M.P., Sir Arthur Rücker, and Sir Thomas Higham, K.C.I.E., with Mr. J. E. Ferard, of the India Office, as secretary.

THE new science rooms of the Colston's Girls' School, Bristol, were opened on Friday last, May 15, by the Right Hon. Henry Hobhouse, M.P. The new building comprises three rooms, about 30 feet by 26 feet, and one smaller. The lecture room will be largely used for the study of botany, and is provided with a small conservatory, or window box, in which experiments, such as those showing the process of germination, will be carried out. In the chemistry laboratory benches are provided at which girls will work in sets of two, and each set will have a balance on side benches close at hand. The physics laboratory is on very much the same plan as the chemistry room. Mr. Hobhouse, in the course of his speech, remarked that the education of girls was of the highest importance, not only in order to fit them for their domestic duties, but also to provide good women teachers. Prof. Armstrong hailed the opening of the new science rooms as a proof that science, once almost neglected, was now considered a necessary part of a liberal education.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, March 26.—"On the Cytology of Apogamy and Apospory. (1) Preliminary Note on Apogamy." By J. B. **Farmer,** F.R.S., J. E. S. **Moore,** and Miss L. **Digby.**

The phenomenon of apogamy is exhibited when the young fern-plant springs directly from the tissue cells of the prothallium generation, instead of arising as the result of segmentation of the egg within the archegonium. It has been regarded as a "short cut" in the life-cycle, and some theoretical importance has been attached to it in connection

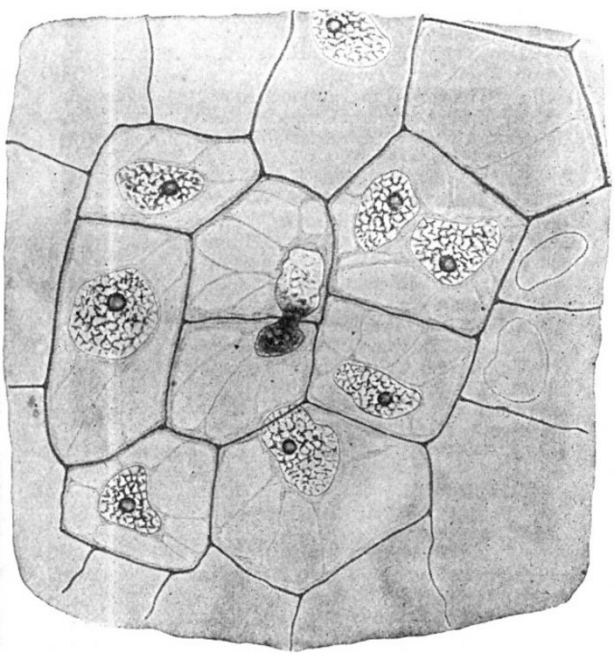

FIG. 1.—Group of prothallial cells with migrating nuclei.

with the relationships believed to exist between the gametophyte and the sporophyte, that is, between the prothallium and the fern-plant. Now it has been known for some years that the nuclei of these two generations exhibit a constant difference *inter se* of such a nature that each sporophyte nucleus contains twice as many chromosomes as do the individual nuclei of the gametophyte.

Evidence is brought forward to show that this nuclear change is brought about, in the apogamous development, by the migration of a nucleus to an adjacent cell, and its subsequent fusion with the nucleus of that cell. A considerable number of instances were observed in which single cells contained two nuclei, and when this was the case, one of the contiguous cells was always seen to be destitute of a nucleus. Instances of the transit of the nuclei through the walls were also seen. Further, the nuclei of some of the cells in the region where these occurrences were discoverable could occasionally be met with in stages at which it was found possible to estimate the number of chromosomes. In such cases these were double the number of those of the ordinary prothallial nuclei.

These facts lead to the inference that we are dealing with an irregular kind of fertilisation, or, at any rate, with a mechanism for doubling the nuclear chromosomes that is practically identical with what is seen in normal fertilisation. In the latter case the double number is arrived at by the addition of the chromosomes of the sperm-nucleus to those of the nucleus of the egg.

The annexed figure illustrates (1) two cells in which the nucleus of the one is passing through the parti-wall, and apparently fusing directly with the other nucleus; (2) a cell with two nuclei, one of which has been derived from the cell at the top right-hand corner of the figure.

May 7.—"Preliminary Note on the Discovery of a Pigmy Elephant in the Pleistocene of Cyprus." By Dorothy M. A. **Bate.** Communicated by Henry Woodward, LL.D., F.R.S., F.G.S., V.P.Z.S., late Keeper of Geology, British Museum, Natural History.

The elephant described was discovered by the author in 1902 during a search for bone-caves in the Kerynia Range in the north of the island. The collection obtained chiefly consists of a series of teeth, all procured from a single deposit, which also contained a very much larger quantity of the remains of *Hippopotamus minutus*.

The teeth of the Cypriote elephant are considerably smaller than those of *Elephas mnaidriensis*, the largest of the Maltese forms, and are also slightly inferior in size to those of *E. melitensis*. As a general feature it may be said that the molars from Cyprus are more simply constructed than those of the last-mentioned species, showing a slighter tendency to "crimping" in the enamel and in being less inclined to develop the mesial expansion of the plates of dentine so characteristic of those of *E. africanus*. Taking into consideration the several characters in which the teeth of the Cyprus form differ from those of all hitherto described dwarf species (putting on one side *E. lamarmorae*, the teeth of which are unknown to science), as well as the distinct habitat of the animal, it is believed to be specifically distinct, and it is therefore proposed to name it *Elephas cypriotes*. The discovery of this pigmy species is interesting in comparison with those from Malta and Sicily, and the occurrence of these different, though apparently closely related, small races of elephants in widely separated islands of the Mediterranean lends probability to the theory that this is a case of independent development along similar lines, the result of similar conditions of existence.

Physical Society, May 8.—Dr. R. T. Glazebrook, F.R.S., president, in the chair.—Mr. T. H. **Blakesley** exhibited and described a spectroscope of direct vision, of one kind of glass, and of minimum deviation for every ray that comes into the centre of the field of view. The refracting angles are such that the cosines of half the refracting angles are equal to half the index of refraction for the ray which is to have no deviation. The first prism is right-angled, and has one angle equal to the refracting angle calculated by the above rule. The second prism and the third possess the refracting angle so obtained, and the fourth is similar to the first. The plan adopted can be extended by employing more than one of the arrangements described, in sequence.—Prof. J. D. **Everett** read a paper on the mathematics of bees' cells.—Mr. W. A. **Price** read a note on the coloured map problem. He referred to the fact that only four colours are required to colour a map on the surface of a simply connected region, such as a sphere, in such a way that two countries marching on a boundary line are coloured differently, and exhibited two models of anchor rings the surfaces of which were divided in each case into six sections, each of which marched with

the other five; and a model of a ring having a cross-bar or stud, the surface of which was divided into eight sections, each of which marched with the other seven. In the case of maps on such surfaces, at least six and eight colours would be required in the respective cases.—Dr. **Watson** read a note on the construction and attachment of galvanometer mirrors. It has often been pointed out, notably by Lord Rayleigh and Prof. Threlfall, that it is better to increase the sensitiveness of galvanometers and similar instruments by improving the optical system, rather than by pushing the electrical sensitiveness to extreme limits. When working with ordinary silver on glass mirrors difficulties arise in connection with the attachment of the fibre and the fact that it is necessary to use a varnish, which in all cases produces distortion. These difficulties have been overcome by using quartz instead of glass, and platinum instead of silver.

Mathematical Society, May 14.—Prof. H. Lamb, president, in the chair.—Lieut.-Colonel A. **Cunningham** announced the discovery of seven new factors of Fermat's numbers (2^{2^n}), viz. when n is 9, the factor $2^{16}.37+1$; when n is 11, the factors $2^{13}.3.13+1$ and $2^{13}.7.17+1$; when n is 12, the factors $2^{16}.397+1$ and $2^{16}.7.139+1$; when n is 18, the factor $2^{20}.13+1$; when n is 38, the factor $2^{41}.3+1$. In the cases of 9, 12, 18, the factors were discovered by Mr. A. E. Western; in the case of 11, by Lieut.-Colonel Cunningham; in the case of 38, jointly by collaboration of these authors with Rev. J. Cullen.—Dr. H. F. **Baker** communicated a series of notes:—(1) On the definiteness of quadratic forms with imaginary coefficients; (2) On a certain form of logical argument which occurs in the proofs of several fundamental theorems of pure mathematics; (3) On the summation of Neumann's series representing a potential determined by boundary values; (4) On the formation of the variant equation in the theory of differential equations; (5) On some points in the theory of continuous groups.—The following papers were communicated:—Mrs. **Young,** The surface representing all right-angled spherical triangles.—Mr. W. H. **Bussey,** Generational relations defining an abstract simple group of order 32736.—Mr. W. H. **Young,** (1) On skew surfaces contained in a linear congruence; (2) On closed sets of points and Cantor's numbers. In the last of these papers methods and results obtained by the author in a previous paper on the theory of sets of intervals are applied to the theory of linear sets of points. The theory of the higher transfinite numbers is avoided, but the transition to these numbers is shown to arise naturally, and a short account is given of the most recent work on this subject.

NEW SOUTH WALES.

Linnean Society, March 25.—Mr. J. H. Maiden, president, in the chair.—The president delivered the annual address, which was devoted chiefly to the consideration of the principles of botanical nomenclature.—The newly-elected president, Dr. T. Storie Dixson, then took the chair, and the following papers were read:—A monograph of the Australian Membracidæ, by Dr. F. W. **Goding.** In studying this group, twelve genera, represented by thirty-five species, have been recognised.—Revision of Australian Lepidoptera, by Dr. A. Jefferis **Turner.** Under the above heading the author hopes to publish a series of papers dealing with the different families as time and opportunity permit. This first instalment treats of the Notodontidæ and Hyponomeutidæ.

DIARY OF SOCIETIES.

THURSDAY, MAY 21.

ROYAL INSTITUTION, at 5.—Proteid-Digestion in Plants: Prof. S. H. Vines, F.R.S.

INSTITUTION OF MINING AND METALLURGY, at 8.—Diamond Drilling in West Africa: J. N. Justice.—On the Occurrence of Mica in Brazil, and on its Preparation for the Market: H. Kilburn Scott.—Analytical Work in Connection with the Cyanide Process: J. E. Clennell.—Notes on the Treatment of Gold Slimes in Venezuela: Leslie Symonds.—Notes on Cupriferous Cyanide Solutions: H. A. Barker.—Notes on Chorolque Tin Mines and Alluvial Deposits, Bolivia: M. Roberts.

FRIDAY, MAY 22.

ROYAL INSTITUTION, at 9.—Dictionaries: Dr. J. A. H. Murray.

PHYSICAL SOCIETY, at 5.—Exhibition of Nernst Lamps, showing their Development from the Experimental Form up to the most Recent Types: J. Stöttner.—Exhibition of a Diagram of Single-piece Lenses: T. H. Blakesley.—On an Instrument for Measuring the Lateral Contraction of Tie-Bars, and on the Determination of Poisson's Ratio: J. Morrow.

MONDAY, MAY 25.

LINNEAN SOCIETY, at 3.—Anniversary Meeting.

SOCIETY OF CHEMICAL INDUSTRY, at 8.—(1) Neatsfoot Oil; (2) The Nitric Acid Test for Cotton Seed Oil: J. H. Coste and E. T. Shelbourn.

TUESDAY, MAY 26.

ROYAL INSTITUTION, at 5.—The Work of Ice as a Geological Agent: Prof. E. J. Garwood.

ZOOLOGICAL SOCIETY, at 8.30.—On the present State of Knowledge as to the Inheritance of Colour in Fancy Rats and Mice: W. Bateson, F.R.S.—List of the Batrachians and Reptiles collected by M. A. Robert at Chapadá, Matto Grosso (Percy Sladen Expedition to Central Brazil): G. A. Boulenger, F.R.S.—Note on some Bulimulidæ from Matto Grosso (Percy Sladen Expedition to Central Brazil): Edgar A. Smith.

EPIDEMIOLOGICAL SOCIETY, at 8.30.—The Etiology of Leprosy: Jonathan Hutchinson, F.R.S.

WEDNESDAY, MAY 27.

GEOLOGICAL SOCIETY, at 8.—An Experiment in Mountain-Building: Lord Avebury, P.C., F.R.S.—(1) The Toarcian of Bredon Hill, and a Comparison with Deposits Elsewhere; (2) Two Toarcian Ammonites: Sydney S. Buckman.

THURSDAY, MAY 28.

ROYAL SOCIETY, at 4.30.—*Probable Papers*:—On the Bending of Waves round a Spherical Obstacle: Lord Rayleigh, O.M., F.R.S.—Sur la Diffraction des Ondes Électriques a propos d'un Article de M. Macdonald: Prof. H. Poincaré, For.Mem.R.S.—An Analysis of the Results from the Kew Magnetographs on Quiet Days during the Eleven Years 1890-1900, with a Discussion of Certain Phenomena in the Absolute Observations: Dr. C. Chree, F.R.S.—On the Theory of Refraction in Gases: G. W. Walker.—Researches on Tetanus: Prof. Hans Meyer and Dr. F. Ransom.—The Hydrolysis of Fats in vitro by Means of Steapsin: Dr. J. Lewkowitsch and Dr. J. J. R. Macleod.

ROYAL INSTITUTION, at 5.—Electric Resonance and Wireless Telegraphy: Prof. J. A. Fleming, F.R.S.

INSTITUTION OF ELECTRICAL ENGINEERS, at 5.—Annual General Meeting.

FRIDAY, MAY 29

ROYAL INSTITUTION, at 9.—The Progress of Oceanography: Prince of Monaco.

SATURDAY, MAY 30.

ROYAL INSTITUTION, at 3.—The "De Magnete" and its Author: Prof. S. P. Thompson, F.R.S.

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