Societies and Academies

LONDON

Royal Society, June 2.—**C. U. Ariëns Kappers**: Some correlations between the brain and the skull (David Ferrier lecture). While the brain-case generally adapts itself to the form and growth of the brain, the author begins by giving some examples in which a one-sided external compression (Teleostomes) or a more general space economy in the neurocranium (birds) seems to be the primary factor in determining some external (and internal) morphological features of the brain. He then discusses the brain and skull shape in mammals in relation to bodily characteristics and intrinsic changes in the brain itself, and their influence on the general and fissural aspect of the pallium. Proceeding to the possibility of establishing anthropological differences in the brain, the author discusses the use of certain standard lines, angles, and indices for expressing such differences in figures. He then proceeds to the general and fissural brain morphology of races in which, in addition to other features, the height index of the skull differs a good deal, and he compares the brachy-hypsicephalic Armenian with platy-brachycephalic Northern Mongol and the latter with meso- or subbrachy-hypsicephalic Chinese brain. Further, the Chinese brain is compared with the Japanese brain. The very limited possibility of using the same standard lines for endocranial casts of extinct races is discussed. The brain (endocranial cast) of Dubois' *Pithecanthropus erectus* is compared with the chimpanzee's and orang utan's. Then follows a discussion of the frontal region in recent man, especially Negro races, and the fissural changes in this region in connexion with cytotectonic and functional fields, chiefly in the vicinity of the mid-frontal. The phenomena observed in fissural development in general are briefly discussed. With the anthropological differences in the brain, which doubtless occur, we should try to differentiate between brain variations primarily depending on, or at least correlated with, the skull and intrinsic changes in the brain.

Optical Society, May 12.—**J. W. Perry**: The $F/1{\cdot}8$ quartz monochromator-spectrograph. The circumstances in which large monochromators and spectrographs of especially high illuminating power are requisite are discussed, and the dependence of illuminating power and instrument efficiency upon the essential optical characteristics of such instruments is investigated. A description is given of a large instrument fulfilling the combined functions of monochromator and spectrograph, the relative aperture of which varies from $F/1{\cdot}6$ at $0{\cdot}185\ \mu$ to $F/2{\cdot}0$ at $1{\cdot}2\ \mu$, and records of performance are described.—**R. F. Hanstock**: The transmission of light in diffusing media. The transmission of light by thin films of diffusing material is investigated, a flicker photometer being used for this purpose. The intensity I of the diffuse light transmitted in the direction normal to the surface is related to the film thickness x by the empirical equation

$$1/I = C(1 + ax + (ax)^2),$$

where a is a constant depending on the opacity of the material of the film to diffuse light and C is approximately constant for all substances. The ability of a film to hide a contrasting background is proportional to the quantity $H = 1/I$, complete hiding being attained for a value of H which is constant for a variety of white and coloured paints and papers. An accurate method of measuring the opacity or hiding power of such films is described.

PARIS

Academy of Sciences, April 25.—**Gabriel Bertrand and Mme. M. Rosenblatt**: The unequal proportions of manganese in green leaves and etiolated leaves. Green leaves are richer in manganese than etiolated leaves.—**R. Fosse, P. De Graeve, and P. E. Thomas**: A new plant principle: uric acid. Uric acid has been extracted from various seeds (especially from *Melilotus officinalis*). It was identified by its crystalline form, by elementary analysis, and its reactions.—**André Blondel**: A new algebraical representation of alternating currents and of other oscillatory phenomena. The notation suggested facilitates rapidity of calculations and their physical interpretation in the applications of electricity and other oscillatory phenomena.—**Louis Roy**: The elastic line in the fundamental equations of the resistance of materials.—**E. Kogbetliantz**: The developments of Laguerre.—**C. E. Winn**: The convergence of a series derived from another series with limited variation.—**Arnaud Denjoy**: The continuity of singular analytical functions.—**Michel Fekete**: The number of changes of sign of a function in an interval and its moments.—**de Séguier**: The classes of substitutions of order 2 of linear, quadratic, Hermitian, and left groups in a Galois field of odd order.—**N. Mouskhelichvili**: The problem of torsion of compound elastic beams.—**V. Smirnoff and S. Soboloff**: The plane problem of elastic vibrations.—**B. Galerkin**: The equilibrium of a thick circular plate in the form of a circular sector.—**Alfred Rosenblatt**: The stability of the Couette movements of viscous liquids.—**R. Swyngedauw**: The rational calculation of pulley belts.—**R. Wavre**: The extension of a theorem of Stokes relating to fluid stars.—**D. Belorizky**: The radius of convergence of the series in the problem of two bodies, treated by Levi-Civita's method.—**P. Guintini**: The distribution of the residual velocities of B-type stars.—**J. Dufay**: The energy curve of the star P Cygni. The energy curve of this star is not that of a black body.—**Ch. H. Muntz**: The resolution of the dynamical problem of elasticity.—**Marcel Mennesson**: A method of measuring lengths and thicknesses with high precision. Air under constant pressure flows through an orifice the section of which is a function of the length to be measured. The volume of air passed is determined by reading a length on a water manometer. A change of length of 0·01 mm. is thus amplified to 500 mm. on the manometer.—**Pierre Vernotte**: The measurement of the thermal conductivity of bad conductors: the calorimeter method.—**Léon Grillet**: The electrical conductivity of black paper. Applications.—**M. Pauthenier and P. Delahaye**: The electrostriction of benzene.—**Charles Dietsch**: A method of measuring high intensities of continuous current.—**R. Chevallier**: The magnetisation of macroscopic powders in weak fields.—**R. Freymann**: The absorption spectra of ethylene and benzene derivatives in the infra-red.—**J. Rabinovitch**: The rotatory dispersions of benzene solutions of d-α-pinene and l-β-pinene. Correction to a preceding note.—**Horia Hulubei**: Contribution to the study of the Raman spectrum of water.—**H. Buisson, C. Jausseran, and P. Rouard**: The transparency of the lower atmosphere.—**Mlle. Y. Cauchois**: The spectrography of the X-rays by the transmission of a non-canalised pencil through a curved crystal.—**Georges Fournier**: The composition of atomic nuclei.—**H. Barjot**: The rational utilisation of solar heat.—**D. Skobelzyn**: The spectrum of the γ-rays derived from thorium.—**Mlles. C. Chamié and A. Korvezee**: Centrifuging alkaline solutions of polonium.—**Pierre Montagne**: The formation of acetylene, starting with methane at low pressure, under the influence of condensed sparks. A study of the conditions (pressure of methane, capacity of condensers) giving the highest

yield of acetylene according to the equation $2CH_4 = C_2H_2 + 3H_2$.—**H. Figour and P. Jacquet**: Comparison of the electrolytic deposits of zinc and cadmium from the point of view of the protection of steel against corrosion. Zinc deposited from a sulphate bath is less resistant to corrosion than that deposited from a cyanide bath. The method of testing for corrosion is not a matter of indifference. Thus in a salt fog or in a wet warm atmosphere, cadmium protects steel better than zinc, but in outside air zinc is more resistant.—**Georges Allard**: The influence of substitutions on the frequencies of organic bodies.—**Ch. Zinzadzé**: The preparation of trimagnesium phosphate.—**B. Bogitch**: The principles of the treatment of nickel minerals.—**L. Palfray, S. Sabetay, and Mlle. Denise Sontag**: A method of determining aldehydes based on the reactions of Cannizzaro and of Claisen. The method is based on the reaction

$$2R \cdot CHO + KOH = R \cdot CO \cdot OK + R \cdot CH_2OH.$$

On account of its high boiling point, benzyl alcohol is used as the solvent for the potash. The aromatic aldehydes have been proved to react quantitatively in the sense of the above equation.—**M. Battegay and L. Denivelle**: The chlorides of the arylsulphuric acids, $ArO \cdot SO_2Cl$.—**P. Mougnaud**: The method of determining fluorine.—**Jacques Duché**: The action of ether and chloroform on the Actinomyces of the asteroid group.—**R. J. Gautheret**: The production of chlorophyll in roots exposed to light, especially in the root of barley.—**Pierre Chouard and Georges Teissier**: Relations between the growth of various parts of melon seedlings and the quantity of reserves left at the disposition of the embryo.—**Charles Pérez**: The small sexual differences of cuticular ornamentation in *Eupagurus*.—**P. Vignon**: The morphological explanation of the wings in the Diptera and Coleoptera.—**A. Back and R. Legendre**: The sexual state of *Germo alalonga* during the fishing season.—**Mlle. Anne Raffy**: The variations of dissolved oxygen consumption during the death of marine stenohaline fishes passing from fresh water to sea water.—**Raoul M. May**: The lasting action, as a substitute, of the intraocular graft of the thyroid from a newly born rat on the development of a white rat the thyroid of which had been removed.—**A. Radoëff**: Researches on the stimulation of growth and of metabolism in the tissues of wheat. The acceleration of growth produced by a preliminary treatment of seeds with solutions of salts of certain metals (manganese, magnesium, zinc) has been proved (Popoff, Bertrand, Brenchley). Experiments on the metabolism of plants stimulated in this way confirmed the increase in growth, but gave negative results for increased metabolism.—**Raymond-Hamet**: The sympathicolytic poisons. The possibility of transforming, by a vaso-dilative action, the vaso-constrictive action of those amines not inverting the hypertensive action.

VIENNA

Academy of Sciences, Feb. 11.—Franz Ackerl: Force of gravity at the geoid.—**Josef Norbert Dörr**: The migration of birds and moonlight. In many cases it is difficult to observe any dependence of the times of the spring and autumn flights of birds on the meteorological conditions. Observations made over a long series of years in Austria, Hungary, France, Switzerland, etc., show that the main flights of those birds which are mainly night-migrants occur during the periods favoured by moonlight.—**Fritz Wessely and Franz Lechner**: 1 : 2 : 3 : 4-tetrahydroxybenzene derivatives. Synthesis of 6 : 7 : 8-trihydroxycoumarin and of dimethylfraxetin. An improved method of preparing 1 : 2 : 3 : 4-tetrahydroxybenzene, and also its conversion into 6 : 7 : 8-trihydroxycoumarin and dimethylfraxetin, are described.—**Leopold Schmid and Richard Huber**: Colouring matter of *Papaver rhœas*.—**Carl Wirtz**: Photometric observations with the great (67 cm.) refractor of the observatory at the University of Vienna. The observations described were made mostly on Saturn's system.—**Joseph B. Niederl**: The structure of acetone-cresol condensation products.—**Heribert Grubitsch**: The processes occurring during the galvanising of iron.—**Wolfgang Gröbner**: Minimal bases for the invariant bodies of cyclic and metacyclic permutation groups.—**Eberhard Geyer**: Short account of the anthropological results of the Lappland expedition of 1913–14 supported by the Vienna Academy of Sciences. The measurements made and the photographs taken during this expedition indicate mixing of the Lapps with their Scandinavian neighbours and with Asiatic (North Siberian) tribes.

Feb. 18.—**Norbert Lichtenecker**: Geomorphological investigations in the French Alps. A survey is given of the geological development of the French Alps.—**Franz Lippay**: Contraction of skeletal muscle during deficient formation of lactic acid. The large quantities of lactic acid regularly appearing during the permanent contraction of striped muscle are by some considered to bear a causal relationship to such contraction. The author's experimental results show that this is not the case, although the course of the contraction may be influenced by the lactic acid; the sense of such influence is, however, not the same with muscle contracted by means of chloroform as with muscle contracted by heat.—**Franz Werner**: Results of a zoological expedition to Morocco in 1930. (4) Orthoptera. More than ninety Moroccan species, ten of them not previously described, are discussed. The main work of the expedition consisted in revision of the Moroccan species from various difficult genera, such as *Hololampra*, *Pyrgomorpha*, *Acinipe*, and *Eurypharyphes*. A number of species were found on the Great Atlas Mountains at a height of more than 2500 metres.—**Oswald Richter**: New contributions to photosynthesis and photolysis, principally in living plants. By means of the so-called 'artificial high sun' (made by Messrs. Heräus of Hanau), which furnishes extraordinarily intense ultra-violet rays, particularly those of wave-length below 300μμ, a number of the effects of such rays have been studied. These include, for example, the decomposition of chlorophyll—which is easily effected in leaves of *Tropœolum majus*, *Robinia pseudacacia*, and *Iris florentina*—the hydrolysis of starch, the decomposition of anthocyan, necrosis colorations, etc.

Forthcoming Events

FRIDAY, JUNE 10

ROYAL ANTHROPOLOGICAL INSTITUTE (Sociological Research Meeting), at 4.—Dr. Fortes and others: Discussion on Cultural Stages.

ROYAL SOCIETY OF MEDICINE (Ophthalmology Section) (Annual General Meeting), at 5.—E. Clarke: Tay's Choroiditis.

ROYAL SOCIETY OF MEDICINE (Laryngology and Otology Sections) (at Eye and Ear Hospital, Portsmouth).—Summer Meeting (*continued on June* 11).

MONDAY, JUNE 13

MIDDLESEX HOSPITAL MEDICAL SCHOOL, at 5.—Dr. A. T. Wilson: The Physiology of the Adrenal Gland. (*Succeeding Lecture on June* 16.)

TUESDAY, JUNE 14

LONDON HOSPITAL MEDICAL COLLEGE, at 5.15.—Dr. J. R. Marrack: The Structure of Molecules in Relation to