ment, and that governors will seek to redeem these institutions from the mere curiosity shop style into which too many have developed, and to render them valuable educational instruments.

Interested in geology, I have been pleased, in occasional visits with pupils to our local museums, to note the gain to accurate knowledge as the diagrammatic illustration of the text-book is exchanged for the fuller teaching of fossil and specimen, and where, to chronological and stratigraphical plan, the characteristic fossils are indicated by special labels, and the time range shown by variously coloured mounts, the advantage is considerable. I would further suggest the desirability of numbering important objects, as in a picture gallery, and furnishing the visitor with an attractive catalogue. Where several museums exist in the same town could not the authorities, by mutual agreement, economise space and effort by division of labour, each one becoming to some extent exhaustive in a special direction?

In one of our best arranged museums I recently found, for pure want of room, Cambrian trilobites associated with basic rocks, and a fossil neatly stowed away in a case of Vesuvian products.

Bright, convenient, and well-keyed, our museums ought to increasingly attract students and gather in recruits from time to time from the inquiring public. A good supply should in this, as in some other educational difficulties, create demand, and stimulate public sentiment until our museums become so commodious and well-appointed as to bear comparison with the excellent models Prof. Dawkins refers to as established by our Continental neighbours; and the natural sciences gain in dignity amongst us until they enter into healthy rivalry with the elder and established studies of numbers and letters.

Manchester, June 2 WILLIAM GEE

I SEE with pleasure that Prof. Boyd Dawkins has again raised his voice urging the importance of museums as a means of education, but as there is one point regarding their management to which it may be useful to call attention, I shall be glad if you will allow me to do so through your pages.

Undoubtedly English museums compare most unfavourably with foreign ones, and this partly arises from the idea which is so prevalent that one man ought to be able to arrange and determine anything from New Zealand birds, plants, or fossils to a collection of Egyptian idols. The consequence is that we see such incongruities as were pointed out by Prof. Dawkins, to which I should like to add another, from one of the leading technical institutions of London; there a few years ago (and I suppose there are still), among building materials, some large Nummulites (a genus of fossil foraminifera), marked portions of brick made by the Israelites for the Egyptians when they were allowed no straw.

In a middle-sized foreign town in any of the other civilised countries of Europe there is a museum in charge of men who have given their attention to various branches of science; even in Italy, which is much behind in this matter of museums, we find in such towns as Turin a well-arranged museum with a considerable staff of curators, with the minerals in the hands of one man, the fossils in another, the vertebrates have, I believe, two or three of the staff to work at them, while the invertebrates are in the hands of another, and in the same way the historical and technical portions are no doubt under adequate management.

When we turn back to England we find such a humiliating thing as a town like Manchester with no museum worthy of a fourth-rate town.

It will no doubt be some time before their importance is fully recognised and therefore as museums are likely to be for a long time insufficiently manned, might it not be a great advantage if a number of local museums joined together to employ specialists to determine different groups? Such work might no doubt be done very cheaply, for such men would often be glad of the opportunity of so much material passing through their hands.

A naturalist who was making any group, such as corals or crustacea, his subject, might visit the museums and would in a very short time be able to determine and arrange the greater part of the local collection, and might have those which required further research sent up to London for investigation at leisure upon the completion of his tour. ARTHUR WM. WATERS

Alderley Edge

The Antiquity of Man

HAVING carefully perused the proceedings that took place at the recent "Conference" on the subject of the antiquity of man at the Anthropological Institute, I confess to a feeling of disappointment. I had looked, if not for new geological facts, at least for something novel in the treatment of what was already known, instead of which the geological speakers seem, for the most part, to have merely reiterated opinions with which their names have been for some time identified. Thus my able opponent, Prof. Boyd Dawkins, does no more than restate views and conclusions which have already been controverted more than once, and to which, therefore, I need not reply here, as in so doing I should be only summarising what has been stated at length elsewhere. Mr. Dawkins's "case" and my own are now so fully before our fellow-hammerers that we may be well content to leave them for judgment to the future—a future which is probably not far off. Prof. Prestwich, again, while quite open to conviction that man may have lived in England in pre-glacial times, is yet strongly of opinion that all the human relics hitherto obtained in the south of England are of *post-glacial* age, because they occur in deposits that overlie "the boulder-clay." Now this conclusion would certainly follow if it could be shown that the "chalky boulder-clay" of East Anglia represents, as Prof. Prestwich thinks it does, the glacial period. Unfortunately it only represents one phase of that period. There is an *older* boulder-clay than that "chalky till," and there are two separate boulder-clays which are *younger*, as Mr. S. V. Wood has demonstrated. The East Anglian chalky boulder-clay was laid down, as I believe, during the climax of glacial cold, and is consequently much older than the upper boulder-clays that occupy the surface of Scotland and the North of England. For the evidence which has weighed with me in coming to this conclusion I must refer Prof. Prestwich to the account of the English glacial deposits, which is given in the second edition of my work on the Ice Age. The proofs and argument are too long to recapitulate here. That the East Anglian chalky till belongs to a much more ancient date than the upper boulder clays of Yorkshire and the North, must strike any one who will take the trouble to compare them. The East Anglian deposit has been subjected to long-continued and powerful erosion, and everywhere bears the impress of extreme antiquity, while the younger tills of the North have a comparatively recent appearance. Nor is this by any means all, for between the accumulation of the chalky till and the formation of the most recent boulder-clay or till of the North there certainly intervened one mild inter-glacial period. (There were in reality, as I believe, two such periods.) Now during the "last inter-glacial period"—that, namely, which preceded the deposition of the youngest boulder-clay of Yorkshire and the North—there certainly existed a land-surface in England over which the pleistocene mammalia roamed. The proofs of this are found in certain fresh-water and estuarine deposits which are met with near Hull and elsewhere, and which have yielded mammalian remains, and thousands of *Cyrena fluminalis* and other shells. Prof. Prestwich has himself described these beds and classified them as *post-glacial*, partly because they repose upon boulder-clay and partly on account of their fossil contents. But since the date of Prof. Prestwich's visit to the locality in question, the section (near Burstwick) has been much better opened up, and now one may see *resting upon these so-called post-glacial deposits a thick mass of tumultuous boulder-clay*. This boulder-clay is in my opinion as truly the product of glacier-ice as any ground-moraine or till in Scotland, Norway, or Switzerland, and points to a time when all Scotland and the northern districts of England, down as far as the valley of the Humber, were shrouded in snow and ice.

With reference to the recent discoveries by Mr. Skertchly near Brandon, which Mr. Evans and Prof. Hughes have convinced themselves lend no support to the view that man is other than post-glacial, I would ask geologists to suspend their judgment until they have had an opportunity of hearing the other side. Let them exercise a little of that "caution" which Mr. Evans desiderates, and not too readily acquiesce in his and Prof. Hughes' ruling. Mr. Skertchly, who has mapped the ground about Brandon and Thetford, and whom we may suppose, therefore, to be more intimately acquainted with the geology of that district than either of his opponents, has no doubt that certain implement-bearing brick-earths are covered by boulder-clay *in situ*. I have also carefully examined the sections in question and feel quite sure that Mr. Skertchly is right, and that the overlying accumulation is a true glacial deposit, and an integral portion of the so-called chalky boulder-clay. Prof. Ramsay, who has likewise recently visited Brandon, is, I believe, of the same opinion. But the occurrence of flint implements underneath the chalky till of East Anglia is, after all, no proof that