On June 25 helium was compressed in a narrow brass tube forming communication between two German silver tubes. The brass tube and part of the two German silver tubes were in a liquid helium bath. At a pressure of 130 atmospheres the tube system appeared to be blocked. When the pressure was diminished by 1 or 2 atmospheres the tube system was open. The temperature of this experiment was somewhat uncertain. By diminishing the pressure of the liquid helium bath the same phenomenon was observed at a temperature of about 3.2° K. at 86 atmos., and at a temperature of about 2.2° K. at 50 atmos. From the regularity of the phenomenon it appears that we were observing the solidification curve of helium. This method of observing solidification has indeed already been used by Kamerlingh Onnes and Van Gulik in preliminary measurements on the curve of solidification of hydrogen.

A repetition of the experiment on July 1 confirmed the early observations. At 4.2° K. helium solidified at 140 atmos. The solidification curve was prolonged to 1.1° K., and the helium solidified then at 26 atmos. The exact numerical data will be given elsewhere. The solidification curve bends so that at the lower temperatures it shows a tendency to become parallel to the axis of the temperatures. So far as can be ascertained from these observations, helium is expected not to have a solid-liquid-gas triple point.

Finally, helium was compressed in a glass tube provided with a magnetic stirrer after the pattern of Kuenen. The observations on the solidification of helium were confirmed. The stirrer was seen to stick when the helium solidified. In one experiment part of the substance was liquid and part solid. One could hammer the solid block with the stirrer that was in the liquid part. A limiting surface between the solid and the liquid could not, however, be seen. Solid helium forms a homogeneous transparent mass, the refractive index of which probably differs extremely little from that of the liquid.

RADIATION FROM THE CARBON ARC

AN investigation is being made at the Bureau of Standards of the radiation from the carbon arc, a matter of great importance in the treatment of diseases by exposure to light, especially sunlight. However, sunlight can not always be obtained, hence the demand for an artificial source approaching sunlight in its characteristics.

The investigation is being made in duplicate: (1) By mapping the ultra-violet spectrum by means of a quartz spectroradiometer, and (2) by measuring the spectral components of the total radiation emitted by the arc, by using a thermopile and screens which completely absorb certain spectral regions and freely transmit others.

Thus far studies have been made of the standard carbons on the market, *viz.*, "white flame," "red flame," "yellow flame," "blue flame" and "neutral core" carbon electrodes; also several special carbons with cores of nickel, tungsten, etc. The effect of varying the current has been studied, using 15, 30, 60, 90 and 122 amperes.

The high-intensity arc (120 amperes) has been found to be closest to the sun in spectral composition. It emits considerable radiation of wave lengths longer than 4μ, which are not in the solar beam, but this can be eliminated easily by using a window of fused quartz, which absorbs the long infra-red rays.

THE COMMITTEE ON INTELLECTUAL CO-OPERATION OF THE LEAGUE OF NATIONS

THE following despatch from Geneva, dated July 29, appeared in a recent issue of *The Boston Transcript:*

The intellectual and scientific leaders of the world are attending this week the meeting of the committee on intellectual cooperation of the League of Nations in Geneva. The committee has taken steps toward coordinating the intellectual work of the world under the chairmanship of Professor H. A. Lorentz, one of the world's most noted physicists and secretary-general of the Netherlands scientific society. Others present were Dr. Albert Einstein, representing Germany; Dr. Vernon Kellogg, permanent secretary of the National Research Council, representing the United States; G. A. Murray, professor of Greek at Oxford, representing Great Britain, and Mlle. K. Bonnevie, zoologist, representing Norway.

Questions affecting universities, especially concerning progress in arts, letters and sciences and also policies in bibliography, were discussed. Exchange of students between countries was urged as the most effective means of advancing the intellectual life of the nations by the American delegate, Dr. Vernon Kellogg. "In my opinion no more important step toward fundamental development in internationalism has been made in recent times than the multiplication of international scholarships for the élite of the younger generation of scholars."

To facilitate the development of international scholarship, the committee considered the possibility of easier passport regulations, less expensive visas and reductions in transportation rates for international students, and encouraged the formation of international student associations. The committee also urged the establishment of university information offices by all countries and the cultivation of courses in internationalism at all universities.

An important report on scholarships was presented on behalf of Mme. Curie, who is absent in Brazil. In her recommendation she points out that since science has become so highly specialized, students must go to the particular places where they can obtain the best training for the subject in which they are interested, regardless of whether it is at home or abroad. She advocates two kinds of scholarships; one for the student who is just beginning his research, the other for the advanced worker

who may already have accomplished some research but needs financial backing in order to continue. She recommends a relaxation of the insistence on formal "credits" prevalent in some places and a stressing of the student's ability to work independently and find out for himself.

The delegates agreed that to inform one scientific worker concerning the researches of others is a major problem of science to-day. This is considered of fundamental importance, and extensive work on a bibliography in economic sciences was proposed as the subject of an international conference to be held at a later date. Cooperation between the various countries in the coordination of physical and biological bibliography is already well under way.

M. J. Destree, formerly minister for sciences and arts in Belgium, called attention to danger to scientific records due to the bad quality of paper and ink used since the war in publication of work. Mlle. Bonnevie reported on an investigation carried on in Norway, showing that the present types of paper will last less than a hundred years.

The proposal by Professor Arthur Korn, the German physicist, to synchronize all important timed operations in the world, presented by Professor Einstein, was favorably received.

The Orient, represented for the first time at a meeting of the international committee by Sir J. C. Bose, the well-known plant physiologist of India, received considerable attention; he will lecture at the University of Geneva on his discoveries in the vital processes of plants.

THE GOLDEN JUBILEE OF THE AMERICAN CHEMICAL SOCIETY

A LARGE number of foreign chemists will join with the chemists of this country in celebrating at Philadelphia during the week of September 6 the Golden Jubilee of the American Chemical Society, at which four thousand scientific men are expected to be in attendance.

Among those already here is Sir James Colquhoun Irvine, F.R.S., principal of the University of St. Andrews and head of its department of chemistry, known especially for his work on the chemical constituents of the carbohydrates. Sir James is lecturing at the summer session of Columbia University and will also speak on the rôle of chemistry in world affairs at the Institute of Politics at Williamstown. At the Sesquicentennial gathering of the American Chemical Society he will describe the growing interdependence of English and American chemists as shown by the developments of the last half century.

One member of the German delegation, Dr. Leonor Michaelis, professor of biological chemistry in the University of Berlin, is also in New York, as well as Dr. Ernst Cohen, professor of physical chemistry in the University of Utrecht. Both Professor Michaelis and Professor Cohen are lecturing at Columbia University during the summer.

Dr. Michaelis is also professor of biochemistry in the Aichi Medical University, Nagoya, Japan, and is the author of numerous research papers and monographs dealing with the physical chemistry of living matter. Dr. Cohen is president of the International Union of Pure and Applied Chemistry, which will meet in Washington during the week following the jubilee. This will be the first meeting of the Union, which consists of a council and an assembly, held in the United States.

Every civilized land will send delegates to the Philadelphia session. Among the French chemists to come are Dr. Camille Natignon, and Dr. Gabriel Bertrand. Dr. Matignon is editor-in-chief of *Chimie et Industrie,* heads a research laboratory in the Collège de France and was recently elected to the French Academy of Sciences. He is known for his work in mineral chemistry. Dr. Bertrand is professor of biological chemistry at the Sorbonne, and is chief of the service of biological chemistry of the Pasteur Institute. Dr. Bertrand's investigations into the venoms of batrachians and reptiles resulted in his discovery of vaccination against the bites of venomous serpents and has served as the scientific basis for subsequent developments made by others.

Denmark will send J. N. Bronsted, professor of physical chemistry at the Royal Polytechnic Institute, Copenhagen.

From Switzerland will come Peter Debye, professor of theoretical physics at the Technische Hochschule, Zurich. Professor Debye is the author of numerous researches in physical chemistry, and is the leading exponent of the theory of the electrical structure of matter as applied to the problems of specific heats, dielectrics and X-ray analysis.

Professor Bronsted and Professor Debye are also lecturers this summer at Columbia University.

Foreign experts who will speak at the raw rubber symposium are Dr. A. van Rossem, of Delft, Holland, and Dr. Henry P. Stevens, of London, consultant for the British Rubber Growers' Association. Canada will be represented by Dr. G. S. Whitby, of McGill University.

Heading the delegation from Italy will be Prince P. Ginori Conti, who will address the society on September 6, on "The Development of Chemical Industry in Italy."

The society has elected to honorary membership fourteen prominent chemists representing the United States, England, Holland, Scotland, Italy, Switzerland, Japan, Czechoslovakia and Belgium. They are: Ira Remsen, president-emeritus and professor-emeritus of chemistry, Johns Hopkins University; Theodore W. Richards, professor of chemistry, Harvard University; Edgar Fahs Smith, provost-emeritus of the University of Pennsylvania; W. Lash Miller, head