

widely used as text and reference books by students in the forest schools and by others interested in forestry.<sup>1</sup> He was responsible for initiating at the School of Forestry a series of scientific bulletins, now comprising thirty-three numbers. Of these he was author or co-author of eight, and seven others were written by graduate students working under his direction. In addition he wrote extensively for the forestry journals and other periodicals. His bibliography covers a wide range of subjects, including articles of a scientific character, discussions of applied silviculture, forest taxation, watershed protection, forest economics and public forest policy.

Professor Toumey was called upon frequently for public addresses and for participation in public enterprises through committees and advisory boards or as an officer in technical and civic associations. In 1929 he was a member of the American delegation to the International Congress of Forest Experiment Sta-

tions at Stockholm, Sweden. He was granted the honorary degree of Doctor of Science by Syracuse University in 1920 and the honorary degree of Doctor of Forestry by the Michigan State College in 1927. He was a fellow of the Society of American Foresters, and a member of Sigma Xi, and of a large number of organizations engaged in advancing the interests of forestry and conservation.

In 1897 Professor Toumey married Miss Constantia Blake, of New Haven, who died in 1904, leaving a son, James W. Toumey, now a surgeon in New York. His second marriage was to Miss Nannie Trowbridge, of New Haven, in 1908.

His ashes will be taken to the Keene Forest, to which he was deeply devoted and which will be an appropriate sanctuary for his last resting place.

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## SCIENTIFIC EVENTS

### BRITISH SOLAR ECLIPSE EXPEDITION TO CANADA

ACCORDING to the astronomical correspondent of the London *Times*, preparations are well advanced for the observation of the total eclipse of the sun on August 31 by an expedition from the Royal Observatory, Greenwich. The eclipse will be visible only from North America and limited regions surrounding that continent, the path from which the sun will be seen totally eclipsed crossing Hudson's Bay, Quebec Province, and the northeastern states, where totality will last about 100 sec. The observers, Dr. John Jackson and Mr. C. R. Davidson, F.R.S., of the Royal Observatory staff, will proceed to a selected station near the town of Parent, in the Province of Quebec, on the Canadian National Railway, to observe the eclipse.

There is to be no attempt to solve the problem of the bending of light-rays as they pass the sun that has formed part of the program on the occasion of some recent eclipses, but the equipment is chosen for making photographic records of the corona that is seen surrounding the sun only during total eclipses, and of its spectrum and of that of the chromosphere or solar atmosphere for which these occasions are specially suitable. Photographs of the corona will be taken with a telescope that has an object-glass 6 inches in diameter and of 45 feet focal length, giving therefore an image of the sun 5 inches in diameter. This will be placed in a fixed horizontal position and fed by a rotating coelostat.

<sup>1</sup>*Seeding and Planting*. James William Toumey. John Wiley and Sons, New York, 1916. Revised by J. W. Toumey and C. F. Korstian, 1931.

*Foundations of Silviculture*. James William Toumey. John Wiley and Sons, New York, 1928.

The spectra of the corona and of the chromosphere will be photographed with a telescope with object glass 7 inches in diameter, of 21 feet focal length, producing, therefore, an image of the sun 2.3 inches in diameter. The spectrum will be formed by a prism, whose effective angle is 45 degrees, placed before the object glass. Such photographs result in a series of parallel arcs, which are actually pictures of the edge of the sun formed by light of different wavelengths. It is hoped that these will enable a connection to be traced between the chromosphere and the corona, and a differentiation to be made between the individual rings, or layers, which it is believed make up these solar surroundings.

Apparatus is also being taken with which to photograph the spectrum of the chromosphere and of the corona in its red and infra-red region. This is a grating slit spectrograph, the sun's image being formed on the slit by a mirror 9 inches in diameter and of 10 feet focal length. Another spectrograph of a different type, the spectrum in this case being produced by a prism with refracting angle of 30 degrees, will be used to photograph certain groups of lines due to calcium, and then deduce their absolute relative intensities at different heights in the chromosphere. Use will be made of curved films in some of these operations to secure good definition over a considerable length of the spectrum and advantage will be taken of the new Ilford infra-red sensitive plates.

### INVESTIGATION OF COSMIC RADIATION

ACCORDING to information from the Massachusetts Institute of Technology, it will participate this summer in the world-wide survey of cosmic radiation to

be undertaken under the auspices of the Carnegie Institution of Washington.

The project, which calls for the establishment of some 20 scientific stations on six continents and in every zone except the Antarctic, is under the direction of Dr. Arthur H. Compton, of the University of Chicago.

Dr. Ralph D. Bennett, associate professor of electrical measurements at the institute, with the cooperation of Dr. J. L. Dunham of Harvard University, will undertake cosmic radiation studies in Alaska, California and Colorado. Dr. Bennett made preliminary radiation studies in Colorado last year and since then he has developed a portable counting tube apparatus. It is planned to set up this instrument at high altitudes in the Rocky Mountains for measurements of the stopping power of different materials for the particles which actuate the counting tube. Dr. Bennett has left Cambridge to join his party in the west.

During the investigations measurements of cosmic radiation will be carried on continuously, day and night, over a long period, to determine whether there is a diurnal variation. The survey will also make it possible to compare directly intensities of radiation at many points. These studies are expected to show definitely whether cosmic radiation is associated with terrestrial locality.

Dr. Robert B. Brode, of the University of California, visiting professor of physics at the Institute of Technology, will cooperate with Dr. Bennett and Dr. Dunham in measurements in the California mountains. In Colorado the party will have the assistance of Professor J. C. Stearns, of the University of Denver. Professor M. S. Vallarta, of the department of physics, will join the party of Professor Compton when it begins its investigations in the highlands of Mexico. Dr. Compton's party will also make measurements in Hawaii, Australia, New Zealand, Peru, the Canal Zone and in northern Canada in the vicinity of the north magnetic pole.

The Asiatic survey will be directed by Professor J. M. Benade, of Lahore, who will make investigations in Ceylon, Java and northern India. South African observations will be made by Professor S. M. Naude, of the University of Cape Town. Dr. E. O. Wollan, of the University of Chicago, will go to Spitzbergen and other European points. Dr. Allen Carpe, of New York, lost his life recently in the beginning of the cosmic radiation survey at the head of the Muldrow Glacier on Mt. McKinley in Alaska.

#### CONFERENCE OF THE INTERNATIONAL STANDARDS ASSOCIATION

ENGINEERS of eighteen nations met in Milan, Italy, on May 30 to open a series of technical conferences

aimed to secure international uniformity in standards for airplane and automobile parts, cutting tools, iron and steel, and other subjects.

The conferences, to extend through the ninth of June, are under the auspices of the International Standards Association, which includes in its membership the national standardizing bodies of the United States, France, Germany, Italy and 14 other nations.

Ernest Wooler, chief engineer of the Timken Roller Bearing Company of Canton, Ohio, an American delegate, will discuss before the conference on ball and roller bearings the American proposal to replace the thousand different types and sizes now manufactured in the United States alone.

Subjects which will be studied by the conference on aeronautics in an effort to secure greater international uniformity in essential features of airplanes, are: direction of rotation of the engine, safety belts, propeller hubs, electric voltages aboard airplanes, floats for seaplanes, parts of the steering equipment and engine control levers, dimensions and arrangement of instruments, instrument dials, identification colors for pipe lines, screwed pipe connections and valves, screw threads and principles for the computation of rating of airplanes and engines.

Other conferences will be held on cutting tools, center heights and dimensions of shaft ends of electric motor and driven machines, shafting keys, fluid meters and sieves for testing purposes.

The countries which will be represented at the International Standards Association conferences through their national standardizing bodies are: Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Germany, Holland, Hungary, Italy, Japan, Norway, Poland, Roumania, Russia, Sweden, Switzerland and the United States.

#### EXPERIMENTAL FORESTS ESTABLISHED IN MINNESOTA

THREE field laboratories, comprising a total of approximately 5,396 acres, have been set aside as experimental forest areas within the Chippewa and Superior National Forests in Minnesota by the U. S. Forest Service. These areas were chosen after a careful study as being representative of the various types and conditions found in the forested area of Northern Minnesota.

The Cutfoot Experimental Forest is located approximately twenty-four miles from Deer River and is well stocked with thrifty, growing timber which is largely Norway and jack pine, although other types are also represented. The Pike Bay Experimental Forest lies approximately six miles southeast of Cass Lake. It is predominantly an aspen-hardwood type, but includes a small area of virgin white and Norway pine.