

temperature rose from 1.5° to 21.5° , luminesces considerably less brightly than a control tube heated from 1.5° to 21.5° . The turbidity is also less in the irradiated tube, indicating that some of the bacteria have undergone cytolysis. Control experiments showed that the dimming was not due to the electric field. The luminescence of a mixture of *Cypridina* luciferin and luciferase was unaffected by irradiation in any way that could not be accounted for by rise in temperature.

One might expect that high frequency mechanical vibrations, carrying as much energy as they do, would be capable of stimulating muscle or nerve tissue. All attempts to demonstrate a stimulating action have failed. The sciatic nerve of a frog

connected with the gastrocnemius muscle may be touched (either nerve or muscle) to a test tube violently oscillating or be immersed in a salt solution in such a test tube without stimulation and without injury. Both nerve and muscle are later found to be quite irritable to electrical stimuli. The high tension field is unable to stimulate because of its high frequency. A bull frog's heart mounted in Ringer's solution in a test tube touching the oil and connected with a heart lever for recording movement, shows no peculiarities of the contraction, but an irregularity and usually a slowing of the rate, despite the rise in temperature that accompanies the irradiation. Further observations will be necessary to analyse these peculiarities.

Obituary.

MR. W. B. CROFT.

WILLIAM BLEADEN CROFT died at Winchester on Mar. 23 at the age of seventy-six years. Born in 1851, the sixth son of a surgeon, Mr. C. I. Croft, he went to Christ's Hospital, and thence as a scholar to Pembroke College, Oxford, and obtained first classes in the schools of mathematics and natural science, besides rowing bow in the Pembroke boat at the head of the river.

Croft was a very remarkable man. He was appointed mathematical and then science master at Winchester College in 1874, but for the last twenty years of his service he taught only physics. He retired in 1915. During all this time he never missed an hour's teaching through ill-health. He was a fellow of the Physical Society, at the meetings of which he was a regular attendant, and was elected to the council in 1903. He served several times on the committee of Section A of the British Association, and examined for the final honours school in natural science at Oxford.

Croft took little interest in chemistry, but he was a born physicist. Had he been trained in one of the great university schools of to-day, he would have achieved a fame far beyond that which fell to his lot. He had the gift of a vivid scientific curiosity, an uncanny power of pitching upon the first hint of a new discovery before others were fully awake to its importance, and a talent for experiment that almost amounted to genius. He was a constant reader of *NATURE* and other scientific periodicals, and he carefully cut out articles and pasted them into scrap-books, which he filled with comments and annotations. If anything struck him as likely to lead further, he at once got into touch with the writer of the article or letter, and repeated for himself any experiments that could be compassed in his laboratory, developing them in promising directions. Thus, for example, it came about that he was the first man in England to make a Branly coherer and to perform further experiments with Hertzian waves.

Croft was always at work on phenomena of common occurrence, and never rested until he, and some special pupils, understood its physical significance. Did a question arise about bells or fiddles? Croft set to work immediately upon the

fundamentals and harmonics of college bells, and called in the assistance of the musical staff. His photographs of diffraction phenomena were extraordinarily good, and still enrich the pages of Edser's "Light for Students." Light and sound were perhaps his chief interests, but he did good work in electricity also.

A teacher for the few rather than the many, to those of his pupils who by diligence and aptitude proved themselves worthy of the meticulous care which he bestowed upon his lectures, Croft imparted all that they could receive of his knowledge of and reverence for science, and his gift of seeing the essential and planning an experimental approach; and he kept touch with them in after years. A permanent memorial of him is left in the collection of interesting apparatus which he gathered in the College laboratory; but above all, he will be remembered by his pupils, his colleagues, and his many friends for infinite courtesy and thoughtfulness. He leaves a widow, three sons, and a daughter.

WE regret to announce the following deaths:

Prof. Wilhelm von Branca, emeritus professor of geology and palæontology in the University of Berlin, distinguished for his work on the evolutionary history of man and other animals and for work on the development of flight, on Mar. 12, aged eighty-three years.

Prof. Elmer E. F. Creighton, of the General Electric Co., Schenectady, a well-known consulting electrical engineer, on Jan. 13, at the age of forty-nine years.

Mr. Alexander E. Outerbridge, of the William Sellers Company, professor of metallurgy at the Franklin Institute, known for his work on the molecular physics of iron, on Jan. 13, aged seventy-seven years.

Mr. E. A. Reynolds-Ball, author of many travel and guide books, including "Mediterranean Winter Resorts," aged sixty-nine years.

M. Emile Senart, president of the Société Asiatique of Paris and an honorary fellow of the Royal Asiatic Society of Great Britain, and author of "Les Castes dans l'Inde," on Feb. 21, aged eighty years.

Mr. G. Chisholm Williams, a distinguished pioneer in the medical use of X-rays, on April 10, aged sixty-three years.