The Mathematical Tripos.

IN NATURE of January 17 (p. 273) there is a long article by Prof. Perry which contains a one-sided account of the new regulations for the mathematical tripos. So far as I can see, no new arguments are suggested, for every statement has been already fully discussed and as, I believe, thoroughly answered. To repeat all these at length would take too much space and time; but perhaps the Editor of NATURE will allow me to remark on two or three assertions which can be answered in a few words.

Prof. Perry speaks of those who vote "non-placet" as the opponents of reform, yet these "non-placets" have continually urged the necessity of reform. It is only this particular reform that they object to. It was proposed in the Senate House (*Reporter*, p. 325) to have joint meetings of the two parties and to agree on some common action. It has also been suggested that we might use the Smith's prizes to separate the different kinds of students. It is, therefore, *the "placets" whom we ought to designate as the opponents of reform* when they refuse even to consider such proposals. So also in the circular (December, 1906) issued by our committee, we say that in the event of the regulations being rejected, we are ready to cooperate in promoting such measures as would, while preserving the best features of the present system, at the same time remedy its admitted defects.

In another place Prof. Perry tells us that one of the most important regulations is that a student may take part i. in his second term. He gives no explanation why this regulation has been objected to, yet this makes all the difference. If students can pass part i. in first-class honours in their second term, the subjects cannot be much more than schoolboy knowledge, and do not deserve Cambridge first-class mathematical honours. These subjects are fewer in number than those of the existing part i. Others have been curtailed, for example, the *uses* of the binomial; exponential, and logarithmic theorems, and also those of Taylor and Maclaurin are required, but *without their proofs*. Is a tripos *which does not include these proofs worthy of first-class university honours in mathematics?* It is a new thing that a mathematician should learn theorems *by rote* without understanding the reasons.

In regard to the higher studies, there is only space to notice that the existing part ii. has been generally regarded as a complete failure, yet its theory and practice are to be retained in the new programme.

The proposed scheme was signed by fifteen only out of the twenty-five members of the Mathematical Board, the remainder not voting. Among *college lecturers in mathematics*, our count makes the majority opposed to the scheme, and the same is true of *resident graduates* in *mathematical honours*. Almost all the training for part i. is now done by the lecturers and teachers in the various colleges. It is only with these that the mathematical undergraduate is brought into close contact, and it is to them rather than to the professors (who necessarily confine their lectures to the highest subjects) that we should look for guidance on the needs of their pupils (see the "non-placet" circular).

The name of a distinguished mathematician is claimed as a supporter by Prof. Perry. The name of Lord Kelvin here comes naturally to our remembrance, as he is our greatest natural philosopher. If the mention of the first name is an argument, how much more that of Kelvin? Yet Lord Kelvin is opposed to the new "so-called" reformation. His opinion of the university training has been given to us in his fly-sheet. Other old members have also explained the good they derived from their "old-fashioned" Cambridge course.

Prof. Perry states that if the "non-placets" should succeed in reversing the decision of the Senate, they are establishing a precedent which cannot conduce to the smooth working of the University. He must have forgotten the precedent set in 1872–3, when a proposal making Greek non-compulsory in the *previous* was carried in 1872, only to be rejected when it came up again a few months later in 1873. No constitutional difficulties appear to have followed. It was proposed in the Senate House by one at least of the supporters of the scheme that if the October decision is reversed they should *repeat the voting term after term* until the opposite side was wearied out. Is it considered that such a course will conduce to the smooth working of the University? So strange a plan appears to be void of all argument, and if even partially adopted will throw the whole Senate into confusion.

There are many points in Prof. Perry's summary of the regulations which would require an answer if they had not already been so fully replied to. I hope I have shown that some of his statements, at least, require verification.

EDWARD J. ROUTH.

Fertilisation of Flowers by Insects.

DR. ALFRED RUSSEL WALLACE, in an article entitled "Creation by Law," contributed to the *Quarterly Journal of Science* in October, 1867, alluded to a Madagascar orchis (*Angraecum sesquipedale*) with a nectary varying in length from 10 inches to 14 inches, and prophesied that a hawk-moth will be discovered with a tongue of equal length to fertilise it. "That such a moth exists in Madagascar may be safely predicted, and naturalists who visit that island should search for it with as much confidence as astronomers searched for the planet Neptune—and they will be equally successful!" Will someone kindly tell me if this prophecy was fulfilled; if so, when, and the name of the moth?

E. W. SWANTON.

Dr. Jonathan Hutchinson's Educational Museum, Haslemere, Surrey, January 17.

IN reply to Mr. Swanton's letter, I have not heard of any moth from Madagascar with an exceptionally long proboscis. I think, however, I did hear of one from East Africa with a proboscis nearly the length required; but as entomologists do not usually open out and measure the length of proboscis of all the large Sphingidæ they receive, some of the required length may exist unnoticed in our public or private collections. An inquiry at the insect departments of the Natural History Museum, and also of that of the Jardin des Plantes, would perhaps afford Mr. Swanton the required information.

ALFRED R. WALLACE.

The Immortality of the Protozoa.

IN a footnote to p. 42 of Coleridge's "Biographia Literaria" (Bohn's Library) occurs the following statement:—

"There is a sort of minim immortal among the *animalcula infusoria* which has not naturally either birth or death, absolute beginning or absolute end: for at a certain period a small point appears on its back, which deepens or lengthens until the creature divides in two, and the same process is repeated in each of the halves now become integral."

As I understand (for I am no biologist myself), the theory of the immortality of the protozoa was, according to the generally accepted view, first definitely formulated by Weismann in his lecture "Ueber die Dauer des Lebens" in 1881. It had been indicated before, but never definitely stated. But an examination of the passage quoted above, with the context in which it occurs (which is too long to be inserted here), shows that already in 1815 Coleridge could allude to this conception as one the truth of which was already accepted among biologists. For Coleridge is not stating the fact for its own sake: he introduces it merely as an illustration of a fact of etymology. Moreover, it is not merely to the phenomenon of multiplication by fission that he alludes, but to the conception to which (at some period subsequent to its discovery) it gave birth.

Coleridge took a keen interest in biology, and was, no doubt, widely read in biological literature. It is possible, indeed, that his statement is based, not on anything that he had read, but on what he had heard in conversation with men of science of his day. It would be interesting, however, to know if the conception had been definitely put forward in writing at this time, and I should be much obliged if you would give me, through the medium of your columns, an opportunity of clearing the question up.

J. SHAWCROSS.

28 Oberstein Road, New Wandsworth, S.W., January 19.