DR. JEAN BAPTISTE EDUARD BORNET, the algologist, member of the Paris Academy of Sciences, has died at the age of eighty-two years.

THE death is announced of William Thynne Lynn, former assistant at the Royal Observatory at Greenwich, at the age of seventy-six years.

DR. JAN. KOWALEZYK, astronomer in the observatory at Warsaw, has died at the age of seventy-eight years.

M. ARTHUR DE CLAPARÈDE, the geographer, has died at Geneva, at the age of fifty-nine years.

THE sixth triennial congress of the International Association for Testing Materials will be held in the Engineering Societies building, New York, beginning on September 3, 1912.

A JOINT meeting of the British Institution of Mining and Metallurgy and the Canadian Mining Institute will be held at Toronto on March 6, and the following days.

THE *Bulletin* of the American Mathematical society states that a new journal, entitled the *Vector* has been established at Warsaw. It will be devoted to mathematical and physical science in general and especially to questions of method and pedagogy.

Nature states that the council of the London School of Tropical Medicine has decided to establish a journal in connection with the school. Three parts are to appear each year, and part I. has just been issued. Sir Patrick Manson writes a foreword; original papers are contributed by Drs. Bayon, Daniels, Hutton, Leiper, Minett and Wise; and surveys of recent literature on tropical medicine and reviews of books complete the matter.

UNIVERSITY AND EDUCATIONAL NEWS

THE will of the late Mrs. Emily Howe Hitchcock provides that the Hitchcock mansion and the estate of forty-five acres, valued at $50,000, shall go to Dartmouth College. To the college is also left Mr. Hitchcock's Di Cesuela collection of Cyprus antiquities. To the Mary Hitchcock Memorial Hospital, connected with Dartmouth, is left an endowment fund of $20,000, and to the Howe Library of Hanover, occupying the ancestral home of Mrs. Hitchcock, an endowment of $50,000. To the Pine Park Association, a society formed to preserve the natural beauties of the town, is bequeathed a large tract of woodland adjoining the Vale of Tempe.

THE Marquise Arconati Visconti has given 500,000 francs to the faculties of science and arts of the University of Paris.

DURING commencement week, June 23 to 27, inclusive, the University of Michigan will celebrate the seventy-fifth anniversary of its founding.

CIRCULARS of information concerning the Kahn foundation for the foreign travel of American teachers have been issued by the trustees of the foundation. Two fellows will be appointed for one year beginning July 1, 1912, with a stipend of $3,000 and an additional $300 for the purchase of books, souvenirs, photographs, etc. The applications for appointment should be made on a formal blank which may be obtained from the secretary of the foundation, Sub-station 84, New York City, and should be filed on or before March 1, 1912. The present holders of the fellowships are Professor J. H. T. McPherson, of the University of Georgia, and Professor Francis Daniels, of Wabash College. They both sailed from this country during the summer and will have completed their year's travel by about August 1, 1912. They are both planning to make a complete trip around the world.

THE course on "Water Analysis and Water Supply" at the Rensselaer Polytechnic Institute has been expanded so as to allow of a preliminary course being given on "plankton" where special attention is devoted to those growths which produce taste and smell in reservoir water. Upon the completion of the above water course, each student is required to spend two weeks at work on local municipal slow sand filter beds and also on filters of mechanical type whereby he acquires a practical knowledge of the workings of full-

sized city filter plants. The cities in the neighborhood of Troy supply good illustrations of the different modern methods of water purification.

The *Bulletin* of the American Mathematical Society states that during the Easter vacation of 1912 an extensive course in mathematics and physics for advanced teachers will be held at Göttingen under the direction of Professor F. Klein.

Dr. C. Rankiär has been appointed professor of botany, and director of the Botanical Gardens at Copenhagen.

Dr. Gilbert T. Morgan, assistant professor of chemistry at the Imperial College of Science and Technology, South Kensington, and junior hon. secretary of the Chemical Society, has been appointed to the chair of chemistry at the Royal College of Science, Dublin, vacant by the retirement of Sir Walter Noel Hartley, F.R.S.

Dr. Theodor Boveri, professor of zoology at Würzburg, has been called to Freiburg.

DISCUSSION AND CORRESPONDENCE

NUMBER OF STUDENTS PER TEACHER

To the Editor of Science: It appears to me that the only correct way to determine the average number of students handled per teacher in any school is to divide the number of student hours per week by the number of teacher hours per week.

For example, let there be 15 teachers and 300 students. This does not mean that on the average one teacher instructs 20 students in a recitation or class. Suppose each student takes 15 hours per week, and that each teacher instructs only 12 hours per week. There are therefore 15×12 classes per week for 300×15 students, since each student appears in 15 classes. The average number of students in each class is therefore

$$300 \times 15 \div 15 \times 12 = 25.$$

In general, therefore, the average number of students which each instructor has to handle in one recitation is the number of student hours divided by the number of teacher hours, in one week.

The average number of hours per week required of each student and each teacher, viz., the number of student-hours and teacher-hours per week divided respectively by the number of students and teachers, are also important numbers in respect to the average work required of students and teachers.

Arthur S. Hathaway
Rose Polytechnic Institute

FUNDULUS AND FRESH WATER

"*Fundulus* and Fresh Water" in your issue of December 29, 1911, recalls some experiences I have had with these fishes in transferring them from salt and brackish to fresh water. *Fundulus heteroclitus* may be so transferred more safely, the less degree of salinity there is in the water whence they were derived. Most of my specimens came from the Hackensack River and its creeks, varying from the saline Newark Bay to the almost entirely fresh water at Little Ferry and at the heads of the creeks. While very few of those transferred from salt water directly to fresh survived the sudden change, an increasing number survived of those gradually transferred in the course of a week or two, through a number of changes of water. My records show that such fishes lived from four to six months, up to two years; one lived over three years. I never succeeded, however, in making a successful transfer of the highly colored breeding males.

Fundulus diaphanus, though known almost entirely as a fresh water species, when taken from salt water also offers difficulties in transferring, thus showing that successful transfer in all cases appears to be a matter of very gradual accomplishment.

Fundulus majalis I never succeeded in transferring, no doubt because of its being a purely marine species.

Cyprinodon variegatus also can be gradually accustomed to a change of water, but being practically only an anadromous fish during breeding time does not very long survive.

It is possible that these cyprinodonts being great rovers can ill bear small quarters and this may be one reason for their shortlivedness in captivity, as compared with the quieter cyprinids for instance.