

they could then afford to smile at the idea of an invader setting foot within our little sea-girt land, sure in the prospect of its remaining the centre of "a greater Empire than has been."

And I think I may venture to assert that if we had adopted at home the principle of universal service for the defence of that Empire, a principle which that great man and soldier Lord Roberts has so persistently advocated, the present iniquitous war would never perhaps have been set on foot.

I suppose that, on the whole, one thing regarding the population of Australia that strikes the visitor from the Old Country more than another is the enormous disproportion between the extent of habitable country and the number of actual inhabitants. That a continent nearly as large as Europe should have far fewer inhabitants than London alone, and a density of only about one seventy-fifth that of Europe is an obvious incongruity. But it is one which will naturally tend to right itself as the years roll by; and since the necessity for a great increase of population in order to develop the country is forcing itself upon the attention of those who guide the fortunes of the several States, we shall no doubt witness, in the near future, a much more rapid rise of population than has occurred in the past. Fortunately, the increase which has taken place is of the right sort. Australia has, to its credit, long refused to be the dumping-ground for the dregs of the Old World, and is developing a race which will, in the course of a few decades, probably be more purely British, both in physique and character, than any other extensive area of population in the world, not even excepting the mother country. No nation has greater possibilities for the future. Assured of peace and of freedom from outside interference, there is nothing to impede that advance which, in her adopted motto, Australia puts before herself as her constant aim; and her invitation to us to visit her shores was, we may take it, not intended merely as an act of graceful hospitality, but also as a means of promoting within her borders that advancement of science which, as its title expresses, is the essential object of the existence of the British Association.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—Mr. T. V. Barker, fellow of Brasenose College, has been appointed University lecturer in chemical crystallography for five years from January 1, 1915; and Mr. A. G. Gibson, Christ Church, as University lecturer in morbid anatomy for five years from the same date.

SPEAKING at the annual meeting of the Sheffield University on Monday, the Vice-Chancellor, Mr. H. A. L. Fisher, said he believes that when the war is concluded it will be possible for England very largely to step into the place hitherto occupied by Germany. If our universities will only be a little more imaginative and try to reproduce some of the perfection of organisation which prevails in Germany, and has brought eternal honour to the German nation, our universities may become cosmopolitan in the sense in which Oxford was the great cosmopolitan university of the Middle Ages. It is only since the Reformation that English universities have become, in a sense, provincial. In certain regions of applied science there is no reason why in the next fifteen or twenty years Sheffield should not be the technical capital of Europe.

A COPY of the annual report of the 118th session, 1913-14, of the Royal Technical College, Glasgow, has been received. Judged by the tests now univers-

ally applied the session was one of the most successful in the history of the college. The number of day students continues to increase steadily; but the most satisfactory feature is the accession to the number of those attending full courses, resulting in a great expansion in "student-hours" of actual attendance and work. The total number of "student-hours" of the day classes was 237,908, an increase of more than 15 per cent. on the corresponding figure for the preceding session. The scheme affiliating the college to the University of Glasgow came into operation at the beginning of the session, with satisfactory results. Forty-one matriculated students were in attendance on qualifying classes within the college, and of these twenty-eight were following a full course of study. At present the scheme applies only to degrees in engineering, but the advisory joint-committee, established by the University and the college, has prepared a draft Ordinance for degrees in applied chemistry, which is now under consideration. It is hoped that this Ordinance will receive the approval of the Privy Council during the coming session, and thus give to college students in chemistry the opportunities for graduation now open to students in engineering. The report points out it is believed that more than a thousand past students have now joined H.M. Forces; the First Company of the 3rd Glasgow Battalion H.L.I. consists of college students exclusively. The Carnegie Trust for the Scottish Universities recently considered the position of the college in view of their allocation of grants for the next quinquennium. In the result, the trust made a grant to the college of 100*l.* per annum for five years. Of this sum, 100*l.* is for the maintenance of the library, 300*l.* for provisional assistance, and 600*l.* towards a superannuation scheme. The college received during the year, among other gifts, legacies of 500*l.* from the late Mr. William Weir, and 500*l.* from the late Mr. J. C. Alston.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, November 19.—Sir William Crookes, president, in the chair.—A. Mallock: Note on the circulation of the atmosphere.—Sir Sidney Burrard: The origin of the Indo-Gangetic Trough, commonly called the Himalayan Foredeep.—G. W. Walker: Approximately permanent electronic orbits and the origin of spectral series. In this paper an endeavour is made to find a basis of explanation of spectrum series in terms of strict electrodynamics. The illustrative system consists of a spherical nucleus radius a , with a positive electric charge E and a fixed magnetic moment μ . It is constrained to be fixed and may be regarded as corresponding to a comparatively massive atom. A single corpuscle with a negative charge e and mass m is free to move under the influence of the forces exerted on it by the nucleus. When the effect of radiation is neglected circular orbits are shown to be possible. The circumstances, stability, and range of these orbits are examined in detail, both for orbits outside and inside the nucleus. Only the inside orbits appear to have a bearing on the problem in hand. It is found that there is a class of circular orbits in each of which the angular momentum of the corpuscle has the same value. This result has already been obtained by Conway, who sought to identify the value with Planck's unit. It is here shown that these orbits occur only if the charge of the nucleus is concentrated mainly at the surface, or if the material of the nucleus has a large dielectric ratio. Another class of circular orbits exists. They lie in the equatorial plane of the nucleus, and have