XXXVII. *Extract of Two Letters from the late Capt.* Alexander Roſe, *of the* 52*d Regiment, to Dr.* Murdoch, *F. R. S.*

From Letter I.

Madras, 20 Sept. 1768.

Read July 5, 1770. * * * * * WE arrived here the 15th of this month; at firſt ſetting out, we had bad weather, having been driven by a contrary wind upon the coaſt of Portugal. From thence we took our departure for the Canaries; where I had an opportunity of gratifying my curioſity by a ſight of the famous Pic of Teneriffe. About ten days after, we made the Cap de Verde-Iſlands; and, by a miſtake of the Captain (which I was glad had happened), ſailed cloſe by the iſland del Fuego, famous for its volcano, which we ſaw in its perfection, and which fully comes up to Virgil's deſcription of Mount Ætna. We had no ſooner loſt ſight of the Cap de Verdes, than we were overtaken with a ſtorm, which laſted a conſiderable time, and were near driven upon the coaſt of Braſil. But the ſtorm abating, and the wind coming fair for a month or more, we had a ſpeedy voyage to the Cape of Good Hope, where we were plentifully ſupplied

ſupplied with every thing we could wiſh for our refreſhment, after ſo long a voyage. The climate and country there are ſo good, that the trees, fruits, and vegetables, both of the hot and the cold climates, flouriſh and thrive in the greateſt perfection. The Dutch there, are juſt the ſame kind of people they are in Holland: ſo that, for variety's ſake, I took a jaunt to the Hottentots crawl-ſhips, which I had a great curioſity to ſee. I found Kolben's account of them to be, in general, very juſt. He takes no notice, however, of their muſic, which I found to be very tolerable; their chief inſtrument being a large cocoa nut-ſhell, ſtrung with guts, and ſomewhat reſembling a guittar. I am convinced they have always had a belief of one Supreme Deity, and other ſubordinate ones, as alſo of a future ſtate.

We found, by exact and repeated obſervations, that the variation of the needle, at the Cape, was 19°½; though, in the lateſt Variation-chart, it is laid down at 18°.

We left that place the 20th of July; and during our long voyage to India, I frequently amuſed myſelf with microſcopical obſervations, of which I ſhall give you ſome account; becauſe, for what I know, ſome of them may not have fallen under the notice of the writers on this ſubject, who make no mention of that ſpecies of *animalcula*, which ſwarm in the atmoſphere of the immenſe ocean, their proper element.

As I could find no great variety of objects on board the ſhip, I endeavoured to produce *animalcula*, by the common methods (by pepper-water, hay,

&c.); but finding they did not anſwer my purpoſe, I tried freſh-water alone, which I expoſed to the open air for two days, and upon examining found a good number of *animalcula*; but they ſoon languiſhed and died. I afterwards expoſed the freſh water for two hours only, and found ſome in it, which lived but a very ſhort time. I therefore reſolved to try ſea-water, which, having been expoſed to the open air, in a very ſhort time, ſwarmed with *animalcula*; theſe, upon the ſtricteſt examination, I found to be exactly of the ſame ſpecies with thoſe of freſh water: only they ſeemed much more active and lively, and inſtead of dying in a ſhort time, as thoſe of the freſh water, they continued to increaſe and thrive wonderfully, the longer I kept them. I then removed ſome of them out of the ſalt into the freſh water; but they ſoon languiſhed and died. Whence I conclude them to be a quite different ſpecies from what we find upon, or near, the land. I began my experiments about ten days after we loſt ſight of land, and continued them the whole voyage; ſo that, with the help of ſome books, I paſſed my time very agreeably.

I had provided myſelf with a thermometer, to meaſure the degrees of heat and cold, in the different climates we were to paſs through; and found the mercury to riſe from 55 to 80° of Fahrenheit's ſcale: which laſt it never exceeded, though we were ſometimes becalmed between the tropics, and upon the line. This degree of heat I have often experienced in Canada, as I dare ſay you ſometimes have in England.

When I have any thing worth communicating from this part of the world, I ſhall not fail to acquaint you with it.

From LETTER II.

Muxadabad, in Bengal,
20 Auguſt, 1769.

SOON after my arrival in Bengal, I was appointed, by the governor, ſurveyor of the company's lands, and ordered to ſurvey the provinces to the North and North Eaſt, as far as Napal; for which I ſet out in November laſt, accompanied with a military force; as there was reaſon to believe the mountaineers would obſtruct the ſurvey. Having finiſhed this work, I diſmiſſed the troops; and deſired the Raja of Napal would give me leave to viſit his country, attended only by a few ſervants; which he with ſome difficulty granted.

The country of Napal is a large flat, ſurrounded with three ranges of almoſt inacceſſible mountains, which are covered with ſnow all the winter, and a great part of the ſummer: ſo that, when every thing on the plains of India is almoſt burnt up with exceſſive heat, the natives of thoſe mountains enjoy a cool temperate air. They are a very different ſpecies of people from the inhabitants of the plains. Their complexions are olive, their features broad and flat; and

and their perſons ſhort and ſtrongly made: they profeſs the Gentoo religion; but differ from them, in that they ſacrifice, and eat moſt kinds of fleſh, excepting that of the cow and of the hog. Their language is the Nagri, which I have good reaſon to believe was the original language of India, and is more ancient than even the Shanſcritta; which I imagine to have been formed and invented by the Bramins, in order to veil their religion from the vulgar. There are at preſent two dialects of the Nagri, one of which is not very common, and is called the Bengal; but this is underſtood by only a very few, and may be called the ancient Nagri; and the other the modern. I found many manuſcripts among the mountaineers, ſome of which treat of the hiſtory of India, going back above three thouſand years. And I am convinced, that, to come at the true hiſtory of the early times of this country, recourſe muſt be had to the books written in this language. I am now endeavouring to get ſome of them tranſlated.

This country has never been viſited by any Europeans, but a few Italian miſſionaries who have lately been driven out of it. I happened to meet with them by accident, and flattered myſelf I ſhould receive ſome uſeful information from them; but was much diſappointed, for they were a ſet of the moſt ignorant fellows I ever met with. Their ſuperior, who ſeemed the moſt intelligent, could give me no account of any place or thing beyond the city he lived in, although he had been twelve years in that country. He told me, however, by way of ſhewing his miſſionary zeal, that he had burnt three thouſand manu-

manuſcripts, during his ſtay there. He had two miſerable families along with him, which he called his converts.

I was greatly ſurpriſed to find many Chineſe commodities among the inhabitants of Napal; and upon enquiry found that they now have, and, for ages paſt, have had, a communication with China, by the way of Tibet. In conſequence of this information, I have given in propoſals to the governor and council here, to trace and explore this route, and am now on my way to Calcutta upon this buſineſs. The rainy ſeaſon coming faſt on, I could make but a very ſhort ſtay in Napal: though, in my opinion, it is one of the fineſt countries I ever ſaw. If my propoſals to the goverment here are agreed to, and it ſhall pleaſe God to continue my life and health*, I hope to be able to give you an account of this, and many other countries through which I muſt paſs before I reach China.

The birds and beaſts I ſaw in the Napal mountains were—Of birds, the *mumal*, a kind of pheaſant, the feathers of a fine dark brown, with red ſpots, and a red tuft upon the head—The *dophia*, of the peacock kind; but the comb and plumage of the neck far ſurpaſs the peacock's; the tail is ſhort, and of a dirty orange colour, and ſeems a contraſt to the other plumage.—Of beaſts, the ſheep with four horns,

* Inſtead of this, the very next India ſhip brought the melancholy news of his death: a loſs! which his family and friends muſt ever deplore—and which may even be reckoned a loſs to the ſciences, and to the public, as well as to the company, in whoſe ſervice he died: as he had, ſo early in life, to the activity and ſpirit of the brave officer, united the unbounded curioſity and cool patience of the philoſopher.

and a kind of deer about the ſize of a lap-dog: I ſent ſome for the governor, but they died by the way.

I am now to acquaint you, that, having procured a teleſcope and ſtop-watch, I made my obſervations upon the tranſit of Venus, which happened here on the 4th day of June, 1769.

Pheſabad, lat. 25° 30′ north.

	h	′	″	
Obſerved the planet a good way advanced on the ſun's body at	5	35	57	(app. time)
Firſt contact at the egreſs	6	52	25	
Laſt contact	7	10	47	
* Time between the firſt and laſt contacts	0	18	22	

* Whence the planet's centre was on the ſun's limb at 7^h 1′ 36″; and this compared with an obſervation of the central egreſs or ingreſs made at a diſtant place will give the ſun's parallax; the other neceſſary elements of the calculus being well eſtabliſhed. In the mean time we ſee, from the Connoiſſance des Tems for 1769, that Pheſabad in Bengal, where Captain Roſe obſerved, is 81° 45′ eaſt of Paris.

The watch had been regulated the preceding day, by equal altitudes of the ſun; the ſun's altitudes, at the two contacts, are likewiſe marked in the Captain's letter; but this part of the work he had probably entruſted to a leſs ſkillful obſerver, while his own attention was engroſſed by the teleſcope and the watch; as I find the difference of the times correſpondent, to thoſe altitudes, does not agree with the interval of the contacts; for which reaſon they are here omitted.

XXXVIII. *Ex-*