tions on which that institution is continually engaged. These cover the fields of general physics, radiology, acoustics, optics, electrical standards and measurements, wireless, metrology, aerodynamics and metallurgy. During last year the physics department of the laboratory was engaged on the measurement of several grams of radium purchased by the National Radium Trust for distribution by the Radium Commission to the centers authorized to receive it. This work has involved the testing of the platinum containers for leakage as well as the determination of the radium content. An instrument has been designed at the laboratory for the rapid visual identification, with the minimum of handling, of the large numbers of radium needles, tubes and applicators which come to Teddington for testing. There was noted during the year a marked increase in the number of tests on feebly active preparations, such as radio-active waters, ores, luminous compounds and the like. In X-ray measurement the workers in the department have been establishing the international unit of radiation, the "Roentgen," or "*r*" unit, which was adopted at the Stockholm conference in 1928, and measuring the pastille dose in this unit. Investigation into certain problems relating to the energetics of X-rays has been started, and the construction of a constant voltage generator for this purpose is well advanced. Among the problems which it is proposed to examine is the variation of X-ray output with tube voltage, anticathode material, and the angle which the X-rays make with the target surface and with the exciting cathode rays. The testing of protective materials and the inspection of X-ray equipment and hospital installations in accordance with the recommendations for X-ray and radium protection have been continued. Some interesting work has also been done on sound, a line of research to which little attention was paid until recent years. The production, reception and analysis of sound and speech, and their reproduction, transmission and magnification for broadcasting, telephony and similar purposes, have brought many problems to the laboratory. Experiments are in progress for the Aeronautical Research Committee with the object of reducing the noise of the flight of aeroplanes. High speed in an aeroplane contributes much to noisiness; an increase in 100 feet per second in speed multiplies the sound tenfold. The noise in the cabin of an aeroplane is stated to be one thousand times that in an express train. A portable noise-measuring instrument has been devised for preliminary work, and a number of measurements of air-screw noises have been made. Street noises, in particular the noise due to motor horns, are also being investigated. On the subject of glare—a parallel infliction—the laboratory is working on the effects of colored light sources, and on the problem of vision under night-driving conditions. Another useful side of the National Physical Laboratory's work is temperature research undertaken for the Food Investigation Board, including a study of distant-reading thermometer outfits. An electric resistance thermometer designed at the laboratory for cold storage work has been patented. A refrigerating railway truck, built for one of the railway companies, has been the subject of test. The truck is provided with a small methyl chloride refrigerating plant driven from the axle. A number of investigations have been made on long-distance journeys, which have shown that the plant is capable of cooling the truck and its cargo sufficiently rapidly, and also that the rate of temperature rise when the plant is not in operation is sufficiently slow. One part of the routine work of the laboratory is the testing of clinical thermometers. More than ten thousand of these were tested last year, and the demand for individual certificates showing the actual corrections at various points of the scale has increased by thirty per cent., as compared with the number issued in the pervious year.

THE WALTER RATHBONE BACON SCHOLARSHIP OF THE SMITHSONIAN INSTITUTION

UNDER the terms of the will of the late Virginia Purdy Bacon, of New York, the Smithsonian Institution some years since was bequeathed the sum of $50,000 to establish a traveling scholarship as a memorial to her husband, Walter Rathbone Bacon, for the study of the fauna of countries other than the United States. The amount available is the interest on the capital invested (about $3,000 a year), the incumbent to hold the scholarship not less than two years.

Applications for this scholarship, addressed to the secretary of the Smithsonian Institution, should be submitted not later than January 31, 1931. The application should contain a detailed plan for the proposed study, including a statement as to the faunal problems involved, the reasons why it should be undertaken, the benefits that are expected to accrue, the length of time considered necessary for the carrying out of the project, the estimated cost and the scientific and physical qualifications of the applicant to undertake the project.

The scholarship will be awarded for a term of two years. If at the expiration of the term it is desired to extend the time, the incumbent shall make application a sufficient time in advance, accompanied by a statement as to the necessity for such extension.

All collections, photographs, records and equipment become the property of the institution.

The incumbent shall not engage in work for remuneration or receive salary from other sources than the institution or its branches during the period of occupancy of the scholarship.

C. G. ABBOT,
Secretary

SUMMER SCHOOL FOR ENGINEERING TEACHERS

THE Society for the Promotion of Engineering Education announces that two sessions of its Summer School for Engineering Teachers will be held in 1931.

The first, on the teaching of chemical engineering, will be held at the University of Michigan from June 24 to July 14, inclusive. This session is being held in response to a suggestion by the American Institute of Chemical Engineers. Professor Alfred H. White, chairman of the department of chemical engineering of the University of Michigan, will serve as the local director.

The second, on the teaching of mathematics to engineering students, will be held at the University of Minnesota from August 24 to September 5, inclusive, in conjunction with meetings of the American Mathematical Society and the Mathematical Association of America, to be held at Minneapolis beginning September 7. This session of the school will be under the direction of Dean O. M. Leland, of the College of Engineering and Architecture, University of Minnesota.

The two sessions for 1931 will bring the total number of sessions held since the establishment of the school to eleven. This undertaking, which was begun in 1927, has now attracted 750 teachers to its sessions. The attendance has represented all parts of the United States and Canada and all teaching ranks. From small beginnings, with attendances of 40, the sessions have grown in numbers, 190 teachers attending those of 1930.

The programs are devoted primarily to principles and methods of teaching the principal subjects of engineering curricula. The contents of courses, including classroom procedure, examinations and tests, departmental organization and other topics relating directly to the major purposes of the school, are presented through lectures, informal discussions and in seminar periods. Incidental attention is also given to the history of the subject, coordination with other subjects of the curriculum, advanced phases of the subject, relationship with engineering practice and other topics.

Members of the school, including the staff, live together for the duration of the sessions in a dormitory of the institution acting as host. Recreational features are provided as a part of each session. It is expected that from 50 to 100 teachers will attend each of the sessions of 1931 as "students." The teaching staffs, as in the past, will be recruited from among the leading teachers, engineers and scientific men of the country. Professor H. P. Hammond, of the Polytechnic Institute of Brooklyn, is the general director of the school.

SCIENTIFIC NOTES AND NEWS

THE University of Paris presented honorary doctorates on November 8 to Dr. John Dewey, professor of philosophy at Columbia University, and to Professor P. Zeeman, professor of physics at the University of Amsterdam.

ON his return to Stockholm from China, in the spring of 1931, where he has been making explorations in Tibet and Mongolia, Dr. Sven Hedin will be presented with the first "Hedin Medal" by the Swedish Anthropological and Geographical Society.

AT a dinner on October 31 on the occasion of the presentation to Mr. Daniel C. Jackling by the American Institute of Mining and Metallurgical Engineers of the William Lawrence Saunders Gold Medal, Mr. John Hays Hammond, the 1929 Saunders medallist, was the toastmaster. The speakers were Mr. Newcomb Carlton, president of the Western Union Telegraph Company; Mr. Lafayette Hanchett, president of the Utah Light and Power Company and Mr. W. S. Boyd, assistant managing director of the Nevada Consolidated Copper Company.

THE REVEREND T. E. R. PHILLIPS, rector of Headley, Surrey, has been awarded the Goodacre medal and gift of the British Astronomical Association, in recognition of his work generally for the association and particularly of his observations and researches on Jupiter. Mr. Phillips already holds the Jackson-Gwilt medal and gift of the Royal Astronomical Society, of which body he has been president and secretary.

Nature reports that the Horace Brown Medal of the Institute of Brewing is awarded by the council for "eminent services on the scientific or technical side of the fermentation industries." The first award was made to Professor H. E. Armstrong in 1926, and the next recipient of the medal is to be Dr. E. S. Beaven, known for his work on barley. The presentation will be made by the president, Mr. Percy Gates, in the lecture theater of the Institution of Electrical Engineers, on November 21, when Dr. Beaven will deliver the memorial lecture on "The Culture of Barley for Brewing."