000; a nurses' home for 100 nurses, to cost $100,000; and alterations of the existing buildings on the Parnassus Avenue site in San Francisco to accommodate the departments of physiology and physiological chemistry, administrative offices and the medical library.

EDWARD PLAUT, of the class of 1912, has presented $5,000 to Princeton University to establish the Albert Plaut Memorial Library of Chemistry, in memory of his father.

MR. CHRISTOPHER WELCH has left his real estate in the county of Somerset to the University of Oxford for the endowment of scholarships for the study of biology, to be known as the "Welch" scholarships. They are to be tenable for four years and their value is to be £400 a year, any surplus income to be paid into a reserve fund formed by the residue of his estate, to be used for the upkeep of the estate and for furthering the study of biology. If the university does not accept the conditions attached to the bequests then the amount goes to six London hospitals, one of which shall be St. George's Hospital; but no hospital where vivisection is disallowed or discountenanced is to benefit, "antivisectionists being enemies of the human race."

SIR ALEXANDER M'ROBERT has given to Aberdeen University an endowment of about £750 per annum for a Georgina M'Robert lectureship on pathology, with special reference to malignant diseases. The donor recently gave an endowment of £373 per annum to the Aberdeen Royal Infirmary. He is director of the Cawnpore Woollen Mills Company, but before going to India thirty years ago he was Neil Arnott lecturer in experimental physics at the Aberdeen Mechanics' Institution and lecturer in chemistry at Robert Gordon's College, Aberdeen.

THE one hundred and fiftieth anniversary of the founding of the medical school by John Morgan at the University of Pennsylvania will be celebrated by a dinner to be given by the Society of the Alumni of the Medical School at the Bellevue Stratford on the evening of February 4. The committee expects to make this event the largest gathering of its kind ever held by the medical alumni, since it also marks the celebration of the beginning of medical teaching in the United States.

MR. R. M. RAYMOND, managing director of the El Oro Company, has been appointed professor of mining in the School of Mines of Columbia University, succeeding Professor Henry S. Munroe, who retired last June after twenty-seven years of service.

DR. CLARENCE W. FARRAR, of the State Hospital for the Insane, Trenton, has been appointed lecturer on abnormal psychology in Princeton University.

DISCUSSION AND CORRESPONDENCE

FIREFLIES FLASHING IN UNISON

FIFTY years ago in Gorham, Maine, while walking along the road I passed an open field and noticed to my astonishment hundreds of fireflies flashing in perfect unison. I watched this curious sight for some time and the synchronism of the flashing was unbroken. Many times after I have watched these luminous insects, hoping to see a repetition of this phenomenon, but the flashes in every instance were intermittent. Since that time I have read about these insects in various books without meeting any allusion to this peculiar behavior. At last I have found a confirmation of my early observations. In *Nature* of December 9, page 414, is the report of an interesting paper read before the South London Entomological and Natural History Society by K. G. Blair entitled "Luminous Insects" in which reference is made to the remarkable synchronism of the flashes in certain European species of fireflies. The explanation offered as to the cause of this behavior seemed to me inadequate. One often notices in the stridulation of the Grillidæ the perfect time the insects keep in their concerts and it seems likely that the same impulse must animate these flashing beetles, and the light emitted could be more easily followed than the sound.

The following is an extract from Mr. Blair's paper:

Apart from its principal function in securing the proper mating of the sexes, the light seems

also to be largely used, at any rate by the males, for purposes of display. Where the powers of luminosity are largely developed in this sex the emission of the light is usually of an intermittent flashing type. It has been noticed in various parts of the world that these flashing males tend to congregate in large companies, and that all the individuals of one of these gatherings will flash in concert. All the fireflies around one tree or group of trees, for instance, will flash together, while those around a neighboring tree will be pulsating to a different time. This feature has been observed of a European species of *Luciola* (though Mr. Main and myself were unable to detect anything of the sort with *L. italica* at Lugano), of an Indian lampyrid genus not stated, and of the genus *Aspidosoma* in South America. The American species of *Photinus* and *Photuris* do not seem to possess the habit.

The exact reason of this flashing in concert, or the method by which it is brought about, have not been ascertained. It has been suggested that the light is not really intermittent in character, but merely appears so owing to its being alternately masked and exhibited by movements of the creature's body, and that a slight puff of wind might perhaps affect all the members of a company and cause them all to conceal their lights at once. Though this explanation of the intermittent character of the light applies well enough to *Pyrophorus*, an insect we shall shortly consider, it is certainly not applicable to these Lampyridæ. It is true the light is not absolutely extinguished between the flashes, but it is so diminished as to become practically dark; moreover the flashing in unison is too regular to be caused by chance puffs of wind. A more probable explanation of the phenomenon is that each flash exhausts the battery, as it were, and a period of recuperation is required before another flash can be emitted. It is then conceivable that the flash of a leader might act as a stimulus to the discharge of their flashes by the other members of the group, and so bring about the flashing concert by the whole company.

Edward S. Morse

POLYRADIATE CESTODES

In the last number of the *Journal of Parasitology*, Vol. 2, No. 1, p. 7, W. D. Foster, of the Bureau of Animal Industry, U. S. Department of Agriculture, gives an interesting summary of the cases of polyradiate cestodes and describes an adult triradiate cestode of the species *Tænia pisiformis* "found in a mass of tapeworms expelled by an imported collie dog." He states that "no case of an adult triradiate cestode of this species has yet been published." It is to be regretted that Foster did not investigate more thoroughly the literature on the polyradiate cestodes before publishing his article.

In Science, 1910, N. S., Vol. 31, p. 837, in an article "Some New Cases of Trihedral Tænia," we published a brief description of two new species of polyradiate cestodes based on the study of four perfect and entire specimens of *Tænia serrata* = *Tænia pisiformis* and three perfect specimens of *Tænia serialis* which were secured from four dogs picked up on the streets of Lincoln.

Foster bases his description on a "number of chains of triradiate proglottids, the longest piece being 23 cm. representing the anterior half of the worm, except the head." From the study of our specimens we question the validity of a specific diagnosis of *Tænia pisiformis* from proglottids alone, without verification from the scolex.

He states that "the identification of the species was verified by feeding experiments on a rabbit" and that "although shipped in a solution of formalin of unknown strength, and kept in a 2 per cent. solution of formalin for one week after it was received, it was determined to use some of the material for feeding experiments." Foster states that he recovered seven "perfectly normal larvæ" of *Tænia pisiformis* from the omentum and body cavity of a rabbit reared and kept in captivity, thirteen months after feeding with two of the proglottids of the triradiate *Tænia pisiformis* which had been preserved and kept in formalin. It seems to us that the reliability of the results of these feeding experiments is open to serious question, first in the use of material preserved in formalin of uncertain strength and kept in a 2 per cent. solution for one week after it was received and second in the uncertainty as to the previous natural infection of the rabbit used, for we have repeatedly found our rabbits, born and reared in captivity, heavily infected with *Cysticercus pisiformis*.