

I must add to Mr. Pound's remark above, that this eclipse happened nearer to the moon's perigee than that, which he observed in the year 1715, and therefore more proper for verifying the moon's anomaly, and limiting the greatest diameter of the shadow of the earth.

L. *A Letter from the Reverend Father Augustin Hallerstein, of the Society of Jesus, President of the Astronomical College at Pekin in China, to Dr. Mortimer, Sec. R. S. Translated from the Latin by Tho. Stack, M. D. & F. R. S.*

S I R,

Pekin, Sept. 18, N. S. 1750.

Read Dec. 19,
1751.

YOUR letter of Feb. 5, 1746, we duly received, and answered as well as the shortness of time allowed us would then permit. In the year 1749, a volume of the *Transactions* was brought to us, for which we return'd thanks to your illustrious Society, and now repeat them in the most cordial manner. As far as our condition here, and the iniquity of the times, will permit, we will never be ungrateful for so great a favour. What we had then ready, and thought might not prove disagreeable to the Royal Society, we sent directed to you, Sir; viz. two Chinese volumes, one of which contains logarithmic tables, formerly translated into Chinese by some of our Society; and the other luni-solar tables constructed from the numbers and measures of the

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the illustrious Newton, which we use at present in our astronomical observatory (or tribunal as we call it) for calculating ephemerides and eclipses. In this packet we now send our astronomical observations for 1746 and 1747; and next year we will send those of 1748 and 1749. And we are encouraged so to do, by the Royal Society's and your great humanity; as you have been pleased to think those for 1740 and 1741 not unworthy of a place in your *Phil. Transf.* that treasury of all sorts of erudition.

From the year 1741 to 1746, we made but few observations. For my predecessor Father Ignatius Kogler was then broken with age, and I was wholly taken up with learning the Chinese language and letters. Yet possibly even these few observations may appear some time or other, with a long series of others, which the aforesaid father made from 1718 to 1745, and set down in loose papers; which I have brought into order, and wrote into one volume, in the order of years and planets; and wish I had leisure to transcribe that volume. However, both he and I went as far as we could. For, to say it by the bye, those bulky machines of our royal observatory here, tho' magnificent, and of solid brass, do not come up to the accuracy of the present time. And the astronomical apparatus of our house, that we can depend upon, almost intirely consists of a micrometer, a pendulum-clock, and a two-foot quadrant. To which may be added a transit-instrument, which we have received a few days ago, by the courtesy of Dr. Antonio Ribeyro Sanchez, a Portuguese, and first physician to the court of Russia: to which if a good quadrant, such as are made now, were added, then we might attempt greater things. For, let the observations



Philos. Trans. Vol. XLVII. TAB. XIV. p. 321.

tions made with only a micrometer and pendulum be ever so accurate, they are rare, and cannot always be made. In the mean time we will place the transit instrument, and use it as far as its use extends. For a quadrant we apply to the court of Lisbon; because we have it not in our power to purchase one. And indeed, the report of the wealth of the Jesuits at Pekin is a mere fable.

We have not yet had the good fortune here at Pekin to see an accurate figure of the male musk animal: the figure here inclosed is that of the female; and it is not this, but the male, that is said to bear the musk. This figure was drawn in our house by Father Ignatius Sichelbarth, from a dead animal, as it was brought to us. The Chinese, who have seen the male, say, that it is not much unlike this figure, excepting that it has larger teeth, and sometimes tusks like those of a boar. On some other occasion we will take care to send you its figure. In fine, the Chinese call both the male and female *biam cham su*, which means the *little odoriferous deer* (*damula odorifera*).

We carefully keep the syllabus of other things, of which you desired to be informed; and shall use our endeavours to satisfy you on these heads, and any other that may give you pleasure. As to geographical maps, and plans of cities, it would be very difficult at present either to obtain or make any, but those already published in Europe, until a more favourable air from this court breathes on us. Last year I and Father Felix de Rocha travelled into North Tartary, beyond that vast wall, which separates (or at least separated) the Chinese from the Tartars: where by the emperor's order, we drew a

S f chorographical

chorographical map of the country, into which this our monarch makes an excursion generally every third year, in order to take the diversion of hunting, and keep his court and army in exercise; pursuant to a custom established by his grandfather, to prevent the Tartars from growing enervated by idleness. And yet they daily grow so more and more; and as they are now more effeminate than the very Chinese, it is not without reason that they are under great apprehensions.

I would send you, gentlemen, a copy of this map, if we had been allowed time enough to make it more accurate. The work was indeed pleasing to the emperor, and upon our return he gave us a most gracious reception, and asked us many questions concerning that country. It is one degree in length, and one in breadth, situated between $41^{\circ} 30'$ and $42^{\circ} 30'$. Its western limit is in the same meridian with the city of Pekin, which the Chinese take for the first meridian both in astronomy and geography. The whole country is one continued chain of mountains and valleys, without inhabitants, but full of wild beasts, as deer, boars, bears, tygers. The passages of the valleys are guarded by troops all around, and no body is allowed to pass thro' them.

Chinese vocabularies, which interpret the Chinese words in Latin, or any other European language, are very scarce, and for the most part very defective. Nor is there any one as yet brought to a sufficient degree of perfection, to deserve printing, or the expences attending it. Those which we use the first years after our arrival, were either left by our predecessors, or written with our own hands with infinite labour.

labour. And even these are not of any great use to us, except the first two or three years, to read and understand some easy books of the Christian doctrine composed by our fathers. For, in order to read the more difficult Chinese books, and especially their classics, we make use of Chinese vocabularies, which explain their characters and hard words in the Chinese tongue, but in a plain and easy manner, much as the Latin dictionaries of Stephens, Nizolius, &c. If we could be informed, that such Chinese vocabularies would prove agreeable to you, gentlemen, we could easily send them.

As touching specimens of butterflies, insects, shells, &c. Father Dincarville, a Frenchman, is the most knowing amongst us in these matters; and as he has the care of sending such things to France, he undertakes to send you at the same time specimens of whatever he can procure: and indeed he sent some the last year 1749.

I am the Royal Society's in general, and in particular,

S I R,

Your most obedient servant,

Augustin Hallerstein.