Oxford Meeting of the British Association.

PROVISIONAL PROGRAMMES OF SECTIONS

WE print below short accounts of the proceedings of the various sections of the British Association at the Oxford meeting to be held on August 4-11. For these particulars we are indebted to the recorders of sections. The statements are brief, but it is clear that interesting and stimulating sessions have been arranged which should do much to make the Oxford meeting memorable in the history of the Association.

SECTION A (MATHEMATICS AND PHYSICS).

The coming meetings of Section A (Mathematics and Physics) are likely to be filled with interest. Apart from the attractions of Oxford itself with its own important schools in these subjects, there are two other contributing factors. First, the list of foreign guests is a particularly interesting one, the visitors including Bohr, Born, Carathéodory, Franck, Runge, Siegbahn, Wien and Zeeman, in addition to well-known representatives of the Dominions overseas. Secondly, a full programme has been arranged for a subsection in mathematics, meeting for three mornings. This should attract many mathematicians who may have refrained from attending previously owing to the minor part that this subject has played in the programme of the Section in recent years.

In physics, in addition to full accounts of work being carried out in the laboratories of Prof. Townsend and Prof. Lindemann, papers will be read by Sir Ernest Rutherford, Sir William Bragg, Prof. W. L. Bragg, and others. On Monday, August 9, Prof. A. Fowler's presidential address will be followed by a discussion, in which most of the foreign guests are expected to take part. A joint discussion with Section B (Chemistry) on the mechanism of homogeneous chemical reactions should enable many physicists to learn something about a subject in which few of them have specialised.

In mathematics, in addition to a full morning on integration and trigonometrical series, special lectures from Dr. T. M. Cherry, Mr. F. P. Ramsay, Mr. M. H. A. Newman and Mr. T. W. Chaundy have been arranged, and contributions are expected from Sir George Greenhill and Prof. E. A. Milne. Lastly, a paper by Mr. Stratton on the recent eclipse observations, and by Prof. Turner on the coming total eclipse in England, should make a wide appeal throughout the Section.

SECTION B (CHEMISTRY).

Prof. J. F. Thorpe will deliver the presidential address to Section B (Chemistry) at 10 A.M. on Thursday, August 4, and will take as his subject "The Scope of Organic Chemistry." Two discussions have been arranged—one (a joint discussion with Section A) on the mechanism of homogeneous chemical reactions and the second one on tautomerism. Prof. W. N. Haworth is to submit a paper on modern views on the structure of the disaccharides, and Mr. J. J. Manley is to describe the work he has conducted on the union of mercury and helium. Of the foreign visitors, Prof. J. Backer is reading a paper on separation and racemisation of simple optically active compounds, and Prof. H. ter Meulen is to describe the uses of hydrogenation in organic analysis. A novel feature of the work of the section will be a paper by Mr. A. Chaston Chapman and Dr. H. J. Plenderleith on an examination of King Tutankh-Amen's cosmetic.

SECTION C (GEOLOGY).

The communications promised for Section C have been so numerous that the time available for presentation and discussion may prove inadequate. Although the meetings of the Section have been extended beyond the normal number, selection of papers has been necessary; yet the programme as at present arranged covers a very wide range of interest, and, so far as possible, kindred studies have been grouped. It is invidious to pick out any papers for special mention, but, to take a conventional subdivision of the subject-matter into mineralogy and petrology, palæontology and physical and stratigraphical geology, the following notes may suffice to convey some idea of the scope of the programme.

The atomic structure of silicate minerals has proved difficult up to the present, but a paper on certain of these minerals is promised, while communications on the textures and structures of igneous rocks will also be received. Sedimentary petrology is also represented. In the realm of palæontology the faunas and classification of the faunas of certain epochs in the past will be considered, notably those of Cambrian and Silurian times: the fauna of more recent deposits, local to Oxford, will be represented by an exhibit which may be consulted during the meeting. Physical and stratigraphical geology will naturally figure largely, and here interests range in time from pre-Cambrian to recent, and in space from England to the farthest confines of the British Empire.

Two important discussions will be held: one on problems connected with the Thames gravels and their fossil contents, and the other in conjunction with Sections D (Zoology) and K (Botany) on the "Conception of a Species." In all branches of natural science the definition of units is necessary, and a biological unit is as fundamental as a unit of length or of temperature. Unfortunately the species, as a unit, has not proved capable of rigid definition, and, from time to time, it is obligatory to take stock of the position. The discussion therefore should be of value in stating the present ideas on this fundamental biological concept.

In the interests of those who are beginning research work and desire some knowledge of technique, a series of short descriptions of certain research methods will be given by workers who have taken special interest in the development of such processes. Demonstrations have also been arranged in illustration.

A most important part of the work of the section centres round the excursions. The local secretaries have so arranged their work that this part of the programme has been in the hands of Mr. C. J. Bayzand, who has drafted an excellent series of half-day and whole-day visits to the neighbourhood. Ill-health may prevent him from being present on these trips, but it is hoped that he may be recovered in time to reap the reward of his sowing. On present showing, then, the Oxford meeting, so far as Section C is concerned, promises to be an excellent one from every point of view.

SECTION E (GEOGRAPHY).

Much attention has been directed of late to economic and social problems associated with the awakening of Negro Africa. Their complexity defies unanimity on methods of administration and development. The president of the Section—the Hon. W. Ormsby Gore,

Under Secretary for the Colonies—following his recent investigations in East and West Africa, will speak on "The Economic Development of Africa and its Effect on the Native Population." This will be followed on the afternoon of Thursday, August 5, by an important joint discussion with Section H (Anthropology) on "The Effect on African Native Races of Contacts with European Civilisation." Among those who will take part in the discussion may be mentioned the Rev. Edwin Smith, Sir Frederick Lugard, Capt. G. Pitt-Rivers, Prof. J. W. Gregory, Sir James Currie and the Hon. Hugh Wyndham.

In Britain, of recent years, one of the most striking applications of geographical study has been the attempt consciously to adjust conditions of life and industry to locality, especially in urban areas. Town planning and regional surveys have in a measure reacted on the character of some of the geographical research in the universities. Two papers, one on London and the other on Manchester, illustrate what is being done in the several university schools of geography, and will form the basis of a general discussion on "Regional Work in Geography."

Several papers present historical aspects of geographical science: Elizabethan theodolites and astrolabes, by Dr. R. T. Gunther; the 'Pantometria' of Leonard Digges, by Mr. A. R. Hinks; the British Isles in the nautical charts of the fourteenth and fifteenth centuries, by Mr. M. C. Andrews; roads on English and French maps at the end of the seventeenth century, by Sir George Fordham. The numerous implications which the geographical study of a region involves is well represented by such contributions as Dr. D. G. Hogarth's on "Our Near Eastern Borders," Prof. Lyde's on modern markets for Canadian wheat, and Mr. Dunlop's comparison of Queensland and Jamaica.

Geographical excursions have been arranged to Brill, the Cotswolds, the central Chilterns and the Goring Gap.

SECTION F (ECONOMICS).

In his presidential address to Section F (Economics), Sir Josiah C. Stamp will deal with "Inheritance as an Economic Factor"; it is expected that Prof. Rignanó (Italy), Dr. Hugh Dalton, M.P., Prof. Edwin Cannan and others will take part in the discussion.

A distinctive point of view upon "Collective Bargaining" will be presented in a paper by Sir Lynden Macassey, in which he will argue that effective collective bargaining is the basis of industrial stability and that recent events have shown the absence of this condition in Great Britain. Mr. Flux, of the Board of Trade, will deal with the markets of the chief British export industrial centres and will use material which has not previously been available for this purpose.

A discussion of peculiar present-day importance will take place upon currency problems, and it will be opened by Prof. Gregory in a paper dealing with the gold standard.

In addition to such topics of outstanding interest as those mentioned above, the Section is to take part in a discussion on a "Survey of the Limits of Agricultural Expansion," which will form the subject of Sir Daniel Hall's presidential address to Section M (Agriculture).

SECTION G (ENGINEERING).

The programme of Section G includes discussions on subjects of very varied interest. The president, Sir John Snell, chairman of the Electricity Commission, in his address will deal with the important subject of electric supply, its recent and probable future development. Following the address Mr. Kennedy will read a paper on the distribution of electric energy, and Mr. Borlase Matthews will discuss the use of electricity in agriculture; some phenomena of conduction will be discussed by Prof. Cramp. Refrigeration, particularly in relation to food preservation and transport, is a subject of scientific and practical interest, and two papers by Dr. Ezer Griffiths and Prof. C. F. Jenkin are to be followed by a discussion in which Sir William Hardy and Sir Richard Glazebrook will take part. The papers will describe small plants that have recently been developed and experiments carried out in the laboratory and on four ships. In connexion with this discussion, a number of small plants will be working in the University Engineering Laboratories.

Recent developments in aircraft are to be discussed. Mr. Wimperis will deal with the 'rotating wing' and describe experiments and the attempts that have been made to use the device for sustentation purposes; the possibilities of its use will be discussed. The researches that have been carried out in connexion with the development of a compression ignition engine for aircraft and burning heavy oils will be described by Mr. H. D. Pye. The problem of producing a fuel jet which penetrates the compressed gas sufficiently to give adequate mixing of air and fuel, and at the same time to obtain sufficient pulverisation and combustion in the short time available, will, *inter alia*, be dealt with. It has been found possible to burn 70 per cent. of the oxygen in the cylinder, but to get perfect mixing at high speeds is extremely difficult. The possibility of eliminating all complications and danger incidental to electric ignition makes it worth while to attempt to develop a compression ignition engine sufficiently light for aircraft purposes. The use of light alloys in aircraft is becoming increasingly important, and the paper by Mr. Bengough and Mr. Sutton will describe the anodic oxidation process which has been successfully developed to render these alloys immune from surface corrosion.

Experiments on materials subject to complex stress conditions will be discussed by Prof. F. C. Lea and Mr. S. Timoshenko.

The microscopic and macrographic methods of detecting the sulphur bacterium *Beggiatoa Alba*, and investigations in which its presence indicates sewage pollution, will be described by Prof. Ellis. The cause of the blackening of the river sands below water level in the Clyde Estuary has been investigated, and it has been shown that this is not due to sewage pollution but to the formation of ferrous sulphide by a reaction between the ferruginous constituents of the sand and the hydrogen sulphide liberated by bacteria which consume the animal and vegetable remains on the shore. A paper by Mr. Edgar Morton on the "Composition and Texture of Sandstone and Limestone in relation to Strength and Durability" should prove of interest to geologists, engineers, architects and builders. Papers dealing with the distribution of pressure in turbines and the influence of voltage harmonics on power factor correction are to be given.

SECTION H (ANTHROPOLOGY).

In Section H (Anthropology) one of the most important features of the programme will be the exhibition of the human skull found in association with Mousterian implements by Miss D. A. E. Garrod near the Devil's Tower, Gibraltar. In view of the conditions of its discovery and its possible relation to the skull of Neanderthal type found at Gibraltar in the middle of the last century, it should give rise to an important discussion. Miss Garrod's discovery will give added interest to Sir W. Boyd Dawkins'

paper on the range of the Neanderthal race on the Pleistocene continent.

The Section will engage in two joint discussions with other sections. The first, with Section E, on the effect on African races of contact with European civilisation, arises directly out of Mr. Ormsby Gore's presidential address to Section E, and will be opened for Section H by the Rev. E. Smith, who will be followed by Sir Frederick Lugard, should his engagements permit. The second joint discussion, with Section D (Zoology) and Section J (Physiology), on mental and physical aspects of heredity, will be opened by Dr. C. S. Myers, to be followed by Profs. Ruggles Gates and Julian Huxley. Sir William Ridgeway will open a sectional discussion on "The Origin of the Scot."

Among a large number of communications making up the remainder of the programme mention can be made of a few only. Sir Arthur Evans on "The Shaft-Graves of Mycenæ and their Contents in relation to the Beehive Tombs" is likely to prove provocative of animated discussion; Mrs. Zelia Nuttall, the distinguished American archæologist, in dealing with the ancient calendar systems of America, will give the Section what is virtually a summary of the results of her life's work. The excavations of the British School at Athens during the past three seasons will be described by Mr. A. M. Woodward, the Director, and Mr. W. A. Heurtley, the latter dealing with his own investigations in Macedonia. Recent excavations in Mesopotamia will be covered by Mr. C. L. Woolley on his recent work at Ur, and Prof. Langdon on work at Kish, skulls from the latter site being described by Mr. L. H. D. Buxton. In Egyptian archæology Miss Gardiner and Miss Caton-Thompson will describe their recent work on the geology and early archæology of the Fayum, and Sir Flinders Petrie will put forward for discussion his views on the prehistoric relations of Egypt and the Caucasus. An important paper by Mr. Gordon Childe will deal with the Terramare and the Hungarian Bronze Age, in which he will carry further his previously published work on the prehistoric archæology of Central Europe.

An interesting series of papers dealing with physical anthropology must be passed over; but in conclusion mention must be made of Miss Alford's communication on 'the ritual dance,' in which she discusses the ritualistic origin of a number of English folk-dances and cites continental parallels. The paper will be illustrated by dances performed by members of the English Folk-Dance Society.

SECTION I (PHYSIOLOGY).

By an unfortunate chance the British Association meetings this year fall at the same time as the (triennial) meetings of the International Congress of Physiology, which will be held at Stockholm on August 3-6. Although the Section may, in consequence, lack a certain number of British and of foreign workers, the sectional programme is quite a full one. The subject of the presidential address is "Function and Design": to this question Prof. Leathes is bringing a fresh outlook, notably from recent work on molecular structure and orientation, with a special consideration of the arrangements at the limiting surfaces and membranes of the organism.

As was suggested in the columns of NATURE of May 29, p. 747, the lecture by Dr. J. S. Haldane on "Acclimatisation to High Altitudes" is of particular interest, in that a reply to Prof. Barcroft's recent publications may confidently be expected, and a consideration of the physiological observations and problems connected with the climbs on Mount Everest. In the joint discussion with Section D (Zoology) on the value of tissue-culture in biology, members will have the first opportunity in England of hearing from Prof. Ch. Champy, of the Sorbonne, an account of his technique and the results he has obtained in this work. The discussion will be opened by Dr. H. M. Carleton, who is in charge of the Department of Histology at Oxford.

A symposium on the 'machinery' whereby a posture is set up or maintained, will allow an exchange of observations and opinions between clinicians and laboratory workers, who have a common interest in this problem, though their paths of approach may be entirely different. Of wide interest, again, is Sir J. C. Bose's lecture on "The Pulse-Beat of Plant and of Animal," while among the more specialised papers are contributions on colour-vision, on biochemistry, and on visceral sensation.

SECTION J (PSYCHOLOGY).

Applied psychology figures prominently in the programme of Section J (Psychology); thus the presidential address by Dr. J. Drever is entitled "Psychological Aspects of our Penal System." A whole session is given to such industrial questions as accidents in industry, restriction of output, and the judgment of value of individual advertisements. There is also a lecture on recent progress in vocational selection. These papers will give an account of some of the activities of the National Institute of Industrial Psychology.

Medical psychology is represented by three papers, namely, personality and value, a method of self-analysis, and heredity and environment in the production of morbid mental reactions. That psychologists are paying attention to heredity is shown by their participating with Sections D and H in a joint discussion on heredity in its physical and mental aspects.

It is gratifying to note that all past presidents of the Section are contributing papers: Prof. C. Lloyd Morgan, "Individual and Person"; Dr. C. S. Myers, "Heredity in its Physical and Mental Aspects"; Prof. Cyril Burt, "Estimations of Temperament and Character"; Prof. W. McDougall, "An Experiment supporting the Lamarckian Hypothesis" and "Intelligence in Rats": Prof. C. Spearman, "The Origin of Error."

Of the more academic papers mention should be made of one by Prof. Rignano of Milan on "La psychologie dans ses Rapports avec la Philosophie et avec la Science," one by Prof. Michotte of Louvain on observation and analysis of mental facts, one by Dr. Aveling on the psychogalvanic phenomenon, and one by Dr. Banister on the localisation of sound. A paper by Dr. Maxwell Garnett on the psychology of patriotism should prove of wide interest; also one by Mr. F. C. Bartlett, Director of the Cambridge Psychological Laboratory, on the social psychology of leadership.

SECTION K (BOTANY).

Owing to the lamentable death of Mr. W. Bateson, Section K (Botany) will meet at Oxford under the presidency of Prof. F. O. Bower. The Section will participate in a discussion on "The Conception of a Species" with the Sections of Geology and Zoology. Within the Section there will be a discussion on sex-determination in plants, which will be opened by Dame Helen Gwynne-Vaughan and contributed to by Dr. Heslop Harrison, Prof. H. Kniep, and Miss Cayley. Prof. J. H. Priestley will initiate another sectional discussion on the scientific principles underlying vegetative propagation, a subject on which a good

deal of light has been thrown recently. The popular lecture will be given by Sir Frederick Keeble on "The Nervous System of Plants."

A large number of papers representative of different branches of botany have been included in the programme, the subject of genetics being particularly well represented this year. A notable feature of the Oxford meeting will be the attendance of a larger number of distinguished foreign botanists than has been the case in recent years. All of them are contributing actively to the programme. As in the last few years, there will be a Sub-section of Forestry, which will be linked with Section K. The Sub-section also has a very full programme, and will be presided over by Lord Clinton.

SECTION L (EDUCATION)

Section L (Education), under the presidency of Sir Thomas Holland, opens its session at Oxford on Thursday, August 5, with several papers dealing with the place of history of science in education. Dr. Charles Singer and Prof. Cecil H. Desch will discuss the subject from the point of view of its value as a humanising element in the teaching of science at university or school. Dr. Gunther will demonstrate the educational value of the Lewis Evans' Collection of historic scientific instruments at the Old Ashmolean Building.

Later in the meeting the more recent advances in educational science will be discussed: the development in the general conception and scope of education during the last twenty-five years by Prof. T. P. Nunn; the education of children under eleven years of age by Miss Margaret Drummond; developments in methods of teaching by Dr. M. W. Keatinge; the organisation of education by Prof. Strong; and educational psychology by Prof. C. Burt. The Section will be invited to discuss scholarships—methods of award and their effect on the present system of education—by Mr. William Hamilton Fyfe. Important results of a recent investigation into the claims of the kinema and of radio to be potent agencies in modern education will be brought before the Section by Dr. C. W. Kimmins, Mr. G. T. Hawkin, and Dr. J. C. Stobart. The public school system is to be reviewed by Mr. Ronald Gurner, Mr. W. W. Vaughan, Mr. M. L. Jacks, Dr. Crichton Miller, and Mr. F. J. R. Hendy. Its relation to national life, its psychological interpretation, its value as a training in community life, together with a critical appreciation of its economic position, are some of the features of the papers to be read.

On Thursday, August 5, a joint session of Section L (Education) and M (Agriculture) will be held in the hall of the Union Society to discuss the educational training of boys and girls in secondary schools for life overseas. Various aspects of this question will be dealt with by Sir A. Daniel Hall, Hon. W. Ormsby-Gore, Sir Halford Mackinder, Miss Gladys Potts, Sir John Russell, Sir Alfred Yarrow, and others. This meeting has been organised for the purpose of directing public attention to the results of an investigation carried out by a special committee, appointed by the Council in 1923. Two reports have already been issued. The Committee hope this year, through this meeting, to emphasise the most important results of their investigation, namely, first, that a growing and widespread demand exists in the Overseas Dominions for boys and girls well educated with an agricultural bias; secondly, that Great Britain has an increasing need of finding healthy and profitable employment within the British Empire for a large number of her sons and daughters; and thirdly, that practical studies of all kinds, especially those related to agriculture, possess a training value far too little realised by parents and by educational authorities.

SECTION M (AGRICULTURE).

The Section will meet under the presidency of Sir Daniel Hall, whose presidential address on the limits of agricultural expansion will form the basis of a joint discussion with Section F (Economics), at which the speakers will include Lord Bledisloe, Sir Thomas Middleton, and Mr. R. J. Thomson. Sir Daniel Hall will also open a joint meeting with Section L (Education) on training for overseas life, at which several distinguished people have promised to speak, and at which it is hoped that the president of the Association may be present.

In addition to these two joint discussions, much time will be devoted to sectional discussion, so that the number of individual papers which are being presented is smaller than usual. It is proposed at a sectional meeting to review the present position of agricultural education in Great Britain, and to consider the methods adopted to make available to those engaged or about to be engaged in the agricultural industry the results of scientific research. Another session will be devoted to possible improvements in cultivation methods, both hand and machine, which is a subject with very important practical and economic bearings at this time when the position of arable land farmers is so precarious.

Other subjects of more technical interest which will occupy the Section are those of soil classification and the nutrition of dairy cattle, in which connexion a paper by Sir A. Theiler and Drs. Green and Du Toit on the minimum mineral requirements of cattle should be of great interest. This South African work forms an interesting complement to that carried out at Aberdeen, Cambridge, and elsewhere in Great Britain.

Messrs. Sutton of Reading have kindly invited members of the Section to visit their seed establishment, and a visit will also be made to the Agricultural Department of the University of Reading.

Universities of the British Empire.

THE universities of the British Empire are parts of a system dependent for its equilibrium and orderly progress in changing conditions on adjustments of factors making for integration and differentiation. The Congress of Universities of the Empire, which met last week at Cambridge, represents an adjustment on the side of integration. A glance at the lists [1] of subjects discussed at the first and second Congresses, 1912 and 1921, brings out the fact that the subjects of last week's discussions are, like those of 1912, but to an even greater extent, concerned directly with co-operation between universities, whereas the programme of 1921 was of a more open and exploratory character. Of the seven subjects of the plenary sessions, five, of the four subjects of sectional meetings, three, were directly and obviously concerned with the question as to how universities in different parts of the British Empire may most effectively help one another. Congresses are sometimes criticised adversely as "leading to nothing," especially where, as in the present instance, the discussions do not culminate in 'resolutions.' It remains to be seen whether the third Congress of the Univer-

[1] "Universities Yearbook, 1926," pp. 12 and 13.