

science teachers, who have already enough grievances to urge against the Department on the score of its administration, than to obtain any amelioration of their status.

I do not think many science teachers will endorse more than one other of Mr. Uhlgren's complaints; so that it is of the greatest importance that that one which affects them all should be proved in the fullest and most circumstantial manner.

Plymouth, Dec. 9. A LOCAL COMMITTEE-MAN

Lunar Calendars

I WISH to call attention to the variations observable between the true period of new moon and the commencement of lunar months, as set forth in the following table:—

Period of New Moons A.D. 1872 H.M.	Jewish Calendar A.M. 5632-3	Mahomedan Calendar A.H. 1288-9
Jan. 10 2.58 P.M.	Shebat commences 11	Jan. 12 Dulkaadah
Feb. 9 1.52 A.M.	1st Adar " "	10 Feb. 11 Dulhagee
Mar. 9 0.53 P.M.	2nd " " "	11 Mar. 11 Mulharram
April 8 0.32 A.M.	Nisan " "	9 April 10 Saphar
May 7 1.19 P.M.	Iyar " "	9 May 9 Rabia (i.)
June 6 3.23 A.M.	Sivan " "	7 June 8 " (ii.)
July 5 6.25 P.M.	Tammuz " "	7 July 7 Gomada (i.)
Aug. 4 9.46 A.M.	Ab " "	5 Aug. 6 " (ii.)
Sep. 3 0.54 A.M.	Ellul " "	4 Sept. 4 Rajab
Oct. 2 3.31 P.M.	Tishri " "	3 Oct. 4 Shaban
Nov. 1 5.28 A.M.	Heshvan " "	2 Nov. 2 Ramadan
" 30 6.25 P.M.	Kislev " "	1 Dec. 2 Shawal
Dec. 30 6.36 A.M.	Tebeth " "	31 " 31 Dulkaadah

As many eminent and practical astronomers write to NATURE, I shall be much obliged if some one will add a fourth column to the above, fully explaining these differences. My object is to ascertain if a calendar, founded on lunations, is at all susceptible of universal use, so as to be correct to time in all places. The true new moon is invisible, the visible new moon is not the true new moon; is there a medial average?

November 23

MYOPS

New Zealand Forest Trees

LET me recommend those of your readers who take an interest in this subject, to trust for correct information thereanent to the works whose names are appended, and not to the statements of recent correspondents of NATURE, who commit errors so great as to refer *Manuka* to the genus or family *Diosma*!

- (1) Dr. Hooker's "Handbook of the New Zealand Flora," which contains at the end of vol. ii. an "Alphabetical List of Native and Vernacular Names" of New Zealand plants, including trees.
- (2) A similar Catalogue of Native and Vernacular Names, published, subsequently to Dr. Hooker's list, by Dr. Hector, Director of the Geological Survey of New Zealand.
- (3) "Report and Award of the Jurors" of the New Zealand Exhibition of 1865; which contains at page 474 an admirable table—showing the strength and other qualities of New Zealand woods, in connection with the names of the trees yielding the said timbers—carefully drawn up by the late Provincial Marine Engineer of Otago, J. M. Balfour, C.E.; and
- (4) The 3 vols. already published of the "Transactions and Proceedings of the New Zealand Institute."

W. LAUDER LINDSAY

Solar Halo

SEEING in your last number an account of a Solar Halo, it has occurred to me that the following description of a similar phenomenon, which I saw in Norway this autumn, may not be uninteresting to some of your readers.

The sun, at 4 o'clock P.M., was just setting behind a range of mountains in the Romsdalen, when a bright halo of light appeared round it, forming a clearly-defined circle, and at the crown of the circle there appeared two horns, as of the beginning of another circle inverted, the junction of the two circles being very luminous; the limbs of the inverted circle—if I may so call it—were rather straight than curved, and were not very long. A

second and outer circle, just twice the diameter of the inner one, shortly appeared, and this circle had all the colours of a rainbow most distinctly visible. These two bows were strongly defined for an hour at least, and during that time constant waves of light shot up and across the sky, not always from the centre, where the sun was, but often from some point within the inner circle to the south of its centre. At other times rays of light would shoot out at a tangent from the outer bow, sometimes on one side and sometimes on the other. Again, some would shoot from one circle to the other, forming a series of bars parallel with the horizon, and at last the rays seemed to concentrate, and, radiating from the centre of the inner circle, shot right through both circles across the sky over our heads, forming a series of gigantic ribs, which extended from west to east.

The day (it was September 23) had been perfect, with a bright sun, a cold, frosty atmosphere, and a blue, cloudless sky. Snow had fallen heavily about three days before, and was still lying everywhere; but on the day we saw this grand display not a cloud had been visible from morning till evening. After all was over, the clouds crept up, and we saw several brilliant shoots of the Northern Lights.

W. W. HARRIS

Manningham, Bradford, Dec. 6

Proof of Napier's Rules

SUCH a structure in cardboard as that described by Prof. A. S. Herschel in NATURE, No. 106, may be found very useful in facilitating the study of the proof of "Napier's Rules," but the ingenious learner might object that the demonstration was confined to one particular species of triangle—the isosceles right-angled with a perimeter equal to a quadrant; for Mr. Herschel's angles *a* and *b* are plainly equal, and together with *c* make up a right angle. The corresponding construction for any case would be as follow:—Take a circular piece of cardboard with centre D (referring to Mr. Herschel's diagram), and on the circumference, in the same direction, take any two arcs B<sub>1</sub>, 12. Let a perpendicular from B or D<sub>1</sub> meet it in D, and a second from C or D<sub>2</sub> meet it in A, and be produced to reach the circumference in B'. Finally, a semicircle on A B' as diameter and another with centre A and radius A C will determine by their intersection the point C'. To a construction thus generalised all that Prof. Herschel adds would apply.

As a question of "Queen's English," it seems hard to connect the last clause in the first paragraph of Prof. Herschel's letter with what precedes. "Them" can only refer grammatically to "difficulties;" but surely Mr. Cooley did not propose to himself 'to render them as easily accessible as possible to the inquiring student in mathematics.'

J. J. W.

The Cause of Specific Variation

I HAVE only just read Mr. Mivart's "Genesis of Species," and was glad to find that his ideas, so ably expressed, are nearly, if not quite, identical with my own, which I laid before the Victoria Institute in a paper "On Certain Analogies between the Method of Deity in Nature and Revelation," May 10, 1869. On p. 259 of his "Genesis of Species" he has the following remarks:—"But are there any grounds for thinking that, in the Genesis of Species, an internal force or tendency intervenes, co-operating with and controlling the action of external conditions?" This question appears to me to exactly correspond with the sentiments of the following passage from the "Journal of the Transactions of the Victoria Institute," vol. iv., p. 265:—

"Rather than venture on any attempt to explain the Divine methods by ordinary terms, I would prefer adopting some general expressions to convey an imagined idea of the causes of existing things, and as less liable to the charge of anthropomorphism.

"I purpose, therefore, adopting the general word *force*, and recognising all issues in nature as the effect produced upon matter by the resultant of component forces. These forces are separable into physical, chemical, biological, &c.; and, in addition to all those which the chemist and the physicist can eliminate and claim as the objects of their special studies, there still remains a residuum of forces in those organisms endowed with life, and which produce those results which we say are designed, and which it is customary to regard as witnessing to a Divine Intelligence.

"In recognising these latter forces, I would call them evolutive, but as being so far like others that their resultant with them produces relative effects only according as in their continual