

spring and turns with it; the pointer P fixed on the frame of the instrument points to an indication of the weight on a spiral line drawn on the cylinder D. This second arrangement allows of the employment of springs whose ends have a relative motion of five or six revolutions.

The authors also brought before the Royal Society a model showing a combination of bifilar and spiral spring suspension, in which great rotation and small axial lengthening or shortening are produced by an axial force.

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE

CAMBRIDGE.—Mr. A. E. Shipley, of Christ's College, will give a repetition of the Elementary Biology course in the Morphological Laboratory during the Long Vacation, beginning July 7.

The workshops of Mechanism will be open during the Long Vacation.

The Observatory Syndicate report 2305 observations of R.A. and N.P.D. in 1883-84, including 1579 observations of zone-stars made on 100 nights. The observations of standard stars are reduced to about the end of 1883. The zone-stars are completely reduced to end of 1881, the mean R.A. and N.P.D. to end of 1877.

It appears that the new expenditure entered into for professors, readers, University lecturers and demonstrators, and for apparatus and buildings, already exceeds the annual receipts from the colleges under the recent Act. Thus there is little chance at present of the appointment of the numerous readers contemplated by the University Commissioners.

The placing of a new story over the Mineralogical Museum for a laboratory of Elementary Biology has been sanctioned. The recommendations regarding a lecture-room and additions to the Physiological Laboratory are in abeyance.

The Botanic Garden Syndicate reports that during the past year the houses have been improved in many details. The Bromeliaceæ are now represented by fifty species. A new fern pit for filmy ferns is well stocked. The collection of Irises has been greatly improved, largely by Prof. Michael Foster's generous contribution, making it probably the finest in any botanic garden. The liberality of Mr. Barr has contributed a very fine collection of daffodils, and one of Funkias, not surpassed anywhere. Numerous plants of scientific interest have flowered in the Gardens and been figured. Col. T. Clarke has contributed a set of important Croci; Messrs. Low of Clapton a fine set of orchids.

The local lectures in provincial centres continue to gain large audiences, many courses of lectures on physical science and biology being given. Great difficulty, however, is felt in establishing sufficiently continuous courses of lectures in successive years, so as to give complete schemes of study.

The Cavendish and the Chemical Laboratories will be open during July and August.

Prof. Macalister will hold a class in Osteology during the Long Vacation. The Demonstrator will take a class in Practical Histology.

### SCIENTIFIC SERIALS

THE *Journal of Botany* for May contains several articles of interest to cryptogamists:—Mr. W. B. Grove describes a number of fungi, some of them but little known or new; and the paper is illustrated by two plates.—Mr. S. Le M. Moore has paid special attention to the small class of endophytic algae, and gives some interesting particulars regarding the structure and reproduction especially of *Chlorochytrium Lemnae* and *Scotinospheera paradoxa*.—Dr. Hance describes, under the name *Phloopteris*, a new genus of polypodiaceous ferns; and Mr. J. G. Baker several new species of ferns in the collection of M. Humblot from Madagascar.—Among the minor notes evidence is given that *Centauria Jacea*, L., must be regarded as a true British species.

In the number for June the only original article of importance is an exhaustive monograph by Mr. F. Townsend, of the variable species *Euphrasia officinalis*. He classifies the various forms under eight groups, only three of which are found in the British Islands.—A large portion of this number is occupied by the completion of the annual list (continued from the previous number) of new flowering plants published in periodicals in Britain during 1883. The length of this list affords evidence that the

study of descriptive and systematic botany is not altogether neglected in this country.

*Rendiconti del R. Istituto Lombardo*, May 15.—Biographical notice of Giovanni Polli, with a list of his scientific productions, by Prof. Gaetano Strambio.—Influence of Virgil on the style of Dante, Petrarch, Metastasio, and Parini, by E. Giulio Carcano.—On the present condition of agricultural interests in Europe and North America, by Prof. Gaetano Cantoni.—On surfaces of the third order, by Prof. E. Bertini.—Experimental studies on the cure and prevention of tuberculosis, by Prof. G. Sormani.

*Journal de Physique*, April.—E. Blavier, study of earth-currents. In France these currents generally flow from north-west to south-west, and inversely; but often their direction changes and they go from north to south, north-east to south-west, east to west, or inversely. It is still impossible to give a general law.—E. Mascart, on the reciprocal action of two electrified spheres, shows that if the distance between centres is triple the diameter the law of Coulomb is correct to 2 per cent.—M. Brillouin, duration of swing of a magnetic system with its index.—M. Izarn, electro-dynamic and electro-magnetic experiments. An astatic float based upon that of Ampère is used to demonstrate the law of repulsion of consecutive elements of the current. The apparatus does not disprove Maxwell's view, however.—M. Buguet, action of two consecutive portions of one current.

May.—E. Mercadier, on the laws of transverse vibrations of elastic rods. From experiments on rods of steel and iron held at two points it appears that the number of vibrations is proportional to the thickness in the direction of the displacement, inversely proportional to the square of the length, and independent of the breadth.—P. Garbe, on Joule's law. Experiments made with an incandescent lamp placed in a calorimeter.—M. Marey, analysis of movements of photography. Gives a diagram of movements of a man running.—E. Mathieu, figures of liquid drops at the moment when they are about to detach themselves from a capillary tube fastened to the bottom of a vase.—M. Neyreneuf, on the transmission of sound.

*Bulletin de l'Académie R. de Belgique*, April 5.—Investigations on the spectra of the comets and on the luminous spectra of the hydrocarbonic gases, by Nicolas von Konkoly.—On the presence of the Biscay whale (Nordcaper) on the coasts of Norway in ancient and modern times, by G. A. Guldberg.—On the influence of temperature on the bands of the spectrum, by Ch. Fievez.—On the sand-heaps and sandstone boulders scattered over the Upper Devonian hills in the Sambre and Meuse districts, by Michel Mourlon.—On the influence of the atmospheric conditions on the appearance of certain colours in the scintillation of the stars; application of these observations to the prediction of changes of weather, by Ch. Montigny.—Spermatogenesis in *Ascaris megaloccephala*, by Edouard Van Beneden.—On the advanced state of vegetation in Belgium in the month of March, 1884, by G. Dewalque.—Remarks on the cause of metamorphism in the rocks of the Recogne district, Luxembourg, by Jules Gosselet.—On the existence of a fourth species (*Balanoptera borealis*) of the genus *Balanoptera* in the North European waters, by G. A. Guldberg.

*Journal of the Russian Chemical and Physical Society*, vol. xvi. fasc. 3.—On the formation of amides of ammoniacal salts, by N. Menshutkin. The speed of amidation of the investigated acids increases with the increase of temperature, and the influence of temperature could be represented by similar curves for the different acids. The velocity of amidation depends also on the molecular weight, that of formic acid going on at a greater speed than those of acids which have higher molecular weights. Even with the aromatic acids the speed of amidation depends on the isomeric form of the acid. The results as to the dependency on isomerism and molecular weight are identical with those arrived at with regard to the compound ethers.—On the hydrates of the chloride of cobalt, and on the cause of the changes of colour of its dissolution, by A. Potilitzin.—On the action of the haloid salts of aluminium on the saturated hydrocarbons, by G. Gustavson. Organic bodies undergo great modifications when they enter into reactions with these salts, even when they enter into unstable temporary combinations; they acquire the capacity of entering into several new reactions, and undergo deep modifications even without being heated. The experiments might throw a new light on the part played by mineral salts in organisms, the component parts of which may be thus submitted to changes that are favourable for life.—On a new salt of rhodium, by Th. Wilm.—Note on M. Kanonnikoff's memoir on the refracting power of organic substances, by F.