

## Letter to Asa Gray

Charles Darwin, 10–20 June 1862

Down Bromley Kent

June 10<sup>th</sup>.

My dear Gray,

Your generous sympathy makes you overestimate what you have read of my orchid Book. But your letter of May 18<sup>th</sup> + 26<sup>th</sup> has given me an almost foolish amount of satisfaction. The subject interested me, I know, beyond its real value; but I had lately got to think that I had made myself a complete fool by publishing in a semi-popular form. Now I shall confidently defy the world. I have heard that Bentham & Oliver approve of it; but I have heard the opinion of no one else, whose opinion is worth a farthing. What strange creatures these orchids are, for instance *Mormodes*, of which I have this morning examined another species, & which supports all that I have said, but which has completely puzzled me.

I thank you most heartily for your notes on several American species. I am not surprised as no true *Orchis* grows near you, that the pollinia of *O. spectabilis* were not removed; I should. expect that it would take probably a long time before new insects would learn the dodge. You probably pushed too hard against the viscid disc & crumpled the contracting atom of membrane, which, I know, interferes with the proper movement.

I will write to Murray about casts of 3 first woodcuts; but I doubt whether he will send the casts, for I believe that there is to be set to be sent to Germany for German Edition. I will do my best, but by Jove you shall not pay for them. If there be (which is very improbable) an American Edit, Murray will expect a little more than simple cost. But I will keep back this letter till I hear from him.

Enough & too much about my orchids, which are now again become beloved in my eyes, & which were quite lately accursed. Many thanks about copies of your Pamphlet. Do not trouble about Hollies; I thought they grew near; the case is not important. Nothing will be made out, I fear, about *Rhexias*, unless indeed a plant or plants could be protected from insects. I have now a *Rhexia glandulosa* under trial, but there is little difference in stamens & little to be made out.<sup>0</sup> I am working at several *Melastomas*; but am at fault; I am, however, certain there is something very remarkable; the pollen of one set of anthers produce less seed & to my amazement their seedlings are dwarfs compared to the other set, all produced from the same plant. The labour is great: I have lately counted one by one 6700 seeds of *Monochætum*! M<sup>r</sup> Meeham has sent me his paper on parallel differences in trees of N. America & Europe; pray be so kind as to remember to tell me whether this can be approximately trusted; for the case interests me much, as best case I have seen of apparently direct action of conditions of life. Forgive me for one bit more trouble: I have a Boy with the collecting mania & it has taken the poor form of collecting Postage stamps: he is terribly eager for "Well, Fargo & Co Pony Express 2<sup>d</sup> & 4<sup>d</sup> stamp", & in a lesser degree "Blood's 1. Penny Envelope, 1, 3, & 10 cents". If you will make him this present you will give my dear little man as much pleasure, as a new & curious genus gives us old souls.

Since this was written the above little man has been struck down with scarlet-fever; but thank God this morning the case has taken a mild form.

I have just received your long notes on *Cypripedium*; you may believe how profoundly interesting they are to me. Will you not publish them, either in noticing my Book in Silliman, or otherwise? But your notes are more interesting than you will suppose, for

since publishing I saw at Flower show, *C. hirsutissimum*, but could not touch it, but it seemed to me that the sterile anther entirely covered the passages by the anthers. I was amazed & saw clearly that there must be some quite distinct manner of fertilisation. But I did not think of insects crawling into flower; still less of different kind of pollen & in somewhat concave & viscid stigma. By Jove it is wonderful. You have hit on the same very idea which latterly has overpowered me, viz the exuberance of contrivances for same object: you will find this point discussed & attempted to be partly explained in the last Chapter. No doubt my volume contains much error: how curiously difficult it is, to be accurate, though I try my utmost. Your notes have been interested me beyond measure. I can now afford to d—d. my critics with ineffable complacency of mind. Cordial thanks for this benefit.

It is surprising to me that you should have strength of mind to care for science, amidst the awful events daily occurring in your country. I daily look at the Times with almost as much interest as an American could do. When will peace come: it is dreadful to think of the desolation of large parts of your magnificent country; & all the speechless misery suffered by many. I hope & think it not unlikely that we English are wrong in concluding that it will take a long time for prosperity to return to you. It is an awful subject to reflect on.— Good Bye my dear friend. I will keep this open till I hear from Murray, which I should think must be tomorrow. I am keeping back this letter till I hear from Murray, who, I fear is absent. I have now received your interesting notes of June 2<sup>d</sup>. How can you ask whether your letters bore me? I never in my life received a letter from you that was dull. Your letters are a very great pleasure & profit. I seldom see or hear from a soul on Science. Most of my scientific friends (See p. 8 at back of p. 5.) (This page has got in wrong place). are so busy that I scruple to write to them.

*Arethusa* is very pretty: I should conjecture its fertilisation was effected nearly as described under *Cattleya*; for so it seems to be with *Vanilla*, which I have lately seen. How well you are attending to *Cypripedium*. I can at any time return you (making copy for self) your notes on this genus or other notes. How very very kind it is in you, overworked as you are, to send me so many notes.— Hearty thanks about *Houstonia*: that subject, I am working at hard & interests me much. By the way did you ever look at the little (so-called imperfect) flower of *Viola* & *Oxalis*; they are very curious, the pollen-grains emit their tubes whilst within the anthers; & it is curious to see these tubes travelling up in straight lines from the lower anthers in *Oxalis*, right to stigmas; it is like spermatozoa finding their way to ovules.

I received 2 or 3 days ago a French Translation of the Origin by a Mad<sup>elle</sup>. Royer, who must be one of the cleverest & oddest women in Europe: is ardent Deist & hates Christianity, & declares that natural selection & the struggle for life will explain all morality, nature of man, politicks &c &c!!!. She makes some very curious & good hits, & says she shall publish a book on these subjects, & a strange production it will be.

Good Bye—till I hear from that wretch Murray.

(I have had another look at your *Arethusa*; structure seems very like *Vanilla* & unlike that of other orchids. In *Vanilla*, the Labellum is furnished with a compound curious comb, which would compel an insect in retreating to rub its back against rostellum; but the papillæ in *Arethusa* seem very different. How beautifully clear the spiral ducts are visible in wings of *Clinandrium* & colum.)

If you come across *Specularia* do look & tell me whether pollen-grains emit tubes direct from anthers or are grains collected on collecting hairs.

I have just had letter from Alp. De Candolle about *Primula* & he gives me facts & his queries show he appreciates the case, & about nat. selection. He says he goes as far as you about change of species, & he laughs at Linnæus' old definition "*Species tot numerasmus quot .... sunt creatæ*". But I think from his letter you go further; he says he wants direct proof of nat. selection & he will have to wait a long time for that. Opticians do not wait for direct proof of undulation of ether. But Good Heavens what a higglety-pigglety letter I am scribbling to you, who have hardly a minute to spare. It is a horrid shame, so I will stop.

20<sup>th</sup>. At last I have heard from Murray that he will instantly send the 3 casts & will let, if wanted, a publisher have whole set "on easy terms"

Yours cordially

C. Darwin