

The Glasgow Meeting of the British Association.

PROGRAMMES OF SECTIONS.

SECTION A (MATHEMATICS AND PHYSICS).

AN interesting and versatile programme has been arranged in Section A (Mathematics and Physics) for the Glasgow meeting. The Section meets under the presidency of Prof. A. W. Porter, whose address will deal with "The Volta Effect: Old and New Evidence," a subject which has interested physicists for many years.

The programme includes three main discussions; the first, on Thursday, Sept. 6, is on the mechanism of thunderstorms, a controversial subject on which Dr. G. C. Simpson, Prof. C. T. R. Wilson, Prof. E. V. Appleton, and others will contribute their views; the second, on Friday, Sept. 7, deals with the photographic measurement of radiation. Dr. R. A. Sampson, the opener, will be followed by Dr. Toy, Dr. Spencer Jones, Dr. Astbury, and other workers in a field which has wide applications in many branches of physics. On Tuesday, Sept. 11, Dr. C. J. Davison (U.S.A.) and Prof. G. P. Thomson will give an account of their work on the scattering of electrons by crystals, in which they have demonstrated the wave-like properties of a stream of electrons. This subject should promote a valuable discussion.

Among the individual papers which are of wide and varied interest, special reference may perhaps be made to a contribution from Prof. de Haas (Holland) on "New Experiments on Supraconductors," and a lecture with demonstrations by Prof. Taylor Jones on spark ignition. Members will also welcome Prof. Zeeman as a foreign guest. Lastly, in the sub-section, the rapidly advancing subject of meteorology will be strongly represented.

SECTION B (CHEMISTRY).

THE organising committee of Section B (Chemistry), having considered that the annual meeting of the British Association, so far as chemistry is concerned, provides a suitable opportunity for the discussion of the results of modern investigations, has planned the programme on lines somewhat different from those of previous years. Prof. E. C. C. Baly is the president of the Section, and his address on "Fluorescence, Phosphorescence, and Chemical Reaction" will be followed by a discussion. Dr. J. Vargas Eyre will introduce a discussion on fermentation, and will deal more particularly with the chemical and physico-chemical aspects of fermentative processes. This discussion, in which Mr. J. L. Baker, Dr. A. C. Thaysen, and others will take part, is particularly opportune in view of the recent impetus which has been given to research on fermentation processes in Great Britain. Another important discussion, which will be opened by Sir William Pope, is on recent advances in stereochemistry, and in this Prof. James Kenner, Dr. H. J. Backer (Holland), Dr. N. V. Sidgwick, and others will participate. Dr. E. K. Rideal has arranged a series of demonstrations on "Light Experiments" as a basis of a discussion of the mechanism of the transfer of energy between molecules.

The programme also contains two items of more than usual interest. Exhibitions of kinematograph films of chemical interest will be given on three days, unfortunately but unavoidably, while some of the discussions are proceeding. Messrs. Imperial Chemical Industries, Ltd., have invited one hundred members of Section B to be their guests at the Ardeer Factory of Nobel's Explosives Co., Ltd., on Saturday, Sept. 8. This invitation has been cordially accepted, as well as

those of other representative chemical firms who will entertain the members during the course of the meeting.

SECTION C (GEOLOGY).

IT is fitting that at the Glasgow meeting of the Association the president of Section C should be one of the Scottish school, Mr. E. B. Bailey, of H.M. Geological Survey, who has chosen for his address "The Palæozoic Mountain Systems of Europe and America."

The meeting will open with an account of the geology of the district by Prof. J. W. Gregory, Dr. G. W. Tyrrell, and Dr. J. Weir, each of whom will deal with one phase of the subject. This will be followed by papers on Northern Ireland, the Hebrides, and the Shetlands. Friday will be largely given to papers on glacial geology; one of the most interesting of these should be that by Drs. W. F. P. McLintock and J. Phemister, which illustrates the application of gravitational survey methods to buried channels.

Two discussions have been arranged, on problems of Highland geology and the tectonics of Asia. The latter, with contributions from workers in China, Siberia, India, and Persia, should prove very interesting. Questions of economic importance will be considered by Mr. E. H. Davison on "The China Clay Deposits of the West of England," and Mr. G. Vibart Douglas on "The Pyritic and Cupreous Ore-bodies of Huelva, Spain." The programme is perhaps deficient in palæontological subjects—the only one being by Dr. W. K. Spencer on "Palæozoic Star-fish."

SECTION E (GEOGRAPHY).

THE Report for 1927 of the British Association Committee on the Teaching of Geography directed attention to the extremely unsatisfactory position of this subject in Scottish education. The programme of Section E for the Glasgow meeting has been framed in part to meet this peculiar situation. The presidential address by Prof. J. L. Myres, on "Ancient Geography in Modern Education," will be preceded by two studies on Denmark and New York City, illustrative of the methods and import of geographical study. These will be followed by an important discussion on the teaching of geography in Scotland.

The tendency for increasing attention to local geographical research is shown not only by four papers on the Glasgow district, but also by two others on the lower valleys of the Rivers Tweed and Tees. In the field of cartography, papers will be read on colonial surveys, revision of survey maps, air surveys and standardisation in layer colouring.

Recent exploration will be dealt with by Mr. F. Rennell Rodd in his "Land of the Tuaregs," whilst Prof. Douglas Johnson, one of the foreign guests, will speak on physiographic features of the Atlantic Coast of North America in relation to problems of recent coastal subsidence.

SECTION G (ENGINEERING).

THE papers to be given in this section are of wide interest, although of course all are closely connected with engineering. Some deal with important and recent developments, while others are distinctly of an academic character.

The president will take for his address "The Influence of Engineering on Civilisation," and will sketch in broad outline the developments that have taken place in the various branches of engineering during

the last century, and refer to the amenities and changes that these have brought about in many aspects of human life. The first paper to be given to the Section, "Engineering of the Zuyderzee," by Mr. J. W. Thierry, describes important engineering works that are being carried out in Holland to reclaim large tracts of land, which in a few years will make important additions to the productive area of that country. The methods of constructing the work, and particularly the tidal problems that will have to be met during the construction, are dealt with in an interesting way. Following this paper there is a discussion on the preliminary education for the engineering profession. The speakers are to be Sir William Ellis, Prof. A. L. Mellanby, and Sir James Henderson.

Two very important developments that have been taking place during recent years, (a) in connexion with high pressure boilers, as, for example, the boilers of the steamer *King George V.*, which work at 500 lb. pressure, and (b) heavy oil engines for aircraft and railways, will be dealt with by Mr. H. Yarrow and Mr. A. E. L. Chorlton respectively. Recent work in connexion with evaporative cooling for aeroplanes will also be discussed.

A number of papers will be given on subjects related to electrical engineering, and it is expected that an interesting discussion will take place on the report of the Committee on Electrical Terms and Definitions, which was set up by the British Association two years ago to consider the electrical terms and definitions published by the British Engineering Standards Association.

The subject of internal combustion engines, particularly from the point of view of cycles used in them, and the changes that take place in the specific heat during compression and combustion, will be discussed by Profs. Goudie and Witchell. A paper is also to be given on the adiabatic flow of mercury through nozzles. The subject of materials is to receive attention, particularly in connexion with the effect of velocity of test on the notch brittleness of mild steel, and a brief report will be received from the Earth Pressures Committee.

SECTION H (ANTHROPOLOGY)

SECTION H offers a full and attractive programme—too long indeed for complete enumeration here—in which, not unnaturally, Scottish subjects figure largely. Prof. T. H. Bryce will open a discussion on human distributions in early Scotland, and in two further communications will consider the natural or artificial origin of certain so-called cultivation terraces in Peebleshire and describe excavations at a monastic settlement on the island of Eileach an Naoimh. Dr. James Ritchie will submit further evidence relating to the occurrence of palaeolithic implements in Sutherland, and Mr. Graham Callender will deal with the relative levels of land and sea in Scotland from an archaeological point of view. Canon MacCulloch will discuss the origin of the Picts, and communications dealing with survivals and other aspects of folklore in Scotland will be presented by the Rev. J. MacPherson and the Rev. A. J. MacLean. Archaeology outside Scotland is well represented. Mr. A. L. Armstrong will describe further excavations in the Cresswell Caves of Derbyshire. Dr. R. E. M. Wheeler and Mr. S. N. Miller will report on recent excavations in Roman Britain. The account by the latter of his work at York will be particularly interesting in view of the character of recent finds.

Going further afield, it is scarcely necessary to emphasise the interest of Miss Garrod's discovery of fragments of another Neanderthal skull in a Palestinian cave, of Prof. Petrie's survey of the results achieved by the British School of Archaeology in

Egypt in its work in Southern Palestine, and of Mr. Field's report on excavations by the Oxford expedition at Kish and on the Field Museum's expeditions to the Syrian desert in 1927-28. The archaeology of eastern Europe will be discussed in communications by Prof. Gordon Childe on the origin of certain Hallstadt types, by Mr. W. A. Heurtley on excavations of the British School in Athens on Macedonian sites, by Mr. O. Davies on tin in prehistoric Greece, and by Mr. Stanley Casson on his excavations in Constantinople.

In ethnography, Capt. Wilson's account of traces of an old terrace system of agriculture in Tanganyika is also of interest to archaeologists, and raises some questions relating to the history of the cultivation of wheat. Mr. Robert Kerr will describe the valuable Gordon Munro collection of Japanese antiquities in the Royal Scottish Museum. Not only have these never been described as a whole, but they are also of considerable interest to archaeologists in relation to the question of distributions in the prehistoric world. Mr. M'Ilwraith will describe certain secret societies in North-west America and Mr. G. W. B. Huntingford the hunting tribes of Kenya. Africa also figures in the archaeological section of the programme in Mr. Miles Burkitt's review of our present knowledge of the Stone Age in South Africa. Sir Richard Paget on the nature and origin of human speech and Miss Blackman in suggesting the use of the colour-top as a means of recording skin colour should both arouse considerable discussion.

SECTION I (PHYSIOLOGY).

Of considerable topical interest and importance is a paper in Section I (Physiology) on the measurement of ultra-violet radiation. Many forms of lamp are now available, and are coming into extensive use in the clinic and in the home, but the measurement of the radiation emitted has hitherto involved apparatus available only in physical laboratories. Prof. F. G. Baily has designed a standard arc lamp, constant in its emission, with which comparisons can be made by exposing sensitised paper and observing the darkening produced in the two cases. A qualitative investigation of the rays emitted can also be made by using screens permeable down to different wave-lengths.

In a joint discussion with Section M (Agriculture) the question of milk production and its relation to diet is being discussed, especially with regard to the content of milk in growth-promoting and other accessory factors, while a sectional discussion on cell structures may, it is hoped, lead to some measure of agreement on a topic concerning which there has recently been keen controversy.

Mr. W. D. Paterson is describing a method whereby graphic records of the pulse-rate, and the systolic and diastolic blood-pressures, can be quickly and accurately taken in man even during quite severe exercise.

SECTION J (PSYCHOLOGY).

SECTION J (Psychology) meets this year under the presidency of Prof. T. H. Pear, who will take as the subject of his address "The Nature of Skill": this is to be followed by a joint discussion with Section F (Economics) on the present position of skill in industry, in which the points of view of psychology, economics, and industry will be presented by Prof. Pear, Prof. H. Clay, and Mr. C. G. Renold.

The programme includes papers on all branches of psychology, theoretical and practical, industrial, medical, and educational. Dr. C. S. Myers will open the meeting with a paper on "Educability," a subject which he has made his own. Dr. W. Brown will speak on "Personality and Methods of Mental Analysis," and Prof. C. W. Valentine on "Some Applications of Experiments in Child Psychology."

An item of general interest is a demonstration of tests used in vocational guidance, which is to be given by members of the staff of the National Institute of Industrial Psychology; the demonstration will be preceded by short papers on the theoretical and practical aspects of the tests. In addition to these there will be several papers on the analysis of mental tests and the capacities they examine.

A visit to the engineering works of Messrs. Mavor and Coulson has been arranged to run concurrently with the reading of papers at one of the afternoon sessions.

SECTION K (BOTANY).

It may be taken as a sign of the growth of active interest in British forestry that the council of the British Association has granted the formation of a division of Section K to deal with matters of afforestation, and the programme which has been prepared for the Glasgow meeting is worthy of the occasion. Such matters as Empire timber development, a retrospect of the forests of Europe before and after the industrial period, the care of forest nurseries, the planting of deer forests, and the preservation of timber, will bulk largely in the programme, while the economic balance between agriculture and forestry will be considered at a joint meeting with Section M.

Under the presidency of Dame Helen Gwynne Vaughan, a varied programme will be discussed in the Section. The presidential address will deal with the relation of nutrition to sex in the Fungi, and will be followed by a series of mycological papers bearing chiefly on economic problems and on the physiology, reproduction, and systematics of Fungi.

Ecology will be represented by papers on the forests of northern Rhodesia, and the peat bogs and sand hill areas of Canada, and cytology and genetics will be represented, as will also be palaeontology and systematic anatomy. A wide range of problems in plant physiology, growth, nutrition, and response to stimulation will be discussed in sequence, and special sessions will be devoted to the discussion of the size factor in plant morphology, the investigation of the biological problems of British fresh waters, and the interpretation of growth curves. A semi-popular lecture on forestry in Scotland, past, present, and future, will be delivered by Sir John Stirling Maxwell.

Among the excursions which have been arranged are visits to Benmore Estate—concurrent with the arrangements for the memorial to the late Sir Isaac Bayley Balfour—to Ben Lui and Loch Katrine.

SECTION L (EDUCATIONAL SCIENCE).

A FULL and varied programme has been arranged for Section L. Dr. Cyril Norwood, in his presidential address, will deal with "The Next Steps in Education." Interesting papers on "Wireless in the Service of Education" and "An Experiment in Educational Broadcasting" are expected from Sir John Reith (Director-General B.B.C.) and Mr. Salter Davies, director of education for Kent, respectively; and it is anticipated that Sir William Bragg and Sir Oliver Lodge will take part in the discussion. Demonstrations of wireless reception suitable for school purposes will also be given and a model studio will be open for inspection. One session will be devoted to a joint discussion with Section G on school, university, and practical training in the education of the engineer, Col. Ivor Curtis (Air Ministry) providing a paper for Section L. The work of post-primary education in Scotland is to be considered in five separate papers, from the national, the training college, the secondary school, the technical school, and the university aspects. A lively discussion

will probably follow. Among the other subjects to be considered are: the methods and results of educational research (three papers), educational clinics and psychological tests (papers by Dr. Boyd, Dr. R. H. Crowley, and Miss Margaret Drummond), and the marking and standardisation of composition (Dr. G. Perrie Williams and Mr. D. B. Mair). A demonstration on music in the school is included in the programme again—Mr. Hugh Hunter is organising the musical display, and Mr. Hugh Robertson, leader of the Orpheus Choir, is to give an address on "School Music." The Section will also take part in the Stow Commemoration meetings. The report of the committee on science in school certificate examination will be presented by Sir Richard Gregory, and Dr. Kimmins is expected to make an interim report on behalf of the committee on recent views on formal training.

SECTION M (AGRICULTURE).

SECTION M proposes to devote a whole morning to the reading and discussion of Dr. Gordon's presidential address on the live-stock industry and its development. This is the first occasion on which the live-stock branch of the agricultural industry—by far the most important—has formed the subject of a presidential address. In the discussion which is to follow, Sir Robert Gregg, chairman of the Scottish Board of Agriculture, Prof. J. A. S. Watson, of Oxford, and Prof. R. G. White, of Bangor, are to take part. Dr. Gordon has been a pioneer in the development of the live-stock industry, and has a lifelong experience of the subject, particularly from the point of view of State assistance and control. It is expected that he will deal, amongst other things, with the operation of the Live Stock Breeding Act in Northern Ireland, for which he was mainly responsible. The subject is at present being keenly debated not only in official circles in England and Scotland, but also amongst farmers' organisations.

Monday morning, Sept. 10, will be devoted to milk problems, a subject of considerable importance in the west of Scotland. A paper on the milk selling agency, which has recently been successfully launched in the Glasgow district, is being contributed by Mr. A. E. Magee, and Prof. Berry and Mr. Macneilage are to deal with the difficult problem of the "Utilisation of Surplus Milk and Milk Residues."

Three joint discussions have been arranged—with Section I on lactation and nutritional factors allied thereto, and with Section F on the incidence of taxation in agriculture. Mr. Venn, who is opening the latter discussion, holds the view that agriculture is a sheltered industry, and is not at present bearing its proper share of taxation. The subject is of particular interest in view of the proposed rating relief to agriculture, and is one which is likely to be very keenly debated. The economic balance of agriculture and forestry forms the subject of the third joint discussion, in this instance with the Forestry Sub-Section, on the initiative of which the discussion has been arranged.

CONFERENCE OF CORRESPONDING SOCIETIES.

THE Conference of Corresponding Societies will be devoted to the science of scenery. Dr. Vaughan Cornish, in his presidential address on "The Preservation of Scenic Beauty in Town and Country," will emphasise the importance of providing a secure foundation for an aesthetic of scenery, in order that reliable advice may be given for its preservation. The greatest of all detriments to the scenery of London is smoke, in spite of occasional fine effects of coloured haze, because it militates against the *al fresco* life on which the social scenery of cities depends for its variety and charm. Decorative and pleasing

as are the agricultural districts of Britain, they have this in common with the scenery of cities, that human effort and contrivance are everywhere visible, and although the human aspect of scenery interests everyone, it does not by itself provide sufficient stimulus for the imagination. A nation needs wide prospects of spontaneous Nature accessible to all. Fortunately, the sea cliffs of our island home present an elemental outlook unsurpassed in grandeur even by Alpine scenery, an image of infinity and eternity of inestimable influence upon the loftier imaginings of the people. Access to the cliffs must be secured, wild lands reserved, and the charm of old-world villages protected. A resolution that His Majesty's Govern-

ment be urged to stimulate local authorities in the protection of scenic amenity in town and country will be proposed by Dr. C. R. Gibson, Royal Philosophical Society of Glasgow, seconded by Mr. T. Sheppard, Museums Association, and supported by the Earl of Crawford.

The second and concluding session will be devoted to the scenery of the English Lake District and its preservation. Dr. H. R. Mill will deal with the geography of the region, a paper will follow upon Wordsworth's interpretation of Nature, and Mr. Ewart James will give an account of a scheme of regional planning for the preservation of scenic amenity in the district.

International Radiology.

THE second International Congress of Radiology, held in Stockholm on July 23-27, proved a pronounced success and one which will long live in the recollections of those who attended it. The Congress was treated by Sweden as of national significance, and the various meetings were held in the Houses of Parliament, which were lent by the Government for the purpose. The municipality of Stockholm offered many facilities and generous hospitality, and had beflagged the main streets and buildings. About 1000 members from 40 different countries were enrolled, the total number with ladies and others interested in the Congress amounting to about 1500. H.R.H. the Crown Prince of Sweden opened the Congress in a wholly admirable speech in English, and stayed to listen to a number of the opening papers. The president, Prof. Gösta Forssell of Stockholm, was presented with a badge and chain of office by the members of the British Institute of Radiology. The chancellor of the Swedish Universities, and Dr. Thurstan Holland, president of the first International Congress, held in London in 1925, also spoke.

The King and Queen of Sweden entertained the members of the Congress at the Royal Palace in the afternoon, the various official delegates being presented to the Crown Prince. The following evening the municipality of Stockholm gave a banquet and ball in the Gilded Room of the world-famous City Hall. Some 750 guests attended the dinner, at which Dr. G. W. C. Kaye offered the thanks of the English-speaking members. Later in the evening nearly 2000 attended the dance, which was held in the magnificent Blue Hall, the scene being one of almost oriental splendour.

The organisation of the Congress was masterly in the extreme and reflects the greatest credit on those responsible. No detail appeared to have been omitted which would contribute to the convenience of the members or facilitate the smooth working of the meetings and social gatherings. The numerous Congress publications were all printed in English, German, and French. Abstracts of the various papers read, some 250 in number, were supplied, together with a 'catalogue' of portraits and particulars of all the members. An exhibition of X-ray and radium apparatus of unusual excellence and dimensions included a joint exhibit of British manufacturers which attracted much attention.

The four main congressional sections, which ran simultaneously, were devoted respectively to diagnostics, therapy, heliotherapy, and radiophysics. Among the medical papers from England may be mentioned one on the rationale of radiation therapy, by Dr. R. Knox, and one by Dr. S. Melville, who contributed to a discussion on instruction and training in medical radiology. Prof. Forssell's demonstration, which drew a large audience, of the after-results of X-ray and radium therapy, illustrated in an out-

standing way the degree of success of this type of treatment in malignant disease. Dr. R. G. Canti's striking kinematograph film showing the effect of radium radiation on the living cell attracted so large an audience that it had to be repeated. Dr. S. G. Scott gave a paper on the remarkably beneficial effects of X-ray treatment on asthma. Prof. Friedrich described the new Institute of Radiology of the University of Berlin. Prof. Siegbahn and his school of workers took an active part in the physics section, to which papers were also contributed by Dessauer, Duane, Glasser, Behnken, Solomon, and others.

The two lasting achievements of the Congress were, first, the unanimous international adoption of the proposals of the British X-ray and Radium Protection Committee. This sets the seal of international approval on the British pioneer efforts to set up standards of protection and so avoid the well-known dangers of over-exposure for the X-ray worker. The result should be to unify protective measures and devices and improve the working conditions of X-ray and radium operators in all countries. The question of seeking legal authorisation for such recommendations was left to each country to deal with as appears to it best. A standing International Protection Committee was set up with Dr. G. W. C. Kaye and Dr. S. Melville as honorary secretaries.

The second noteworthy accomplishment was the adoption of an international unit of X-ray intensity. This unit is that originally proposed by Villard and afterwards and more definitely by Friedrich, and is now defined as "the quantity of X-radiation which, when the secondary electrons are fully utilised and the wall effect of the chamber is avoided, produces, in one cubic centimetre of atmospheric air at 0° C. and 76 cms. mercury pressure, such a degree of conductivity that one electrostatic unit of charge is measured at saturation current." It was agreed to call the unit 'the Röntgen' and to designate it by the letter small 'r.' It still remains, of course, that a specification of dosage for therapeutic or other purposes will require also a specification of quality of the radiation used, and for practical purposes this is sufficiently defined at present either by the half-value layer in some specified material or by the effective wave-length method of Duane. The International X-ray Unit Committee, set up in London at the first Congress, at the instance of the British Committee, was invited to continue its work to evaluate, if possible, the erythema dose of the therapist in *r* units. Prof. Siegbahn was elected chairman, and Prof. E. A. Owen and Prof. H. Holthusen hon. secretaries.

The third International Congress will be held in September 1931 in Paris under the presidency of Dr. A. Bécère. For the interim, an executive committee of seven from as many different countries was set up, the British representative being Dr. Thurstan Holland.