

reflection on the science masters. If the genius of the schools were something more than classical, if boys could get the same promotion for science that they do for classics, the opportunities of the science master would be increased a hundred-fold, and scientific knowledge would become the rule instead of the exception.

Throughout the article on the position of science at Oxford, I referred to public schools, only once to science masters, and that once in a complimentary sense. It should have been sufficiently clear, in spite of my unguarded sentence, that it was the spirit, the general scheme of education of our public schools, that I was attacking. Mr. Latter's letter justifies my attack. There are points in his letter which I would willingly discuss, but space forbids my entering into them now. As to the questions of Greek and the precedence of chemistry and physics over biology, there is much to be said on both sides. I will only say this: Mr. Latter is an accomplished zoologist, and his love of his subject perhaps leads him to under-estimate the intense interest which many young boys take in chemical and physical problems. After watching carefully a group of very small boys with whom I have familiar relations, I am convinced that they go after butterflies and fishes, not by preference, but because they have this opportunity of satisfying their thirst for natural knowledge, and have not the same opportunities for cultivating chemistry and physics. At any rate, if I offer to make hydrogen, or to exhibit an air-pump or an electric battery, the insects are deserted at once. Being a biologist myself, I write without prejudice in favour of the more exact sciences.

THE WRITER OF THE ARTICLE.

#### The Salaries of Science Demonstrators.

I FANCY the incident referred to in the fable quoted by "O. J. L." (p. 271) must have happened some time ago, possibly when "O. J. L." was a tadpole himself. I am sure he would not think so lightly of our grievances if he fully realised the state of affairs in this pond of late years. At one time every tadpole who did good work had a reasonable prospect of developing into a frog on attaining a suitable age. Now there are scores of tadpoles, some of them grey-haired, who attend meetings, and croak to the best of their ability, and read papers bearing the name of some frog as joint author, but who seem fated to end their days in the tadpole stage because they cannot get sufficient food to enable them to develop into frogs.

This state of affairs is, I take it, largely attributable to the following cause. As all naturalists are aware, our ponds at certain seasons of the year are choked with frog-spawn. Under the old *régime* this spawn had to take its chance; some got dried up in the sun, and some got washed away by rain, so that only one occasional *ovum* here or there hatched. This process of survival of the fittest led to the production of a race of frogs eminently adapted to hold their own in the struggle for existence, and many of these have now acquired world-wide reputations. But Mother Carey, fearing lest any of the eggs that perished might contain the latent germs of some remarkable genius, has carefully tended this frog-spawn and hatched it in a laboratory fitted up with all the most modern incubators and other appliances, and has sometimes even nurtured it with County Council and other scholarships. So far so good. But as soon as the tadpoles are hatched, Mother Carey turns them adrift into our pond to fish for themselves, and takes no more notice of them. The result is that, where we had one tadpole formerly, there are now hundreds, struggling and starving each other out. Every morsel of food dropped into our pond (even if it be only a matter of £60 a year) leads to a terrible scramble, in which the best of us do not always come off first. I consider that we have a genuine grievance against Mother Carey on the ground that, after having devoted so much energy to hatching large numbers of tadpoles annually, she gives so little thought about finding us proper food at the time when we most need it. If we cannot all live on dry land, let us, at any rate, have a fair chance of developing our power of swimming like frogs in the water.

"AN AGGRIEVED TADPOLE."

#### The Date of the Glacial Period.

MR. DAVISON has laid geologists under many obligations to him for his mathematical investigations of vexed or obscure questions. His suggestion in the *Geological Magazine*, that the glacial period would probably have left a long-enduring mark

upon the iso-geotherms, seemed to me, as I dare say it did to other students of glacial geology, a promising one; and though a comparison, which I made of the gradients in thirty-seven cases within the glaciated area of Britain with sixteen in the unglaciated portion, failed to reveal any significant difference, still I have been disposed to ascribe the failure rather to the imperfection of the data than to any fault in the method. When, however, Mr. Davison (*NATURE*, June 11, p. 137) extends the application of his formula to a comparison of two hemispheres, the insufficiency of the data is such as to entirely vitiate any results.

In the northern hemisphere there were available in 1885, when Prestwich wrote his memoir published by the Royal Society, 231 series of observations on the temperature of mines, tunnels and bore-holes, and it was only by what appeared to be the rather arbitrary elimination of an immense number of the records, that anything like an agreement could be obtained.

What, however, is the body of evidence employed in the determination of the temperature-gradient in the southern hemisphere? One bore-hole in New South Wales! Whatever confidence we may feel in the care exercised by the observers, I cannot think that any general conclusions should be based upon this single series of observations.

There are several well-known bore-holes in the northern hemisphere in which the gradient is as far from the average given by Mr. Davison as is that of the Australian one, and, though various explanations were suggested, none was regarded as satisfactory. If Mr. Davison had referred to the Wheelton bore-hole in the 19th and 20th reports of the British Association Committee on underground temperatures, he would have found there a series of observations, made by a practised physicist, and repeated after an interval of a year under varied conditions, with practically identical results; yet here the increase of temperature was only  $1^{\circ} F.$  per 70 feet. The St. Louis bore-hole, again, gave an average gradient of 88 feet; and though the result was regarded as erroneous, it was acknowledged that every care had been exercised, and no specific source of error could be suggested.

Taking all the circumstances into consideration, I think it will be generally conceded that, interesting as this Australian record may be, it throws no light whatever upon the vexed question of alternate glacial periods in the two hemispheres.

PERCY F. KENDALL.

Yorkshire College, Leeds, July 16.

#### TAXIDERMISTRY AND MODELLING.<sup>1</sup>

THAT taxidermy has been almost an entirely neglected art is obvious to the least scientific visitor to even the best of our museums, when he regards the "deformed, distorted, and disproportioned" effigies that represent our commonest species. Every means, therefore, be it by example or precept, which will have the effect of impressing on the taxidermist the importance of his share in the exposition of natural history, and which will tend to raise what is at present little better than the knack of distending, more or less cleverly, the skins of animals with wool or shavings, to the science and art of where and why to "stuff" and reproduce, and how to pose, will be welcomed by all those who are responsible for instructing, by forms made up to simulate life, those desirous of becoming acquainted with the likeness and gait of animals which they have few or no opportunities of observing in a state of nature; and by those who turn aside to our museums to refresh their spirits with the sight of species which they have learned to love in the fields or in the sea.

The title of the work which heads this article is from the pen of Mr. Montagu Browne, the Curator of the Leicester Museum. That institution has obtained a considerable and deserved reputation for the excellence of many of its mounted groups, birds especially, as examples of the taxidermist's art, prepared by the skilled hands,

<sup>1</sup> "Artistic and Scientific Taxidermy and Modelling: a Manual of Instruction in the Methods of Preserving and Reproducing the Correct Form of all Natural Objects, including a chapter on the Modelling of Foliage." By Montagu Browne, F.G.S., F.Z.S., &c., Curator of the Leicester Corporation Museum and Art Gallery; author of "Practical Taxidermy," &c. With 22 full-page illustrations, and 11 in text. Pp. xii + 463. (London: Adam and Charles Black, 1896.)