on the advancement of science. The Century of Progress Exposition, conceived, planned and carried to successful realization despite tremendous difficulties in the immediate past, offers to the association concrete demonstrations of the advancement of science in variety and extent heretofore unessayed by any organization or community in the world. The unique character of the exposition will be apparent to all who participate in the meetings.

Working together the Century of Progress and the association issued last year invitations to a selected list of leaders in scientific research throughout the world to visit Chicago and take part in the programs of the meeting. Acceptances were received from about forty and their contributions appear in the general program of the meeting outlined later in this announcement. In consequence of the presence and participation of these foreign guests together with many distinguished men from this continent, the meeting takes the form of an international congress. It affords a rare opportunity for personal contacts and exchange of views on the progress of science here and elsewhere which will be of the highest value to American workers and will stimulate increased activity in these fields.

The list of foreign guests, as already printed in SCIENCE for November 25, 1932 (p. 484), has suffered only slight modification due to various circumstances. The speakers and their topics so far as announced are given later in this article in the record of meetings and general sessions.

The period of two weeks decided upon for the meetings is well filled by the programs of the sections and of the participating societies. While it has not been possible to group together all similar organizations, still the first week in general is being utilized by societies representing pure sciences, whereas those in applied sciences meet in the second week. The number of affiliated societies meeting with the association is unexpectedly large; indeed, the group of engineering societies is so large that this period has rightly been designated as Engineering Week. Relations to the organizations have determined the precise time for certain special groups; thus the meetings of Section N (Medical Sciences) come in the first week, immediately after the convention of the American Medical Association in Milwaukee, and those of Section Q (Education) fall at the end of the second week, thus leading up to the sessions of the National Education Association immediately following.

To a large extent the programs of the sections and the affiliated societies have assumed a special character for this occasion. Many symposia have been organized which merit particular attention, as they include addresses by the foreign guests and by American scientists of distinction. Single addresses and short series of invited papers dealing with particular problems have been preferred to miscellaneous lists of contributed papers. An effort has been made to leave time open, especially in the afternoons, which can be used for group conferences, informal discussions and social affairs.

The evenings have been devoted to a series of general sessions, with programs of wide general interest and speakers in fields commanding present attention. Most of these programs are announced under the auspices of some section and are planned definitely to appeal to the general membership of the association, both by nature of the topics presented and of the speakers. It is the hope of the association that these occasions may also attract such attention from the citizens of Chicago and vicinity as will make known the work of the association and the significance of science as the essential factor in determining progress in the coming century. While the list of events is still subject to slight modification, the series of evening sessions will be substantially as follows.

EVENING MEETINGS

On Monday evening, June 19, the Century of Progress Exposition will tender a reception to the association and associated societies in honor of the foreign guests. This reception will be held in the Hall of Science on the Exposition Grounds. Admission will be by badge or ticket only. Members should not fail to register sufficiently early to secure the necessary items.

On Tuesday evening, June 20, Section N (Medical Sciences) has organized a general session for the association and its friends. The program will be devoted to the topic of "A Century of Progress in Medicine." The public is invited. The speakers include: Dr. Morris Fishbein, editor of the *Journal* of the American Medical Association, on "Frontiers of Medicine"; Dr. Paul Dudley White, of the Harvard Medical School, on "Heart Disease"; Dr. Max Cutler, of the Michael Reese Hospital, on "The Conquest of Cancer"; Madame Curie, of Paris, will also take part. This meeting will be held in a large auditorium, the location of which will be announced later.

On Wednesday evening, June 21, the general session will be conducted under the auspices of Section B (Physics). The speakers will include Dr. F. W. Aston, of Cambridge, England, on "The Story of Isotopes," and President R. A. Millikan, of the California Institute of Technology, on "New Light on Nuclear Physics."

The same evening Section F has provided another general session, with Dr. Richard Goldschmidt as speaker, on the topic "Some Aspects of Evolution."

Thursday evening, June 22, will be devoted to a

banquet given by the association in the Grand Ball Room of the Hotel Stevens in honor of foreign guests. Members desiring tickets for themselves and friends should make early reservation. Attendance at the banquet is also open to friends of the association, after provision has been made for members desiring to participate. Further details will be announced in the general program.

On Friday evening, June 23, there will be a general session at the Field Museum under the auspices of Section H (Anthropology), in which Professor C. U. A. Kappers, director of the Central Institute for Brain Research, Amsterdam, Holland, will give an address on "The Anthropology of the Near East in Connection with the History of its Population." On this evening the Field Museum will hold an open house for the members of the association and their guests.

Section I (Psychology) sponsors a general session for Saturday evening, June 24, in which Professor Charles E. Spearman will speak on "Recent Advances in Our Knowledge of Human Personality."

On Monday evening, June 26, comes a symposium arranged with the cooperation and support of the Far Reaching Foundation of Denver. The program on the subject "Nationalism" has been worked out by a special committee of Section L (History and Philology). Professor Charles A. Beard, president of the American Historical Association, will present a paper on "Nationalism in American History." Professor Bernadotte Schmitt, of the University of Chicago, will also speak. It is hoped that one or more of the foreign guests will take part.

On Tuesday evening, June 27, Section M (Engineering) and the engineering societies will hold a joint general session in the Grand Ball Room of the Palmer House. Dr. A. P. M. Fleming, of the Metropolitan Vickers Electrical Company, Manchester, England, will address the session on "The Development of Engineering in the Last One Hundred Years."

Wednesday, June 28, is recognized by the Century of Progress Exposition as Engineers' Day. The general banquet of the engineering societies and Section M will be held that evening in the Grand Ball Room of the Hotel Stevens.

Thursday evening, June 29, Section K (Social Sciences) will sponsor a general session. Professor Henry Clay, of Manchester, England, will deliver the address of the occasion.

Friday evening, June 30, the general session is held under the auspices of Section Q (Education). The topic of the evening is "Education for a Democracy." Professor Walter F. Dearborn, of Harvard University, will preside. Miss Jane Addams, of Hull House, Chicago, and President Robert M. Hutchins, of the University of Chicago, will speak.

Certain other special features in the general program merit particular mention. Among these is the conference on "The Diffusion of Scientific Knowledge," organized by Science Service under the leadership of Dr. William H. Howell. The wide-spread and unfortunate failure of the general public to recognize the fundamental importance of research as a *condicio sine qua non* of advancement in the well-being of all nations and the necessity of maintaining and increasing rather than reducing and crippling such activities at the present time make this topic of outstanding importance. The discussion by a group of distinguished foreign scholars from widely different environments is certain to yield results of great value.

The meeting of the American section of the International Union of Pure and Applied Sciences with foreign guests will convene on Saturday morning, June 24, in the International House on the University of Chicago campus, under the leadership of President R. A. Millikan, chairman of the union, and Professor F. K. Richtmyer, of Cornell University, chairman of the section. The program includes papers by Sir Richard Glazebrook, M. Henri Abraham, professor at the Sorbonne, Professor Leigh Page, of Yale University, Dr. George A. Campbell, of the American Telephone and Telegraph Company, Dr. Harvey L. Curtis, of the U. S. Bureau of Standards, and Professor A. E. Kennelly, of Harvard University.

On Tuesday afternoon, June 27, the American Society for Testing Materials has arranged for a joint meeting with Section M (Engineering). On this occasion the Edgar Marburg Lecture will be given by Dr. Herbert John Gough on "The Crystalline Structure in Relation to Failure of Metals, Especially by Fatigue." In 1925 the American Society for Testing Materials instituted the Marburg Lecture for the purpose of securing at annual meetings, by leaders in the respective fields, reports of outstanding developments in the promotion of knowledge of engineering materials. The lecture commemorates the name of the first secretary of the society, through whose development of the technical programs the organization has become widely recognized as a forum for the discussion of properties and tests for engineering materials.

Important symposia and more technical addresses by distinguished foreign guests and others have been developed by many sections and societies and are listed for meetings during the afternoon hours and in connection with society dinners. A record of these items will be found under the programs of the organizations concerned.

On Sunday morning, June 25, members of the association are invited to attend services in the University of Chicago Chapel. The address will be given by Professor Shailer Mathews. It is hoped that special

courtesies can be offered to the association on Sunday afternoon also, of which later notice will be given.

ENTERTAINMENT FOR LADIES

Mrs. Henry Gale, chairman of the Ladies' Committee, has reported the present stage of plans for entertaining the ladies while their husbands are attending the scientific sessions. On Wednesday, there will be an automobile trip up the North Shore, luncheon and visits to two or three private gardens, with tea; on Thursday afternoon, a visit to the University of Chicago campus, with tea at the Ida Noyes Hall; in the late afternoon, probably on Friday, a boat trip on the lake in private boats of Chicago yachtsmen. For at least the first and last of these functions the parties will be limited in number. Plans for registering for them will be announced in the printed programs for the meetings, along with plans for visiting other points of interest in Chicago by individual request, guest memberships at the women's clubs, etc.

THE CENTURY OF PROGRESS EXPOSITION

(From the Exposition office through the courtesy of Dr. Philip Fox)

The Century of Progress Exposition, in addition to having a historical background, will show the latest industrial developments and the basic scientific principles behind them. A replica of Fort Dearborn, Chicago's first building, is seen there, and with a turn of the head the lofty skyscrapers of America's foremost contribution to architecture, which had its inception in Chicago.

The general type of exhibits of the Basic Science Division was outlined by the Science Advisory Committee of the National Research Council. The exhibits are intended to present a unified front of modern science, but for operating purposes they are classified under the following seven heads—Mathematics, Astronomy, Physics, Chemistry, Biology, Geology and Medicine. The exhibits are for the most part presented in the Hall of Science. They are designed to be intelligible and appealing to the uninitiated and at the same time of interest to the specialist.

In the field of biology, every resource at command will be enlisted to present in clear and simple fashion a few of the fascinating problems and principles of that science. Living plants and animals will be used in the demonstration of the principles of genetics, evolution, ecology and animal societies. The rôle of the cell will be emphasized. Cell activities will be demonstrated and illustrated by models of magnified cells. So far as possible the demonstrations will be made by means of moving models, living specimens, moving pictures and transparencies, as well as preserved plants and animals. Among highly interesting presentations will be the embryological exhibits, the models displaying the physical mechanism of speech and thought, the union of plant cells, the production of food in plants, the growth of trees, marine biology, the distribution of plant life over the globe, etc.

Chemistry will be presented as the fundamental science of the transformation of matter. The exhibits will attempt to demonstrate what chemistry is and what it has done to advance civilization. Such phenomena as burning, the rusting of metals, the combustion of fuels, the function of breathing, etc., will be shown as various manifestations of chemical change. The development of the world's raw materials and their production by means of chemical transformation into articles and commodities of vital necessity to mankind will be shown. The principle of catalysis and its application to the production of useful products, the application of the principle of absorption and the study of colloidal matter and the products which have resulted will likewise be portrayed. Important chemical applications of electricity will be demonstrated.

In the geological exhibits the origin and growth of the earth will be traced by means of operating models and other dynamic exhibits. How the processes of deposition and erosion have changed the earth's contours will be shown. The formation of mountain ranges, how volcanoes and geysers occur and the origin and recording of earthquakes will be explained. Petroleum's occurrence in the earth and man's amazing methods of locating it will be shown by a series of exhibits. A geological time clock, which records 2,000,000,000 years of the earth's history within the space of a few minutes, will be another unique feature of this exhibit.

Visitors will be given a broad and comprehensible view of mathematics. This science, for purposes of clarity in the exhibit, has been divided into four major subdivisions: numbers and algebra, geometry, analysis and applied mathematics. Historic apparatus and instruments used by the U. S. Navy in navigation, gunnery and communication will be on display. The contributions of mathematics to the development of other basic sciences will be interestingly set forth.

In the exhibits of physics, visitors will learn of a wide variety of phenomena—how gases can exert high pressure, how gas and steam engines and refrigerating systems operate, how drops of water and other liquids happen to be round, how sounds are produced, transmitted through the air and recorded. Fundamental electrical phenomena will be demonstrated, and the application of electricity and magnetism to industrial uses for man's welfare will be clearly set forth. One of the interesting features of the exhibits of physics