

congress will visit the marine laboratory of the Brooklyn Institute of Arts and Sciences, and the Carnegie station for experimental evolution at Cold Spring Harbour. On August 29 the New York Zoological Society will receive in the morning in the New York Aquarium, and in the afternoon in the Zoological Park; in the evening there will be a reception in Columbia University library.

On Friday, August 30, Prof. Henry Fairfield Osborn invites the congress to an excursion up the Hudson to West Point and Garrison. Saturday will be devoted to the Universities of Yale and Princeton.

On Monday, September 2, the congress will move from New York to Philadelphia; there will be luncheon at the Academy of Natural Sciences, followed by inspection of the library and museum; there will be an afternoon drive to the Zoological Gardens and Fairmount Park; in the evening there will be supper at the Philadelphia Country Club.

On September 3 there will be visits to the American Philosophical Society, Independence Hall, Girard College, the University of Pennsylvania, and thereafter the congress will move on to Washington. On September 4 there will be a general meeting in the assembly hall of the Cosmos Club, Washington, at which addresses of welcome will be given by the secretary of the Smithsonian Institution, the president of the Carnegie Institution, and the president of the Washington Academy of Sciences. This will be followed by a visit to the National Zoological Park, the Congressional Library, the United States Department of Agriculture, the Hygienic Laboratory, and other points of zoological interest. In the evening there will be a reception by the Cosmos Club.

On September 5 the congress will proceed by boat on the Potomac River to Mt. Vernon, the home of George Washington, and to the United States Navy Proving Station at Indian Head. There will be dinner at Marshall Hall, and an evening reception at the United States National Museum.

On Saturday, September 7, an excursion has been arranged to Niagara Falls and across Lake Ontario to Toronto, returning to New York on Monday night or Tuesday morning.

If fifty members agree to go, there will be an excursion to Bermuda, which will give the members of the congress an opportunity of becoming acquainted with a very interesting semitropical zoological region. Members will have facilities in collecting and preserving zoological material. The expenses of the expedition for each participating member will be thirty-two dollars for return passage and about two dollars a day hotel charges while in Bermuda. After the party lands in Bermuda, the local committee will supply, free of charge, all transportation, carriages, steamers, &c., and such other incidentals as will ensure a successful expedition. It is to be hoped that this very attractive part of the programme will be carried out. The inclusive dates fixed for the expedition are September 14-22.

It may be noted that the executive committee of the Boston meeting consists of Profs. G. H. Parker (chairman), Samuel Henshaw (secretary), L. O. Howard, J. S. Kingsley, E. L. Mark, and H. F. Osborn.

If two suggestions from experience might be ventured, we would submit that outside each sectional meeting there should be a time-table board showing what precisely is going on, and that each member should wear in his button-hole a number corresponding to a printed list, so that strangers to one another may know at once who's who!

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THE LEICESTER MEETING OF THE BRITISH ASSOCIATION.

PROVISIONAL PROGRAMMES OF SECTIONS.

ARRANGEMENTS for the work of the various sections are now approaching completion, and we are able to give the provisional programmes. It is evident from this list of papers and discussions, incomplete though it is, that many matters of wide scientific interest will be brought forward at Leicester.

Among the foreign representatives who have accepted invitations to be present are the following:—Section A.: Prof. L. Natanson, Prof. D. J. Korteweg, Prof. H. G. van de Sande Bakhuizen, Dr. Oskar Backlund, Prof. Donner, M. Ch. Féry; Section B.: Prof. R. Abegg, Prof. A. Tschitschibabin, Prof. T. W. Richards, Prof. A. Werner, Prof. F. M. Jaeger; Section C.: Prof. H. Sjögren, Prof. F. Frech, Prof. C. Diener, Prof. J. P. Iddings; Section D.: Prof. H. Simroth; Section E.: Prof. P. Vidal de la Blache, Prof. Max Eckert; Section H.: Prof. E. Naville; Section I.: Prof. N. Zuntz; Section K.: Prof. J. P. Lotsy, Prof. R. Chodat, Prof. H. Conwentz, Prof. O. Uhlworm; Section L.: Dr. Otto Andersen, Dr. F. Rönning, Prof. M. L. Morel. Corresponding members Baron D. Kikuchi, Prof. P. H. Schoute, Prof. R. Nasini, and Prof. George F. Barker have also expressed their intention of being present.

The address of Prof. A. E. H. Love, F.R.S., the president of Section A (Mathematical and Physical Science), will be delivered on the morning of Thursday, August 1. Several discussions have been arranged. On Friday, August 2, there is to be one on the constitution of the atom, which will be opened by Prof. E. Rutherford, who will be followed by Sir O. Lodge, Mr. G. A. Schott, and others. On Monday, August 5, Dr. L. Holborn, of Charlottenburg, will open a discussion on radiation-pyrometry; he will be followed by M. C. Fery, of Paris. On August 6, a paper by Mr. W. Palin Elderton on modern methods of treating observations will consist of an exposition of the methods of Prof. Karl Pearson, chiefly as applied to meteorological phenomena. It is hoped that all will attend who are interested in the reduction of observations of any kind, and assist to make the discussion useful. The following papers have also been promised:—On the nature of ionisation, Prof. H. E. Armstrong; an analytical study of the meteorological observations made at the Glossop Moor kite station during 1906-7, Miss M. White, Mr. T. V. Pring, and Dr. J. E. Petavel; recent developments of the methods of forecasting by means of synoptic charts, Dr. W. N. Shaw; ether density, Sir O. Lodge; sæcular stability, Prof. H. Lamb; modern work on the calculus of variations, Prof. A. R. Forsyth; exhibition of models of three-dimensional sections of the regular hypersolids in space of four dimensions; Mrs. Stott; a method of obtaining the chief properties of the exponential function, Prof. A. E. H. Love; operational invariants, Major MacMahon; a property of Abelian groups, Mr. Harold Hilton; factorisation of the Pellian terms, Lt.-Col. Cunningham; on the theory of integral equations, Mr. H. Bateman; a mountain observatory in India, Prof. C. Michie Smith. The various committees connected with the section will also present their annual reports.

Section B (Chemistry) has made the following provisional arrangements:—August 1: Presidential address, Prof. A. Smithells; discussion on valency, to be opened by Prof. W. J. Pone, and in which Prof. Werner (Zürich), Prof. Abegg (Breslau), Prof. Richards (Harvard), Prof. Jaeger (Amsterdam), Prof. J. J. Thomson, Mr. W. Barlow, and others will take part. August 2: Joint discussion with Section G on explosion tempera-

tures. The following members will take part:—Dr. Boudouard (Paris), Prof. Haber (Karlsruhe), Mr. Dugald Clerk, Prof. B. Hopkinson, Prof. H. B. Dixon, and others. August 5: Reports will be received from the research committees:—(1) The transformation of aromatic nitramines; (2) the study of hydroaromatic compounds; (3) preparation of a new series of wave-length tables of the spectra of the elements; (4) dynamic isomerism; (5) the study of isomorphous sulphonic derivatives of benzene. The following papers will be read:—The applications of Grignard's reaction, Dr. A. McKenzie; paper by Prof. Tschitschabin (Moscow); fluid crystals, Prof. Jaeger; atomic weights, Prof. T. W. Richards; carbon suboxide, Dr. Boudouard; carbonyl compounds, Dr. H. O. Jones. August 6: Discussion on the chemistry of wheat and flour with special reference to strength, to be opened by Mr. A. E. Humphries, president of the National Association of British and Irish Millers. The following will take part:—Messrs. R. H. Biffen, T. B. Wood, A. D. Hall, Horace Brown, J. L. Baker, A. J. Banks, E. F. Armstrong, and E. S. Watkins.

The following papers, among others, will be read in Section C (Geology):—Prof. W. W. Watts and Mr. Fox Strangways will give addresses on the geology of the country round Leicester. These will be followed by papers dealing with local geology by Drs. Bennett and Stracey and Messrs. Horwood, Bosworth and Keay. A discussion on the origin and extent of the iron ores of Britain will be opened by Mr. Bennett H. Brough; and other authorities on the subject are expected to take part in it. Among other subjects to be brought forward are:—Earthquakes, Prof. Milne; pisolitic iron ores, Mr. W. G. Fearnside; desert forms, Mr. H. Ferrar; the ancient volcanoes of Basutoland, Rev. S. S. Dornan; a remarkable occurrence of strontia near Bristol, Mr. H. Bolton; the gravels of Holderness, Messrs. Stather and Sheppard; and the occurrence of a marine peat near Liverpool, Mr. J. Lomas. Reports of various committees will be presented. On the fauna and flora of the Trias, Mr. J. Lomas; Carboniferous faunas and zones, Drs. A. Vaughan and Wheelton Hind; Anglesey Rocks, Mr. E. Greenly; terms used in geography and geology, Mr. W. G. Fearnside; erratic blocks, Prof. P. F. Kendall; Pre-Devonian rocks of the Mendips, Prof. S. H. Reynolds; and the Kirmington Drifts, Mr. Stather. Excursions will be made to places of geological interest every afternoon during the meeting, and longer excursions have been arranged for the week-end and at the close of the meeting.

The following items have been arranged for Section D (Zoology):—Presidential address, Dr. W. E. Hoyle; discussion (in conjunction with Section of Botany) on the physical basis of heredity, to be opened by Prof. S. J. Hickson; discussion (in conjunction with the Sections of Botany and Education) on the teaching of biology in schools, to be opened by Mr. O. H. Latter, of Charterhouse; afternoon lecture by Dr. C. W. Andrews, adaptation to aquatic life in reptiles and mammals; problems in the sexual organisation of the Crustacea, Mr. G. W. Smith; Pycnogonida, Mr. T. V. Hodgson; demonstration of models, Protozoa, &c., Mr. F. R. Rowley; experiments on seasonally dimorphic forms of African Lepidoptera, Dr. F. A. Dixey; (1) classification of the Haplosporidia, (2) the movements of Spirochaetes, as seen in *S. balbianii* and *S. anodontae*, Mr. H. B. Fantham; the rise and recognition of economic biology, Mr. Walter E. Collinge.

The papers offered to Section E (Geography) include the following:—The surveys of British Africa, Major C. F. Close, R.E.; the maps and methods of the present-day explorer, Captain T. T. Behrens,

R.E.; the geographical evolution of transport, Prof. Vidal de la Blache (Paris); commercial geography from the modern standpoint, Prof. Max Eckert (Kiel); the hinterland of the Port of Manchester, Mr. J. McFarlane (Manchester); the Jäderin district of southern Norway, Mr. O. J. R. Howarth; Shotover Hill; a study in morphological causation, Rev. C. E. Spicer; regional geography of the Land's End peninsula, Mr. A. W. Andrews; physical geography of the Etbai desert of Egypt, Mr. H. T. Ferrar; travels in the Andes of Peru, Mr. C. R. Enock; the British Museum expedition to Ruwenzori, Mr. R. B. Woosnam; explorations in Labrador, Mrs. Leonidas Hubbard. Afternoon lectures:—The Kurds, Mr. Mark Sykes; the Jamaica earthquake, Dr. Vaughan Cornish; the preservation of "Naturdenkmäler," or natural monuments, Prof. Conwentz (Danzig) (joint meeting with Sections C and K).

The programme of Section G (Engineering) is as follows:—August 1: Presidential address, Prof. S. P. Thompson; the present position of gas and petrol engines, Mr. Dugald Clerk. August 2: Joint meeting with Section B to discuss gaseous explosions with special reference to temperature. August 5 and 6: Pupin's compensated cable for telephone transmission, Sir W. H. Preece; modern machinery and its future development, Mr. H. I. Brackenbury; a machine for weighing the forces on a cutting tool, Mr. J. F. Brooks; ferro-concrete and examples of construction, Mr. J. S. E. de Vesian; examples of ferro-concrete, Mr. W. Noble Twelvetrees; the equipment of the engineering laboratory at the Finsbury Technical College, Prof. E. G. Coker; the ice problem presented in engineering work in Canada, Prof. Barnes; notes on the governing of hydraulic turbines, Mr. R. S. Ball; submarine signalling, Mr. Millet. A practical demonstration of boot and shoe-making machinery will be given by Mr. C. Bennion.

The programme of the proceedings of Section H (Anthropology) is even longer than usual, and many of the communications promise to give rise to interesting discussion. The greater part of the time of the section will be taken up by papers of an archaeological character, but the communications in general ethnography, though less numerous than usual, include a number of considerable importance. On August 1 a meeting will be held in conjunction with the Section of Educational Science for the discussion of anthropometrics in schools. In archaeology, Prof. W. M. Flinders Petrie will describe the results of his excavations in Egypt during the past season, and Dr. E. Naville will deal with the beginnings of Egyptian civilisation. A discussion on the early Iron age, and the different dates of inception in different areas, in which Sir John Evans has promised to take part, will be opened by Prof. W. Ridgway, and Mr. J. L. Myres will contribute a paper on the *Sigynnae* of Herodotus and Cyprian spears. Prof. R. C. Bosanquet will read a paper on the scourging of the Ephebi at Sparta. Accounts of the work of the British Schools of Archaeology at Athens and Rome during the past year will be given by their respective directors, Mr. R. M. Dawkins and Dr. T. Ashby. The former will deal chiefly with the excavations in Sparta. In addition, Dr. Ashby, in a paper on the ethnology of Sardinia, will urge the need of archaeological and ethnographic investigation in that island for the elucidation of problems of Mediterranean ethnology, and in connection with the report of the Roman Sites Committee will describe the excavations of the past year at Caerwent. A paper by Mr. F. Newberry and Dr. T. H. Bryce deals with the "door-step art" of Scotland, Mrs. Hobson will give the results of an examination of a large number of souterrains in Ulster, and Dr. G. A. Auden will de-

scribe a number of Scandinavian antiquities found at York. Dr. L. R. Farnell, in a communication on the development of Greek religion, will criticise Dr. Usener's theories concerning *Søndergötter* and *Augenblick-Götter*. Among the communications in general ethnography may be mentioned:—Education and evolution, the Rev. A. E. Crawley; a paper by Messrs. T. A. Joyce and E. Torday on the ethnography of the south-west Congo Free State, dealing with the migrations of the inhabitants of the territory drained by the Kwango and Kwilu Rivers; a paper by Dr. W. H. R. Rivers on Morgan's Malayan system of relationship, which adduces evidence against his concept of the "consanguineous family" as the earliest stage of the development of human society. Prof. R. J. Anderson, in a paper on racial types of Connaught, describes the chief physical types of that province, and discusses the chief influences by which they are, or have been, modified; a study of the condition of the Maoris in 1907, by Miss B. Pullen-Burry, after describing their religion and social organisation, deals with their economic and social condition. Among papers of a technical character, considerable interest attaches, in view of the present lack of agreement as to the use of anthropological terms, to a communication by Dr. Rivers in which he attempts to define the use of certain sociological terms, and to a communication by Mr. J. L. Myres on the use of the triangle in decorative art.

The provisional programme of Section I (Physiology) is as follows:—August 1: Presidential address and miscellaneous papers. The president, Dr. A. D. Waller, has been studying chloroform of late, and his address will probably take the form of a general statement on the position of anæsthetics at the present time. August 2: The morning will be devoted to papers on the electrophysiology of animals and plants. Dr. Alcock, Dr. Waller, and others will read papers. August 5: A discussion on the physiological and therapeutical uses of alcohol will be opened by Prof. Cushny. Other speakers will include Sir Victor Horsley, Dr. Dixon, Dr. Rivers, and Dr. Waller. August 6: A discussion on antitoxins will be opened by Prof. Sims Woodhead. The afternoons will be in part given to the reading of reports. There are three committees which should report, the subjects being:—(1) The investigation of the effect of climate upon health; Sir Lauder Brunton, the president of this committee, will read the report; (2) the determination of the metabolic balance-sheet of the individual tissues, president, Prof. Gotch; (3) the ductless glands, Prof. Schäfer. These reports will be presented on the afternoons of August 1, 2, and 6 respectively.

In Section K (Botany), Miss Fraser (of the Royal Holloway College) and others will communicate the results of recent investigations on the cytology of fungi, particularly in relation to sexuality and the reduction division. Mr. V. H. Blackman will take part in the discussion on this subject. Prof. F. O. Bower will communicate the results of his recent work on the embryos of Pteridophytes. Prof. Conwentz, the Prussian State Commissioner for the preservation of natural monuments, will deliver a lecture, illustrated by lantern slides, at a joint meeting of Sections C, E, and K, on the care of natural monuments. Prof. F. W. Oliver is expected to communicate the results of some recent investigations of Palæozoic seeds. Prof. Weiss will give the semi-popular lecture on pollination in recent and fossil plants. There will be a joint meeting with Section D to discuss the physical basis of heredity (opened by Prof. Hickson), and with Sections D and L to discuss the teaching of botany in schools. Prof. Armstrong will communicate a paper on the theory of enzyme-action. There will be a visit to Mr. Hurst's nurseries at

Burbage to inspect his experiments in hybridisation, and a botanical excursion to Charnwood Forest.

Discussions on several important subjects have been arranged by the organising committee of Section L (Educational Science); and among the authors and speakers are leading representatives of every grade of educational activity. The chief educational associations have appointed delegates to attend the meeting. After Sir Philip Magnus's presidential address on August 1, there will be a discussion at a joint meeting with Section H (Anthropology) on anthropometrics in schools, with particular reference to the recommendations of the Physical Deterioration Committee. Among the expected speakers are Sir Victor Horsley, Mr. R. C. Lehmann, M.P., Dr. F. C. Shruballs, Mr. J. Gray, Mr. E. Meyrick, Prof. M. E. Sadler, Dr. J. Gow, Mr. Cecil Hawkins, and Mr. S. R. Brown. Friday, August 2, will be occupied with a discussion of the scholarship system in all its aspects from the primary school to the university, with papers by Miss J. Cleghorn, Mr. A. R. Pickles, president of the National Union of Teachers; Mr. W. A. Brockington, Miss S. Heron, Mr. J. L. Paton, Mr. G. Gidley Robinson, Rev. A. A. David, Dr. H. B. Baker, Prof. H. A. Miers, and Prof. M. E. Sadler. The curricula of secondary schools will form the subject of discussion on the morning of August 5, in connection with the report of a committee appointed at the York meeting last year. Mr. R. E. Thwaites will state the results of an inquiry into science teaching in secondary schools. In the afternoon there will be a joint meeting with Sections D and K on the teaching of biology in schools, to be introduced by Mr. O. H. Latter. Other speakers will be Prof. S. J. Hickson, Prof. J. B. Farmer, Miss Lilian Clarke, Miss Laurie, Mr. M. D. Hill, Mr. E. Meyrick, and Mr. Hugh Richardson. August 6 will be devoted to scientific teaching in relation to trade classes and industrial requirements, this general description to include the consideration of domestic subjects in girls' schools, day trade schools for girls, preparation for technical training in day and evening schools, and the qualifications of teachers. Papers dealing with these subjects will be contributed by Mrs. Ramsay MacDonald, Mr. C. T. Millis, Mr. J. G. Legge, and Mr. J. H. Hawthorn.

THE KING AND HIGHER EDUCATION IN WALES.

THE foundation stone of the new buildings of the University College of North Wales was laid by the King on Tuesday, July 9. The King was accompanied by the Queen, and the ceremony was performed in the presence of a large and brilliant assembly. In his response to an address of welcome, presented by the Lord Lieutenant, the King said that the main object of his visit to Wales was to express again his belief in the necessity of affording the youths of the country the most complete educational equipment possible, both for their self-improvement and in order to enable them to acquire success in life. The King also remarked, in the course of a reply to an address presented by the Mayor and Corporation of Bangor, that "Education, and especially secondary education, is a subject the importance of which cannot be over-estimated, and which engages my cordial interest and encouragement." Replying on behalf of the Queen and himself to an address from the governors of the college, the King again referred to his interest in higher education in the following words:—

The admirable work performed by the college in its temporary buildings has been widely recognised and was