

ton (New York), Dr. E. De Wildeman (Brussels), Dr. R. E. Fries (Stockholm), Professor B. Hayata (Tokyo), Dr. A. W. Hill (Kew), Professor H. Lecomte (Paris), Dr. E. D. Merrill (New York), Professor R. Pampanini (Florence), Professor Hans Schinz (Zurich), Dr. O. Stapf (Kew), Professor R. Wettstein-Westersheim (Vienna).

### THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE draft of the program for the meeting of the British Association at Bristol from September 3 to 10 has now been completed and is summarized in the *London Times*. There will again be some 300 papers. The botanical section's addresses are unusually numerous, but the president this year is Professor F. O. Bower, emeritus professor of botany in the University of Glasgow. A number of the delegates to the International Congress of Botanists at Cambridge will go on afterwards to this meeting.

The president's address this year will also follow the modern rather than the older style. The model which passed in review the advancement made in every department of science will not be adopted by Professor Bower. His address will be purely botanical and will consist largely of a statement concerning his own work, and his subject will be "Size and Form in Plants."

It is interesting to note, according to the *Times*, that at a meeting in Bristol in 1898 Sir William Crookes prophesied a world-scarcity of wheat unless agriculture sought the aid of chemistry. This year one of the subjects of the agricultural section will be the relation of nitrogen to our food supply.

A meeting in Bristol is also a natural stimulus to the archeological, geological and engineering interests. There will be lectures on Roman remains in Gloucestershire and on geological formations such as those at Cheddar. Modern engineering has an important representative in the Bristol Aeroplane Company. There will be papers on recent progress in air-cooled aero-engine development and on the present position of the high-speed heavy oil engine. The latter will be associated with another lecture, by Lieutenant-Colonel

V. O. Richmond, the designer of the airship R 101, which is driven by heavy oil engines. There will also be lectures on the construction of R 100 by Mr. B. N. Wallis and on the Graf Zeppelin by Herr W. E. Doerr, and films of all three airships will be shown.

Much attention will be given by the section of mathematical and physical sciences to wireless problems. A discussion on the meteorological relations of atmospheres will be shared by Dr. R. A. Watson-Watt, Professor E. V. Appleton and Mr. M. A. Giblett. Professor Appleton will also read a paper on wireless echoes and wireless demonstrations will be given by the B.B.C. Town-planning will be fully discussed by the geography section and the position of the British dyestuffs industry will be discussed in the chemistry section by Professor G. T. Morgan, Sir William Pope, Professor J. F. Thorpe, Professor A. G. Green and others.

The public lectures will be more numerous than usual. Bath, Cheltenham, Gloucester, Devizes and Chard, for instance, have all asked for lectures on economic subjects. Sir Josiah Stamp will lecture at Bath on the price level and scientific control. Weston-super-Mare, having chosen a health subject, will hear Professor Winifred Cullis on "Breathing under Difficulties"; Swindon will have a lecture on some branch of aeroplane engineering by Wing Commander Cave-Brown-Cave, and Cirencester will have a description of Gloucestershire excavations by Dr. R. E. Mortimer Wheeler.

One of the subjects for Bristol is the bearing of research on the improved production of apples. Sir Daniel Hall will give this lecture on market day. Sir Arthur Keith will speak on the contribution of Dr. John Beddoe, the Bristol anthropologist, to modern anthropology. East African archeology and astronomy will be the other subjects at Bristol.

The centenary meeting of the British Association will be held next year in London, probably with General Smuts as president. It will take place at the end instead of the beginning of September, and its chief meetings will probably be held at the Central Hall, Westminster.

## SCIENTIFIC NOTES AND NEWS

THE eightieth birthday of Dr. William H. Welch was celebrated in the Kitasato Institute for Infectious Diseases in Tokyo on April 8. The main address was made by Dr. Kitajima; other speakers were Dr. Madsen, of Copenhagen; Professor Kofoid, of the University of California, and Dr. Kitasato.

A DINNER was recently given in London by the Physiological Society in honor of the eightieth birth-

day of Sir Edward Sharpey-Schafer, professor of physiology at the University of Edinburgh.

IN honor of Dr. George F. Arps, professor of psychology and dean of the College of Education of the Ohio State University, a dinner was given on the tenth anniversary of his deanship. Dr. W. O. Thompson, president emeritus; Julius F. Stone, chairman of

the board of trustees; Dr. Boyd H. Bode, and Professor Wilbur H. Siebert paid tribute to him.

At a recent meeting of the council of the French Society of Industrial Chemistry, Professor Marston Taylor Bogert, of Columbia University, was elected to honorary membership.

PROFESSOR SIGMUND FREUD, psychiatrist, of Vienna, has been awarded the Goethe prize for scientific and literary distinction.

SIR CHARLES SHERRINGTON, Waynflete professor of physiology in the University of Oxford, and Dr. J. A. Arkwright, honorary bacteriologist to the Lister Institute of Preventive Medicine, have been appointed members of the British Medical Research Council in succession to Sir Frederick Hopkins and Sir Charles Martin.

DR. HUGH P. BAKER, who served as the first dean of the New York State College of Forestry at Syracuse University from 1912 to 1920, has been re-elected to that office by the board of trustees. He succeeds the late Dean Franklin Moon. Dr. Baker left Syracuse University to accept a position as executive secretary of the American Paper and Pulp Association. Two years ago he became manager of the department of trade association service in the U. S. Chamber of Commerce. Before going to Syracuse the first time he was head of the departments of forestry of the Pennsylvania State College and of the Iowa State College. Professor Nelson C. Brown, acting dean of the college since Dr. Moon's death, was given a vote of appreciation for his service by the trustees. He will remain in the college in an administrative capacity.

DR. ALLAN WILSON HOBBS, professor of applied mathematics and a member of the faculty for thirteen years, has been appointed dean of the College of Liberal Arts of the University of North Carolina, succeeding Dr. Addison Hibbard, who resigned, in May to accept a position at Northwestern University.

UNDER the Bosch benefaction at Sydney University the following appointments have been made: to the chair of surgery, Dr. Harold Dew, practicing surgeon of Melbourne; to the chair of bacteriology, Dr. Hedley Duncan Wright, reader in bacteriology in the University of London and assistant editor of the *Journal of Pathology and Bacteriology*, and to the chair of medicine, Dr. Charles George Lambie, lecturer in medicine at the University of Edinburgh.

DEAN ROSCOE POUND, of the Harvard Law School, has been nominated by the British group for judge of the Permanent Court of Arbitration. The Australian group also nominated Dean Pound to fill the unexpired term of Mr. Charles Evans Hughes.

THE Secretary of State for Scotland has appointed Mr. A. Froude to be registrar-general for Scotland, in succession to Dr. James Craufurd Dunlop, whose retirement under the age limit will take effect on September 3.

THE American Engineering Council has announced the appointment of six engineers to an advisory committee which, under Dr. George K. Burgess, director of the United States Bureau of Standards, will plan the design and equipment of the National Hydraulic Research Laboratory. Two members of the committee—John R. Freeman, of Providence, and William B. Gregory, professor of experimental engineering at Tulane University—will devote several months to the study of hydraulic laboratories in Europe. The other members of the advisory committee are Sherman M. Woodward, professor of mechanics and hydraulics at the University of Iowa; Lewis F. Moody, consulting engineer for Cramp-Morris Industrials, Inc.; Ely C. Hutchinson, editor of *Power*, and Blake R. Vanleer, assistant secretary of the American Engineering Council.

THE National Tuberculosis Association announces the appointment of three research fellows for the academic year 1930-31. The successful candidates were selected from a large number applying from all parts of the country. Those to whom the awards were made are: Alvin E. Belden, M.D., Lancaster, Pennsylvania; William F. Lawrence, C.P.H., Portsmouth, Virginia, and Edna E. Nicholson, A.B., Ann Arbor, Michigan.

THE trustees of the Ramsay Memorial Fellowships have made the following awards of new fellowships for the session 1930-31: Mr. W. R. Angus, a fellowship of £300, tenable for two years, at University College, London; Dr. K. Krishnamurti, a fellowship of £300, tenable for one year, at University College, London; Dr. James Bell, a Glasgow fellowship of £300, tenable for two years, at University College, London, and Dr. A. Girardet, a Swiss fellowship of £300, tenable for one year, at the University of Edinburgh. The trustees have renewed the following fellowships for the same session: Dr. H. Erdtman (Swedish fellow), University College, London; Dr. A. Klinkenberg (Netherland fellow), University of Cambridge; Professor Y. Nagai (Japanese fellow), University College, London, and Dr. Lloyd M. Pidgeon (Canadian fellow), University of Oxford.

THE trustees of the Beit Fellowships for Scientific Research, founded and endowed in 1913 by Sir Otto Beit, have awarded fellowships, tenable at the Imperial College of Science and Technology, South Kensington, for the two years 1930-32, of the value of £250 a year each, to Mr. Bernard William Brad-

ford, for research upon the electrical condition of hot metallic surfaces when promoting the combustion of carbonic oxide; to Mr. George Maxwell Richardson, for research into the further application of electro-metric methods and theory to the study of problems of biological interest, and to Mr. Geoffrey Herbert Cheesman, for research on the electron distribution and structure of the halogen oxides.

DR. GEORGE GRANT MACCURDY, of Yale University, honorary collaborator in the anthropological department of the U. S. National Museum, has been appointed American delegate to the eleventh International Congress of Prehistoric Anthropology and Archeology at Coimbra, Portugal. Dr. MacCurdy will also be the American delegate to the fourth session of the International Institute of Anthropology meeting simultaneously at Coimbra.

DR. A. S. HITCHCOCK sailed for Europe on August 1 to attend the International Botanical Congress at Cambridge. He attends the congress as delegate from the U. S. Department of Agriculture, the Botanical Society of America and the Botanical Society of Washington.

DR. C. J. WIGGERS represented Western Reserve University at the medical meetings connected with the recent celebration of the one hundredth anniversary of Belgian independence in Brussels.

MR. RUDYARD BOUTON, assistant curator of ornithology at the Carnegie Museum of Pittsburgh, an expert in the collection and preservation of insects, and Mrs. Bouton, sailed on August 5 for England. They will accompany Mr. and Mrs. Ralph Pulitzer in an expedition to southeastern Angola, Africa and down the Okavango River, where it is hoped to find specimens of the white rhinoceros. The specimens collected by the expedition will go to the Carnegie Museum.

THE Scarritt Patagonian expedition to collect fossil mammals under the leadership of Dr. George Gaylord Simpson, of the staff of the American Museum of Natural History, sailed for Buenos Aires on August 8.

DR. CLYDE FISHER, of the American Museum of Natural History, has visited Iceland on a mission for the New York Bird and Tree Club, of which he is president. He will also visit Norway, Denmark and Sweden, where he expects to take photographs for the educational work of the museum. Dr. Fisher took with him as a gift from the New York Bird and Tree Club to the people of Iceland several crates of small American evergreen trees, as well as the promise of seedlings to be sent in the coming fall and spring. These were presented at the millennial celebration of the founding of the government of Iceland.

*Natural History* reports that Dr. James P. Chapin, associate curator of birds of the eastern hemisphere at the American Museum, is now on a collecting trip in the Belgian Congo, which is made possible through a fund established by Mrs. Dwight Arven Jones. Dr. Chapin attended the seventh International Ornithological Congress at Amsterdam with Dr. Frank M. Chapman, and from there went to Brussels to complete arrangements for his journey to the Belgian Congo. Dr. Chapin is accompanied by Franklin Edson, 3d, a representative of the department of mammalogy at the American Museum, who had volunteered to assist him. The material collected will make possible a group showing the bird life of an African tropical forest and will be a companion group to one depicting the bird life of the plains.

A SERIES of Hertzlein lectures was given under the auspices of the University of California and Stanford University in San Francisco on August 7, 8 and 9, by Dr. Charles Singer, of the University of London. The titles of the separate lectures were: "Medieval and Modern Medicine" Part I and Part II, and "The Scientific Works of Leonardo da Vinci."

THE annual meeting of the American Astronomical Society will be held in Chicago from September 3 to 5.

THE fourth International Congress for Individual Psychology will be held in Berlin from September 25 to 28. It will open with an address by Dr. Alfred Adler.

THE thirteenth International Congress of Hydrology, Climatology and Medical Geology will be held at Lisbon from October 15 to 23. During the congress visits will be paid to the more important towns and spas of Portugal, and an excursion will be made to the Azores and Madeira. Further information can be obtained from the Faculty of Medicine, Lisbon.

THE council of the Royal Institute of Public Health of Great Britain has accepted an invitation from the German Government, the municipality of the city of Frankfurt and the university of that city to hold its congress in May, 1931, in Frankfurt. The Marquess of Reading will preside.

It is reported in *Nature* that the fifth ordinary general meeting of the Ross Institute and Hospital for Tropical Diseases was held on July 9. The Chairman, Sir Charles McLeod, reviewed the work of the year. Sir Ronald Ross, Sir William Simpson, Sir Aldo Castellani and D. Shaw-Mackenzie have continued their researches, and a new department in charge of Sir Malcolm Watson has been created to deal with malaria and its problems. Short courses for planters on malaria control have been held and much propaganda work on this subject has been prosecuted.

The institute has no endowment fund except a few hundred pounds and is dependent for its income upon contributions from companies and donations and subscriptions, an increase in which is appealed for.

BECAUSE of a year's delay in obtaining radium for the Marie Curie Radium Institute of Warsaw, for which Mme. Curie was given \$50,000 in 1929 by a group of Americans, the hospital will not be able to open its doors until December. The delay is said to have had its advantages, however, for the interest on the money will be sufficient to purchase platinum screens for the radium when it becomes available.

MAJOR-GENERAL MERRITTE W. IRELAND, Medical Corps, U. S. Army, states that the "Index Catalogue of the Surgeon General's Library" is to be continued, after consideration of replies to his recent letter of inquiry. Ninety per cent. of institutions and organizations addressed expressed an earnest desire for a continuation of the catalogue. A new series will be started after the completion of the present, or third, series.

AN Associated Press dispatch reports that Premier Mussolini, on receiving plans for the dental clinic for which Mr. George Eastman, of Rochester, N. Y., gave \$1,000,000, ordered the opening for October 28, 1932, the tenth anniversary of the Fascist march on Rome.

CHRISTIAN MICHELSEN, formerly prime minister of Norway, has instituted a fund of 5,500,000 crowns for scientific research. The statutes of the institute to which the funds are to be given contain a provision to the effect that the board may grant yearly contributions to Norwegians interested in research work.

A DECISION was handed down by the Court of Claims on June 16, 1930, in a test suit brought by the Cosmos Club, Washington, which holds that it is not a social, sporting or athletic club within the meaning of the Internal Revenue Act providing for taxes on dues and initiation fees of members of a social, sporting or athletic club and that therefore the ten per cent. tax on dues and initiation fees of members which heretofore has been exacted should be returned by the government.

A DECISION resulting from the refusal of Harvard University to accept a gift in a will to endow courses for instruction in eugenics has been handed down by the Supreme Court of Pennsylvania in the cases of Mears' Estate, in which the court held that the gift was one which must be deemed to be for a charitable use, and that since the specific purpose had failed because of Harvard's rejection of the gift, the court would name another medical school to carry out the charitable intent of the testator.

## DISCUSSION

### EARLY DEFINITIONS OF THE MATHEMATICAL TERM ABSTRACT GROUP

WHILE science is international it is always of some interest to consider the question in what country certain fundamental ideas were first published. For instance, it is well known that English and German writers were inclined for many years to claim for their own respective countries the discovery of the calculus under the leadership of I. Newton and G. W. Leibnitz, respectively. Hence it is of some interest to note here that the honor of the discovery of abstract group theory seems also to be shared by these two countries, although up to the present time it has been customary to credit German writers alone, especially L. Kronecker (1870) and H. Weber (1882 and 1893), for the earliest publications of sets of postulates relating to abstract groups. Sometimes G. Frobenius (1887) has also been thus credited.

This credit entails, however, a striking anomaly in the history of group theory since it is universally admitted that the English writer A. Cayley was the first to publish a complete determination of the possible abstract groups of all the orders which do not exceed certain small numbers, publishing this determination for the orders less than 8 in 1854 and for order 8 in

1859. It is obviously impossible to determine rigorously all the abstract groups of a given order without employing a definition of the technical term abstract group, and such a definition implies a set of postulates. What is perhaps a still more striking anomaly in the history of group theory is the fact that A. Cayley is commonly given credit for the earliest proof (1854) of the fundamental theorem that every abstract group of finite order can be represented as a regular substitution group, and such a proof seems to imply a set of group postulates.

This proof results directly from the well-known group table which was used by A. Cayley in 1854, and hence it seems to imply that a set of group postulates was known in England at that time. As a matter of fact it is not difficult to see that A. Cayley used here substantially the same set of postulates for a finite group as the one which was published later by H. Weber in the *Mathematische Annalen*, volume 20 (1882), page 302. It is true that A. Cayley's postulates were not as clearly formulated as some of those which were published later and that he restricted his attention to groups of finite order. On the other hand, the set of postulates which was published by L. Kronecker in 1870 and which has been widely quoted