

	Ben Nevis, June—Aug. 1884	Säntis, June—Aug. 1884	Mt. Washing- ton, May—June, 1873	Ben Nevis, Dec.—Feb. 1883—84
1 a.m.	15	18	20	9
2 "	15	24	15	7
3 "	19	24	9	8
4 "	12	16	8	7
5 "	7	12	8	3
6 "	8	8	1	5
7 "	0	4	2	3
8 "	2	7	0	1
9 "	3	13	8	3
10 "	5	15	10	6
11 "	11	20	12	8
noon	15	18	19	7
1 p.m.	11	19	16	7
2 "	15	17	12	7
3 "	14	11	15	7
4 "	10	11	13	7
5 "	10	9	7	3
6 "	5	8	4	4
7 "	3	7	1	5
8 "	0	10	3	3
9 "	0	5	5	4
10 "	9	2	15	8
11 "	11	7	19	8
midnight	9	9	19	6

Hence the maximum occurs on these heights shortly after midnight, and the minimum shortly after noon. Now it will be seen that these diurnal maxima and minima occur nearer midnight and noon than do the phases of the other meteorological phenomena, thus suggesting a direct connection with solar and terrestrial radiation. It is singular that, while the diurnal period of strongest insolation determines the occurrence of the maximum velocity of the wind over extensive land surfaces, it determines the minimum velocity on peaks rising to a great height above the land surfaces surrounding them. Of special importance in its bearings on the question is the curve of diurnal variation on Ben Nevis for the three winter months of 1883-84, when the mean velocity of the wind was nearly double that of the summer months. In that season Ben Nevis was under a deep covering of snow, the sky clouded nearly the whole time, the air frequently darkened with dense drifting fogs, and the difference between the mean lowest and highest hourly temperature only half a degree. Notwithstanding the practical uniformity of temperature of the surface of the top of Ben Nevis during the twenty-four hours of the day, the curve of the diurnal variation in the wind's velocity was as clearly marked in winter as in summer, and the two curves were alike in showing the occurrence of the maximum shortly after midnight, and the minimum shortly after noon. We must therefore conclude that the peculiar type of the diurnal curves of wind velocity on these elevated peaks is altogether independent of the temperature of the surfaces over which the winds blow. The results point not obscurely to an investigation of the relations of the visible and invisible vapour of the atmosphere to solar and terrestrial radiation as an inquiry of first importance in meteorology.

#### OUR BOOK SHELF

*Exercises in Electrical and Magnetic Measurement.* By R. E. Day, M.A. New Edition. (London: Longmans, Green, and Co., 1884.)

MR. DAY has produced a new and considerably improved edition of a most useful and valuable little book. Every teacher of electricity whose work is not confined to the

beggarly elements of mere phenomena will thank Mr. Day for the admirable selection of problems put together in this volume. Nothing could be a greater boon to the real student than the means thus afforded of testing his knowledge of the exact quantitative laws of the science. If it were not for the historic interest of that rather antiquated instrument the torsion balance—we should doubt the utility of giving so much attention to it. Although the more modern electrometers have entirely superseded the torsion balance as an instrument of research and of measurement, it has, nevertheless, become so prominently fixed—like some grand old fossil long ago extinct—amongst the characteristic forms of electrical instruments, that examiners still expect candidates for examination to know something about it. On the other hand, the space allotted to moments of torsion and inertia is all too brief, though admirably filled. We must, however, take exception to the practice apparently followed on p. 62, of expressing a moment of couple in *dynes*: it should surely be *dyne-centimetres*. The section on the chemical (or rather thermo-chemical) theory of electromotive force is excellent. The problems comprised under the heading Electromagnetic Measurement are admirable, though perhaps a little beyond most students.

#### 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. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

#### Earthquakes and Terrestrial Magnetism

MR. W. H. PREECE having written to the Astronomer Royal to ask whether any disturbance of our magnets or our earth-current apparatus was experienced during the recent earthquake in Spain, it may be interesting to communicate also for the information of your readers the result of an examination of our photographic registers in consequence made, and especially in order that what has been remarked may, if possible, receive confirmation.

As respects magnetic movement, the magnets on Dec. 25 last and following days were generally quiet. But on looking more closely at the registers, attention was at once drawn to a small simultaneous disturbance of the declination and horizontal force magnets, occurring at 9h. 15m. on the evening of December 25. Both magnets were at this time set into slight vibration, the extent of vibration in the case of declination being about 2' of arc, and in horizontal force equivalent to .001 of the whole horizontal force nearly. The movements have not the character of magnetic movements, and, if in reality produced by the earthquake, are of course simply an effect of the shock, the magnets being heavy bars suspended by silk threads some feet in length. About ten minutes afterwards there is doubtful indication in the horizontal force register of a second disturbance. There is no corresponding perceptible disturbance in the earth-current registers.

No other similar motion is observable either on December 25 or on the following days.

It may be remarked that in NATURE for January 1 last (p. 200) the time of occurrence of the earthquake at Madrid is said to be 8h. 53m. p.m. Taking this to be Madrid time, it corresponds to 9h. 8m. of Greenwich time.

WILLIAM ELLIS  
Royal Observatory, Greenwich, January 15

#### Teaching Chemistry

THE subject of science-teaching in schools, and more particularly the best way in which practical chemistry should be taught, has of late been discussed in the columns of NATURE. With the editor's leave, I should like to say a little regarding the methods of teaching chemical science in general.

NATURE for January 8 contained notes, by Profs. Sir H. F.