

Experimental Cell Studies.

IN an experimental study of cell and nuclear division, especially in *Vicia faba*, Sakamura (Journ. Coll. Sci., Imp. Univ. Tokyo, vol. xxxix., article 11) has made an important contribution, particularly with regard to the factors that may influence the form, size, and number of the chromosomes. He finds, in agreement with most previous investigators, that *V. faba* has twelve chromosomes, the earlier counts of fourteen being due to a constriction which appears constantly at a certain point on the longest pair of chromosomes. Two other species of *Vicia* have fourteen chromosomes, three have twelve, while *V. unijuga* is tetraploid, having twenty-four.

The investigations of Némec and others in chloralising root-tips and studying the effects on mitosis and the multiplication of chromosomes have been considerably extended, including treatment with benzene and chloroform vapour, ether, carbon dioxide, high temperature, electric currents, Röntgen rays, plasmolysis, and infection by the Nematode worm *Heterodera*. The chromosomes often shorten and thicken under this treatment, irregular mitoses occur, and frequently the number of chromosomes is multiplied, but there is no evidence of later reduction divisions in the pollen formation were also obtained by similar treatment.

A study of the chromosomes of wheat gives very different results from those of previous investigators. *Triticum monococcum* is found to have fourteen chromosomes ($2\times$), four derivatives of Emmer wheat are found to have twenty-eight ($4\times$), while three descendants of Dinkel wheat have forty-two ($6\times$). This is a confirmation of the view that *T. monococcum* is the most primitive, while *T. vulgare* belongs to the most advanced, type—a view which is supported also by the phytopathological studies of Wawiloff, the serological tests of Zade, and the evidence from sterility of the various hybrids as obtained by Tschermak. The fundamental importance of cytological studies of agricultural plants is thus apparent.

R. R. G.

University and Educational Intelligence.

CAMBRIDGE.—Mr. H. H. Brindley, St. John's College, has been re-appointed demonstrator of biology to medical students; Mr. J. T. Saunders, Christ's College, demonstrator of animal morphology; and Mr. J. Gray, King's College, demonstrator of comparative anatomy. Mr. E. J. Maskell, Emmanuel College, has been appointed to the Frank Smart University studentship in botany.

Graduate research studentships at Emmanuel College have been awarded to E. J. Maskell for research in plant physiology, to C. H. Spiers for research in stereochemistry, and to G. L. Jones for research in Celtic and Frankish institutions.

DR. GRIFFITH TAYLOR, at present physiographer in the Commonwealth Weather Service, Melbourne, has been appointed to a specially created position of associate professor of geography in the University of Sydney. He will take up the duties of his new position in the early part of 1921.

A REUNION of old students of the Royal College of Science, London, will be held on Tuesday, September 14, at 7 p.m., at the Imperial College Union, Prince Consort Road, South Kensington, London, S.W.7. The president, Sir Richard Gregory, will take the chair at 8 p.m., and Prof. H. E. Armstrong will

deliver an address entitled "Pre-Kensington History of the Royal College of Science and the University Problem."

THE issue of the *Lancet* for August 28 is a medical students' guide for the session 1920-21. The various curricula are described in detail, and under their respective headings the necessary information concerning the facilities for medical study offered at the different teaching centres of the United Kingdom is given. The regulations for the examinations, both preliminary and professional, at these centres are set out so that the student desiring to obtain a medical degree from a university or a diploma from any medical corporation may ascertain the course of clinical instruction and the conditions under which submission for examination is allowed. The metropolitan medical schools and hospitals are grouped under the University of London; similarly, all hospitals in direct connection with provincial universities are described under the appropriate university. Finally, an account is given of the conditions under which commissions can be obtained in the Navy, Army, Air Force, Indian, and Colonial Medical Services.

WE have just received a "Handbook of Lectures and Classes for Teachers," issued by the London County Council. The range of subjects offered is very wide, and all the courses will be conducted by experts. Under the heading of geography, lectures will be given on physical geography, the use of instruments, and regional and historical geography—a course which will extend over two years. In addition, there will be lectures on the past and the future of the great towns of the world, and one lecture on regional surveys. In the department of mathematics the teaching of arithmetic, of mensuration and geometry in junior schools, and of elementary mathematics will be dealt with in five courses of lectures during the year. Science will be represented by courses of lectures on modern theories of time, space and matter, psychoanalysis, psychology, elementary astronomy, the special senses, experimental investigation of children, the industries of the Stone age, insects in relation to agriculture and disease, and laboratory arts, and there will be one lecture on insects as disease-carriers. As usual, there will be a course of single lectures on special subjects: Prof. J. N. Collie will lecture on the rare gases in the atmosphere; Prof. A. Fowler on recent developments in astronomy; Prof. A. Keith on the antiquity of man; Prof. R. Biffen on agricultural botany; Dr. Bateson on the heredity of sex; Dr. Forster on chemical technology; and Sir W. H. Bragg on the romance of science. The lectures will be open to all teachers employed either within or outside the administrative county of London. Full directions for the application for tickets of admission will be found in the handbook.

Societies and Academies.

PARIS.

Academy of Sciences, August 9.—M. Henri Deslandres in the chair.—A. Blondel: A new optical or electrical apparatus for the measurement of oscillations of velocity and angular deviations. The method is based on the registration on a photographic film moving at a uniform rate of the angular displacements of a disc carrying a series of equidistant slits, the disc being attached to the axis of the machine under examination. An application of the method to the study of an internal-combustion engine is given.—M. Petot: Extract from a letter to M. Appell con-

cerning the spherical representation of surfaces.—**B. Delaunay**: The number of representations of a number by a binary cubic form with negative discriminant.—**F. Carlson**: The zeroes of the series of Dirichlet.—**C. Frémont**: Cause of the frequency of breakages of rails at their extremities.—**J. Rey**: Perrot's experiment relating to the movement of rotation of the earth. In 1859 Perrot observed certain rotations in a jet of water flowing from a hole in the base of a cylindrical vessel, and regarded these as due to the rotation of the earth. Laroque, in 1860, concluded that the observed phenomena were not connected with the earth's rotation, but many phenomena in geophysics have since then been explained on the assumption of the validity of Perrot's views. Experiments are described which lead to the conclusion that Perrot's views are erroneous, and fully confirm Laroque's criticisms.—**H. Godard**: Observations of the periodic comet Tempel II. made at the Bordeaux Observatory with the 38-cm. equatorial. The apparent positions of the comet and comparison stars for July 24, 25, and 27 are given.—**A. Buhl**: The symmetries of the electromagnetic and gravific field.—**E. Darmois**: The influence of ammonium molybdate on the rotary power of malic acid. A crystallised compound of malic acid and ammonium molybdate has been isolated. Its rotatory power is very high ($+219^\circ$), and constant over a wide range of concentrations. There is a probability that this is not the only complex compound formed when ammonium molybdate is added to solutions of malic acid.—**A. Portevin**: The similitudes of micrographic aspect existing in various states between the iron-carbon (steels), copper-tin (tin bronzes), copper-zinc (brasses), and copper-aluminium alloys (aluminium-bronzes).—**J. Bougault** and **P. Robin**: Catalytic oxidation by unsaturated bodies (oils, hydrocarbons, etc.). Dichloroethyl sulphide, which alone or in solution is unaffected by oxygen, in presence of turpentine readily oxidises on exposure to air, the sulphoxide $\text{SO}(\text{CH}_2\text{CH}_2\text{Cl})_2$ being formed. By a similar oxidation, thiodiglycol in presence of citral is readily oxidised by air to the sulphoxide $\text{SO}(\text{CH}_2\text{CH}_2\text{OH})_2$.—**R. Souèges**: The embryogeny of the Compositæ. The last stages of the development of the embryo in *Senecio vulgaris*.—**P. Lesage**: Experiments utilisable in plant physiology on osmosis and on the aspiration due to evaporation.—**M.** and **Mme. G. Villedieu**: The action of rain on the deposits of copper mixtures on plants.—**J. Amar**: How to determine the output of workmen.—**A. Migot**: The formation of the axial skeleton in *Eunicella (Gorgonia) Cavolinii*.—**MM. Fauré-Premiet, J. Dragoin, and Mlle. Du Vivier de Streel**: The histochemical differentiation of the foetal pulmonary epithelium in the sheep.—**M. Piettre** and **A. Vila**: Some properties of serine.—**C. Lebailly**: The virulence of the milk in apthous fever. The milk is virulent before any appearance of symptoms characteristic of the disease, the high temperature being the only indication of departure from the normal healthy condition.—**E. Aillaire** and **E. Fernbach**: Some observations on the culture of the tubercle bacillus in non-glycerinated media.

ROME.

Reale Accademia dei Lincei, April 11.—**A. Roiti**, vice-president, in the chair.—**U. Cisotti**: Integration of characteristic equation of waves in a canal of any depth, iii. Formulæ for the effect of local perturbations are found.—**P. Comucci**: So-called hydro-castorite of Elba. Analysis shows that this is not a definite species of mineral, but rather a product of alteration found as a rule in different minerals of

uncertain composition.—**G. Valle**: Interrupted incoherent sounds. An examination of the acoustical effects produced by sirens in which the openings are arranged in groups, the interval between which is not an exact multiple of the interval between the members of a group.—**M. Tenani**: Diurnal oscillations of wind velocity at different heights. Between May and September, 1917, regular observations were made with *ballons-sondes* at different times of the day at the Royal Aerological Station of Vigna di Valle for the purposes of aviation. The mean amplitude of diurnal oscillation decreases upwards, starting with 3 m./sec. at the ground. The oscillations parallel to the shore-line are almost negligible compared with those in a perpendicular direction. An attempt is made to determine a coefficient of correlation between the difference of temperature of earth and sea and the wind velocity perpendicular to the shore, but the mean error is too large to allow of the results being practically applicable up to the present.—**C. Ravenna** and **G. Bosinelli**: The dipeptid of aspartic acid and the function of asparagin in plants. In these experiments the dipeptid was obtained directly in a state of purity by prolonged boiling of a solution of asparagin.—**R. Raineri**: Corallinaceæ of the Tripoli coast, i. A description (accompanied by three figures) of the five species of the genus *Lithothamnium* found along the floor of the Tripoli Sea, namely, *L. crispatum*, *Haucki*, *Lenormandi*, *Philippii* (encrusting), and *fruticulosum* (lightly branching). Seven other species, to be described later, were also found.—**M. Ascoli** and **A. Fagioli**: Sub-epidermic pharmacodynamic experiences, iv. This deals with the action of thyroids and indirect effects.—**L. de Marchi**: Obituary notice of Prof. Vincenzo Reina, with list of works.—The Academy passed a resolution expressing the hope that the Government would secure for the nation the "Villa Gioiello," near Arcetri, in which Galileo spent the last ten years of his life.

April 25.—**F. D'Ovidio**, president, in the chair.—**L. Tonelli**: Points in the calculus of variations.—**E. Clerici**: A pulverulent mineral from Dorgali, in Sardinia. This mineral produces luminescence when heated. By comparing the corresponding effects with various fluorites it is inferred that this phenomenon arises from the presence of traces of rare earths.—**R. Raineri**: Corallinaceæ from Tripoli, ii. The remaining species are *Lithophyllum expansum*, *lichenoides*, *byssoides*, and *decussatum*, and *Melobesia Lejolisii*. In addition, two corallines with articulate thallus occurred.—**L. Pigorini**: Colouring matters from the eggs of silkworms. One gram of eggs was treated with a mixture of alcohol and acetone and the coloured extract tested with a Duboscq colorimeter. The coefficients of extinction of the various colours were found to differ according to whether the eggs were laid by the white, golden, or yellow type of female, or, again, by crosses of the two latter, and the results were sufficiently marked to be practically useful in testing the variety to which the ova belong.—**L. Pigorini** and **R. Grandiori**: Action of sulphide of lime on Lepidopterous ova. Pigorini found that sulphide of lime dissolves the shell of the egg without damaging the living elements, and Grandiori uses the method in his embryological studies of the eggs of *Bombyx mori*, *B. Yamamai*, and *Orgiia antiqua* with great success.—**R. Grandiori**: Symbiotic micro-organisms in *Pieris brassicae* and *Apanteles glomeratus*. Observations were made on four embryonic stages of the *Pieris*, in which were found symbiotic forms similar to others previously seen to penetrate the hypoderm of the parasitic Ichneumon.

CAPE TOWN.

Royal Society of South Africa, July 21.—Dr. A. Ogg, vice-president, in the chair.—P. A. van der Bijl: The genus *Tulostoma*, Persoon, in South Africa. This is a widely distributed genus, and in South Africa two species are thus far known, viz. *Tulostoma cyclophorum* and *T. Lesliei*, a new species, which the author describes in this paper.—P. A. van der Bijl: A fungus, *Ovulariopsis papayae*, n.sp., which causes powdery mildew on the leaves of the pawpaw plant (*Carica papaya*, Linn.). The author describes a fungus found in Natal on the under-surface of the pawpaw leaves as a new species, for which the name *Ovulariopsis papayae* is suggested.—P. A. van der Bijl: South African Xylarias occurring around Durban, Natal. Four species of Xylarias have thus far been collected by the writer around Durban, and of these three have not been previously recorded from South Africa.—W. A. Jolly: Note on the spinal reactions of the Platana. The author gives a note of reflex times observed in the spinal preparation of the Platana of the Cape Peninsula (*Xenopus laevis* or an allied species).—J. R. Sutton: A possible lunar influence upon the velocity of the wind at Kimberley (third paper). This paper deals with the variations in the speed of the wind when the moon is furthest from the earth. The discussion follows the same lines as the previous one, which dealt with the speed variations at perigee. The results obtained go to confirm the earlier ones. The diagram curves show generally the same turning-points as the perigee curves, but later in time, and the moonrise minimum is not so pronounced. The apogee curves average lower on the scale than the perigee curves. While the velocity of the wind tends to rise at perigee when the moon is above the horizon, it tends to fall at apogee.

SYDNEY.

Royal Society of New South Wales, July 7.—Mr. T. H. Houghton, vice-president, in the chair.—Dr. S. Smith: *Aphrophyllum Hallense*, gen. et sp. nov., and *Lithostrotion* from the neighbourhood of Bingara, N.S.W. The corals are referred by the author to *Lithostrotion arundineum* and *L. Stanvellenae*.—J. H. Maiden: Descriptions of three new species of *Eucalyptus*. The first is a dwarf, mallee-like stringy-bark, from between Port Jackson and Broken Bay, closely allied to a moderately large tree, *Eucalyptus capitellata*. The second species comes from the summit of Mount Jounama, at an altitude of about 5400 ft., thirty miles south of Tumut. It is a large tree, a gum, and the bark falls off in strips as much as 30 ft. long. It is allied to the snow gum, *Eucalyptus coriacea*, and to one of the mountain ashes, *E. gigantea*. The third species comes from the drier parts of Western Australia, and it may be spoken of as the dry country representative of the Yate, *E. occidentalis*.

Books Received.

The Land of the Hills and the Glens: Wild Life in Iona and the Inner Hebrides. By S. Gordon. Pp. xii+223. (London: Cassell and Co., Ltd.) 15s. net.

Die Binokularen Instrumente. By Prof. M. von Rohr. Zweite Auflage. Pp. xvii+303. (Berlin J. Springer.) 40 marks.

A Text-book of Electrical Engineering. Translated from the German of Dr. A. Thomälen by Dr. G. W. O. Howe. Fifth edition. (London: E. Arnold.) 28s. net.

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Einführung (Handbuch der biologischen Arbeitsmethoden). By E. Abderhalden. Pp. 44. (Berlin und Wien: Urban und Schwarzenberg.) 4 marks.

The Advancement of Science, 1920: Addresses delivered at the Eighty-eighth Annual Meeting of the British Association for the Advancement of Science, Cardiff, August, 1920. (London: John Murray.) 6s. net.

The Andes of Southern Peru: Geographical Reconnaissance along the Seventy-third Meridian. By I. Bowman. Pp. xi+336. (New York: The Geological Society of New York; London: Constable and Co., Ltd.) 27s. 6d. net.

Water-Plants: A Study of Aquatic Angiosperms. By Dr. Agnes Arber. Pp. xvi+436. (Cambridge: At the University Press.) 31s. 6d. net.

A First Course in Nomography. By Dr. S. Brodetsky. Pp. xii+135. (London: G. Bell and Sons, Ltd.) 10s. net.

Etude sur le Système Solaire. By Dr. P. Reynaud. Pp. xiv+83. (Paris: Gauthier-Villars et Cie.)

The Sea-Shore. By W. P. Pycraft. Pp. vi+156. (London: S.P.C.K.) 4s. 6d. net.

A First German Course for Science Students. By Profs. H. G. Fiedler and F. E. Sandbach. Pp. x+99. (London: Oxford University Press.) 4s. 6d. net.

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