4. <i>Prunus Cerasus</i> (dwarf cherry)	April 22
5. <i>Prunus Padus</i> (bird cherry)	" 24
6. <i>Pyrus communis</i> (wild pear)	" 23
7. <i>Pyrus malus</i> (crab apple)	" 28
8. <i>Syringa vulgaris</i> (lilac)	May 4
9. <i>Lonicera tatarica</i> (Tartarian honeysuckle)	" 4
10. <i>Narcissus poeticus</i> (poet's narcissus)	" 5
11. <i>Aesculus hippocastanum</i> (horse-chestnut)	" 7
12. <i>Crataegus oxyacantha</i> (hawthorn)	" 9
13. <i>Cytisus laburnum</i> (laburnum)	" 15
14. <i>Sarothamnus vulgaris</i> (common broom)	" 14
15. <i>Cydonia vulgaris</i> (common quince)	" 16
16. <i>Sorbus aucuparia</i> (mountain ash)	" 17
17. <i>Sambucus nigra</i> (common elder)	" 28
18. <i>Secale cereale</i> (rye)	" 28
19. <i>Atropa belladonna</i> (deadly nightshade)	" 29
20. <i>Vitis vinifera</i> (grape vine)	June 13
21. <i>Tilia Europaea</i> (<i>grandifolia</i>) (lime tree)	" 22
22. <i>Lilium candidum</i> (white lily)	July 1

B.—FIRST FRUIT RIPE

23. <i>Ribes rubrum</i>	June 21
24. <i>Lonicera tatarica</i>	July 1
25. <i>Sorbus aucuparia</i>	" 30
26. <i>Atropa belladonna</i>	Aug. 2
27. <i>Sambucus nigra</i>	" 11
28. <i>Aesculus hippocastanum</i>	Sept. 17

Observations of the species 1, 3, 8, 11, 17, 22, and 27 are specially requested, as one of the undersigned (Dr. Ihne) is at present occupied with the preparation of a phænological map for Europe. Observations made either this year or previously, but not yet published, should be sent to one of the undersigned, and will be esteemed a favour. In what way (*inter alia*) it is possible to utilise the observations, may be understood from the comparative phænological map of Central Europe, by H. Hoffmann (*Petermann's Geographische Mittheilungen*, January, 1881.)

H. HOFFMANN
EGON IHNE

Giessen, February 25

Rime Cloud observed in a Balloon

In the question whether the cloud that floated over Paris, January 25, consisted of microscopical atoms of solidified water or of minutest globules of liquid water cooled below zero, discussed under this heading in *NATURE*, vol. xxv. p. 337, 385, 436, M. de Fonvielle adduces (p. 436) in favour of the first alternative a new argument, viz. that floating over the cloud in sunshine he has seen upon the cloud only the *corona*, and nothing resembling a rainbow, and he invokes the authority of Bouguer (1744), que "le phénomène [la *corona*] ne se trace que sur les nuages formés de gouttes de vapeur et même sur ceux dont les portraits sont glacées, mais non sur les gouttes de pluie comme l'arc-en-ciel."

I did not expect anything else. M. de Fonvielle could not see a rainbow, because the cloud certainly did not consist of rain-drops; neither could he see a rainbow, when the cloud consisted of minutest particles of liquid water.

It is a well-known fact that small particles of water suspended in air produce no rainbow. When Kratzenstein (1774) advocated the opinion anticipated by Halley (1686), that water-vapour may be condensed in a vesicular state, he availed himself of the observation, that in cloud, and mists, and the condensed steam over boiling water, a rainbow is not to be observed in reflected light. It is not necessary to enter into the question whether the hypothesis of mist-vesicles is to be abandoned, and—as seems to me more probable—the existence of very small solid (*i.e.* not hollow) globules of liquid water is to be admitted for clouds, &c., consisting of the latter; solid water-drops, too, if their dimensions are small enough in comparison to a wave-length of light, cannot produce a rainbow.

So I think it still possible that the cloud observed by M. de Fonvielle, and many mists, which have been described as consisting of ice, may have consisted of liquid water cooled below zero.

In my letter in *NATURE*, vol. xxv. p. 385, read "Hildebrandsson's discussion of the meteorological observations made during the voyage of the *Vega*" for "Hildebrandsson's meteorological observations, &c."; and "Frostzüg" (*i.e.* frost-smoke) instead of "Frostzüg."

Heidelberg, March 11

HERMANN KOPP

Water in Australia

THE extracts from Australian letters communicated by Mrs. Merrifield remind us again of the important question of water-supply in that thirsty region. Why need the crops be lost for lack of water, when accumulating evidence assures us that in the Tertiary Sandstone of the great central plain there is an abundant supply not many yards from the surface? How can the great gum trees resist the drought as they do unless their roots touch water? Several successful borings have already been made, but probably such works far inland are prevented by the scarcity of fuel for steam power. Prof. Ayrton has now, however, demonstrated that power can be generated wherever coal is plentiful, and transmitted economically and effectively by electric wire to the inland motors. It is probable that within a few years the dynamo machine will prove of more practical value to Australia than to any other country in the world. If there is any novelty or any value in the suggestion of an underground water-supply in the Australian plains, and of obtaining it by the aid of electricity, the credit is due to Mr. Thomas Blunt, of Baxter-gate, Loughborough, not to myself.

Bristol Hill, Leicester, March 25

F. T. MOTT

The Solar Spectrum in a Hail-Storm

DURING the hail storm of Tuesday, the 21st inst., I made observations on the spectrum in various parts of the sky, and was surprised to find the orange lines of a tint decidedly deeper than that of their normal hue. When the hail ceased and the snow began to fall heavily, the lines assumed their usual colour. The rain-band at the time was strong, as might have been expected. I was not before aware that hail would exert this influence on the spectrum. The observations were made with a small pocket spectroscope.

C. H. ROMANES

Worthing, March 22

Temporary Retinal Effects

IN your present week's "Notes" you have referred to the curious experiences of MM. Macé de Lepinay and Nicati, in finding the town lights appear green, after five hours among snow-fields. On the Cima di Jazi, some 16,000 feet or more high, I found another effect. On removing my blue snow-glasses, the sky (at about 10 a.m.) appeared of the deepest indigo colour, while the sun could be looked at without pain, and resembled a harvest-moon close to the horizon, of a red yellow tint, and with a well-defined outline. The effect disappeared as we descended the mountain. As another instance of temporary affliction of the retina, I had been using on the sun, as examined with an 8 $\frac{1}{4}$ -inch reflector, a miniature spectroscope with fine slit, notwithstanding which the spectrum was very bright. Some hours (not immediately) after, all the gas lamps, candles, &c., appeared of a blood red, and so continued for some hours. This effect still persisted at dinner-time, but gradually and entirely passed off during the meal. No trace of green tint was, in this case, seen. In the sun-glare it is not uncommon with some persons, to find leaves and other small objects on the path, of a red tint.

J. RAND CAPRON

Guildown, March 25

Specific Heat and Thermal Conductivity

PROF. TYNDALL, in his lectures on "Heat a Mode of Motion," p. 255, gives a highly-instructive experiment to illustrate the influence of the specific heat of a substance in masking its thermal conductivity. Short prisms of iron and bismuth, having their upper ends coated with wax, are placed upon a vessel of hot water, and the wax is observed to melt first upon the bismuth, in spite of its comparatively low conductivity.

I should like to ask whether others have been uniformly successful in obtaining the above result, at any rate when the bismuth and iron prisms are soldered to the top of the hot water vessel; for this seems to me necessary in order that the experiment may be made with absolute fairness, and independently of any want of uniformity of polish and flatness in the surfaces between which the heat has to pass.

I have tried with cylinders of nearly pure bismuth and best bar iron of various lengths (from 1 cm. to 5 cm.) and diameters, brightly polished, and in some cases wrapped in vulcanised india-rubber, to avoid loss of heat by radiation and convection, and I invariably find that the wax melts upon the iron first.