thereby causing the sudden production of large volumes of gases at the ordinary temperature.

In answer to Mr. Griffith's query, I may state that the two trees are 34 yards apart; that there is no other tree in a direct line between them, though there are two about 4 yards from this line, and about midway between them; that the trees are certainly not isolated in any way, since there are fifteen trees within less than 34 yards of one of them, and about the same number within the same distance of the other.

48 Bryanston Square. SPENCER PICKERING.

Yew Trees in Berks.

A COMMUNICATION from Mr. Walter Money respecting two yew trees which were planted in the churchyard of Basildon, Berks, by Charles, Lord Fane, in 1726, has appeared lately in some of the papers (*North Wilts Herald*, October 4, 1889, and *Standard*), in which he refers to the dimensions recorded in the parish register, taken in 1780 and 1796, and again by my father in 1834. He adds his own observations on the growth taken this year. As I happen to have the original notes made by the late Prof. J. S. Henslow, dated "1834, August," it may be not uninteresting to record them. He writes as follows:—

"Measurements of yew trees at Basildon Churchyard, planted in 1726; taken near the ground:

		Ft.	In.	
Tree to south,	1780	6	3	According to Register.
	1796	8	6	
	1834	8	9	[J. S. H.]
	,, (at 4 feet)	6	10½	
	[1889	9	10	Mr. Money]

Tree to north [1780 and 1796 not recorded in register]:

		Ft.	In.	
Roots lately injured by digging graves.	1834	9	2½	[J. S. H.]
	,, (at 4 feet)	6	9¾	
	[1889	9	6	Mr. Money]

"From the three observations of 1780, 1796, and 1834, it would appear that the period of rapid growth stopped about 1796; but it seems probable that the measurement here is somewhat too great compared with that of 1780, as well as with that of 1834; for

Growth to	Ft.	In.	Lines.	Lines.	Years.	Lines per ann.
1780 ...	6	3	= 900	gives 300 diam. of gr. in 54,	*i.e.*	5½
1796 ...	2	3	= 324	,, 108 ,, ,,	16, ,,	6¾

"Allowing this measurement to be wrong by 6 inches, it will reduce it to a greater probability also with that of 1834; and we shall have—

Growth to	Ft.	In.	Lines.	Lines.	Years.	Lines per ann.
1796 ...	1	9	= 252	gives 84 diam. of gr. in 16,	*i.e.*	5¼
1834 ...		9	= 108	,, 36 ,, ,,	38, ,,	1
[1889 ...	1	1	= 156	,, 52 ,, ,,	55, ,,	1]

"N.B.—The increase between 1780 and 1796 is too great, supposing the same parts to have been measured; and between 1796 and 1834 it is too little; therefore 1796 either took in too much of the circumference of the roots, or perhaps 1780 a little above them. Possibly the soil had become somewhat raised since 1796.

[Since 1834 the growth for the last fifty-five years will be seen to be exactly the same per annum, or 1 line.]

[With regard to the rate of increase at a height of 4 feet from the ground, he adds the following additional note.]

"Now the rate of increase of 4 feet from the ground is slower than that near the root, upon the whole, in the proportion of one-fourth, nearly. Taking, therefore, this fact with the indications given above, we may average the growth of the stem at 4 feet in the following way:—

"Diameter at 4 feet = $\frac{990}{3}$ lines = 330 (in 1834). Dividing this by the age, or 108 years, it gives 3 lines per annum nearly.

"Also 1780 to 1796 gives 84 lines for 16 years, *i.e.* 5 lines per annum.

"As it seems not to have grown much in the last twenty-eight years (*i.e.* up to 1834), if we allow 1 line for this period, and distribute for the eighty years of rapid growth, we get the following result; thus:—

First 20 years at	3½ lines	=	70		Young growth.
,, 40 ,,	4 ,,	=	160		
,, 20 ,,	3 ,,	=	60		
,, 28 ,,	1½ ,,	=	42		Settled period."

GEORGE HENSLOW.

Maxwell's "Electricity and Magnetism."

THERE is apparently a trifling slip in § 360 of Maxwell's "Electricity and Magnetism." The ratio of the resistance of pure iron at 100° C. to the resistance at 0° C. is there stated to be 1·645. This ratio is evidently calculated from the results given in Matthiesen's paper on the influence of temperature on the electric conducting power of thallium and iron (Proc. Roy. Soc., 1862–63). The true ratio for pure iron annealed in hydrogen is 1·6255. The other ratios mentioned in the paragraph are correctly deduced.

HERBERT TOMLINSON.

King's College, Strand, October 12.

AN EXAMINATION OF SOME POINTS IN PROF. WEISMANN'S THEORY OF HEREDITY.[1]

PROF. WEISMANN'S views on heredity and allied phenomena have met with such general acceptance that I feel it to be presumptuous on my part to attempt any criticism of them. I cannot but think, however, that a statement of the difficulties which they present to me, and of the inconsistencies which appear to exist in the argument, may be of value, not indeed as a refutation, but as drawing attention to those points which seem to require further elucidation.

It will be necessary for me to state Prof. Weismann's argument, and I shall endeavour, in so doing, to represent it as fully and as fairly as my apprehension of it will admit, and as far as possible in his own words. But this is a matter of no small difficulty, inasmuch as the argument has to be traced through a number of separate essays, even though these essays have been collected into one volume and translated into English. All the references which I make relate to the English edition.[2]

The fundamental fact upon which the whole argument is based, and which Prof. Weismann appears to have fully established, is that the body of unicellular organisms (monoplastides), as also that of undifferentiated multicellular organisms (homoplastides), is immortal, at any rate potentially. This position is clearly stated in the following passage (p. 25):—

"The process of fission in the Amœba has been recently much discussed, and I am well aware that the life of the individual is generally believed to come to an end with the division which gives rise to two new individuals, as if death and reproduction were the same thing. But the process cannot truly be called death. Where is the dead body? What is it that dies? Nothing dies; the body of the animal only divides into two similar parts, possessing the same constitution."

Death is, on the contrary, a characteristic feature of differentiated multicellular organisms (heteroplastides); but even in these forms there is still an immortal part, for the reproductive cells which develop into new individuals are evidently as potentially immortal as the Amœba. In these higher organisms, therefore, the mortal cells are to be distinguished from the immortal. This distinction is drawn by Prof. Weismann as follows (p. 122):—

"It is necessary to distinguish between the mortal and the immortal part of the individual—the body in its narrow sense (*soma*) and the germ-cells. Death only affects the former; the

[1] This paper is an expansion of some remarks contributed to the discussion on "The Transmission of Acquired Characters," which took place in Section D during the recent meeting of the British Association at Newcastle.

[2] Weismann, "On Heredity" (Oxford: Clarendon Press, 1889).