

hint of his well-known "cup" anemometer, although Edgeworth only speaks of *bending* the various pieces of metal which formed the terminations of the arms of the revolving apparatus with which he was experimenting. This paper was alluded to by the president, in the course of his address to the Meteorological Society, but in such a manner as to lead me to suppose that it was not very generally known.

May I ask when, and by whom the word "anemometer" was introduced? The earliest instance of the use of the word, with which I am acquainted, is by D'Ons en Bray, in 1734. I expect that it is of French origin. RICHARD B. PROSSER

Vivisection

It is due to Prof. Yeo to state that while enumerating in his article on Vivisection the texts which in his opinion bore most directly upon the subject, he did not omit the case of the swine to which Mr. Stevenson alludes (*NATURE*, vol. xxv. p. 483). I may, observe, however, that as Prof. Yeo's argument only required to cite the texts which convey the authority of our Lord, he did not make out so strong a justification of physiological method on biblical grounds as he might otherwise have done. The whole philosophy of "scape-goats" and of animal sacrifice in general, clearly rested on the assumption that the Deity considered vicarious suffering of animals for the benefit of man, not merely to be what Lord Coleridge would term "lawful," but even desirable to the extent of rendering it obligatory on man to "shed the blood" of lower creatures for the purpose of obtaining immunity from evil.

This is not the place to consider such a topic at length, but after what has already appeared in these columns it seems worth while to observe that anti-vivisectionists would show themselves most politic by not attempting to carry their controversy into the domain of biblical ethics. The uniform opinion entertained by the canonical writers touching the importance and the rights of animals in the divine scheme of things, appears to have been that which is so tersely expressed by the Jewish Apostle of the Gentiles—"Doth God take care for oxen?"

THE WRITER OF THE ARTICLE ON "VIVISECTION"

It is with great regret that I inform you, and through you Miss Cobbe and the readers of *NATURE* in general, that I have been made the victim of a *ridiculous and ill-timed hoax*. The little anecdote of Miss Cobbe which appeared in *NATURE*, vol. xxv. p. 459, is, it appears on investigation, quite apocryphal; yet my informant, when relating it to me, asseverated its truth so strongly, and gave me so many corroborating details, that I did not hesitate in saying that "I knew it to be true." He even ventured to "name" the celebrated vivisectionist whom Miss Cobbe was supposed to have interviewed. Therefore, when doubts began to be cast on the accuracy of my statements, I communicated with this gentleman, who informed me that the whole of this conversation between himself and Miss Cobbe is *totaly imaginary* and never took place. "A fellow-feeling makes us wondrous kind," and I am sure Miss Cobbe, having been so often victimised herself, and led to believe ridiculous tales of hideous and impossible torture inflicted by high-minded, scientific gentlemen, will sympathise with me in my chagrin at finding myself a victim to my own gullibility.

May I be allowed to add, Sir, a serious postscript to my letter?

We none of us—I least of all—doubt the value of Miss Cobbe's advocacy of any cause. Had not the practice of vivisection been based on an earnest seeking after knowledge, it had surely fallen ere this before Miss Cobbe's stout blows. Now whilst we are disputing as to whether the practice of vivisection be right or wrong, a far more serious question—I had well-nigh said "crime"—is confronting us. Owing to the extraordinary demand for rare (not necessarily "beautiful") birds' skins, for the adornment of women, we are threatened with the rapid, almost immediate, extinction of some of the most wonderful species of the world's avifauna. I saw, in a milliner's shop in Regent Street, the other day, four birds of paradise, two trogons, scarlet ibises by the dozen, a rare goatsucker, kingfishers, orioles, and bee-eaters, not to mention many other birds whose greater abundance might seem to excuse their wholesale sacrifice. Now, Sir, the human race has already had to mourn the destruction of the dodo, the solitaire, the great auk, and the moa: let us not add to this list the *paradisæida*, the trogons, and the humming-birds. If then, Miss Cobbe will only place

herself at the head of an Anti-bird-skin-wearing Association, she will find one of the most grateful and humble of her followers in your obedient servant, H. H. JOHNSTON

PS.—I take this opportunity of remarking, that I have no connection whatever, in an official capacity, with the Zoological Gardens. I headed my first letter thus, merely because it accidentally happened that I borrowed pen, ink, and paper, and wrote it there.

Tudor House, Champion Hill, S.E., March 27

YOUR correspondent, Mr. C. A. Stevenson, referring to the miraculous narrative of St. Mark, chap. v., verses 26-32, reasons to the effect that if 2000 swine were destroyed to alleviate the sufferings of a single man, then are those physiologists to be justified who, for the benefit of the whole human race, sacrifice a few animals. But, unfortunately for the argument, neither from the narrative of St. Mark, nor from those in the other gospels, does it appear that the permission given to the "unclean spirits" to pass into the swine, after their expulsion from the "demoniac," in any way contributed to his cure. On the contrary, it is distinctly implied that the demons might have been sent elsewhere than into the swine. For, according to St. Mark, they "besought" that they might not be sent "away out of the country"; or, as St. Luke has it, that they might not be commanded "to go out into the deep," that is into the "abyss," elsewhere translated "bottomless pit." Thus, it seems to be taught that when driven out of the man, the demons might have become simply disembodied spirits; and, indeed, so far as we can gather, the permission to enter into the swine was purely *ex gratia*.

Hence any pro-vivisection argument to be sought in the fate of the swine must, I fear, assume a form differing somewhat from Mr. Stevenson's; but which I prefer not to specify.

W. S.

AS no one has made any remarks upon the passage in Mr. H. H. Johnston's letter, in which "a distinguished man of science" is said to have twitted a lady with "wearing ostrich feathers which are plucked from the *living bird*, causing most exquisite pain," will you allow me to inform the fair portion of your readers that they may wear ostrich feathers with clear consciences if they can make sure of these having been taken from living birds, *i.e.* from those kept on ostrich farms. It used, I believe, to be the practice to pluck out the feathers; but the inflammation set up proved injurious or fatal, as must be obvious, and the life of a bird worth perhaps 60*l.* or 80*l.* was endangered for a crop of feathers worth 7*l.* or 8*l.* When the feather is quite ripe and at its best, the quill is cut with a pair of scissors or sharp knife about half an inch from the skin, and the stump moults out in the ordinary course. Probably by far the larger quantity of plumes come from tame birds. In 1878, 57,144 lbs. were exported from the Cape, and there are probably considerably more than half a million of tame birds in South Africa at this moment.

Ladies who carry their anti-vivisection consistency so far as to have serious misgivings about wearing leather boots, must still be cautious in the matter of ostrich feathers; since numbers of birds are hunted down for their plumes, although we can hardly suppose them in this case even to be plucked out while the ostrich is alive. They would come quite as easily from a dead but still warm bird, and the hunter would not be exposed to the risk of that tremendous kick an ostrich can give. I shall be glad to know on what authority birds of paradise are stated to be "skinned alive."

ARTHUR NICOLS

Phænology—An Appeal

THE undersigned would urge all those who take an interest in the phænology of plants to make as many and as accurate observations as possible, and they recommend as specially suitable the following plants (the dates after the names give the mean for Giessen, calculated from many years). The observations should be made on plants standing free, plants on espaliers being excluded, and they should be made daily, accurate results being only obtained in this way.

A.—FIRST BUDS OPEN

1. <i>Ribes rubrum</i> (red currant)	April 14
2. <i>Prunus Avium</i> (wild cherry)	" 19
3. <i>Prunus spinosa</i> (sloe)	" 20

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>Sicale cereale</i> (rye)	" 28
19. <i>Atropa belladonna</i> (deadly nightshade)	" 29
20. <i>Vitis vinifera</i> (grape vine)	June 13
21. <i>Tilia Europæa</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 "Frostrog" (*i.e.* frost-smoke) instead of "Frostzög."

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.