some respects, yet differed from it in some important points. The "low sun-bands" appeared weak rather than strong, partly perhaps by contrast with the great intensity of the rainband, and the rainband itself was easily divided into lines, of which eight are recorded in my note-book as being seen with a one-prism spectroscope. The band between *b* and F, observed by Mr. Lockyer, was also seen here, and was found to be one ascribed to aqueous vapour, W.L. 504. A spectrum almost in all respects similar to that observed here can be seen by any one who will examine the absorption produced by a *small* cloud passing over the sun as seen with the spectroscope, having a lens in front of the slit. The contrast with the bright spectrum of the sun shows the general absorption in the red very clearly, and if the sun be near the horizon the other bands will be, in most cases, fairly well seen.

It is worth noting that we have had an unusually early and heavy monsoon, ushered in by a remarkable thunderstorm and followed by a period when the spectrum showed an abnormal freedom from vapour, the rainband at times being quite invisible. During this latter period we have had beautiful rosy after-glows, the sunlight being apparently reflected from thin, almost invisible, cirrus clouds.

If the presence of dust can be proved, these phenomena, as I previously indicated, can be readily explained in accordance with the facts so beautifully illustrated by Mr. John Aitken (*Trans. R.S.E.*, vol. xxx. p. 337), for the dust particles would condense moisture in the upper parts of the air, and we would have a light haze, such as was observed here, not sufficiently dense to cause actual clouds, but deep enough to give the special absorption effects, while the dust itself would assist in producing the general absorption.

Against the idea of Java dust, however, have to be set a number of facts of which the following are a few:—The maximum phase of greenness was on the same day (September 10), all over Ceylon and South India, and as far west as long. 64° (at sea). The green sun was not seen at Rangoon nor at the Andaman Islands, though at the latter place the sounds of the eruption were heard. The first rain that fell here afterwards was subjected to careful microscopic analysis, and showed no trace of volcanic dust. The phenomenon reappeared on September 22.

For my own part I think there is strong evidence that the influence of the Javan eruption was an electrical one, and that that was not necessarily propagated by the actual transference of matter. Mr. Whymper's very interesting letter is of course by no means conclusive as regards the effects of dust, for it is, I believe, regarded as virtually proved that the mere existence of dust in large quantities in volcanic ejecta proves the presence of an abundance of water vapour. C. MICHIE SMITH

P.S.—There is a misprint in my letter to Sir William Thomson which, as I have seen it twice quoted, ought to be corrected. It is in vol. xxix. p. 55, line 8, which should read: "After the electricity had gone to *negative*." C. M. S.

The Christian College, Madras, January 23

SINCE the end of October, when I first observed an unusual red glow for a considerable time after sunset, I have been a close observer of the atmospheric phenomena so fully described by your correspondents. For some time past they have appeared with little of their former brilliancy, until the evening of the 7th inst., when there was a remarkably fine display, equalling in many respects those of December. Of this I shall particularly mention but one feature which I had seen three times previously, but never displayed with such intensity and clearness of definition. At 5.30, when the after glow was at its maximum, a lovely crimson arc appeared opposite it in the eastern horizon, in every respect as described by Mr. Divers in his letter dated from Japan, which appeared in NATURE of January 24 (p. 283). I may remark that I have observed here, from November 10 to this date, but latterly with much diminished intensity, every one of the phenomena he so graphically describes. A. C.

Roscommon, February 11

"The Indians of Guiana"

IN the notice of Mr. Im Thurn's work on the Indians of Guiana, in the current volume of NATURE (p. 305), Mr. Tylor writes: "What is still more curious is that the rude method of making thread by rolling palm or grass fibre into a twist with the palm of the hand on the thigh may be commonly seen in Guiana, although the use of the spindle for spinning cotton is also usual." As such a fact appears to be curious to so eminent an anthropologist as Mr. Tylor, it may be of interest to some of your readers to learn that this mode of twisting fibres is still by no means uncommon in India, though spinning must there have been familiar to the natives for unnumbered generations. I have frequently seen Hindus of various castes twist a mass of jute-fibre into a compact and firm rope of considerable length, between the palm of the hand and the inside of the thigh, and by the same means they will frequently produce long pieces of strongly coherent twine when the need for it arises. From my experience, which, though confined to a small geographical area, comprehended an acquaintance with both Hindus and Mohammedans imported into the tea-districts from almost every part of British India, I should suppose that this custom of twisting fibres into rope and twine is universal throughout the country, though doubtless it is resorted to rather as a makeshift than as a regular mode of manufacturing twisted cords. That such a means should be resorted to by the wild tribes of the north-eastern frontier is by no means strange, though these have acquired not a little skill in spinning and weaving cotton, but that so primitive a method should still prevail amongst peoples so highly cultured as the Hindus and Mohammedans of India often struck me as remarkable.

While noticing Mr. Tylor's interesting article, I cannot refrain from questioning the justice of the supposition that pile-dwellings on the land are due to the "survival of the once purposeful habit of building them in the water." That in New Guinea such is the case there can be little doubt, as Dumont d'Urville and Mr. Wallace, as well as Prof. Moseley, have remarked. And that Mr. Im Thurn's supposition with regard to the natives of Guiana is also correct there can hardly be a doubt. But these two cases scarcely seem to me sufficient upon which to generalise, even when added to Prof. Moseley's pretty and ingenious view as to the origin of the Swiss châlet. As has been pointed out to me by my friend Mr. W. E. Jones, F.R.I.B.A., Lecturer on Architecture in the Bristol University, a somewhat similar development of single-storied into two-storied dwellings is to be traced in the stone buildings as well as in the less substantial dwellings of Western Asia, between the twentieth and the twelfth centuries B.C., and though of course it is not impossible, it certainly seems improbable that a race of ancient lake-dwellers should have perpetuated on sandy plains a practice which must altogether have ceased to be useful long before it reached a region so far removed from its original home. And indeed it seems to me that pile-dwellings may be observed in localities in which it is scarcely possible that the practice could have originated in lake-dwellings, or in any dwellings of any sort erected in water, whether fresh or salt. I allude more particularly to the raised dwellings of the Nagas, Kukis, Cacharis, Khasias, and other hill-tribes of the north-eastern frontier of India, in the midst of which I lived for several years. That these people should ever have dwelt so near the sea that they acquired the habit of erecting pile-dwellings therein seems to me highly improbable when it is remembered that their racial and linguistic affinities place them undoubtedly in that great Mongolian group of which the Thibetans and Burmese are examples; and that therefore they may be regarded as immigrants from more Eastern Asia, rather than as tribes which have been gradually driven back from the Bay of Bengal by the encroaching civilisation of the Hindus. Nor does it seem probable that their pile-dwellings were originally erected in lakes amongst the hills, for in fact the lakes nowhere exist. There are indeed extensive *bheels* or marshes, which during the rainy season sometimes contain a good deal of water. But these *bheels* are, during at least a portion if not the whole of the year, so pregnant with fever and ague that I cannot believe that they were ever employed, as were the lakes of Switzerland and Italy, for the protection of the habitations of man. Yet these north-eastern frontier tribes for the most part build their houses upon piles. These are generally of bamboo, and so of course are very perishable, but occasionally small timber is employed. The floor or platform (of coarse bamboo matting) is seldom raised more than from twenty-four to thirty inches above the ground, though, if my memory serves me, I have occasionally seen it raised as much as between six and seven feet. Beneath this platform a good deal of lumber generally accumulates, and the poultry and pigs frequently congregate for shelter, but I think I never saw an