

Miers one on "The growth of a crystal." Mr. H. N. Dickson lectured on the "Influence of climate," and Prof. W. J. Sollas on the "Geology of Oxford." In Part II., considerably more attention was devoted to scientific subjects. Prof. W. J. Sollas conducted a series of geological classes and excursions, and Mr. A. W. Brown gave a course of practical instruction in illustration of Mr. G. C. Bourne's lectures in Part I. Dr. Farrar gave two lectures on "Prehistoric man." Two of the evening lectures were devoted to science, Dr. A. Ransome, F.R.S., discussing microbes and disease, and Mr. G. J. Burch "Wireless telegraphy." Both lectures were admirably illustrated.

THE following important announcement is inserted in the new Directory (1899) of the Department of Science and Art:—"The Lords of the Committee of Council on Education have under consideration the assessment of the efficiency of instruction in the elementary stage of science and art subjects by inspection only. It is proposed to discontinue examinations, as a test for the purposes of assessing the grant in that stage, after the year 1900. It is proposed that papers shall continue to be set in that stage for students who may desire to be examined and to possess a certificate of having passed the examination; but that in those cases a fee should be charged to cover the cost of examination." The Directory contains a number of new regulations affecting schools and classes connected with the Department of Science and Art. The object of most of the changes is evidently to encourage practical instruction in science. Visits of students to galleries, museums, and other public institutions, or attendance at field classes, may now be registered as attendances for grants. Theoretical mechanics and Section I. of the elementary stage of physiology have been added to the list of subjects in which grants for practical work may be given. The syllabuses of inorganic chemistry (theoretical) elementary stage and of theoretical and practical metallurgy have been revised, and slight modifications have been made in connection with the syllabuses of mathematics (Stage I.) and botany. With regard to schools of science, students under twelve years of age are to be excluded from them unless specially allowed by the inspector, and students at such schools are not as a rule to be admitted to the science and art examinations. Suggested laboratory arrangements for practical work in physics and biological subjects are described in the Directory, and should be of service in connection with the construction of small laboratories.

### SCIENTIFIC SERIAL.

THE second part of the *Zeitschrift für Wissenschaftliche Zoologie* for 1899 contains two important contributions to the morphology of Invertebrates. The first, by Dr. P. Obst, discusses the fate of the nucleolus in the development of the ovum of certain Molluscs and Arachnids; while the second, by Dr. E. Zander, deals with the abdominal bristle-like apparatus of the Hymenoptera. Especial interest attaches to the latter communication from the author's discovery that the first formation of the abdominal appendages and of the accessory sexual organs (gonapophyses) belongs to two distinct periods of development. The first of these are truly embryological, making their appearance during ovular development, whereas the second do not commence till an early larval stage is attained.

### SOCIETIES AND ACADEMIES.

#### PARIS.

**Academy of Sciences, August 21.**—M. Maurice Lévy in the chair.—The Perpetual Secretary announced to the Academy the loss it had sustained by the deaths of MM. Frankland and Bunsen, Foreign Associates of the Academy.—On the cause of the persistent luminous trains which accompany certain shooting stars, by M. Ch. André. Remarks on an observation by MM. Lagrula and Luizet of one of the Perseids seen on August 12; the luminous streak of the meteor could be seen for twenty minutes, during which time marked changes of form were obvious in the trail of the meteor.—On an infinite continuous group of transformation of contact between right lines and spheres, by M. E. O. Lovett.—A method for

determining the Newtonian constant, by M. G. K. Burgess. The Cavendish method is modified by supporting the weight carried by the torsion thread in a bath of mercury. In this way it was possible to suspend a mass of lead of two kilograms each on a torsion wire of bronze or platinum of 0.05 mm. diameter. The sensibility of this apparatus is very great, a shifting of the large masses (10 kgr. each) through 40° turning the torsion system through about 12°. The chief difficulties would appear to be the necessity of keeping the temperature of the mercury absolutely constant, and the variations introduced by fluctuations in the surface-tension of the mercury.—On the magnetic properties of iron at low temperatures, by M. Georges Claude. The hysteresis and permeability of iron are both practically constant over the temperature-range, +25° C. to -185° C., the permeability at -185° C. being only 2.5 per cent. less than at 25° C. These results are in agreement with the experiments of Thiessen, carried out at temperatures of -80°, but are in opposition to the results of Dewar and Fleming.—Decomposition of phosphate of manganese by water at 0° and 100° C., by M. Georges Viard.—On the persistence of the cardiac contractions in the phenomena of regression in the Tunicates, by M. Antoine Pizon.—On temperature and its variations in free air, from observations in ninety captive balloons, by M. L. Teisserenc de Bort. The temperature at different heights presents in the course of the year variations much more considerable than had been supposed from the observations made in an ordinary balloon. Even as high as 10,000 metres there is a marked tendency to an annual variation of temperature.

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