tural and Mechanical College as professor of veterinary medicine and state veterinarian. In 1899 he also became professor of zoology and experiment station bacteriologist. He gave himself up entirely to his work not only in the departments in which he was interested but to the school as a whole. That he was highly esteemed was manifested by the fact that in 1900, in addition to his other duties, he was made dean of the School of Veterinary Medicine and, in 1913, was also made dean of the School of Science and Literature. During the year 1915 he was made acting president and director of the experiment station. In 1921 he was made dean of the faculty.

Dr. Lewis was for a time a member of the American Association and was a working member of many scientific societies. Although quiet and retiring in personality, he was always ready to do his part in any enterprise of educational value for public welfare.

His research work was directed chiefly toward the diseases and the improvement of the livestock industry. In his earlier work he was much interested in parasiticides, anthelmintics and disinfectants. Later, he carried on a great deal of work toward the prevention and control of hog cholera and the prevention of tuberculosis in livestock. His most recent experimental work has been with the problem of sterility in domestic animals. In this connection he has shown some of the influences of a concentrated protein diet upon the potency of germ cells.

Dr. Lewis was at his best in his work about his laboratory surrounded by his students and associates. His personal interests were the last to be considered and he made it easy, and a source of pleasure, for his associates who worked with him. His own high ideals of service and love for the truth were the source of inspiration for many college generations. Many students went forth from his classroom filled with the love of science and guided by the example of his calm and thoughtful leadership to meet the problems of life with the same determination, standards and ideals that he imparted to them. Mere words can not summarize services such as he rendered to the school and state. He left an inspiration in the field of altruistic endeavor which will always be held in high esteem by his students, friends and colleagues.

JOHN E. GUBERLET
OKLAHOMA AGRICULTURAL
EXPERIMENT STATION

SCIENTIFIC EVENTS

PRECISE STANDARDIZATION OF RADIO FREQUENCIES

THE Bureau of Standards has developed a very precise method of standardization of radio wave lengths and frequencies, which is the fundamental basis of radio measurements in this country. By the process used, the frequency of radio waves is compared with that of an audible musical note. A tuning fork is mounted in such a way that it may be made to control the frequency of an oscillatory circuit. The frequency of another oscillatory circuit operating at much higher frequencies is then compared with it by means of a cathode-ray oscillograph.

This latter instrument consists of the cathode-ray tube, a special kind of vacuum tube in which the narrow stream of electrons is subjected to the action of electric fields applied by the two alternating-current generators. When neither generator is operating, the electrons, impinging on the active screen at the end of the tube, cause a single luminous spot. If one generator is connected, the spot is deflected back and forth along a single line, horizontal or vertical as the case may be, with such rapidity that it appears as a solid line. If both generators are applied simultaneously, the spot oscillates both horizontally and vertically and appears, in general, as a blurred luminous rectangle. If, however, the frequencies of the two generators bear a simple ratio, such as four to one, the spot traverses and retraverses a definite simple path, forming a figure by which the frequency ratio may be recognized. It has been found possible to compare frequency ratios as high as twenty-one to one.

The bureau is at present engaged in the standardization of a high precision standard

wavemeter by this means. A tuning fork of known frequency, approximately 1,000 cycles per second, is used as the basis of the standardization. A low-frequency generator is tuned to successive multiples of this frequency by means of the cathode-ray oscillograph and corresponding settings of the wavemeter are obtained. A third generator is similarly tuned to multiples of these frequencies and thus by successive stages the standardization is extended to include frequencies as high as 5,000 kilocycles (60 meters). It is intended that this wavemeter be used as the basic standard for the standardization of commercial wavemeters.

THE DEVONIAN FOREST AT GILBOA, N. Y.

CONTINUED operations of the New York Board of Water Supply have brought to light 20 to thirty additional specimens of these earliest trees, all of which, by courtesy of the commissioners, have come to the State Museum, with the exception of one specimen presented to the American Museum of Natural History. These great stumps have now been located at three distinct horizons in the sandstones of late Devonian age, at or near Gilboa, and thus indicate the rising and falling of the shore land on which they grew. The botanical interest attached to this extraordinary occurrence is intensified by the fact that no satisfactory solution has been offered of the relationships of these trees, though they have been known for many years. The character of the stumps themselves and such portions of their tissue as remain have not proved a satisfactory clue to their nature, but Winifred Goldring, paleobotanist, has found in their foliation and fructification evidence which has led to the belief that they are seed ferns (Pteridospermophyta), partaking of the character of Lyginopteris and allied forms, but of a simpler organization. That trees of such magnitude, rising to heights of 30 to 40 feet, should appear so abruptly in geological history is sufficient to indicate what a long unobserved record lies back of this majestic plant growth, the oldest of known forests. In due time an effort will be made to reproduce in the State Museum the conditions under which these trees grew on the sloping shores of the Appalachian.

THE BOYLSTON MEDICAL PRIZES

THESE prizes, which are open to public competition, are offered for the best dissertation on questions in medical science proposed by the Boylston Medical Committee. At the annual meeting held in Boston in 1920 a prize of $300 was awarded to an essay entitled "Acute Inflammation of the Nose, Pharynx and Tonsils" by Mr. Stuart Mudd, of St. Louis. For 1922 there is offered a prize of $500 and the Boyston Prize Medal for the best dissertation on the results of original research in medicine, the subject to be chosen by the writer. The Boylston Prize Medal will be added to the money prize only in case the winning essay shows special originality in the investigations detailed. Dissertations entered for this prize must be in the hands of the secretary on or before February 1, 1923.

In awarding these prizes, preference will be given to dissertations which exhibit original work, but if no dissertation is considered worthy of a prize, the award may be withheld. Each dissertation must bear, in place of the author's name, some sentence or device, and must be accompanied by a sealed packet, bearing the same sentence or device, and containing the author's name and residence within. Any clew by which the authorship of a dissertation is made known to the committee will debar such dissertation from competition. Dissertations must be printed or typewritten, and their pages must be bound in book form. All unsuccessful dissertations are deposited with the secretary, from whom they may be obtained, with the sealed packet unopened, if called for within one year after they have been received.

By an order adopted in 1826 the secretary was directed to publish annually the following votes: (1) That the board does not consider itself as approving the doctrines contained in any of the dissertations to which premiums may be adjudged. (2) That, in case of publication of a successful dissertation, the author be considered as bound to print the above vote in connection therewith.

The Boylston Medical Committee is appointed by the president and fellows of Harvard College, and consists of the following physicians: Reid Hunt, M.D., *secretary;* William T.