

favours the volcanic dust theory; for it is strange that I should never have noticed it before, if it is of common occurrence; still we know that a phenomenon is more easily seen again after it has once been observed, than seen in the first instance. Can these pink rings be accounted for optically? If they could, would it not throw much light upon the cause of the fine sunrises and sunsets?

With regard to the height of the film which has caused these, I should like to ask whether it is considered proved that the sun is actually shining on it so far into the twilight, or whether the glow may not be caused by reflection from bright sky upon which the sun is really shining. The after-glow among the Alps is clearly caused in this latter way, and not by the sun shining upon the mountains themselves. At the same time, the appearance of cirrus clouds dark against the bright sky, as occurred this morning at about 7.40 a.m., seems to point to the film being far above them.

THOS. WM. BACKHOUSE  
Sunderland, December 19, 1883

P.S.—This morning the pink half-ring was again conspicuous, only the inner half was nearly white; within was the blue, darkish, as before. It was at its best at 8.10 a.m.

December 20, 1883

T. W. B.

I learned from a Dutch paper (but I forget from which) that a *blue sun* was observed at Paramaribo in the beginning of September (I think it was the 2nd or the 6th).

Stuttgart, January

E. METZGER

The following letter appears in the *Times* of Tuesday:—

“A shower of matter having ‘a white sulphurous appearance’ is reported from the vicinity of Queenstown, Cape Colony, towards the close of November. The appended paragraph, giving an account of the phenomenon, is extracted from a Kimberley (Griqualand West) newspaper of December 1. Taken in connection with the description in your correspondence columns of December 25 of a somewhat analogous shower at Scutari, the paragraph is certainly interesting, and, perhaps, of value to physicists investigating the cause of the recent celestial phenomena.”

“Edinburgh, January 3

“WALTER CLARK

“We were informed yesterday of the occurrence at Glen Grey, about twelve miles from Queenstown, of a phenomenon which, while it lasted, nearly terrified the white and native population out of their wits. On the afternoon of Wednesday a thick shower of matter, presenting a white sulphurous appearance, fell in the valley in which this village is situate, and, passing right over it from east to west, covered the entire surface of the country with marble-sized balls of an ashy paleness, which crumbled into powder at the slightest touch. The shower was confined to one narrow streak, and while it lasted, we are told, the surrounding atmosphere remained unchanged and clear, as it had been before. Great noises accompanied the shower, and so frightened the people working in the fields, who at first were under the impression that it was a descent of fire—the white substance glistening in the sun—that on perceiving it they fled into their houses for shelter. No damage was caused by what fell, and upon examination of the substance afterwards it was found to be perfectly harmless. At first the little balls were soft and pulpy, but they gradually became dry and pulverised, crumbling at the touch. We have before us a piece of earth on which one of them fell, and the mark left behind resembles a splash of lime-wash or similar matter. It does not smell of sulphur.”

MR. JOHN TEBBUTT, of Windsor Observatory, N.S.W., writes as follows to the *Sydney Herald*:—The appearance presented by our evening skies for some weeks past has been the subject of general remark. Last evening, the 14th, the sky was almost cloudless after sunset, and the usual brick-red light again made its appearance along the west-south-west horizon. It was reflected apparently from an almost invisible and gauze-like cloud in the higher regions of the atmosphere. About seven o'clock the red glow was at its maximum, when a solitary cloud, whose apparent surface did not exceed ten square degrees, presented itself above it at an altitude of 25°. This cloud, which was at first white, quickly changed to a beautiful green, its borders being of a deeper tint. Of all the cloud phenomena that I have witnessed, it was one of the most remarkable. It retained its green colour for the space of about ten minutes, being all the time subject to much internal commotion. It soon afterwards

resolved itself into several cloudlets, and finally disappeared. Two or three other small clouds were visible at the same time, and about the same altitude above the northern horizon, but these were of a gray colour throughout. The eastern sky about the moon was of that deep blue which is frequently observed to surround her when rising during the winter oppositions. Shortly after the dispersion of the green cloud, the ruddy glow gave place to the ordinary pale gray of the twilight, but by half-past seven o'clock the western sky became suffused with red, but this time of a clearer and more aurora-like tint. It did not appear, as in the former case, to be reflected from hazy cloud, and it extended much higher in the sky. This repetition of the ruddy glow on the same evening is a phenomenon which I had witnessed on several occasions during the present month. I remember that many years ago (probably twenty-five) a somewhat similar patch of red light used to make its appearance regularly after sunset in the west-north-west. This phenomenon occurred previously to the commencement of my regular meteorological observations in 1863, and was, I think, contemporaneous with a very dry winter. That the present ruddy skies are not merely a local phenomenon is obvious from the fact that they have been regularly observed during the past three months over a considerable portion of the Indian Ocean.

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE

CAMBRIDGE.—The following appointments have been made in accordance with Grace No. 19, confirmed on December 6 last:—J. H. Randell, B.A., Pembroke College, Assistant Demonstrator in Physics; J. C. McConnell, B.A., Clare College, Assistant Demonstrator in Physics; R. H. Solly, Demonstrator in Mineralogy, and Assistant Curator of the Museum; Walter Gardiner, B.A., Clare College, Demonstrator in Botany; A. Sheridan Lea, M.A., Trinity College, Senior Demonstrator in Physiology; W. D'Arcy Thompson, B.A., Trinity College, Junior Demonstrator in Physiology; A. Harker, B.A., St. John's College, Demonstrator in Geology. Baron Anatole von Hügel has been appointed Curator of the Museum of General and Local Archaeology.

### SCIENTIFIC SERIALS

THE *American Journal of Science*, December, 1883.—Some points in botanical nomenclature, a review of “Nouvelles Remarques sur la Nomenclature Botanique,” par M. Alph. de Candolle, Geneva, 1883, by Asa Gray. The main object of this very valuable contribution to the vexed subject of botanic nomenclature is to enforce the principles and supplement the data supplied by M. de Candolle in his epoch-making work. His doctrines are on the whole cordially accepted, and often very ably illustrated, while here and there some useful suggestive remarks and criticisms are offered on matters of detail upon which diversity of opinion and practice still prevails.—Precarboniferous strata in the Grand Cañon of the Colorado, Arizona, by Charles D. Walcott. The results are here embodied of over two months' careful examination especially of the Kaibah Division of the Grand Cañon and lateral gorges undertaken during the winter of 1882-3. The author, an active member of the United States Geological Survey, concludes that the Grand Cañon and Chuar groups correspond to that of the Keweenawan of Wisconsin, both being referable to the Lower Cambrian. Jointly with the Paradoxides horizon of Braintree, Massachusetts, and St. John's, New Brunswick, the olenellus of Nevada, Vermont, New York, and Newfoundland, and the Potsdam series of Wisconsin, New York, Canada, &c.; they constitute the Cambrian age as so far determined in North America.—Contributions to meteorology, nineteenth paper, with three plates, by Prof. Elias Loomis. This paper deals at some length with the barometric gradient in great storms. The results confirm in a general way the accuracy of Ferrel's formula:—

$$G = \frac{1076 \cdot 4 (2n \cos \psi + v) sP}{\cos i (1 + .004t) P^2}$$

where  $G$  denotes the barometric gradient in millimetres per degree of a great circle, or sixty geographical miles. But it is shown that the effect of friction is considerably greater than was supposed by Ferrel.—A brief study of Vesta, by M. W. Harrington. The author considers it probable that this asteroid has a