subject to severe criticisms—(a) the observed rate of energy transformation is greater in the giant than in the hotter and denser dwarf stars; (b) the adiabatic nature of a star would be insufficient to regulate the generation of heat.

Jeans assumes that we have, in the center of stars, a quantity of atoms of atomic weight higher than uranium, whose super-radioactive powers lead to decomposition into energy. The success of the theory in accounting for the following observed facts is enough to demand its serious consideration.

1—Life of stars of order of 10^{13} years
2—Better value of the stellar absorption coefficient
3—Giant and dwarf stars
4—White dwarfs
5—Early spectral type of spectroscopic binaries
6—Relations between visual double stars
7—Sufficiently long time for evolution of orbits of visual binaries
8—Cepheid and Long Period Variables (?)

The main objection of Eddington to the theory appears to be invalid.

DONALD H. MENZEL

LICK OBSERVATORY,
Nov. 25, 1926.

EXUM PERCIVAL LEWIS

IN the death of Exum Percival Lewis on November 17, 1926, there was lost to science an inspiring teacher, a distinguished investigator in spectroscopy and astrophysics, a philosopher and an idealist. Professor Lewis was born in Washington County, North Carolina, on September 15, 1863. He was the son of Henry Exum Lewis, a noted physician, and Emma (Haughton) Lewis. Owing to the privations brought by the Civil War and to the death of his father when he was seven years old his elementary education was obtained entirely at home. As a boy he served as a printer's apprentice and as a young man accepted a position in the War Department at Washington, D. C. While thus employed he attended night classes at Columbian University (now George Washington University) from which he was graduated in 1888 with the degree of B.S. In 1890 he entered the Johns Hopkins University as a graduate student in physics, mathematics and astronomy, and from 1891 to 1895 he was an assistant in physics at that institution, having charge of the laboratory instruction. At the same time, from 1892 to 1895, first as instructor and then as assistant professor, he lectured evenings on general physics, electricity and heat, in the scientific school of Columbian University.

At Johns Hopkins University, under the inspiration of Professor Rowland, Professor Lewis began the work of an investigator in his chosen field of spectroscopy, receiving the degree of Ph.D. in 1895. His thesis, on the infra-red spectra of certain metals, represented practically the first accurate measurements of infra-red lines. His knowledge of astronomy and astrophysics, in addition to his attainments in physics, led, in 1895, to his being called to the University of California, where a physicist was needed who could give proper support to the astronomical work being undertaken on the campus at Berkeley in connection with the work at Lick Observatory. At the University of California he held the position of instructor in physics from 1895 to 1896; assistant professor from 1896 to 1902; associate professor from 1902 to 1908; professor from 1908 to the time of his death, serving after 1918 as the chairman of the department. From 1898 to 1900 he was on leave of absence on a Whiting Fellowship, engaged in spectroscopic research at the University of Berlin, making a systematic investigation of the effects produced by small quantities of other substances in the spectra of nitrogen, hydrogen and oxygen. In this work is found the first recognition of the fact, which has only recently been fully recognized, that the most profound changes in the character and appearance of the spectrum of a given element or substance can be produced by suitably modifying the excitation. It was in connection with this investigation that, in 1900, he discovered the afterglow in a vacuum tube containing nitrogen in which a slight trace of oxygen or water vapor was present. In 1904 he discovered the ability of this afterglow to excite the spectra of various solid substances introduced into the nitrogen-filled tube: this secondary excitation also persisting after the main discharge had ceased. These phenomena, extended by Lord Rayleigh and others, under the term "active nitrogen," have become of great importance. In addition to his researches in active nitrogen he investigated the band spectrum of nitrogen, especially the second positive group in the ultraviolet. His discovery of the effect that the introduction of self-induction in the circuit has on the band spectrum of nitrogen is still one of the most striking examples of what is now known to be the effect of changes in temperature upon any band. Among his other contributions to spectroscopy was the discovery of the continuous spectrum of hydrogen in the ultraviolet, with a determination of its limits and the condition most favorable to its production; the determination of several hundred new lines in the ultraviolet spectra of krypton and xenon; and the ultraviolet spectrum of the solar corona obtained with a quartz spectrograph of his own design. This spectrograph was made possible by a special grant from the Carnegie Institution.

His papers in physics, in other fields than spectroscopy, are numerous and include such subjects as the ionization of gases, conduction of electricity in gases, changes in length and hysteresis losses accompanying magnetization, the mechanism of light emission, the pressure of sound waves and a method of determining amplitudes in sound. His interest in the teaching of physics led him to contribute largely to this subject, through addresses before educational conventions and through publication.

Professor Lewis was strongly attracted to astronomy, especially on the astrophysical side. He was a member of the Crocker Eclipse Expeditions of the Lick Observatory in 1908 at Flint Island in the South Seas, in 1918 at Goldendale, Washington, and in 1923 at Ensenada, Lower California. His special part in these expeditions was the study of the corona. His photographs showed the continuous spectrum of the inner corona from λ5500 to λ3175, with a number of bright lines, which had not been previously observed, superimposed. His observations led to the conclusion that the temperature of the inner corona probably exceeded 2,000° absolute.

Professor Lewis was a teacher of rare charm. He had the power of separating the essentials from a mass of confusing details and presenting the material with clearness and an absorbing interest. He was sympathetic and patient, allowing great freedom to students and colleagues associated with him, but demanding always a high standard of scholarship. He imparted to the students enthusiasm and high ideals. With many of the present methods of education he was in outspoken opposition, maintaining that they tended to develop mediocrity rather than the highest attainment possible. He was unusually gifted with the power of popular exposition, presenting technical and difficult conceptions in physics and astronomy with a clearness and simplicity that appealed to the layman and brought to his hearers a fuller appreciation of the interest and value of science. Many of these popular addresses, on a wide variety of subjects, were published. They included such titles as "Science, Materialism and Ethics," "The Contribution of Astronomy to Civilization," "The University and the Physical Sciences," "Scientific Imagination," "The Ethical Value of Science," "The Spectroscope, Key to Celestial and Atomic Mysteries," "The Evolution, Death and Resurrection of the Stars."

The geniality of Professor Lewis and his powers of conversation made him a welcomed addition to any intellectual gathering. He was an active member of several clubs, including the Chit Chat Club of San Francisco. He was a member of the American Physical Society, serving as a member of the council, as a member of the editorial board, and as Pacific Coast secretary; the California Academy of Science; the Optical Society of America; the Astronomical Society of the Pacific, serving as a member of the board of directors and as president; the American Association for the Advancement of Science, serving as vice-president, physics section, and as president of the Pacific Division. He was a member of the honor societies Phi Beta Kappa and Sigma Xi.

Professor Lewis was married in 1901 to Louise Sheppard, of San Francisco. His widow, a daughter, Evelyn, and a son, John Sheppard, survive him.

ELMER E. HALL

SCIENTIFIC EVENTS

THE BRITISH MOSQUITO CONTROL INSTITUTE

Nature prints an account of the first statutory general meeting of the British Mosquito Control Institute, which was held at the Hotel Cecil, London, on March 30. The council was elected in accordance with the articles of association approved by the Board of Trade, and by which the institute is registered under the Companies Acts, 1908–1917, as a company limited by guarantee and not having a share capital. Since the anti-mosquito campaign was begun at Hayling Island about seven years ago, it has become increasingly evident that the work so successfully accomplished there is of more than local interest, and that medical officers of health and sanitary inspectors in many parts of Great Britain, as well as abroad, desire to know how to keep mosquitoes under control. The Ministry of Health can only concern itself with these insects as disease carriers, even though in some districts they make life out of doors almost intolerable in certain months of the year. The Natural History Museum is always willing to identify specimens and give general guidance on methods of dealing with them, but neither it nor the Ministry of Health is concerned with actual field operations by which the mosquito nuisance may be reduced or eliminated. This practical knowledge is, however, available at the British Mosquito Control Institute at Hayling, where there is now a substantial building with laboratory, museum, photographic room and other facilities for the study of all stages of mosquito life and its regulation. The institute has been vested in trustees by the founder and director, Mr. J. F. Marshall, whose devoted services in solving problems of mosquito control are widely known and appreciated. Membership is open to all who are interested in the subject, and it is hoped that, in due course, sufficient support will be forthcoming from members and public bodies to make the institute self-supporting and extend its activities. The council includes among its members