only terminate with the life of the unfortunate subject. This power of growing afresh so complex and specialized an organ as an eye is certainly at first sight not a little astonishing, but it appears to be capable of a very simple explanation: the cells terminating the cut stump of the tentacle are the ancestors of those which were removed; a fresh series of descendants are derived from them, similarly related to the ancestral cells as their predecessors which they replace; the first generation of descendants become in turn ancestors to a second generation, similarly related to them as were the second tier of extirpated cells; and this process of descent being repeated, the completed organ will at length be rebuilt. The possibility of this arises from the fact that in the snail the embryological course of development is capable of being repeated by the adult structure. In higher organisms this possibility does not as a rule exist, and mutilation is not followed by regeneration; but even in their case the ancestral cells remain, and when the embryological development is repeated their representatives in the embryo are present to give rise to descendants of the normal type in the normal fashion. It follows from this view, which leaves pangenesis out of account, that mutilations cannot possibly be inherited, and this for the reason that the cells forming the organism at each stage of its development must be regarded as the ancestors of those of the next stage; thus finally we are brought round to something which looks very like Weismannism.

W. J. SOLLAS.

Trinity College, Dublin, March 15.

P. S.—The foregoing completely accounts for the non-inheritance so often referred to of the character produced by circumcision. In the case of a snail it might be presumed that circumcision could not produce any persistent result; in the human subject what is remarkable is not the reappearance of the prepuce in the descendant, but that no regrowth beyond healing takes place in the subject.

MR. MARCUS M. HARTOG'S letter of March 6 inserted in last week's number (p. 462), is a very valuable contribution to the growing evidence that acquired characters may be inherited. I have long held the view that such is often the case, and that I have myself observed several instances of the, at least I may say, apparent fact.

Many years ago there was a very fine male of the *Capra megaceros* in the gardens of the Zoological Society. To restrain this animal from jumping over the fence of the inclosure in which he was confined, a long and heavy chain was attached to a collar round his neck. He was constantly in the habit of taking this chain up by his horns and moving it from one side to another over his back; in doing this he threw his head very much back, his horns being placed in a line with the back: the habit had become quite chronic with him, and was very tiresome to look at. I was very much astonished to observe that his offspring inherited the habit; and although it was not necessary to attach a chain to their necks, I have often seen a young male throwing his horns over his back and shifting from side to side an imaginary chain. The action was exactly the same as that of his ancestor. The case of the kid of this goat appears to me to be parallel to that of child and parent given by Mr. Hartog. I think at the time I made this observation I informed the late Mr. Darwin of the fact by letter, and he did not accuse me of "flat Lamarckism."

J. JENNER-WEIR.

Chirbury, Beckenham, Kent, March 16.

Hertz's Equations in the Field of a Rectilinear Vibrator.

IN Dr. Oliver Lodge's valuable communication to NATURE of the 21st ult. (p. 402), giving Hertz's equations for the field of a rectilinear vibrator, may I suggest the following very slight change, in order to bring the formulæ into complete accord with those of the Maxwellian theory.

$$\text{Hertz has, with } A^2 = \mu K, \\ A \frac{dL}{dt} = \frac{dZ}{dy} - \frac{dY}{dz}, \quad A \frac{dM}{dt} = \frac{dX}{dz} - \frac{dZ}{dx}, \quad A \frac{dN}{dt} = \frac{dY}{dx} - \frac{dX}{dy}, \\ A \frac{dX}{dt} = \frac{dM}{dz} - \frac{dN}{dy}, \text{ \&c.,}$$

whence he obtains the suitable solutions—

$$X = -\frac{d^2\Pi}{dx dz}, \quad Y = -\frac{d^2\Pi}{dy dz}, \quad Z = \nabla^2\Pi - \frac{d^2\Pi}{dz^2}, \\ L = A \frac{d^2\Pi}{dy dt}, \quad M = -A \frac{d^2\Pi}{dz dt}, \quad N = 0,$$

where Π satisfies the equation—

$$\nabla^2\Pi = A^2 \frac{d^2\Pi}{dt^2}.$$

The corresponding Maxwellian equations would be—

$$\frac{dL}{dt} = \frac{dZ}{dy} - \frac{dY}{dz}, \quad \frac{dM}{dt} = \frac{dX}{dz} - \frac{dZ}{dx}, \quad \frac{dN}{dt} = \frac{dY}{dx} - \frac{dX}{dy}, \\ A^2 \frac{dX}{dt} = \frac{dM}{dz} - \frac{dN}{dy}, \text{ \&c.,}$$

with the solutions, X, Y, Z, as before, and

$$L = A^2 \frac{d^2\Pi}{dy dt}, \quad M = -A^2 \frac{d^2\Pi}{dz dt}, \quad N = 0.$$

The more general solutions of the field equations would be—

$$X = \frac{d}{dy} \left(\mu \frac{d}{dx} - \lambda \frac{d}{dy} \right) \Pi + \frac{d}{dz} \left(\nu \frac{d}{dx} - \lambda \frac{d}{dz} \right) \Pi; \\ L = A^2 \frac{d}{dt} \left(\nu \frac{d}{dy} - \mu \frac{d}{dz} \right) \Pi;$$

with corresponding expressions, *mutatis mutandis*, for Y, Z, M, N; where λ, μ, ν , are arbitrary constants, coinciding with Hertz's results when $\lambda = 0, \mu = 0, \nu = -1$.

H. W. WATSON.

Alternative Path Leyden Jar Experiments.

IN your issue of Feb. 14 (p. 380) there is an "Electrical Note" which is very misleading. You will perhaps allow me to say, therefore, that Mr. Acheson's photographs show no evidence of oscillation whatever; that his experiments are aimed at practical questions connected with lightning protectors, and confessedly were not made in such a way as to have much theoretical importance; that Mr. Acheson is not expounding a new theory by calling self-induction "extra currents"; and finally, that the author of the note, in speaking about "the errors due to charging which vitiated Prof. Lodge's early experiments," is talking about something which has no existence.

OLIVER J. LODGE.

The Celluloid Slide-Rule.

CELLULOID has been applied to so many purposes, that one is never surprised to see one or other of its many valuable properties turned to account in some new way. A slide-rule is now made, in which the surfaces on which the divisions are engraved consist of thin sheets or veneers of dead white celluloid. The divisions are beautifully sharp and distinct. If these veneers do not come unfastened, and the rule does not lose its dead white surface with use and exposure, this new application of celluloid will be found a most valuable one. The rule examined is one almost identical in pattern with the well-known Gravet instrument, and, if one may judge by the scale, the accuracy of the divisions, and the smoothness of the motions, it is made by the same machinery. The differences are mere differences of detail. Mahogany takes the place of boxwood. The cursor runs on an improved form of slide. Chisel-edges, instead of cross-lines, on the cursor are used to transfer readings. There is only one opening at the back, so tangents cannot be read without reversing the slide. The millimetre scales at the two edges are replaced by scales of inches. It is a pity that one of the scales of millimetres has not been left. The agents are John Davis and Son, of Derby and 118 Newgate Street, and the price is rather less than that at which the ordinary Gravet can be obtained in this country.

C. V. BOYS.

The Philosophical Transactions.

YOUR correspondent "S." seems to be unaware that what he asks for has been already done. The abridgment of the Philosophical Transactions, which was brought down to the year 1800 by Charles Hutton, George Shaw, and Richard Pearson, was continued in octavo form, by order of the President and Council of the Royal Society, under the title of "Abstracts of the Papers printed in the Philosophical Transactions of the Royal Society of London." This series extended to six volumes, bringing the abridgment down to the year 1854. At the seventh volume the title was changed to "Proceedings of the Royal Society of London," a publication which still exists, and which contains abstracts of all the papers in the Philosophical Transactions and a good deal besides.

H. R.