The tamping was blown out of three or four of the holes which I saw operated upon, and this is certainly not what would be called an "extremely rare" occurrence. At the same time it did not appear to affect the final result in any way.

I said nothing about the probability of the process failing or succeeding in its application to the mining of shales, iron ores, &c., and stated no conclusion in this connection which could in any way be affected by the results of the experiments which Mr. Mosley says are pending. WILLIAM GALLOWAY

Cardiff, August 14

Science at the Victoria Hall

THE immediate object of the Victoria Hall Committee is to provide healthy amusement in place of the unhealthy sort too often found in places of cheap recreation, and does not appeal specially to scientific men as such. But they have a scheme on hand for next autumn to which I venture to call your attention. They would like to devote one evening in the week for popular lectures, and as a previous experiment they propose to have during October and November a series of very elementary popular addresses on scientific subjects of about half an hour in length, to be introduced in the beginning, or middle, or end of the temperance demonstrations which take place on Friday evenings. It is hoped that an interest in such matters may be awakened in the audience (usually numbering ten or twelve hundred, or during the winter more than this), which assembles at these demonstrations. It is an audience less of artisans than of labourers and costermongers, among whom the demand for scientific teaching must be created as well as supplied. If once it can be shown that such addresses are appreciated, we have good hope of efficient help in carrying them on, but we should be grateful for offers of help in the pioneer course. Dr. W. B. Carpenter, Dr. Richardson, and one or two others have given conditional promises, but we have not yet sufficient names for a long enough series to try the experiment fairly.

To simplify and popularise science to the utmost, without lowering it, is not a task which can be performed by those who have no qualification except goodwill, and as, unfortunately, the Victoria Hall is not yet self-supporting, the committee cannot offer anything like adequate remuneration for the services of competent and therefore busy men. They would gladly be responsible for the expense of providing lime-light, or hiring apparatus for experiments, but beyond this they must appeal to the public spirit and generosity of scientific men.

Communications may be addressed to the Honorary Secretary, Royal Victoria Coffee Hall, Waterloo Road, S.E., or to Miss C. A. Martineau, Walsham le Willows, Bury St. Edmunds.

ONE OF THE COMMITTEE

Spelling Reform

IN your note last week on the United States Spelling Reform Report, there is a slight misapprehension. It is said that the result of adopting a phonetic spelling will be the break-up of the English language. This is quite erroneous. Phonetic spelling simply represents pronunciation, and if the phonetic spelling of London English differs from that of Colonial English it can only be because the pronunciations are different; that is, because the language has *already* broken up. On the other hand, if the pronunciations are the same, the spellings will be the same, and I fail to see how an identical spelling in London and Australia can bring about a disruption.

In the present state of Biblical criticism, I rather wonder that the tower of Babel should be appealed to as evidence of *Hebrew* thought; but if the Hebrews were really so impressed with the confusion of tongues, and if phonetic spelling is really so conducive to that confusion, then let me ask: Why did the Massorites, with that story before their eyes, go and make the originally phonetic Hebrew alphabet more phonetic still by adding the finest set of vowels that has ever been used? Why, except that they knew, as Prof. Sayce and Dr. Tylor know, and the late Charles Darwin knew, that phonetic spelling is the only thing that preserves language and its history from utter decay.

JOHN FENTON

Spelling Reform Association, 8, John Street, Adelphi, W.C., August 14

Possible Sound Organs in Sphingid Pupæ

IN recently characterising the pupa of *Sphinx catalpæ*, Boisd., for my report as entomologist to the Department of Agriculture, I was struck with the occurrence on the anterior border of each of the larger movable abdominal joints (viz., abdominal joints 5, 6, and 7) of a peculiar elongate concavity, a structure not mentioned by Westwood, Burmeister, Kirby and Spence, Girard, Clemens, Harris, Graber, or any modern author whom I have been able to consult. There is an approach to it in the pupa of *Ceratomia amyntor*, and it occurs in that of *Sphinx harrisii* in similar position and form as in *S. catalpæ*. In *Macrosila 5-maculata* it is somewhat above the spiracles, and that on the fifth abdominal joint has a second larger ridge running around it posteriorly. It does not occur in any of the species of the genera Sesia, Thyreus, Darapsa, Deilephila, Philampelus, and Smerinthus in my collection. It has no internal connection with the respiratory or circulatory systems, and its function is probably sound-producing by friction with the posterior margin of the preceding joint. This organ may, in fact, throw some light on the method by which the noise is produced which the pupa of *Sphinx atropos* is capable of. Unfortunately, I have no pupæ of that species for examination.

I shall be glad to learn from any of your Lepidopterological readers if they are familiar with this structure on any other pupæ or know of any record of it. C. V. RILEY

Washington, D.C., U.S.A.

Meteorology of the Antarctic Region

IT is well known that on the Antarctic lands perpetual snow descends much lower than in corresponding latitudes of the northern hemisphere. The chief cause of this is, no doubt, the difference of climate due to the preponderance of land in the northern hemisphere and of water in the southern. But there is another cause, of sensible magnitude, which I have not seen mentioned. In high southern latitudes the barometer stands permanently nearly an inch lower than in corresponding northern latitudes, and this must cause a permanently lower temperature in the Antarctic regions. That is to say, a depression of an inch in the barometer corresponds to about 1000 feet of mountain ascent; and any station in the Antarctic region must therefore be as much colder than a corresponding one in the Arctic region, as if the Antarctic station stood 1000 feet higher above the sea-level than the Arctic one.

The cause of the barometric depression in the Antarctic region is probably the centrifugal force of the west winds, or "counter-trades," which, as Maury remrrks, surround the South Pole with "an everlasting cyclone on a great scale."

JOSEPH JOHN MURPHY

Old Forge, Dunmurry, Co. Antrim, August 8

RECTOR (whose appeal for help in protecting a granite boulder in his country parish we inserted in No. 663) requests us to acknowledge with many thanks the following contributions:—Saxo, 2*s*. 6*d*.; William S. Layman, 2*s*. 6*d*.; J. W. A., 5*s*.

SUN-SPOTS AND MARKREE RAINFALL

BY aid of R. Wolf's series,[1] I have been endeavouring, if possible, to trace the effect of the different state of the sun's surface, as shown by the extent of its spots, on our climate. I distributed the annual rainfall, registered here 1833-1863, into ten classes, according to the corresponding values of "the relative numbers" *r*, as exhibited in Table I. These relative numbers have been determined by Prof. Wolf from a discussion of the registered number of spots and groups of spots on the sun, and are supposed to be proportional to the area covered by spots on the sun's surface. The mean rainfall M, the average of the thirty-one years, is 37·254 inches. o is the rainfall regis-

1 "En désignant par *g* le nombre des groupes de taches nus un jour quelconque sur le soleil, une tache isolée comptant pour un groupe; par *f* le nombre des taches contenue dans tous les groupes, nombre que j'estime approximativement proportionel à la surface tachetée; et par *k* un coefficient dépendant de l'observation et de son instrument, et déduit d'observations correspondantes, en supposant ce coefficient égal à l'unité pour mai et pour le grossissement 64 d'un *Fraunhofer* de 4 pieds, je pose: $r = k(f + 10g)$, et je nomme *r* le *nombre relatif* de ce jour. La moyenne de tous les nombres relatifs appartenant à la même année donne le nombre relatif de l'année." R. Wolf, Mémoire sur la Période commune à la Fréquence des Taches Salaires et à la Variation de la Déclinaison Magnetique (Memoirs of the Royal Astronomical Society, vol. xlii., 1877, Part vi).