was to ensure the maximum of output with the minimum of fatigue. Overtime was an elastic term, and not only imposed a severe strain on the worker, but it curtailed unduly the periods for rest and repose; it was uneconomical, physiologically extravagant, and frequently resulted in lost time and diminished output.

## UNIVERSITY AND EDUCATIONAL NEWS

The University of Chicago has received from Mr. Frederick H. Rawson a gift of $300,000 for the construction of a laboratory building in connection with the plans for the medical school.

A provisional gift of $100,000 to the University of Vermont has been given by General Rush C. Hawkins, of New York. The money is given on condition that the university raise an additional $200,000.

Tulane University has received a bequest of $60,000 for the School of Tropical Medicine, available after the decease of the wife of the late Colonel W. G. Vincent.

The new gymnasium of the Stevens Institute of Technology was dedicated with appropriate ceremonies on November 18. The building, which was erected at a cost of over $125,000, is the gift of Mr. William Hall Walker, of New York.

Dr. L. V. Heilbrun has been appointed instructor in microscopic anatomy at the College of Medicine at the University of Illinois.

The School of Medicine of the University of Alabama announces that two new all-time professors have been appointed to the faculty. Dr. Joseph M. Thüringer, of the Harvard Medical School, becomes head of the department of anatomy, and Dr. Claude W. Mitchell, Ph.D. (Nebraska, '13), M.D. (Chicago, '15), head of the department of physiology and pharmacology.

Mr. William George Palmer, B.A., formerly scholar, has been elected to a fellowship at St. John's College, Cambridge. Mr. Palmer, who came up from Guildford Grammar School, took a first in each part of the Natural Science Tripos, 1913–14, with distinction in chemistry, and was awarded the Hutchinson studentship.

## DISCUSSION AND CORRESPONDENCE

### SYNCHRONISM IN THE RHYTHMIC ACTIVITIES OF ANIMALS

Two men walking together keep step so easily that the keeping step seems automatic. With a similar feeling of its naturalness we keep time in various ways, as in marching or dancing to music. Although these actions seem so automatic, they all or nearly all were learned by conceptual awareness of the relations between one's own actions and the actions of others, and purposive imitation of the latter. Such awareness of relations and purposeful imitation have not been found in animals (with the possible exception of the Primates). Certainly in most of the behavior of animals the tendency to keep time with an external rhythm is conspicuously absent. When two horses are driven abreast, each trots in his own rhythm in sublime disregard of his team-mate. Every circus has its so-called dancing animals, but I never saw one that really kept time with the music except as the trainer prompted it. Some birds have wonderful musical powers, but I never knew of a case of two birds singing in unison, nor of a bird singing synchronously with any external rhythm.

Nevertheless, although an animal can not have a concept of the relation between two coinciding rhythms, it is supposable that some animals might have an innate mechanism that would bring them into synchronism with an external rhythm, just as two pendulums or two dynamos, if properly adjusted, maintain a perfect synchronism. Let us review the observations that might substantiate such a supposition.

Many animals are provided with lock and key reflexes which produce an admirable synchronism. Two cocks fighting jump at each other at almost the same moment. Many birds, notably some of the Limicolæ, fly in close flocks and the whole flock turn apparently at the same moment in their rapid evolutions. But it is important to notice that these actions are not rhythmical. To maintain such admirable synchronism and at the