

THURSDAY, JANUARY 6, 1887

SCIENCE AND THE JUBILEE

THE year of Jubilee has come, and on all sides we hear of proposals to make it memorable in one way or another. It is right that the completion of fifty years of such a glorious reign as that of the present Queen should be celebrated by all kinds of noble effort, and the more the future greater well-being of the Queen's subjects is considered in those efforts, the more lasting such memorials will prove. But, so far, the word Science has scarcely been mentioned either in summing up the progress of the nation during the last fifty years, or in considering how science should have its place among the memorials by which this year is to be marked out from among its fellows.

This is not encouraging; still less encouraging is it that at the beginning of such a year the progress of science in this country finds itself jeopardised in a serious manner. According to rumour part of Lord Randolph Churchill's famous "plan" was to increase his reputation not only by crippling our national defences but by paralysing all those efforts to spread science broadcast in our land for which the Science and Art Department and other kindred organisations, such as the British Museum, are responsible. To effect any large economy in this direction science schools must have been swept away, science classes crippled, science scholarships abolished, and science museums cast into the limbo of ineffectiveness.

Truly the politician's trade is a curious one; for, supposing the rumour to be well founded, and that all these things had been proposed, what then? In a week the common-sense of the country would have found out that the Government which could sanction such measures was out of touch with all true progress. But suppose, further, that they were permitted to be carried out; we should just be where we were fifty years ago in many things which by common consent lie at the root of all true national progress. It is lamentable, indeed, that even yet the Philistine is so rampant among us, and that those to whom the nation looks for good government and light and leading know so little about our actual needs.

Indeed, it must be frankly conceded that in these matters our nation is fifty years behind others. Nay, more: we must possess our souls in patience for yet another fifty years; for not till then, as things go, it is to be feared, will the average politician know the rôle which science plays in modern progress, and the stern necessity there is, if we are to hold our own among the nations, that scientific instruction must be enormously extended.

Turning now to another matter which is engaging much attention in connection with this memorable year, we must confess to a feeling of disappointment in connection with the proposals for an Imperial Institute which we printed last week (p. 210). The Committee who drew up the Report, on which, no doubt, action will soon be taken, have undoubtedly avoided many errors into which they would have fallen had they followed much of the advice which has so freely been tendered to them; but we think that they have missed their mark in great measure, for the reason that the Committee too much resembles the

play of "Hamlet," with the Prince of Denmark omitted. It did not please the Prince of Wales to nominate any official representative of science upon it. We do not forget that the Committee had the advantage of numbering Sir Lyon Playfair among its members, but he was not there as an official representative of science, and, had he been, such representation would have been numerically insufficient. As it is, it is not difficult to surmise that many of the best suggestions contained in the scheme are his, and this makes us regret the more that he was there single-handed.

In our view, there is room for an Imperial Institute which might without difficulty be made one of the glories of the land, and which would do more for the federation of England and her colonies than almost any other machinery that it is possible to imagine. But it must be almost exclusively a scientific institution. Its watchwords should be "Knowledge and Welcome." England, through such an institution, should help her colonies in the arts of peace, as she does at present exclusively in the arts of war. In an Imperial Institute we can imagine the topography, the geology, the botany, and the various applications of science and the industries of Greater Britain going hand in hand.

This year is not only the 50th anniversary of the Queen's accession, but it is the 800th anniversary of Domesday Book. Let the Imperial Institute be the head-quarters of a bigger Domesday Book; let all knowledge be there accumulated concerning the growth of England's children during the last 800 years; let the knowledge be complete, and so arranged that what comes from each quarter shall throw light on all. Those who know how matters stand best, will see that in the case of many of our colonies this knowledge does not exist; then let it be the proud duty of the Imperial Institute to get it. We have colonies in which are large stretches of country teeming with mineral and botanical wealth where no surveyor, or botanist, or geologist has ever trod. Let the Imperial Institute bring about the arrangements by which they may be sent; we have men engaged upon all these works at home. We can imagine no greater service rendered to the science of this country than that those engaged upon its various surveys should enlarge their experience by that "travel, travel, travel" upon which Sir Charles Lyell insisted. The presence of such men for a few months in those colonies where surveys have not already been established would be of inestimable advantage on both sides; and if the system were at work for a few years it would be found that there is no more necessity for a colony, unless it prefers to do so, to establish the whole mechanism of a Geological Survey and a Topographical Survey for itself than there is for it to establish an Admiralty or a War Office.

We would by no means limit this scientific outlook to surveys merely. Take the present condition of Barbados as a case in point. Barbados must either start some new industry or she must starve. This new industry must depend upon new knowledge. We take no steps to help Barbados with our brain power, as if it was not our concern; but if Bridgetown were under the guns of a foreign fleet, the whole money and muscle power of the Empire would, if necessary, be at her disposal.

We have said enough to indicate the general direction in which we believe the Imperial Institute can do the noblest

work, and can make itself felt more and more as years roll on, and we believe that if the future governing body of the Institute is a truly representative one, that is, if science is properly represented on it, by such men as the President of the Royal Society, the Directors of the Royal Gardens and of the Geological and Topographical Surveys, that such functions as those we have suggested will be obvious.

To turn now to another part of the scheme, the Report wisely suggests that the new Emigration Office should form part of it. With this we cordially agree. But the return current must be provided for. Those who have lived in England's colonies and dependencies know best the intense home feeling, and in many cases the stern necessity there is of close contact with the mother country. Let the Imperial Institute be England's official home of her returning children, the Hall in which she officially welcomes them back. Let them here find all they need, and let information and welcome be afforded with no stinted hand.

Along the two large lines we have indicated, we believe that there are efforts to be made which could only be effective as connected with such an institution as an Imperial Institute, and we believe that they are more germane to its functions than some of the minor utilities shadowed forth in the Report.

The Committee has certainly made out its case in favour of South Kensington. And it will be generally conceded that, if the Institute has for its chief objects the binding together of the various developments of science and art in the mother country and her colonies into one homogeneous whole, the Commissioners for the Exhibition of 1851 would be perfectly justified in making the valuable gift to the Institute which is referred to in the Report. We shall not follow the *Times* in gibing at South Kensington. To us South Kensington means the Science and Art Department, with its schools, museums, and laboratories, and the Natural History Museum; and we know that these institutions have had no more to do with the various shows there during the last few years than they have with the services of the Oratory, with which they are also geographically associated.

It is with several unpleasant reminiscences connected with these shows still in our minds that we are somewhat doubtful of that part of the Report which refers to the exhibitions of various Imperial products, and we believe the only safeguard possible, if they are really instituted, would be that they should be open free to the public like the National Museums.

HISTORICAL GEOLOGY

The Student's Hand-book of Historical Geology. By A. J. Jukes-Browne. (London: George Bell and Sons, 1886.)

GOOD wine needs no bush, but every prudent vintner will carefully abstain from hanging out a sign calculated in any way to convey to the passer-by the impression that the liquor to be obtained within is of inferior quality. If authors were equally cautious, we should not see, as in the case before us, a good book disfigured by a frontispiece, to say the least, not calculated to produce a favourable impression on the mind of one who opens the

work for the first time. The plate in question is a fanciful representation of what some one has imagined may have been the distribution of land and sea during the Carboniferous period. It depicts the present bed of the North Atlantic as then occupied by a broad tract of continental land. Now, when we picture to ourselves a long tongue of land running out, during Carboniferous times, from Scandinavia across the Highlands of Scotland and on to the north and west of Ireland, we are well within the bounds of legitimate speculation. The arguments in favour of such an hypothesis are too well known to need reproduction here. Again, when we look at a geological map of North America, and note how the great central tract of Palæozoic formations is even now hemmed in on the north and east by a belt of Archæan rocks, we are indulging in no improbable supposition if we infer that, during Palæozoic times, the eastern Archæan strip extended further to the east than now, and that from it was derived part of the material for the formation of the rocks of the Palæozoic basin. But it is obviously quite another thing if, on the strength of these two highly probable suppositions, we proceed to fill up the whole of the intervening ocean. It is a puzzle to our mind to imagine on what grounds any one can pretend to know what was the condition of things in mid-Atlantic so far back in the earth's history, and any attempt to lay down such a map as figures in the frontispiece to the present volume seems to be about as striking an instance as can be found of the unscientific use of the imagination.

Luckily a very slight acquaintance with the book itself will dispel the unfavourable impression likely to be created by its frontispiece, but the introduction of this map has permanently impaired the usefulness of the present edition, because the money spent on it would probably have sufficed to furnish a number of illustrations of real value, which are very much wanted. The book contains careful descriptions of the physical geography of the British Islands at different geological periods, but mere verbal accounts of the distribution of land and sea are hard to follow; and if each had been accompanied by a small outline map the value of these really important descriptions would have been more than doubled.

To pass to our author's treatment of the several formations. In the case of each he begins with a general sketch, in which he explains, among other matters, the grounds on which the formation was established and received a distinctive name; then follows a summary of the life of the period, illustrated by woodcuts of rather unequal execution; after this he proceeds to detailed stratigraphy, describing the minor subdivisions and the lithological character of their rocks at the principal localities where the formation has been studied; and he concludes with restorations of the physical geography of each period. Detailed stratigraphy in a work of the present size must necessarily be very condensed; and it is a question whether under this head an attempt has not been made to be too encyclopædic. In his nomenclature the author perhaps shows some weakness for new names; the restorations of old physical geography seem to be accurate and cautious, and as successful as they can be made without illustrative maps.

In the account of the Archæan rocks he displays a caution and a freedom from dogmatism and partisan