Euler to Wettstein
Berlin, 21 November 1752
Letter 278 (2779)

[…] I have finally sent the almanacs according to your order that you requested as:

80 genealogical almanacs in French at 1 Rt	…53 Rt. 8gg.
2 ditto German at ½ Rt.	… 1 Rt.-
	54 Rt. 8
Discount 12th	4 Rt. 12 3pf
	49 Rt. 19gg. 4pf

I have added this year's astronomical almanac in Latin since you will find an entire list of the members of our Academy which you are curious to see. If the almanacs for next year were already completed, I would have sent them and you would have found the names of those who have been received in our Academy since the beginning of the year.

I sent Mrs. Mortimer's bill to Saint Petersburg and I hope soon to withdraw the money to pay Mr. d'Arnim who has been so generous as to order me to make it as a present to Mrs. Grischow.

As for the seeds for the exotic plants, I am much obliged for the advice that you have been willing to give me, however as we are not doing any sales an entire box would have been entirely too much for us. It would only be necessary for a dozen or half-dozen seeds of each species like the Magnolia, Tulipifera etc. It would be nothing for Mr. Collinson to do this, and perhaps we would be prepared to send him something else which he might enjoy. Since Mr. Meckel has told me that yellow carnations or caryophillii flore flavor are very rare in England and we could send him as many of the plants in exchange for such seeds, as

long as he would tell by which method and least expense it would be to send them. As soon as we are convinced of his good intentions to our Academy we will accept him immediately into membership.

Mr. Eller has entrusted me to give his very best regards to Mr. Lobb on the occasion of the second part of his Principles of Medicine that I presented to him. I too, have as many thanks to give you concerning the book by the American philosopher who wished to explain the physical causes of universal gravity. The book contains many interesting thoughts from a man who is not completely devoted to this study, however in the end the author has poorly understood the explanation of what he has undertaken. Firstly he hides behind the little knowledge that he has in mechanics, and when he attempts to argue the best laid propositions of the late Mr. Newton, supported by reasons totally destitute of any basis, that a planet is attracted to the Sun by reason of the mutual attraction of the square of the distance after having approached the Sun until its perihelion, he did not know how it would distance itself to return to its aphelion, which underscores a blatant ignorance of the principles of motion and which places the author entirely without knowledge to establish the real forces required concerning the motion of planets, irrespective of the starting place. His explanation taken from the elasticity of the ether is so very poorly thought out that it is entirely contrary to the first principles of hydrostatics. How absurd to sustain the notion that ether placed between two celestial bodies does not possess the same elastic nature at rest? By the same reasons the author should have supported the elasticity of enclosed air in a vacuum is much less that free standing air, which is as contrary to reason as it is to experimentation.

For me I had the same plan in my piece on magnets which won the prize in 1744 (Paris) to find the cause of universal gravitation in the elasticity of ether, however I approached the subject differently which conformed very strictly to the principles of mechanics. I found that the ether has to find itself in great motion when near to celestial bodies which decreases as to

its distance. Finally, is certain that due to the nature of the movement of fluids that their pressure is least where there is the greatest movement, however without the movement the pressure would be everywhere the same.

Therefore if the sun is S, the ether will find itself in motion all around the Sun, the speed of which will be all the greater the smaller the distance from the Sun. If we establish P as any planet, the motion of the ether at point E will be greater then at F, and in distancing the pressure of the ether will be less then at E then at F. The planet will be under greater pressure at F then at E, and by consequence will be pushed directly towards the sun. Having joined the principle of the pressure of fluids to this result, I find that the force that must be exerted so as to be pushed towards the sun is exactly mutually proportional to the square of the distance. So in the same way it follows that any two planets will be attracted together following the same proportions. If the American author had developed this in this way, he perhaps would have better succeeded, however the way in which he proposes his subject does not deserve our attention, and it becomes totally ridiculous when he wants to take recourse to the force of the sun's rays to bring the planets to their aphelion with the wrong conclusion that is not the effect of centripetal forces.

I would very much like to know in greater details the difficulties and objections that Messrs Short and Dolland have against my dioptic research which I will not hesitate to examiner without prejudice. However to the ones that they have already made, I feel that I have sufficiently answered, and I await the objections of another type which are not founded on another authority.

Mr. Bruckner's machine besides making the mistake in its principle that the sea is entirely calm at a depth of 7 to 8 feet has other defects. Only when it is constructed will the real effect of the ship be known with all its tossing and listing which will make for a longer trip.

Mr. de Maupertuis has entrusted me to present his regards and my mother and entire family do the same with great

attentiveness as I have the honor of being with the most perfect affection [...]

1st Edit 12/2/03