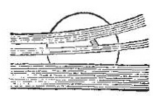
But, however far the supply exceeds the demand, there is always room for what is thoroughly good, especially if it has improvements that its predecessors lack. Though every author is apt to think his pet methods are the very best, and more or less inclined to regard his fads as steps towards perfection, if not indeed its full realization, there are a few who take a sounder view of things, and care nothing for novelty for its own sake. The author of the volume before us has shown that he is one of the few. This book is of sterling value, and will be welcomed by the teacher of elementary chemistry as a guide for his students that he will have pleasure and full confidence in placing in their hands. The volume is well got up, printed in clear type, and illustrated with a sufficient number of excellent diagrams, many from original drawings made by the author. Its 272 pages are not crowded with information or anything else, but the facts included are clearly described in a readable and concise manner. In scope, the book includes the principal non-metallic elements and their chief compounds, followed by the more important metals and their salts. The selection is good and not novel. The periodic law is briefly referred to, and the last eighteen pages are occupied with the chemical physics that it is usually considered well for elementary students to master, such as the relation between specific heat and atomic weight, critical temperature, diffusion of gases, effects of temperature and pressure upon gases, and so on.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Alpine Haze.

PROF. TYNDALL has done good service by drawing attention to Alpine haze, and is quite right in adding that it appears in horizontal layers. Such is its common form, but I have also observed a vertical part of it connecting two horizontal striæ rendered conspicuous by concealing portions of a setting sun,



Setting sun observed February 16, 1846, at Garuqqe, in lat. 8° 0′·6, long. 36° 51′, at an altitude of 2175 metres.

just as thick boards might do. On another occasion I saw a rough column of it towards the north-west at a supposed distance of three or four kilometres. A few hours later, while I was noting down the phenomenon, a native exclaimed that it had changed its position, and on looking north-west I could see no trace of it, a column similar in size and distance being then in the north-east. It towered above my level on a rolling plain 2300 metres above the ocean. In another place I have seen it at a height of 3600 metres.

Although generally overlooked by meteorologists, this phenomenon has a special name in warm countries. Portuguese call it *neblita*; in Spain it is mentioned as *callina* or *calina*, and Basques name it *lañoa*. Nowhere have I seen it so frequent and thick as in Ethiopia, every different language of that wide region having a special word to express it. The Amara call it *tigag*; the Oromo, or Galla, *qayota*; the Tigray, *taqa*; while old Ethiopic employs the term *qobar*. I have used the latter in my published accounts, because *brume* in French and *haze* in English are generic and not specific names.

Qobar is gray, and of a livid hue when intense, verging sometimes to blackness. The Gascon-speaking population in the Pyrenees call it *bruma terranera*, *i.e.* earth-haze. Its edges are not jagged, like those of clouds, but quite smooth. At Quarata, in 1845, when I was at the level of Lake Tana, the Island of Daga, which rises suddenly 140 metres above the water at an angular height of 16′ and a distance of 11·6 miles, was visible only by 4′ or 5′ of its upper part, the lower 11′ or 12′ being concealed by *qobar* thicker than usual, and seemingly spread on the lake. I have seen it often on the Red Sea, and sometimes even here in the Bay of Biscay towards the north.

Qobar is the surveyor's foe, and has made me lose several important bearings. It blurs the landscape, diminishes estimated distances, and in Ethiopia is often so thick that no feature of a country is visible beyond the space of a mile.

Fifteen years ago I published in my "Physique du Globe" all that I know about *qobar*. In Germany it goes by the name of *Heiderauch*, or by six other words all ending in "*rauch*." Ethiopians also compare it to but distinguish it from smoke. When commenting on chapter x. of Exodus, their native professors say that the darkness mentioned in verse 22 was an intense *qobar*, and go on to explain that the light enjoyed by the Children of Israel is fully borne out by the fact of *qobar* being sometimes prevalent in one place, yet absent in its neighbourhood. I have noted several instances of this partial occurrence. Without quoting them, I may mention that, according to my working hypothesis, *qobar* is only dry air, visible because in large quantity. On the other hand, astronomers well know that very moist air is the most transparent.

Natives are swarthy in countries where *qobar* abounds. Does it darken man's skin? At all events it is worth while to draw some hundred litres of it through suitable reagents. Chemists could thus test Kaemtz's notion that it is always smoke.

ANTOINE D'ABBADIE (de l'Institut).

Abbadia, Hendaye, November 10.

P.S.—I forgot to mention that, after crossing the three layers shown by the figure, the setting sun crossed two other layers, and finally disappeared behind the lower stratum of *qobar*, then 3° or 4° above the horizon.

Rankine's Modification of Newton's Investigation of the Velocity of Sound in any Substance.

PROF. EVERETT's letter (November 8, p. 31) calls attention to a difficulty which is apparently felt by students over the attempted elementary method of deducing the general expression for the velocity of sound given in Maxwell's "Heat." Advanced students need feel no difficulty of the kind, because they arrive at it by another path; but inasmuch as the Rankine method seems the easiest available to intermediate students, it is desirable as a matter of pedagogy to put it in its simplest form; and so I venture to quote here the plan I have for some time adopted.

First lead up to the subject by considering the velocity of a hump on a stretched string. Explain the plan of imagining the string to move along at the same pace as the hump, but in an opposite direction, so as to keep the hump stationary in space, obtaining the velocity necessary to do this by equating the normal compound of the tension to the centrifugal force—

$$\mathrm{T} \cdot \frac{ds}{r} = \frac{\lambda ds}{r} \cdot u^2, \qquad \text{or } u = \sqrt{\frac{\mathrm{T}}{\lambda}},$$

where T is the tension, and λ is the linear density of the string; and then actually show the experiment—running a light loose flexible endless cord on a pulley, and making a hump on it. The tension in a loose whirled endless cord free from gravity being that due to the centrifugal force only, viz.—

$$\mathrm{T} = \frac{\lambda ds \cdot v^2}{r} \cdot \frac{r}{ds} = \lambda v^2,$$

it follows that $v = u$, and so the keeping of the hump still is automatic, except for a slight interference by the weight of cord hanging below the hump. This interference being less and less notable as the hump is initially made nearer the bottom of the loop of cord.

Next explain, and illustrate by moving diagrams, the simple harmonic motion of the particles of a medium conveying sound-vibrations.

Then proceed to consider a longitudinal pulse travelling along a substance contained in a tube of unit area, and imagine a wind of the substance blowing through the tube in the opposite direction with such a velocity, U, as just to keep the pulse stationary in space.