation* 2: 134–5. CD added a brief reference to Müller's findings in *Origin* 5th ed., p. 304. See also CD's remarks on self-sterile plants in *Cross and self fertilisation*, pp. 340–8.
- <sup>2</sup> Müller had earlier described this occurrence in self-pollinated *Oncidium flexuosum* flowers (*Correspondence* vol. 14, letter from Fritz Müller, 1 December 1866).
- <sup>3</sup> Alfred Möller added a drawing of *Epidendrum* made by Müller to Möller ed. 1915–21, 2: 105 (see n. 20, below).
- <sup>4</sup> Müller never published the name *Epidendrum zebra*. The drawing of the orchid published in Möller ed. 1915–21, 2: 105 (see n. 3, above), has been identified as *Prosthechea vespa*, which has the synonym *Epidendrum variegatum* (Robert Dressler, personal communication; see also Higgins 1997, p. 381).
- <sup>5</sup> CD reported Müller's experiment of placing the two different pollen masses on one *Oncidium flexuosum* stigma in *Variation* 2: 134–5; he noted that after eleven days the *Epidendrum* pollen was indistinguishable from the other, except for the caudicles, or attached stalks. He did not mention any later developments. See also letter from Fritz Müller, 2 February 1867.
- <sup>6</sup> CD noted how often 'various Orchideous tribes' failed to have their flowers fertilised, and noted this observation of Müller's in regard to the Epidendreae and to *Vanilla* in Brazilian forests, in *Orchids* 2d ed., pp. 280–1.
- <sup>7</sup> Müller wrote of the difficulty he had in pollinating another species of *Notylia* in his letter of 2 August 1866 (*Correspondence* vol. 14); he sent a drawing of that flower with specimens attached.
- <sup>8</sup> CD included a description of the pollination of Müller's second *Notylia* by pollen from flowers from the same raceme and by pollen from flowers from a different plant in his discussions of plants that were poisoned by their own pollen (see *Variation* 2: 134–5). In *Orchids* 2d ed., p. 172, CD mentioned the poisonous effect of same-plant pollen on Müller's first *Notylia* species.
- <sup>9</sup> See *Variation* 2: 134–5.
- <sup>10</sup> CD reported this view of Müller's in *Variation* 2: 135.
- <sup>11</sup> CD added Müller's observation of nectar secretion in *Notylia* and *Oncidium* to *Orchids* 2d ed., p. 266.
- <sup>12</sup> Möller added a figure of parts of a *Catasetum* flower to Möller ed. 1915–21, 2: 107 (see n. 20, below).
- <sup>13</sup> In his letter to Müller of 20 September [1865] (*Correspondence* vol. 13), CD had suggested Müller read his observations on *Catasetum* in *Orchids*, pp. 211–48, 'to shew how perfect the contrivances are'; CD reminded him of this in his letter of 17 October [1865], adding that Hermann Crüger of Trinidad had confirmed all that he had written (see *Correspondence* vol. 12, letter from Hermann Crüger, 21 January 1864, and letter to Daniel Oliver, 17 February [1864]; see also Crüger 1864). CD had argued in *Orchids*, pp. 236–46, and in 'Three sexual forms of *Catasetum tridentatum*', that *C. tridentatum* (now *C. macrocarpum*) was the male form of a plant that also had a female form (*Monachanthus viridis*; now *C. macrocarpum*), and a hermaphrodite form (*Myanthus barbatus*; now *C. barbatum*).
- <sup>14</sup> CD included Müller's account of the *Monachanthus* and *Catasetum mentosum* in Brazil, as well as the failure to fertilise the *C. mentosum* with its own pollen or that of another plant, in *Orchids* 2d ed., p. 206. See also 'Fertilization of orchids', p. 154 (*Collected papers* 2: 151).
- <sup>15</sup> Müller refers to the *Monachanthus* of the previous paragraph, which he thought was the female form of *Catasetum mentosum*. CD had found no viscid disc or pedicel in *Monachanthus viridis*, and surmised that they fell off with the rudimentary pollen-masses (*Orchids*, pp. 239–44). CD had described how, in *Catasetum*, the entire pollinium, with the viscid disc attached by the highly elastic pedicel (now known as the stipe) to the pollen-masses, was ejected with great force when the antenna was touched (*Orchids*, pp. 222–7). For diagrams of CD's 'Catasetidæ', see *Orchids*, pp. 216–17, 232, 239; for explanations of his orchid terminology, see *Orchids*, chapter 1, and pp. 220–1.
- <sup>16</sup> CD illustrated the rudimentary nature of the pollen-masses of the female form in particular by comparing those of *Catasetum* and *Monachanthus* (see *Orchids* 2d ed., pp. 201–3). He concluded: 'At a period not far distant, naturalists will hear with surprise, perhaps with derision, that grave and learned



men formerly maintained that such useless organs were not remnants retained by inheritance, but were specially created and arranged in their proper places like dishes on a table . . . by an Omnipotent hand “to complete the scheme of nature” (*ibid.*, p. 203). Müller later published his observations on *C. mentosum* (now *C. atratum*) (F. Müller 1868); CD cited this work in ‘Fertilization of orchids’, p. 154 (*Collected papers* 2: 151); see also *Orchids* 2d ed., pp. 206–7.

<sup>17</sup> CD cited Müller’s observations in his description of ‘deglutition’, when pollen-masses were slowly sucked into the narrow slit of the stigma, in *Monachanthus*, *Cirrhaea*, and *Notylia* (see *Orchids* 2d ed., pp. 171–2, 206). See also ‘Fertilization of orchids’, p. 153 (*Collected papers* 2: 150).

<sup>18</sup> Müller first wrote to CD about *Gesneria*, evidently in regard to its possible dimorphism, in a missing section of his letter of [2 November 1866] (*Correspondence* vol. 14); see *ibid.*, letter to Fritz Müller, [late December 1866 and] 1 January 1867.

<sup>19</sup> In *Gesneria*, the hairs on the margin of the valve retain the seeds in the pod until they are blown out by the wind (ensuring they will be carried a distance from the original plant). However, in some orchids and the Hepaticae the movement of hygroscopic hairs ensures dispersal, as the teeth of the peristome in a spore capsule release spores with slight changes in humidity.

<sup>20</sup> Only the last half page of the original letter has been found (beginning ‘I enclose some seeds . . .’). The remaining portion is from a draft found by Alfred Möller and published in *Fritz Müller: Werke, Briefe und Leben* (Möller ed. 1915–21). According to Möller, all of Fritz Müller’s letters to CD were written in English (see Möller ed. 1915–21, 2: 72 n.); most of them have not been found. Many of the letters were later sent by Francis Darwin to Möller, who translated them into German for his book. Möller also found drafts of some letters (*ibid.*) and published these in their original English version. The present letter (except for the last half page) is one of these drafts.

From John Murray 2 January [1867]<sup>1</sup>

Albemarle St  
Jan<sup>y</sup> 2

My Dear Sir

M<sup>f</sup> Clowes’ estimate of your MS.<sup>2</sup> shows that it will make

Vol I. 648 pages	}	post 8 <sup>vo</sup>
" II 624 pages		

same size as the origin of *Species*—independant of contents Preface Index & any addit<sup>1</sup> Chapter—<sup>3</sup>

This is clearly too much for volumes of that size—& I propose therefore—with your consent to substitute the larger (Demy) 8<sup>vo</sup> size in wch your work w<sup>d</sup> form 2 Volumes like the last Ed<sup>n</sup> of Lyells Principles<sup>4</sup>

On hearing from you the Printer will be set to work

I am My Dear Sir | faithfully yours | John Murray

Ch. Darwin Esq

DAR 171: 342

<sup>1</sup> The year is established by the relationship between this letter and the letter to John Murray, 3 January [1867].



<sup>4</sup> For Murray's suggestion about the page size of *Variation*, see the letter from John Murray, 2 January [1867]. For CD's own complaints about the weight of the sixth edition of Charles Lyell's *Elements of geology* (C. Lyell 1865), see *Correspondence* vol. 13, letter to Charles Lyell, 21 February [1865].

<sup>5</sup> For CD's possible additional chapter on humans, see *Correspondence* vol. 14, letter to John Murray, 21 and 22 December [1866]. See also *ibid.*, letter to J. D. Hooker, 24 December [1866]. Ultimately, CD did not add this chapter to *Variation*, but used the material he had begun collecting for it in *Descent*.

From John William Salter 4 January [1867]<sup>1</sup>

8, B. Road | S<sup>t</sup>. John's Wood  
Jan. 4/66

Dear M<sup>r</sup> Darwin

The very kind way in which you have done this takes off the feeling with which one receives aid from many.<sup>2</sup>

Believe me, it has been 3 years long hard struggle before I thought of asking any help but what my hands & brain could give me— The latter has given way a little I fear, but I am better now.<sup>3</sup>

I feel sure I shall be able in some way to return y<sup>r</sup>. kindness

The accomp<sup>s</sup>. pamphlets you will not care for perhaps—though one refers to the new formation.<sup>4</sup>

It is a source of great pleasure to me to find that all the improvements in classification made in England are adopted abroad— They dont lead us as a rule, but we them.

I have a letter from old Sedgwick still as lively as ever—and I shall have a little work to do for him in the arrang<sup>t</sup>. of his Museum soon.<sup>5</sup>

Could I have got my own English Botany finished, I believe I should have been tolerably independent of accidents. But the same cause that has made it necessary to write to you *prevented* me from completing & making it valuable—<sup>6</sup>

Should you have any neighbours who possess English Botany—or yourself care about it, I enclose a prospectus & also a jeu d'esprit of my sister's on my hard fate, as she calls it—<sup>7</sup> It is more amusing than my papers—

I must tell you fairly, that the further I examine with the aid of your new theory, the more facts appear to me to agree with it— There are still some very important exceptions that make me think there is another law beside it not recognized— I do not think that breaks in the geol. succession are sufficient to account for the sudden leaps in life among the old strata. e.g. from Cephalopoda to Fish.<sup>8</sup>

But I follow y<sup>r</sup>. direction & make notes occasionally of these, or rather I will, for three years have passed away since I could get time for this.

Of course everybody agrees about species thats settled—but why do Entomostraca univalve Mollusca, & amphibia begin with such high forms? I would add Fish, but I might run the risk of saying something outrè & you have always Huxley<sup>9</sup> at command.

J W Salter

January 1867

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<sup>2</sup> CD sent the manuscript of *Variation* to John Murray on 22 December 1866 (see *Correspondence* vol. 14, letter to John Murray, 21 and 22 December [1866], and Appendix II). Murray also refers to William Clowes of the printing firm William Clowes & Sons.

<sup>3</sup> Murray refers to *Origin*. In his letter to Murray of 21 and 22 December [1866] (*Correspondence* vol. 14), CD said that he was sending all of the manuscript of *Variation* apart from the last chapter and a possible chapter on humans (see also *ibid.*, letter to J. D. Hooker, 24 December [1866]). ‘8vo’: octavo.

<sup>4</sup> Murray refers to the tenth edition of Charles Lyell’s *Principles of geology* (C. Lyell 1867–8).

To John Murray 3 January [1867]

Down. | Bromley. | Kent. S.E.  
Jan. 3<sup>d</sup>

My dear Sir

I cannot tell you how sorry I am to hear of the enormous size of my Book.<sup>1</sup> I fear it can never pay. But I cannot shorten it now; nor indeed, if I had foreseen its length, do I see which parts ought to have been omitted.

If you are afraid to publish it, say so at once I beg you, & I will consider your note as cancelled. If you think fit get anyone whose judgment you rely on, to look over some of the more legible chapters; viz the Introduction & on Dogs & on Plants; the latter chapters being in my opinion the dullest in the book.<sup>2</sup> There is a Hypothetical & curious Chapter called Pangenesis which is legible, & about which I have no idea what the instructed public will think; but to my own mind it has been a considerable advance in knowledge—<sup>3</sup> The list of Chapters, & the inspection of a few, here & there, w<sup>d</sup> give a good judge a fair idea of the whole Book. Pray do not publish blindly, as it would vex me all my life if I led you to heavy loss. I am extremely much vexed at the size; but I believe the work has some value, though of course I am no fair judge.—

You must settle all about type & size according to your own judgment; but I will only say that I think, & hear on all sides incessant complaint of the fashion which is growing of publishing intolerably heavy volumes:—<sup>4</sup>

I have written my concluding Chapter; whether that on Man, shall appear, shall depend on size of book, on time & on my own strength.<sup>5</sup>

My dear Sir | Yours very sincerely | Ch. Darwin

Endorsement: ‘1867. Jan 3<sup>d</sup>  
John Murray Archive

<sup>1</sup> CD refers to *Variation* (see letter from John Murray, 2 January [1867]).

<sup>2</sup> CD refers to the introduction, chapter 1 (‘Domestic dogs and cats’), and chapters 9 to 11 of *Variation*.

<sup>3</sup> Chapter 27 of *Variation*, ‘Provisional hypothesis of pangenesis’, outlined CD’s ideas regarding heredity; CD suggested that minute particles (gemmules) circulated in the bodily fluids and were capable of generating new cells, remaining dormant until required. He thought his hypothesis could explain both sexual and asexual reproduction, as well as reversion and the regrowth of body parts. For CD’s discussion of pangenesis with correspondents, see, for example, *Correspondence* vol. 13, letter to T. H. Huxley, 27 May [1865], and *Correspondence* vol. 14, letter to J. D. Hooker, 4 April [1866].