January 3, 1893, not having opened the box for some days, I made an examination. The egg was in its former position, so far as I could tell, but the shell was split on one side and the young *Peripatus* had escaped. This young *Peripatus* was found lying dead on the glass floor of the hatching box, 25 mm. distant from the shell. It must have crawled off the rotten wood and along the glass to the position in which it was found. It was only about 5 mm. in length, so that, even assuming that it moved in a perfectly straight line, it must have crawled for a distance five times its own length. To the naked eye the young animal appeared of a pale greenish colour. It could not have been dead for very many days, but decomposition had already set in, and the animal was stuck to the glass on which it lay. It was impossible to remove it without considerable injury, but I ultimately succeeded in mounting it in Canada balsam, and it is impossible, even in its present condition, to doubt that it really is a young *Peripatus*, for the characteristic jaws and claws are well shown. I also mounted the ruptured egg-shell, and found that the characteristic sculpturing on the outside was still clearly visible.

This egg, then, hatched out after being laid for about seventeen months (from about July 1891 to about the end of December 1892). I cannot believe that under natural conditions the embryos take so long to develop. At any rate it now appears certain that the larger Victorian *Peripatus* lays eggs which may hatch after a lapse of a year and five months.

ARTHUR DENDY.

The University of Melbourne, February.

A Simple Rule for finding the Day of the Week corresponding to any given Day of the Month and Year.

A RULE was lately mentioned to me by a friend for finding, almost by inspection, the day of the week for any given year and day of any month in that year, during the present century. The basis of the rule is so obvious, when once the rule is stated, as to require no demonstration, but it struck me as so ingenious as to be worth while communicating it to you in case you deemed it worthy of insertion. I also append a very easy method of extending the rule to any date subsequent to the introduction of the Julian intercalation either in the past or future, except indeed for the eighteenth century, in which the introduction of the new style requires a special treatment.

The nineteenth century rule above alluded to is this. Each of the 12 months has its special numerical constant, thus:—

Jan.	Feb.	Mar.	Ap.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
3	6	6	2	5	0	2	3	1	3	6	1

Write down four columns thus

A	B	C	D

Under A enter day of month, under B constant for that month, under C year of century, under D greatest multiple of 4 in the year of century.

Add together the numbers under these heads, divide by 7, and the remainder is day of week; except that in Leap Year 1 must be subtracted for any day before February 29.

Example.—June 18, 1815 (Battle of Waterloo):—

A	B	C	D	Sum.		Remr.	
18	0	15	3	36	$\frac{36}{7}$	1	Sunday.

February 1, 1892:—

A	B	C	D	Sum.		Remr.	
1	6	92	23	122	$\frac{122}{7}$	3	Sunday

Subtract 1 for Leap Year before February 29. *Ans.*—3 − 1 = 2 or Monday.

December 25, 1892:—

A	B	C	D	Sum.		Remr.	
25	1	92	23	141	$\frac{141}{7}$	1	Sunday.

To extend the rule to any future century, we have only to alter the monthly constants, adding 5 to each for each added century after the present, and 1 for each century, an exact multiple of 4, in the interval.

Thus for the thirty-first century. Number of added centuries is 12, and there are 3 centuries, succeeding multiples of 4 (twenty-first, twenty-fifth, and twenty-ninth). Therefore add 5 × 12 + 3 = 63, or omitting multiples of 7, add 0.

Hence, constants for thirty-first century are the same for the present century.

New Year's Day, 3001,

A	B	C	D	Sum.	Remr.	
1	3	1	0	5	5	Thursday.

For centuries anterior to the eighteenth we must first of all find by special method what the monthly constants would have been throughout the eighteenth century without the change of style, and then subtract 6 for each century short of the eighteenth.

It may easily be seen that the constants throughout the eighteenth century would have been without change of style.

Jan.	Feb.	Mar.	Ap.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2	5	5	1	3	6	1	4	0	2	5	0

For the eleventh century subtract 7 × 6 or 42, *i.e.* since this is multiple of 7 subtract 0, and we get the same repeated.

For the seventeenth subtract 6, and remember that when the result is negative we must replace it by the defect of the corresponding positive number from 7, and we get

3	6	6	2	4	0	2	5	1	2	5	1

Example.—Battle of Hastings, Oct. 14, 1066.

A	B	C	D	Sum.	Remr.	
14	2	66	16	98	0	Saturday.

Execution of Charles I., Jan. 30, 1649,

A	B	C	D		Sum.		Remr.	
30	3	49	12	=	94	$\frac{94}{7}$	3	Tuesday.

H. W. W.

"Roche's Limit."

WITH reference to Prof. G. H. Darwin's notes (NATURE, March 16, p. 460) on the investigations of M. Roche as to the smallest distance from its primary at which a satellite can exist, does not the distance given—viz. 2·44 times the radius of the primary—refer to the case of the satellite having the same density as its primary? In Note 3 Prof. Darwin warns the reader that Roche's limit depends, to some extent, on the density of the planet. Suppose the density of the planet to remain the same while that of the satellite is taken at double. In this case the tidal or differential influence of the planet on the two halves of the satellite will have doubled, while the gravitational attraction of the two halves of the satellite on each other will have become fourfold; and generally, the power of the planet to pull the satellite asunder will be inversely as the density of the satellite, and directly as the density of the planet.

An alteration of the size of the satellite does not much affect the question, because both forces are thereby equally altered, so long as the satellite is very small in comparison with its distance from the planet.

Seeing that the tidal or differential influence of a planet on its satellite is inversely as the cube of their distance apart, perhaps it would be correct—as far as gravitational influence alone is concerned—to state the limit at which a satellite can exist as being equal to $2{\cdot}44\ R \times \left(\frac{D}{d}\right)^{\frac{1}{3}}$

where R = the radius of the planet,
D = the density of the planet,
d = the density of the satellite.

As an interesting case of the same problem from a different point of view, suppose two very small equal spheres in contact, and a third much larger sphere placed in line with their centres, all three having the same density; then, when the distance of the point of contact of the small spheres from the centre of the large one is 2·52 times the radius of the large one, the attraction of the two small spheres for each other just balances the differential influence of the large one tending to draw them asunder. The effects of variation in density and size being the same in this case as in the former.

It would probably be interesting to many of your readers to have Prof. Darwin's views as to whether it is a reasonable supposition that a small satellite, such as Jupiter's fifth, is likely to have the same density as Jupiter; and whether the meteorites forming Saturn's ring are likely to be of so small density as