

raised to 100° C. and subsequently protected from contamination. He has been convinced that his supposition on this subject was erroneous. And since this period, whilst I have been careful to undertake fresh researches concerning the death point of Bacteria, he has been content to rest in the stage of mere supposition on this most important point, and is now, as it appears, quite unprepared to question the truth of my assertion that Bacteria are killed at 60° C. It is right that the public should know this, and I only regret that Dr. Sanderson himself cannot be induced to inform them as to the real extent of his knowledge upon this part of the subject.

II. CHARLTON BASTIAN

University College, Oct. 20

Foreign Orders

THE acceptance and refusal of foreign orders by British subjects has hitherto been universally misunderstood. The existence of the Queen's Regulations, which you have reprinted in your columns (vol. viii. p. 481), prohibiting the receipt of these orders without special permission, must, after the discussion which took place in the House of Commons during last session, surprise many of your readers, who will naturally ask why regulations so stringent and so habitually disregarded, have been either kept entirely private in the Foreign Office, or, if published, have never been followed up. As it is, I will venture to say that not one out of some hundreds who have received foreign orders are aware of the prohibition or have any obvious means of becoming aware of it. Announcements of the presentation to British subjects (and it is assumed acceptance of by them) of such orders habitually appear in the most conspicuous type of the most widely circulated papers, but never a hint on the part of the Foreign Office that the recipients are violating Her Majesty's rules, as drawn up by itself and signed by the Secretary of State for Foreign Affairs.

Such being the case, it is somewhat singular that the Foreign Office should issue regulations approved by Her Majesty, forbidding British subjects to accept or to wear foreign orders and their decorations, except in the very rare cases in which Her Majesty's permission is obtainable, and yet take no steps through its agents at foreign courts to instruct the habitual givers that Her Majesty not only disapproves of their action, but requires of her subjects to tell them so in the most ungracious of all ways, namely by refusing to accept their favours, and returning the tokens thereof.

Surely if the prohibition to accept is wise and good (and I am the last person to doubt Her Majesty's wisdom) the obvious course for the Foreign Office to pursue is to inform all foreign Sovereigns of the fact, and instruct British subjects to transmit any orders that they may receive or have received to the Foreign Office to be returned to the sovereign who sent them, if the services of the recipient are not of such a nature as to enable him to obtain permission to accept them.

Into the merits of the prohibition I am not disposed to enter at much length. That foreign orders are comparatively valueless in themselves is generally admitted; and it is well understood that not a few are to be had for the asking by men of real or supposed eminence, and others by solicitation from men of no eminence at all, or of doubtful eminence. It would surprise your readers to know how many of these orders there are in the possession of their countrymen, whose habitual disregard of such honours leads them in most cases to toss them into a drawer and say nothing about it to any one but their wives, who think they would suit their necks better than their husbands' long-tailed coats.

Some few (very few) no doubt have a definite scientific or literary value; but so long as the British public are entirely ignorant of this value, they will be held in no higher estimation than the others, nor do I see any way by which the value of a foreign order could be made known and recognised, or by which the title of the recipient to wear it could be appraised.

I believe that it is to the rarity of British orders that any desire to obtain foreign ones is mainly due. Had we more, or none, their value would diminish or expire; as, however, I am not prepared to propose either the restriction or multiplication of British orders, a third alternative might be suggested to the Foreign Office, and that is the command to wear them if accepted; which would result in a display in our *soirees* and assemblies of which men of eminence would be heartily ashamed, and lead to a petition for relief, that would be followed by an abandonment of the practice of giving by the powers that be.

D.C.L.

Mr. Forbes on Mr. Mallet's Theory of Volcanic Eruption.

I DO not intend to depart from my purpose, as stated in my last (NATURE, vol. viii. p. 485), to have done with further controversy. I must, however, beg your permission to correct a statement as to a matter of fact which constitutes the prominent feature of Mr. D. Forbes' letter on the above, and which is published in the last number of NATURE.

Mr. Forbes says, and begs your readers to remember that his remarks [namely, in his original review of my translation of "Palmieri"] were altogether directed to the assertions contained in my introductory sketch, and not *comments upon my theory of volcanic energy*—of which Mr. Forbes now says we, viz., he and your readers, as yet know little or nothing. That is to say, nothing beyond what is given in the abstract in the Proceedings of the Royal Society and in my Introduction to Palmieri.

Mr. Forbes' review (NATURE, vol. vii. p. 259) which called forth this correspondence, was no doubt confined to my translation of, and introduction to, "Palmieri's Vesuvius," &c. But in that same introduction was contained a sketch of my theory of volcanic energy—upon which Mr. Forbes deemed himself warranted to make his sweeping condemnation—that it was not probable that this hypothesis will receive the adhesion of either chemist, mineralogist, or geologist.

If this were not a comment upon my theory of volcanic energy I know not what a comment means.

My complaint has been that it was a comment condemnatory—based on erroneous as well as inapplicable premises—and made at a time when, as Mr. Forbes himself in his last admits, he knew very little about that theory, as fully expounded in my paper in the Phil. Trans.

ROBERT MALLET

Oct. 28

Settle-Cave Report

I HAVE just read with considerable astonishment Mr. Tideman's letter (NATURE, October 23) relating to an abstract which I never saw till to-day, and for which, therefore, I am not responsible. The whole question of the antiquity of cave-deposits as well as that of those in the Victoria Cave, in particular is treated in my work on "Cave-Hunting," shortly to be published, and therefore I see no reason for entering into any argument based on the distribution of the Pleistocene Mammalia, or to depart from my rule of not entering into a controversial correspondence.

W. BOYD DAWKINS

Owens College, Manchester, Oct. 24

The Oxford Science Fellowships

I WRITE to confirm Prof. Clifton's letter (in the last number of NATURE) respecting Mr. Perry and Oxford Science Fellowships. Nothing, it seems to me, can be more conclusive than the way in which Mr. Perry's letter has been answered. Any remark further of mine on this point would be superfluous.

I will only say that, in the practical part of the examination, no subject could have been chosen better fitted for giving perfectly fair play to all concerned. If it were possible to imagine that any advantage was given, it was, by the choice of the subject, given to those who were unacquainted with the University laboratory.

In conclusion—far from being looked on as an unwelcome intruder, I met with from all, whether candidates or examiners, the most generous courtesy and kindness.

Cambridge, Oct. 24

THE CAMBRIDGE B.A.

PROFESSOR CLIFTON cannot have considered what a great mistake I have been the victim of, or he would not in his hastily written attempt to defend the general science arrangements at Oxford, have forced me to the following explanation. He knows that I stated my case fairly, and he might surely have given credit for this whilst letting us have the benefit of his later information.

I have not at hand a copy of my letter to the Warden. I am quite sure that I told him I was a graduate of the Queen's University in Ireland. The Warden simply directed me to the short notice in the *Times* (afterwards given in your columns), said that the election would not be limited to graduates of Oxford, and would altogether depend on the results of the examination held at Merton on Oct. 7. I thought this letter perfectly satisfactory

as to my eligibility, as did several Oxford graduates to whom it was shown. I shall presently refer to Prof. Clifton's "warning."

The examination was to begin on Oct. 7, at 9 A.M. On presenting myself, a gentleman whose name I do not know, told me that the Physics papers would not be given out before Oct. 10, that if I felt inclined to work the paper given to candidates for the *Mathematical Fellowship* I might do so, and credit would be given for Mathematics in the event of two men being equal in the Physics examination. I shall not comment on this promising arrangement, or on the fact that the candidates for the Physics fellowship had not till then heard of the Mathematical paper. Our informant told me that there were grave doubts as to the eligibility of outsiders. He certainly gave me to understand that these doubts extended to *all* who were not Oxford graduates. I understood that some Cambridge men had presented themselves also; that the question of our eligibility was about to be settled with the Registrar of the University, and that if I called on the Warden between four and five in the afternoon (the time mentioned in the original notice) he would be provided with the results of the deliberations.

At 4.30 I found the Warden about to go away somewhere. I had an audience of about two minutes; was asked what College I belonged to (meaning in Oxford).—Not an Oxford man, I answered.—Then he was afraid I was ineligible. I then informed him that I was the graduate of the Queen's University, to whom he had written in June. I suppose he had very little time for apologies, but he let me know, before leaving, that he had misinterpreted the results of some late commission when he wrote in June, and that I need have no hope.

I have stated the grounds for my former general statement. If Prof. Clifton is certain that graduates of Dublin and Cambridge are eligible, we must rely on his information being most correct, but I am troubled to know who is answerable for my being left in ignorance until now, and if anybody knows whether elections are never made of men who would really be ineligible by the laws of the University.

2. He insinuates a deception on my part, in not mentioning his "warning." I take it that Prof. Clifton has partly forgotten the matter of which he speaks. I wrote to him for leave to inspect the Physical Laboratory at Oxford, not certain that he was one of the examiners, but aware that he had charge of that institution and that the examination *must* be held there (see 3). I did not speak of my eligibility.

There is no doubt about the fact that great difficulties are thrown in the way of outsiders, but I should have been wrong if I had laid any blame on Prof. Clifton for taking the only course open to him. The case is simply this: according to the present Physics arrangements at Oxford, outsiders preparing for the October Fellowship examination at Merton could not without giving the greatest imaginable trouble to Prof. Clifton get any opportunity of inspecting the apparatus.

After stating that he was unable to afford me the desired opportunity, he asked if I had ascertained about my eligibility, informing me that the warden or sub-warden was the proper person to apply to. I immediately wrote that *I had already made such an inquiry*, stating the result.

I now infer that he, after receiving my letter and aware that I had made the proper inquiries, allowed both the Warden and myself to remain in ignorance of the grievous mistake. On receiving no answer I felt perfectly certain that the information received from the Warden was correct.

When I last wrote to NATURE I felt grateful to Prof. Clifton for his inquiry, incomplete and worse than useless "warning" as it had been. Surely no one will think that I had any right to introduce his name.

3. He says it was by no means certain that the Practical Physics examination would be held in the Physical Laboratory. Will he assert that in any one of the nineteen colleges of which he speaks, or in the nineteen collectively there is apparatus for conducting such an examination?

He wonders why it should be necessary to inspect the particular apparatus to be employed in the examination. I do not know if Prof. Clifton was really one of the examiners for the fellowship, but surely he cannot have thought about the matter without being aware of the immense importance of a previous acquaintance with the apparatus such as Oxford men are sure to have. I heard by accident in July that there was no delicate apparatus, nor were proper arrangements made for exact experiments in Static Electricity. Can Prof. Clifton not understand that to an outsider such information might be of the greatest importance.

"What arrangement of telescope stand is there for measuring wave-lengths?" "Is there a Soleil's instrument for measuring the angle between the axes in biaxial crystals?" "Will the arrangements for observing deflections of a needle enable us to employ the logarithmic decrement?" These questions and a hundred others as important were constantly distracting me during the four months of preparation.

My letter to Prof. Clifton was, I believe, modest, and showed my respect for him as a man who had done a great work in his attempt to create a Physics School at Oxford. My request was not "unreasonable." I did not know that his presence was necessary during an inspection of the Physical Cabinet, or the University. I maintain too, that he has no right to assert that I must feel very uncertain about my own practical knowledge.

London, Oct. 28

JOHN PERRY

Simple Diffraction Experiment

THE apparatus for this experiment consists of a slit and a grating. A slit may be made by ruling a line on a piece of smoked glass. The grating is made by slightly greasing the thumb and forefinger (there is naturally sufficient on the hot and moist hand), and by drawing a piece of clean glass through them so as to obtain alternate parallel light spaces and greasy lines on both sides of the glass; out of several trials a grating may be made which when used in the following manner will give very pretty results.

The grating being placed close to the eye, the slit (with its direction parallel to that of the lines on the grating) is held up before some bright light, as of a candle, and looked at, as if the grating did not exist. Very beautiful and numerous spectra may then be seen ranged on each side of the slit.

The vitreous surface of window glass does not seem to give such good gratings as a worked and polished surface, as for instance that of a weak spectacle lens.

Oxford

H. L.

Publication of Learned Societies' Transactions

IN NATURE, vol. viii. p. 506 Mr. Röhrs wishes that our learned societies would publish their papers separately. I have urged this before in NATURE, but unsuccessfully. With Transactions such as those of the Royal Society, the present system is almost an absurdity, for papers on most incongruous subjects are bound up together, and the cost is too great. When once a paper is printed, the Council seem to think that there is nothing more to be done, and do not in any way try to make the work known. All papers should be sold separately as cheaply as possible, and on publication, should be advertised in the scientific journals.

If this were done, we should not have men like Prof. Sylvester writing as follows:—"I owe my thanks to M. Radau and the editor of the *Annals of the École Normale Supérieure* for having been at the pains to disintomb the little known conclusions contained therein from their honourable place of sepulture in the *Philosophical Transactions*." W. B. GIBBS

EXAMINATIONS OF THE SCIENCE AND ART DEPARTMENT IN BIOLOGY

THE syllabus of the Biological subjects in which examinations are held by the Science and Art Department, has undergone considerable modifications in the edition of the Directory which has been recently issued. Animal Physiology, Elementary Botany (including Flowering Plants only), are subjects which at present appear to be best adapted for the purposes of school instruction. They stand, therefore, in no necessarily logical relation to the other two which are grouped together under the head of General Biology. These involve the use of the compound microscope, and some amount of microscopic manipulation. They are therefore better fitted for rather more advanced, or at any rate, older students than the first stages of the subjects first mentioned.