

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—The 202nd meeting of the Junior Scientific Club was held on May 26. After private business, Mr. J. M. Wadmore (Trinity) read a paper on caoutchouc; Mr. M. Burr (New College) exhibited some live walking-stick insects; and Mr. H. E. Stapleton (St. John's) read a paper on Dulong and Petit's law.

AN exhibition of practical work executed by candidates at the recent technological and manual training examinations of the City and Guilds of London Institute will be opened by the Duke of Devonshire, at the Imperial Institute, on Friday, June 9.

THE Edinburgh correspondent of the *Lancet* states that the court of the University of Edinburgh had recently before them a report from the committee appointed to draw up a statement and appeal for funds for University purposes, in which it was stated that the funds required for the equipment of the Public Health Laboratory and for the preparation of a library catalogue had been provided, the former by the generosity of Mr. John Usher of Norton, and the latter from the munificent bequests of the late Sir William Fraser. For the library, however, funds are still urgently required. The most pressing wants are: (1) a fire-proof room for the storage of rare books of the fifteenth and early sixteenth centuries and the MSS., which number about 7000; (2) a fund, amounting at the lowest figure to 25,000*l.*, for the purchase of scientific and literary journals and of larger works of reference; and (3) extensive structural changes and new book-cases, costing at least 5000*l.*, or a new and suitable building for the library. Another direction in which it will soon be necessary to spend money is the establishment of the Physical Laboratory. The construction and equipment of this laboratory will be a large undertaking, but it is one which will have soon to be faced if the scientific reputation of the University is to be maintained.

SCIENTIFIC SERIALS.

American Journal of Science, May.—Some experiments with endothermic gases, by W. G. Mixer. The endothermic gases operated upon were acetylene, cyanogen, and nitrous and nitric oxides. A beautiful experiment described is one in which acetylene is decomposed at a dull red heat. The gas issues from a narrow tube into a wider tube, heated by a Bunsen burner. When the glass begins to glow there is a slight puff, and the stream of gas issuing from the narrow tube glows, or rather the carbon particles glow in it with the heat of dissociation of the acetylene.—A hypothesis to explain the partial non-explosive combination of explosive gases and gaseous mixtures, by W. G. Mixer. Detonating gas, a mixture of carbonic oxide and oxygen, one of cyanogen and oxygen, and other explosive mixtures of gases, do not explode below certain pressures when sparked. Explosions do not occur because of the infrequency of impacts of molecules having a velocity or internal energy adequate for chemical union. Some of the molecules combine, but the heat of their union is not sufficient to restore the energy lost by radiation, and the change is therefore not self-propagating.—Occurrence of palæotrochis in volcanic rocks in Mexico, by H. S. Williams. Origin of palæotrochis, by J. S. Diller. These two papers effectually dispose of the hypothesis of the organic origin of the siliceous formations described by Emmons as due to some primordial coral. Prof. Williams describes some specimens coming from an old eroded volcanic cone made up of altered porphyry and volcanic tuffs, situated north-east of Guanajuato in the Santa Rosa mountains. A microscopical study of thin sections reveals the fact that the nodules are spherulites, a common feature of acid igneous rocks.—Association of argillaceous rocks with quartz veins in the region of Diamantina, Brazil, by O. A. Derby. Red clay is always associated with the quartz veins of the diamond region of Minas Geraes, Brazil. The author describes a remarkable layer of that kind, one to two metres thick, which has received from the miners the name of *Guia* (Guide), because, as they state, diamonds were to be looked for below the outcrop of this layer, and not above it.—Volatilisation of the iron chlorides in analysis, and the separation of the oxides of iron and aluminium, by F. A. Gooch and F. S. Havens.

The fact that ferric oxide is completely volatile in HCl gas applied at once at a temperature of 500°, and at 200° if the acid carries a little chlorine, opens the way to many analytical separations of iron, notably to the separation of intermixed iron and aluminium oxides.—Preliminary note as to the cause of root pressure, by R. G. Leavitt. The author applies the latest researches on osmotic pressure to the known facts of plant physiology.

Bulletin of the American Mathematical Society, May.—Prof. Holgate gives an account of the April meeting, of the Chicago Section, at Evanston, April 1. There were two sessions in the day, and twelve papers were communicated.—Prof. Bôcher gives an elementary proof that Bessel's functions of the Zeroth order have an infinite number of real roots. This was read at the Society's February meeting (*cf.* Gray and Mathews' "Treatise on Bessel Functions," p. 44.) A generalisation of Appell's factorial functions (read at the December 1898 meeting), by Dr. Wilczynski, is a slight modification of Appell's proof. The writer proposes to discuss these functions more fully later on. A paper, read at the February meeting, by Prof. J. Pierpont, entitled "On the Arithmetization of Mathematics," is an attempt to show why arithmetical methods form the only sure foundation in analysis at present known. General reasons are indicated in a paper by Klein ("über Arithmetisierung der Mathematik," *Göttinger Nachrichten*, 1895). The paper enters into considerable detail. There is much metaphysics as well as mathematics.—Prof. E. W. Brown contributes an appreciative review of Prof. Darwin's work on the tides and kindred phenomena of the solar system, and also notices "Leçons sur la théorie des Marées," by Maurice Lévy.—The Notes give an account of a projected change in the "Annals of Mathematics," which is to be inaugurated in vol. xiii., and a full list of the subjects of lectures at a dozen German universities, besides some notes of personal matters.

Wiedemann's Annalen der Physik und Chemie, No. 4.—Pitches of very high notes, by F. Melde. The author reviews the various methods by which very high pitches have been determined. These include subjective methods like those by direct hearing and by difference tones, and objective ones like the various vibrographs and the author's own method of resonance. The author admits that the method of difference tones is untrustworthy, and points out certain advantages of the sensitive flame which might be utilised.—Viscosity of gases, by P. Breitenbach. Of the two methods for determining the viscosity of gases, that of transpiration through a capillary tube, and that of the oscillation of a solid, the latter indicates a greater increase of viscosity in the temperature. But in any case the increase is not quite proportional to the temperature.—Effect of electric oscillations upon moist contacts, by E. Aschkinass. Two pointed copper wires which just touch each other act as an ordinary coherer in air or alcohol, but when immersed in water, or when the points are only connected by a drop of water, the action is reversed, since electric waves have the effect of temporarily increasing instead of reducing the resistance. In another form of the experiment, a few drops of water are added to the copper filings of an ordinary coherer. This reversed action is as yet entirely unexplained.—Emission and absorption of platinum black and lamp black with increasing thickness, by F. Kurlbaum. The emission of blackened surfaces is compared with that of an "absolutely black body" in the shape of an orifice of a brass vessel blackened inside and kept at a constant temperature by circulating steam. A bolometer is exposed to radiation from this orifice and to films of black substances kept at the same temperature. It appears that platinum black has a higher absorptivity and emissivity at greater thicknesses, whereas that of lamp black is greater in very thin layers. Neither of these substances absorbs heat rays of great wave-lengths. For most purposes, platinum black is to be preferred, if only on account of the facility in controlling its electrolytic deposition.—Radius of molecular action, by W. Mueller-Erbach. Films of bees-wax or sealing-wax were protected by thin layers of gum against the dissolving action of carbon bisulphide vapour. The thickness of the layer of gum required for effectively protecting sealing-wax was 0.35 mm., whereas bees-wax was sufficiently protected by a layer only 0.14 mm. thick.

THE April issue (vol. lxx. part 4) of the *Zeitschrift für Wissenschaftliche Zoologie* contains five articles, of which, perhaps, the one by Messrs. Eimer and Fickert, on the evolutionary history of the Foraminifera, is the most generally interesting.