LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

The British Association and our Colonies.

THAT four hundred members of the British Association have recently visited the principal places of interest in South Africa, that they have been the recipients of magnificent hospitalities, that they have read papers and discussed points of importance bearing upon the development of African colonies, are facts well known to the reading public. Although so much has been written and said about what the association has done, but little has been conjectured as to possible outcomes from this remarkable excursion. To many the expedition may appear as a gigantic "picnic," the members participating in which have had a hurried glance at Africa and have returned with that modicum of knowledge which is proverbially regarded as dangerous. If, however, we turn to a list of the names of those who were members of the association party, and observe that it includes those of recognised leaders in science, literature, and in a variety of professions, casual conclusions of this nature are at once dispelled. What is realised instead is that South Africa has been visited by a number of specialists whose services are frequently retained by Governments and corporate bodies. No doubt these gentlemen have learned much, but it is difficult to imagine that they left South Africa without leaving some small return. Now that they are back in Britain it is tolerably certain that they have brought with them opinions bearing upon railways, mines, agriculture, emigration, and on other matters connected with the development of South Africa, all of which will command attention. A well known eastern country which sends its experts to exploit the western world attains a similar end by systematised departmental methods.

The benefits of greatest importance, however, may be the resultant of personal and friendly relationships which have been established between leading men of science and practical workers in two related countries. These relationships should stimulate reciprocity, remove misconceptions, and pave the way to cooperation in various directions. Regarded from this point of view, it is difficult to escape from the conclusion that the meeting of the British Association in South Africa has played an important part in strengthening a union between a parent and its offspring.

Should views of this description meet favour, it remains for members of the British Association and others to consider the possibility of extending the work of such national importance. One method by which this might be attained would be the organisation of an intercolonial meeting of the British Association. The difficulties connected with the organisation of such a convention, say in London, to be supplemented by visits to various centres in Britain, to which representatives and visitors from overseas connections should be invited, have already been informally discussed by home and colonial members of the British Association. They do not appear to be insuperable, and it may be anticipated that such an undertaking would meet with national approval and support.

JOHN MILNE.

The Stone Age of the Zambesi Valley, and its Relation in Time.

ABOVE and below the Victoria Falls stone implements are present in profusion, both in the river gravels on the highest margins of the Zambesi valley and also spread broadcast, along with rolled gravel, on the basalt platforms of the ancient river channel below the Victoria Falls. Stone implements are also found in abundance along the highest banks of the Zambesi below the present falls, at the junction of the "desert sands" and the underlying basalts. (I use the term "desert sands," for, though its surfaces are now wooded, it has been deposited under Æolian desert conditions.) At the base of these

"desert sands," which form the highest margin of the old Zambesi valley below the present falls, and resting immediately on the basalt platform, are horizontal beds of chalcedony, ferruginous sandstone, and quartzite sandstone; these are certainly the products, and have been formed at the base of the "desert sands."

These "desert sands," which occur on both sides of the Zambesi valley, I was able to examine for some distance below the Victoria Falls. They are of considerable thickness, at places fifty, sixty, and perhaps a hundred feet in depth. The railway from the falls to Bulawayo passes through these sands, and good sections are to be met with. There are no stone implements, pebbles, or stone of any description to be found throughout their entire structure until we reach the very bottom, where the horizontal beds of chalcedony, ferruginous sandstone, &c., rest *in situ* on the basalts. The chalcedony layer varies in thickness from a few inches to two feet or more. I may here remark that the majority of the implements are made of chalcedony; likewise to a great extent are the pebbly gravels of the river, both above and below the Victoria Falls. Of the thousands of implements and rolled pebbles that I handled, very few were made of any other substance but the rocks that lie at the base of the "desert sands," and I did not find a single implement made of basalt or dolerite. The quarries of the prehistoric men were the beds that lie at the base of the "desert sands," and when they were fashioning their implements along the horizon of the chalcedony formation there can be no doubt that the Zambesi was flowing at their feet, a smooth and noble stream, precisely as it flows now through the "desert sands" above the present falls, and the basalt and dolerite platforms were sunk under the waters of the river.

The evidences that the river gravels and included implements now resting upon the basalt platforms below the Victoria Falls were deposited by the Zambesi when it flowed at a height of 400 feet or 500 feet above its present level are as follows:—Above the Victoria Falls, on the left bank of the river, near the ferry to Livingstone Island, the river gravels are well in evidence. They consist of rounded pebbles of chalcedony, quartzites, and various other rocks; the contained implements are more or less water-worn, and of the same character as those in the gravels below the Victoria Falls. I took from this horizon implements of Palæolithic type.

When we pass below the Victoria Falls to the Rain Forest, we can realise without doubt that the Zambesi once flowed over this area, and that its southern cliff must once have been the falls of the river. In the water-worn gullies of the Rain Forest implements and rounded pebbles are to be found of the same character as those in the beds above the Victoria Falls; they must have been deposited there by the river when the Rain Forest area formed part of its bed. When we travel further down the course of the old river-bed we find on the platforms and promontories of the basalt, now eroded by deep lateral ravines, which overlook the zigzags of the cañon, where the Zambesi rushes 400 feet below, deposits of implement-bearing gravel. We cannot therefore escape from the conclusion that these implements and pebbles were deposited there by the Zambesi when it flowed over these surfaces prior to the excavation of the chasm. From these surfaces I took implements some of which, if found in Europe, would be called typical Palæolithic types.

If I am correct in my observations as to the method of deposition of these implements, we may be satisfied that an immense period of time has elapsed since Palæolithic man lived on the banks of the Zambesi. We cannot at present measure that period by our chronological record, but we may be satisfied that man lived there when the Zambesi below the Victoria Falls flowed 500 feet above its present level, and before its waters had carved out through hard basaltic beds the wonderful chasm that now extends for forty miles below the Victoria Falls. Perhaps geologists may in the future be able to arrive at some trustworthy conclusions as to the rate of retrocession of the falls of the Zambesi, and the carving out of its chasm, which would give a more or less accurate determination of the period when primæval man occupied the Zambesi valley. At present we can only say that a great lapse of time must have occurred; but this deduction, being based