

westerly station in Europe from which the phenomenon has been observed with some approach to accuracy; and if the centre of the corona be, as it seems to be (*pace* some of your correspondents), an actual, substantive point, and not merely the effect of perspective, the following observations may help in determining its height above the earth. At 11.0 exactly, Greenwich time, the centre of the very well developed corona had an altitude of 68° , with an azimuth bearing of 21° E. of S., a little W. of magnetic S. (these measurements being taken as correctly as could be done with a good-sized compass furnished with a clinometer), and it was distant from α Lyrae (*Vega*) about 8° towards S.W.; this distance being afterwards diminished by the rotation of the earth. The aurora was observed independently by Messrs. Kinahan and Symes, of the Irish Geological Survey, in the same neighbourhood, and they also noted the proximity of the centre to the above-mentioned star. I do not trouble you with other details.

M. H. CLOSE

Newtown Park, Black Rock, Dublin, July 13

I WITNESSED last night what must have been a somewhat brilliant display of aurora. From 10.45 P.M. to 11.0 P.M. slight breaks in the N.E. were brightly lit up with a rosy glare, and another break in the N. with the green rays. Coruscations of light flashed up from time to time, and were visible even through the clouds, which consisted of somewhat dense nimbus. The display in a clearer sky must have been decidedly fine.

Bridport, Dorset, July 8

J. EDMUND CLARKE

Registering Thermometer

MR. WHIPPLE and Mr. Bushell have shown great ingenuity in suggesting remedies for the copious condensation of moisture which takes place in the interior of the jackets of minimum thermometers on the grass.

Both their suggestions I have found fail to work a permanent cure; the chloride of calcium (only of use when the stopping is perfect) soon becomes super-saturated, and itself gives off moisture. The putty and sealing-wax hold good for about five or six months, and then the insidious moisture permeates again. Would it not be better to adopt my very simple plan of discarding the jacket altogether? It is absolutely useless, and no stopping is really effectual in resisting for long the daily extremes of heat and cold and damp and dryness these thermometers must undergo.

I have used a thermometer on the grass for the last three years entirely unmounted, and find its indications in no way effected by the loss of its outer coat.

CHARLES H. GRIFFITH

The Rectory, Stratfield Turgiss, Winchfield, Hants,
July 5

Luminous Matter in the Atmosphere

I WAS much interested by M. Waldner's short article on "Luminous Matter in the Atmosphere" in the number of NATURE for Feb. 15, 1872. Being unable to see the particles described, I applied to him for further directions, and he was kind enough to inform me that they may be seen *à vision directe* with a telescope.

I have since found that many of the little bodies may be seen with the naked eye by shutting out the powerful direct and lateral rays. This may be done, *e.g.*, by partly closing the *jalousies* or outside shutters used here, and then looking for the particles at about the distance of quarter of a degree, or of the sun's radius from the border of his disc, when the sun is either just below the upper edge of the shutter, or immediately above the ledge of the house if it looks east and west. Shutters are not always necessary. I have just seen great numbers by standing on the border of the shadow thrown by the adjoining house. Even by holding my hat over my head I can perceive some of them. The chief object to be aimed at is to prevent the eyes from being dazzled by the direct rays of the sun. The same principle explains the reason why stars are sometimes seen during the day from the bottom of a well or through a telescope, and why the red protuberances of the sun become visible during an ordinary or artificial eclipse.

On the 9th and 10th current, and again this morning, there was a haziness round the sun, which gradually diminished as the angular distance from his disc increased, until the sky became beautifully blue at an angle of 25° or 30° . I found that the

haziness was produced by the reflection of the sunbeams from innumerable little particles. Many of them were distinctly visible to the naked eye, but many more were seen with an opera-glass or telescope. They passed too rapidly to be counted, but fifty at least were in the field of my glass at one time. I am sure that this is no optical delusion, for several of my friends have seen them too.

What were these little particles? M. Waldner supposes them to be crystals of ice, and they certainly look like miniature snowstorms. Perhaps some of your readers may be able to decide whether the higher particles are composed of ice-like cirri, the loftiest of the clouds. But some of the corpuscles of the lower strata of the air are undoubtedly seeds, little organic substances, insects, &c. I have caught several feathery little seeds of this kind. They are almost imperceptible when seen against some white substance, and are so light that the slightest currents of air waft them to great distances.

Another instance of numberless little vegetable substances being blown here may be cited, namely, the pollen of the pine trees growing on the Landes. An unusually large quantity of this fell here on April 17, 18, 19, and 20, and may probably be traced to three extensive fires of pine woods sixty or eighty miles N.W. of Pau (April 14-16). The pollen was doubtless drawn upwards by a strong current of heated air, and then wafted to Pau by the wind, which blew in the right direction (April 17-19). The wind changed at Bordeaux on the 20th, and the pollen then fell (April 21-22) near Perigueux, nearly as far to the N.E. of the fires as Pau is to the S.E. A correspondent of the *Times* (April 30), mistaking the pollen for sulphur, announced that a shower of this substance had fallen here, and supposed that it was connected with the eruption of Vesuvius, which, however, did not begin until the 24th.

I would suggest that some record should be kept of the direction of the wind which these particles indicate in different strata of the atmosphere in fine weather.

J. F. ANDERSON

4, Place Duplace, Pau, June 12

Vibration of Glasses containing Effervescing Liquids

It is known that a glass containing effervescing liquid will not give a clear note when struck, and that as the effervescence subsides the tone becomes more and more clear. When the liquid is perfectly tranquil the glass will ring as usual, but on re-exciting the effervescence the musical tone again disappears. Sir John Herschel (*Encyc. Met.*, Art. "Sound"), who states that this experiment appears to have been originally made by Chladin, quotes it as an "example of the stifling and obstruction of the pulses propagated through a medium, from the effect of its non-homogeneity;" and, in explanation of the phenomena, he says:—"We must consider what passes in the communication of vibrations through the liquid from one side of the glass to the other. The glass and contained liquid, to give a musical tone, must vibrate regularly in unison as a system; and it is clear, that if any considerable part of a system be unsusceptible of regular vibration, the whole must be so."

The phenomenon, then, according to this explanation, is due to the fact that the liquid, during effervescence, becomes non-homogeneous, and thus obstructs the passage of the sonorous vibrations from one side of the glass to the other.

It is with much diffidence that I venture to express dissent from so eminent an authority as Herschel; but it does not appear to me that the above explanation is entirely satisfactory, for the following reasons:—

1. It seems probable that the sonorous vibrations pass *round* the glass rather than *across* it. For, if they pass across the glass, that will occur whether it contains water or air. Yet the musical tone of a glass containing air is not destroyed by suspending within it, so as not to touch it, a ball or cylinder of wool or cotton, although the sonorous vibrations certainly cannot pass freely through that substance.

2. If the non-homogeneity of the contained liquid be the cause why the sonorous vibrations will not pass, whence comes it that treacle, clear honey, &c., which are homogeneous fluids, destroy the musical ring of a glass fully filled with any of them?

The phenomenon presents itself to my mind as being due to a certain amount of vibration communicated to the glass by the agitation arising from the effervescence. This vibration—which can be easily heard by placing the ear close to the glass—interferes with that caused by striking the glass, and destroys more