

It is now clear that all those agents which inhibit the rusting of iron (see Journ. Chem. Soc., 1905) also render the iron "passive" to a greater or less extent, and that this passivity of iron persists after the metal has been removed from the effective solution. Iron which has been immersed in alkalis or in a solution of potassium bichromate is found still to be passive after careful washing with water, that is, after removal of all trace of the solution which produced the effect. The iron is no longer attacked by nitric acid of a certain strength or by the appropriate solution of copper sulphate, nor does it "rust" in presence of oxygen and water. Contact with certain substances, especially dilute acids, including carbonic acid, at once destroys the passivity, and the iron becomes active again in all respects. A full account of this work and of its bearings will shortly be given.

The fact alluded to in recent correspondence, that an iron cylinder which has been immersed in potash solution and afterwards washed with water will not rust in air until carbon dioxide is admitted, does not prove that carbon dioxide is necessary for rusting. The observed facts are due, first, to the passivity of the iron induced by the alkali, and, secondly, to the destruction of this passivity by the carbon dioxide. The same piece of iron will rust freely in air deprived of carbon dioxide, provided that it has not been in contact with alkali of such a strength as will induce passivity.

May 9.

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SCIENCE AND THE IMPERIAL CONFERENCE.

SUCH words as Empire and Imperial, like many others, suffer some disadvantage from their historical antecedents. Looked at in the past they recall something Roman, something Napoleonic; the rule of dependent peoples, conquered by the sword, and governed, not wholly inefficiently, but without much say in the matter, by military power. Looked at in the present and with a scientific eye, the British Empire reveals itself as something fundamentally different. It is simply the last term of social aggregation. Free peoples, starting from the family, aggregate themselves into larger and larger groups, and the common freedom is maintained by the naval supremacy of the mother-country. The Crown consecrates the unity of the whole.

Every stage of aggregation in such a system has its common interests which require concerted action. The recognition of this inevitably leads to some sort of what Herbert Spencer would have called physiological integration in which the whole is greater, or at any rate more efficient, than the sum of its parts. The Imperial Conference, which is about to meet, has come into existence just as naturally as a municipality or a county council. The essential principle is the same: the scope of its deliberation will only extend to larger problems.

Such problems will be matters of high policy, and though it may be hoped that they will be dealt with in a scientific spirit, it is improbable that the direct interests of knowledge will for the moment find a place amongst them. But the principle of Imperial Conference, which happily there is every reason to regard as permanently established, has already received a development in a more detailed direction. The Imperial Education Conference, which held its last public sitting on April 28, has now received Government recognition, though its first meeting in 1907 was the result of unofficial initiative. It is not improbable that its example may be followed on behalf of other interests of no less importance.

Knowledge in a logical order would come before education. But the machinery of an Imperial Conference would probably not be very helpful to the pro-

gress of science in the abstract, as that cannot be earmarked to any nationality. The scientific study of the Empire itself is a field in which that machinery could find employment with results of the most profound scientific interest and the greatest practical utility.

Looking at the magnitude of the Empire, nothing is more remarkable than the feeble interest it excites in the mind of the average citizen. His horizon is rarely more than parochial, and the only imperial problem on which he probably has a distinct conviction is the necessity of maintaining our naval supremacy. It is something that in a vague way he should wish it to be maintained. But what the Empire is, or what are its future possibilities, he neither knows nor cares. In this he is hardly to be blamed. He was taught in his youth, as we may learn from the "Reminiscences of Goldwin Smith," that Colonies were a source of weakness, and we may learn from the same authority that half a century ago even the Colonial Office was animated with the idea of getting rid of them decently. If, since that day, opinion has changed to acquiescence in the existence of Empire, it is due to the influence and advantages of a peaceful commerce. Perhaps in generations to come it may excite a livelier enthusiasm.

A common attack, such as a conference might stimulate, on scientific problems, might do something to bring this about. There is no suggestion that science should be centred in the home-country. The dominions have their own scientific activity, and the ranks of the Royal Society are open to their workers. The problems that demand cooperation are not local but far extending, even cosmic.

Our Admiralty has charted the shores frequented by our shipping, and the world's navigation has the benefit. The international recognition of the meridian of Greenwich is our reward. But though the *Challenger* expedition made a noble beginning, a thorough exploration of ocean depths still remains to be accomplished, and is a task which naturally falls to a maritime race. But the land cries out to be accurately mapped. Both Africa and Australia have suffered from using imperfectly determined meridians of longitude as boundaries. The accurate determination of the position of salient points throughout the Empire would alone be a sufficient subject for a conference. Were this accomplished local surveys would start from a sound basis in filling up the details. As it is, even the survey of the United Kingdom is not absolutely coordinated with that of the continent. Such an enterprise as that of Sir David Gill in measuring an arc of the meridian from the Cape to the northern hemisphere would not be left to private initiative.

If the topography of vast territories is still imperfectly known, their geology is practically untouched. Africa differs from neighbouring continents in being all but an island. It seems to be the part of the earth's surface which has been least disturbed by volcanic action. It has preserved a structure of great antiquity. Thoroughly understood, it would throw light on an early chapter of the history of the earth.

In the southern hemisphere British maritime activity is dominant. A knowledge of the meteorology of its oceans is a necessary condition of their secure navigation. Sir Charles Bruce, in his "Broad Stone of Empire," has given a striking account of what has been accomplished towards it by the Mauritius Meteorological Observatory. Such a measure of undoubted success should stimulate further endeavour and the provision of other stations. It ought to be possible to predict the disastrous droughts of India

and Australia. This will never be accomplished until we thoroughly understand the influence of the Antarctic Continent. Its investigation would alone be a fit subject for an imperial conference. It is a problem which should no longer be nibbled at, but made the object of systematic attack.

If we turn from the physical to the biological field the need of cooperative endeavour is no less insistent. The problems of geographical distribution are hampered for want of material from large, uninvestigated areas. In anthropology our knowledge is still fragmentary, even of the subject races of the Empire. Commerce affords a wide area for the distribution of their local diseases. Cases of sleeping sickness are to be seen in our hospitals, and beri-beri has sometimes produced a panic in our ports. Yet the campaign against tropical disease has only begun.

If it is objected that such schemes are visionary, it may be replied that half a century ago they were actually within the field of practical politics, and that, too, at a time when anything like Imperialism was certainly not in fashion. In 1859 the Duke of Newcastle, the Secretary of State for the Colonies, wrote officially that "her Majesty's Government have under their consideration a project for collecting the materials of a National Work on the Astronomical features, the terrestrial physics, the botany, zoology, and geology of the Colonial Possessions of the British Empire." All this remained a project except as regards botany, which was imposed on Kew. The task, with various fortunes, sometimes of neglect and discouragement, has occupied it steadily ever since. With the completion, now in sight, of the two great Floras of Africa, under the editorship of Sir W. Thiselton-Dyer, the vast undertaking will have been practically accomplished. It is to be noted that except in the case of tropical Africa, the expense has been borne by the Dominions and Colonies concerned. And to the Flora of South Africa a spontaneous and not the least liberal contributor has been the Transvaal Government.

The inference that may be drawn from such facts is that while the Imperial Government could probably be induced to aid well-considered scientific work in the Crown Colonies and Protectorates, funds would be forthcoming for the share of that of the Dominions. Cooperation would give them a voice in the scope and character of any scheme, and a guarantee of its efficient and economical execution.

Such a sketch of what imperial cooperation might do for knowledge of the globe on which we live has at any rate the charm of a pleasant dream. Will it ever be realised? Not as long, certainly, as a Prime Minister can describe our Government as "the organised power of Philistines." The Philistine has the Government he deserves, and Philistine he will remain until the schoolmaster is touched with idealism and the aim of life ceases to be purely materialistic. Men may learn that though the pursuit of wealth may be exciting its attainment is dull in its results and usually mischievous in its effects. Ambition may prompt the rich to leave a worthier monument behind them than the mere record of their death duties. The value of wealth consists not in its possession but in its power, whether for good or evil. Perhaps the sporting instinct will come to the rescue of knowledge. Wealth may effect the performance of what a man may not be able to achieve himself, and yet feel some pleasure in seeing done. Money has been found to explore the ornithology of New Guinea, and men have been ready to risk their lives in the enterprise. Such sporadic efforts will never be wanting; what is needed is the coordination which will unite them in a considered campaign.

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NATURAL HISTORY OF THE BIBLE.

THE celebration of the tercentenary of the English authorised version of the Bible is an event of national importance, when everything connected with Holy Writ commands, if possible, more than ordinary interest, not only from Biblical scholars, but also from a large section of the general public. Among the numerous sections of the subject, that which most commends itself to students of natural science is, of course, the natural history of the Bible in the wider sense of that term—that is to say, inclusive of zoology, botany, and mineralogy; and the present celebration affords a fit opportunity of reviewing and revising our knowledge of Bible animals, plants, and minerals, and also of considering whether any emendations of the names by which some of them are referred to in the authorised version ought not to be amended. This has been recognised by the authorities of the British Museum, who are now arranging in the hall of the Natural History Branch at South Kensington an exhibition of Bible animals, plants, and minerals, which will be opened in due course, and will doubtless attract a large amount of attention and interest on the part of the public.

Although comparatively little interest and importance attaches to the list of species regarded by the ancient Jews as unclean, the correct identification of the animals and plants referred to in other parts of the Bible is in many cases essential to a proper appreciation of the context, more especially when they are introduced to illustrate a simile, or to accentuate some striking or picturesque feature in local conditions. At the time when the authorised version was written natural history had scarcely attained the position of a science, even the birth of Linnæus not having taken place until nearly a century after the translators had finished their labours. But this lack of knowledge of natural history common to all educated persons of that day was by no means the only difficulty with which the translators had to contend. For, in the first place, the animals and plants of Syria and Palestine were probably even less known than those of several other parts of the world; while, secondly, the dispersal of the Jews had led to the proper meaning of many of the old Hebrew names of animals and plants being more or less completely forgotten.

Consequently the translators were plunged into a very sea of difficulties, from which, considering all things, it is little short of a marvel that, despite many egregious blunders, they emerged as creditably as they did. In regard to names of which the true signification was not apparent the translators followed two distinct courses. In some cases, as, for instance, with *shâphân* ("the hider"), they made a "shot" at the meaning of the name, rendering the one quoted by coney, the then current designation of the rodent we now term (except in legal phraseology) rabbit. On the other hand, some Hebrew names, like *shittim* and *almug*, among the designations of timber and trees, were transferred directly to the English version without any attempt at translation or identification. And there is little doubt that this latter was the preferable course. Indeed, in the case of *almug* trees it is almost the only legitimate one, as the species is not yet identified with absolute certainty, although it may be the red sandal-wood of India. *Shittim*-wood might, of course, be now translated as acacia, but even this would be unsatisfactory, as the tree popularly known in this country by the latter name is really a Robinia.

In a few instances, as in the case of "pygarg" for *dishon*, the translators used terms of which they could not possibly have known the proper meaning;