

being of a peculiar type, even when too far from the sun to show any colour. The clouds thus coloured are usually of a much striated or rippled structure, and show the colours generally in small spectra; whereas the clouds seen in December were remarkably smooth in texture, and although often striated, the striations were feeble and comparatively few, and in straight lines, while each cloud showed one regular gradation of colour.

Whether the coloured clouds described by your correspondents, with the exception of those mentioned by Mr. N., were all of the same kind, it is difficult to decide; perhaps they may have been so, in spite of the varieties in their appearance. Some observers describe the body of these clouds as having been dark, in particular your correspondents at Darlington and Broseley (Shropshire), pp. 192, 193, whereas all seen here were white or bright. Still, those clouds seen further south were probably of the same kind, only thicker. The difference in shape is most likely not a radical one, as the larger clouds seen here had wavy, not straight, edges, though their general directions were the same as the sides of the more rectangular ones. The nearest approach here to a pallium of these singular clouds was on the morning of December 12, when there occurred, at 8.15 a.m., an extensive pale steel blue film above the region where the sun was, and reaching to an altitude of 25°.

Dr. H. Geelmuyden, observing at Christiania on December 8 (see p. 264), appears to place the peculiar clouds at a lower level than cirro-cumulus, but as seen here they were always the highest clouds.

In conclusion, I think that Prof. A. S. Herschel is mistaken in supposing these clouds have been "only a good instance of a common sight," but although I never noticed them before, I do not dispute the suggestion of Dr. Geelmuyden that they may be seen more frequently than some of us have thought. I have not seen them since December 13.

T. W. BACKHOUSE

Sunderland, February 11

Human Hibernation

I DID not answer your correspondent's query on human hibernation in your issue of the 5th inst. (p. 316), because I thought some one better informed than myself would answer it. However, as no one has done so, I may as well give a solution of this well-known Indian trick which I have seen, but the authority for which, I am sorry to say, I cannot remember. It is very simple, like all these things are when you "know how they are done." A tunnel is dug from the grave to the neighbouring jungle; the grave itself is partly prepared. The subject is then, in sight of the spectators, prepared, by having his ears and nostrils filled with wax, and his tongue turned back. He is then apparently buried, creeps through the tunnel, and gets away. After six months, or any other interval, he creeps back again, is dug up apparently lifeless, and restored with infinite pains. In some cases, I believe, a sentry has been placed over the grave, but, of course, without results.

ALFRED H. HULK

Bolney House, Ennismore Gardens, S.W., February 13

An Error in Ganot's "Physics"

I BEG to call attention to a typical error in a formula which appears to have run through ten editions of Ganot's well-known treatise. It is one not difficult of discovery by that somewhat too rare class of students who carefully plod through all the steps which lead up to it, but very likely to be overlooked by the more common class who are content to extract the formula as it stands with the undoubting faith reasonably based on "Tenth Edition, revised and enlarged."

The formula which represents the weight of air saturated with vapour occurs on p. 325 of the tenth edition, and is printed—

$$P = \frac{0.31 \times V.F}{(1 + \alpha t) 760} (H - \frac{3}{8}F).$$

The first F should obviously be expunged.

E. DOUGLAS ARCHIBALD

Tunbridge Wells, February 16

Shadow on Clouds

I AM not aware if the following phenomenon is at all common, but I venture to think it somewhat unusual, and that it might interest some of your readers:—

Whilst at anchor in Cumberland Bay in the Island of Juan Fernandez on the evening of December 24, 1884, we observed the following remarkable sight. The Bay is situated on the north side of the island, and some way inland is a remarkable hill, called the "Yunkua," or "anvil," it being somewhat of the shape of one; it is the highest hill in the place, viz. 3005 feet, and from the anchorage bears about south-west, and is distant two miles. The Bay is closed in by high cliffs and hills. On the day mentioned, shortly after the sun had disappeared behind the western hills, we observed this hill make a distinct shadow on the clouds above it, in which every irregularity and peak came out with wonderful clearness. The shadow lasted till about 30" before the time of sunset (which was invisible to us), and was inverted and inclined to the hill as in a mirage at about 30°. The weather at the time was very fine. Barometer, 30.22; temperature of altitude thermometer, F. 62°; and very few clouds were about.

ALFRED H. TARLETON

H.M.S. *Constance*, at Sea, January 25

THE METEOROLOGY OF HAVANA¹

THIS annual of the Royal College of the Society of Jesus at Havana for 1875, which has just been published, possesses more than a passing interest. The observations were made daily every two hours from 4 a.m. to 10 p.m., and include pressure, temperature, humidity, wind, rain, magnetic, electric, optical, and other weather phenomena. The results are plotted on large monthly diagrams, and as each day has six-tenths of an inch devoted to it, the two-hourly observations of all the different elements can be readily seen and compared with each other; and this part of the work is done with a scrupulous care and accuracy it would not be easy to surpass. On the same diagrams are marked the days on which auroras are reported to have been observed in the United States, as published in the *Monthly Weather Review* at Washington.

A note is appended to each month's observations, drawing attention to the more significant of the magnetic perturbations in their relations to the changes of weather at the time, and in particular to the "nortes," or "northerners," of the cooler months of the year: Thus, on April 3, 4, and 5 a "norther" prevailed, which was succeeded on the three following days by a remarkable magnetic perturbation, which was accompanied with a high barometer and a strong wind, rising in the afternoons to a rate of 35 kilometres per hour, with daily manifestations of aurora in the United States, but was unaccompanied throughout with any electric phenomena. Again, the magnetic perturbation, of April 13 was coincident with a characteristic "norther," much thunder and lightning, a very heavy rainfall, and a disposition and state of the aqueous vapour which give rise to solar and lunar halos, and other optical effects; but during the time no auroras were reported from the United States. Father Viñes points out in the monthly notes various other relations between the magnetical and meteorological phenomena which suggest that this line of inquiry is likely to lead to valuable additions to our knowledge of weather changes.

The mean annual pressure at sea-level is 30.067 inches, the maximum being 30.129 inches in January and the minimum 30.002 inches in September, with a secondary maximum of 30.092 inches in July and minimum of 30.066 inches in April. As regards the diurnal oscillation from the morning maximum to the afternoon minimum, the greatest occurs in the winter months, when it amounts to 0.080 inch, whereas in July it is only 0.051 inch. These diurnal and seasonal fluctuations in their varying amounts have no small significance in their relations to the analogous phenomena in the United States and over the high pressure area of the Atlantic. The mean annual temperature is 77.7, rising to the maximum 82.2 in July, and falling to the minimum 73.0 in December. The

¹ "Observaciones Magnéticas y Meteorológicas del Real Colegio de Belen de la Compañia de Jesus en la Habana. Año de 1875." (Habana, 1884.)