

## Societies and Academies.

## LONDON.

Mineralogical Society, Nov. 6.—C. E. Tilley: On scawtite, a new mineral from Scawt Hill, Co. Antrim (with chemical analysis by Mr. M. H. Hey). This new monoclinic mineral, with composition  $6\text{CaO} \cdot 4\text{SiO}_2 \cdot 3\text{CO}_2$ , occurs in the contact zone between the chalk and tertiary dolerite, from which another new mineral, larnite, was recently described (*Min. Mag.*, vol. 22, p. 77).—F. Coles Phillips: On the composition-plane of [010]-twins in the acid plagioclases. In the true pericline twin, the inclination of the variable composition-plane for different composition is correctly given by Wulff's curve. T. Barth's conclusion that there is no regular variation is not justifiable, and results partly from confusion with other twin-laws such as that of accline A. The pericline twin should be of frequent occurrence in the crystalline schists.—M. H. Hey: On the variation of optical properties with chemical composition in the rhodonite-bustamite series. A complete optical study of three analysed members of the rhodonite-bustamite series, with the data available from the literature, shows regular variation in the optical properties and specific gravity with change in lime content.—F. Coles Phillips: A preliminary account of some mineralogical and chemical changes induced by progressive metamorphism in the Green Bed group of the Scottish Dalradian. Analyses prove the Green Beds to be a truly isochemical series in respect of the constituents significant in progressive metamorphism. The earliest-formed plagioclase is pure albite, but a progressive entry of the anorthite molecule can be traced. The adjustment to equilibrium is apparently close, all the reconstituted plagioclase of a given rock having the same composition. In the highest grades the feldspar is a medium andesine. Similar variations with increasing grade are found in the associated epidiorites. The earliest-formed greenish micaeous mineral is a true potash mica, which undergoes increase in FeO in higher grades. Hornblende appears in the chlorite-zone only in rocks low in potash.

Optical Society, Nov. 14.—A. G. Frewin: (1) The Busch optometer (eye refractor) designed by Prof. Thorner; (2) A glare-free, reflexless, stereoscopic hand ophthalmoscope. The new ophthalmoscope has a concave mirror which focuses a source of light on the lower part of the patient's dilated pupil. The optical system is such that the two pupils of the observer are conjugate with two separated points just above the image of the light. The action is thus similar to that of a policeman peering through a small window-pane into a dark room which he illuminates with his bull's-eye.

## PARIS.

Academy of Sciences, Oct. 28.—A. Cotton: The problem of asymmetric synthesis and the combined actions of polarised light and of a magnetic field on certain photographic plates.—Georges Claude: The first attempts to realise at Cuba a Claude-Boucherot apparatus. An account, with photographs, of the first unsuccessful attempt to launch a tube, 2 metres in diameter and 2 kilometres long, in the bay of Matanzas, Cuba.—Pierre Weiss and R. Forrer: The magnetisation to saturation of ferrocobalts and the atomic moments of iron and of cobalt. The magnetisation to saturation of 25 cobalt-iron alloys, ranging from 0 to 100 per cent cobalt, is described. The results are given graphically.—J. Herbrand: The limited solutions of certain functional equations.—

P. Dubreil: Some complements to the theory of Nøther.—J. A. Lappo-Danilevski: The explicit expressions of the invariants of a monodrome group of a system of linear differential equations with arbitrary rational coefficients.—N. André Roussel: The generalised primitive of a function.—Victor Válcovici: The generalisation of the theorem of energy.—Joseph Pérès: Concerning the fundamental problem of the theory of vortices.—William Loth: Remarks on the guiding of ships or aeroplanes by directed waves.—L. Décombe: The mechanism of emission and Melde's experiment.—Paul Jayles: The electrolytic chlorination of benzene in methyl alcohol solution. Electrolysis without a diaphragm gave monochlorobenzene as the main product with a small proportion of benzene hexachloride. The same products were obtained in higher yields using a diaphragm.—M. Laporte and La. Goldstein: Activation in the rare gases.—A. Gillet and D. Guirchfeld: The existence of a chemical equilibrium in autoxidation. In the direct oxidation by oxygen gas, in air, experiments are described in support of the view that there exists for each temperature an equilibrium pressure of oxygen below which no fixation of oxygen upon the autoxidisable body takes place.—René Dubrisay and Albert Saint-Maxen: The autoxidation of hydroquinone. Measurements giving the rate of oxidation of solutions of hydroquinone as a function of pH.—Mme Ramart-Lucas and J. Hoch: The comparative stability of the ethylenic stereoisomers and syntheses by ultra-violet rays.—Gaston Rapin: The action of some dioxides on very dilute aqueous solutions of potassium permanganate.—L. Palfray and B. Rothstein: The halogen derivatives of 1·4 cyclohexanediol (quinite). These can be obtained by the interaction of quinite and halogen acid.—A. Pereira Forjas: The spectrochemistry of Portuguese mineral waters. The water of Cambres. In addition to the ions detected by ordinary chemical methods, the spectroscopy revealed the presence of radium, lead, uranium, vanadium, zinc, copper, germanium, and possibly thallium.—Daniel Chalonge and F. W. Paul Götz: Diurnal and nocturnal measurements of the quantity of ozone contained in the upper atmosphere. Measurements made at Paris and at Arosa by the spectrographic method, showed that at these places the presence or absence of the sun caused no notable change in the thickness of the ozone layer.—A. Guillaume: The alkaloid losses in the course of drying plants under varied conditions.—Jules Amar: The hemopneic coefficient and its applications.—F. Obaton: The relation between the nature of the glucides of *Sterigmatocystis nigra* and that of the sugars supplied to it. There is a correlation between the nature of the product made by the *Sterigmatocystis* and the sugar supplied as food to the mycelium. This relation is more marked between glucose and trehalose than between lævulose and mannitol.—H. Péneau and G. Tanret: The mercury reducing power of normal urine. The mercury reducing figure, although admittedly arbitrary, furnishes data which may be of service in the examination of urine.—R. Fosse, A. Brunel, and P. de Grève: Allantoinase and the origin of allantoinic acid in plants.—G. Ramon: The production of a very active diphtheric toxin. The usual method of preparation is modified by the addition of a certain proportion of glucose. A toxin of high activity is obtained.

## ADELAIDE.

Royal Society of South Australia, Oct. 10.—Thomas T. Colquhoun: Polarity in *Casuarina paludosa*. Portions of bark of a young tree were removed, turned end for end and regrafted. The resultant shoots were tested for growth of roots unsuccessfully. The grafts

were removed and sectioned, the junction between the normal wood and inverted wood being marked by abnormal twisting of the trachæ and trachieds, suggesting that translocation effects required the same orientation of the conducting strands.—J. G. Woods: Floristics and ecology of the mallee. The mallee is a transition region between the savannah forests of the southern wetter districts and the Eremian or northern communities of saltbush and mulga. The geographical range of the chief tree species (*Eucalyptus spp.*) is sharply limited by the 20-inch isohyet in the south and the 8-inch isohyet in the north. In New South Wales its northern limit is determined by the northern limit of winter rains. The soils are all alkaline (pH about 8.0) and all contain nodular travertine limestone. Analysis of the growth forms gives a spectrum showing preponderance of woody shrubs and undershrubs of pronounced sclerophyll type and with a large therophytic element. Of the total number of species only about 25 per cent are confined to the mallee; the rest are migrants from the northern and southern communities.—Albert H. Elston: Australian Coleoptera (Part 6). Names and describes three new species of Elateridæ and one new genus and seven new species of Cleridæ.

## CAPE TOWN.

Royal Society of South Africa, Sept. 25.—J. C. Vogel: The cause of the Russell effect observed in oils. On exposing moist starch potassium iodide paper near oils of animal, vegetable, and mineral origin, iodine stains develop. The intensities of the stains produced by different oils are proportional to the intensities with which they act on photographic plates exposed near them (Russell effect). The reaction only takes place in the presence of oxygen. The liberation of iodine is due to the liberation of volatile oxidation products consisting of normal fatty acids containing four or more carbon atoms. The Russell effect and the supposed photoactivity of oils is due to the reducing properties of the vapours of these acids.—H. Spencer Jones: The secular variations of the orbital elements of the inner planets. Recent determinations of the change in the obliquity of the ecliptic indicate an appreciable correction to Newcomb's value, which can be accounted for by an error in his adopted mass of Venus. If the revised mass of Venus is adopted, the mass of the earth deduced from the secular variations of the orbital elements corresponds to a still smaller value of the solar parallax. The discordance can be traced to the motion of the node of Venus upon which the mass of the earth obtained from the secular variations almost entirely depends. With the most probable system of masses, the discordance between the observed and theoretical motions is six times the probable error. The motion of the node of Venus is the only remaining outstanding discordance between theory and observation in the planetary elements.—B. de St. J. van der Riet and G. W. B. van der Lingen: The wax of the rhenoster bush (*Elytropappus Rhencrotes*). The air-dry tips of Rhenoster bush collected at Stellenbosch were found to yield on extraction with volatile organic solvents up to about 10 per cent of wax-like material. The yield and nature of the 'wax' varied according to the solvent used for extraction.—F. C. Cawston: The problem of the ventilation of iron roofs in the tropics. The present system of ventilating iron roofs is very inadequate and a cowl on the summit is insufficient unless there is a corresponding provision of air inlet. This inlet should be provided by means of a ventilating shaft inserted on a slant at each corner of the roof to supplement adventitious draughts.

## LENINGRAD.

Academie des Sciences (*Comptes rendus*, No. 16).—W. Willams: Action of nitric acid on dihydroperilamine. Cyclical primary amines of the terpene series with the  $\text{NH}_2$  group in the side chain are able, like the polymethylene primary amines, under the influence of nitric acid, to isomerise with the increase in the cycle by one atom of carbon.—V. Feofilaktov: The condensation of pyruvic acid with formaldehyde in the presence of sulphuric acid. The usual idea, that the product of the condensation is a tetramethylene-1:3-dioxalic acid, namely,  $\text{C}_8\text{H}_8\text{O}_6$ , is erroneous; there are two products, and one of them, mistaken for  $\text{C}_8\text{H}_8\text{O}_6$ , has actually the formula  $\text{C}_9\text{H}_8\text{O}_6$  and the structure of a methylene-bis- $\alpha$ -tetronic acid.—B. Numerov and N. Samsonov: Results of gravimetric observations made in 1928 near Lake Baskuntchak. A gravitational survey of the area revealed the presence of several anomalies which must depend on the geological strata, but the area surveyed was not sufficiently extensive.—B. Numerov and B. Kozlovskij: Results of gravimetric observations made in 1927-28 in the Emba area. Minimums of gravitational force in the area surveyed correspond to the places where more ancient strata, namely, Permian, come near the surface, while the oil-bearing strata are somewhat removed from them. The greatest negative anomaly indicates the presence of salt-bearing strata.—N. Nasonov: Notes on *Phlebotomus* (3). A gradual increase in the numbers of sand-flies in the Crimea which has been observed during the last fifty years is due to the gradual progressive desiccation of the peninsula caused by the deforestation of the Yaila mountains.—P. Schmidt: The subfamily Blepsinæ (Pisces, Cottidæ) in the Pacific. The following forms occur in the North Pacific: *Blepsias cirrhosus* Pall., *B. cirrhosus* sbsp. *draciscus* Jord. and Starks; *B. bilobius* C.V. (= *Histiocottus bilobus* C.V.); *Nautichthys oculo-fasciatus* Gir. (= *Nautiscus pribilovius* Jord. and Gilbert).

## PRAGUE.

Czech (Bohemian) Academy of Sciences and Arts (Second Class, Natural Sciences and Medicine), Oct. 18.—Dr. Sedláčková: Influence of choline on the glycoregulation of tissues.—V. Vondráček: Characterology from the medical viewpoint.—A. Jílek and J. Lukas: Electroanalytical determination of thallium as thallic oxide. The anodic deposit from solutions of thallic nitrate in presence of hydrofluoric acid and hydrogen peroxide consists practically of  $\text{Tl}_2\text{O}_3 \cdot \text{HF}$ ; this may serve for quantitative estimation; in the presence of alkali salts the results are somewhat higher.—K. Kavina: Virescence of flowers of *Anthriscus cerefolium* Hoffm. subspec. *trichospermus* Schult.—R. Šimůnek: The resistance of electrolytes to high frequency oscillating currents. In an oscillating circuit the presence of electrolyte increases its high frequency resistance. It was measured at wavelengths of 600, 300, 150 metres and compared with the value calculated from J. J. Thomson's formula; the agreement was satisfactory. The method is electrodeless.—K. Koutský: The quadratic character of numbers and the generalisation of a certain Lagrange rule of the partition of quadratic residues.—J. Rasch: Influence of fatty acids on the maximum of current due to atmospheric oxygen in electrolysis with the dropping mercury cathode. The maximum is greatest when the ionic concentration is ca.  $0.5 \times 10^{-3}n$ , as in solutions of strong electrolytes. Undissociated molecules have the greater effect in suppressing the maximum the higher the acid; anions of lower acids are indifferent like those of strong electrolytes; palmitate and stearate molecules and ions



have great suppressor activity, due to their abnormally great adsorbability. From the suppressor action a measure for the adsorbability of the acids in the mercury-solution interface is derived.—Milovidov: Influence of radium rays on the chondriosome of vegetable cells.—K. Dusl: Mathieu functions.—E. Votoček and S. Malachta: A new transition from sugars to the furane group. Transition of 5-ketorhamno-lactone into the methyl ester of the methoxymethyl-furane-carboxylic acid has been effected by methyl alcohol and hydrochloric acid.—L. Borovanský-O. Hněvkovský: Growth of the body and the progression of ossification in boys from birth up to nineteen years of age.

Nov. 8.—O. Tomíček and A. Jánký: Determination of halogenides in presence of sulphites. In solutions of the normal sulphites only the iodide can be exactly estimated; in the presence of bisulphites the bromide is also exactly determinable; in fairly acidic solutions all the three halides are determinable.—O. Tomíček and A. Jánký: The determination of iodides and bromides in chlorides. Traces of iodide can be estimated directly by silver even in solutions containing 1 mgm. I' per litre of a 10 per cent NaCl solution. Winkler's apparatus and method for the isolation of bromides from chlorides has been improved.—A. Orlov: Wavellite from Černovice near Tábor (in south Bohemia).—B. Hostinsky: The probability of phenomena joined into Marek's chains.—K. Žlápek: Dependence of the form of musculus digastricus mandibulæ of man and anthropoid apes on the mechanism of the jaw-bone joint.—B. Hejda and A. Vančura: Urogenetic coefficients in liver diseases.

#### SYDNEY.

Royal Society of New South Wales, Oct. 2.—J. A. Cresswick and S. W. E. Parsons: The testing of lead azide detonators. The ballistic pendulum was used so that a direct reading might be obtained of each shot fired. As a preliminary, charges of 10 grams each of standard non-gelatinous powders were fired, using alternatively the aluminium and copper type detonators. The same explosives were then desensitised with liquid paraffin, to determine the point at which one type of detonator would fire the charge whilst the other type failed. After a lapse of two months the mixtures were again tested, using aluminium detonators, and in each case complete detonation of the charge resulted, with same development of power as when previously made. The results prove that aluminium (lead azide) detonators, as at present imported into Australia, are slightly more efficient as initiating agents than the older copper (mercury fulminate) type of the same number.—J. C. Earl: The action of acids on diazoaminobenzene. Diazoaminobenzene, when acted upon by acids, yields, according to the conditions, aminoazobenzene or phenyl diazonium salts and aniline. The detection of an intermediate product is described, with experiments showing the profound effect of very small quantities of acids on diazoaminobenzene. The employment of carbon dioxide to liberate the nitrous acid required for the preparation of diazoaminobenzene is advised.

#### WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, vol. 15, No. 9, Sept. 15).—Elery R. Becker, J. A. Schulz, and M. A. Emmerson: A comparative study of the digestion of proteins and carbohydrates in goats during infusoria-free and -infected periods. Infusorian infection gives no significant advantage.—Benjamin Kropp: The melanophore activator of the eye. An investigation

by blood-transfusion methods of the hypothesis that the blood carries an activator. Extracts of eyes of dark-adapted *Rana clamitans* tadpoles injected into the abdominal cavity of light-adapted tadpoles induced melanophore expansion. Probable source of the activator is the retina.—F. Simon and E. Vohsen: Note on Mr. King's paper: "The crystal structure of strontium".—Roscoe G. Dickinson and Robert T. Dillon: The Raman spectrum of gypsum. Comparison of the spectrum with that of an aqueous solution of ammonium sulphate.—Robert T. Dillon and Roscoe G. Dickinson: Raman spectra from acetone. Results do not agree with those obtained by Williams and Hollaender.—F. O. Rice and R. E. Vollrath: The thermal decomposition of acetone in the gaseous state. Pure dry nitrogen saturated with acetone was passed at a known rate through a quartz tube in an electric furnace at 630° C. About 60 per cent of the acetone decomposed is recovered as ketene (CH<sub>2</sub>:CO). This result is not in accord with investigations in which rate of change of pressure is measured.—Donald Statler Villars: The equilibrium constants of reactions involving hydroxyl.—Linus Pauling: On the crystal structure of the chlorides of certain bivalent elements. Using results published by Bruni and Ferrari from powder data, it is deduced that cadmium and other divalent chlorides have a structure in which each cation is surrounded by six chloride ions approximately at the corners of a regular octahedron, six edges of which are shared with other octahedra so as to form a layer.—L. H. Adams and R. E. Gibson: The elastic properties of certain basic rocks and of their constituent minerals. Compressibilities, at pressures between 2000 and 12,000 megabaryes (1 megabarye = about 1 atmosphere) were measured by submitting specimens to hydrostatic pressure in a steel cylinder and determining decrease in volume. For basic rocks, it seems that compressibility calculated from mineral content gives a limit to which that of rocks approaches at high pressure. The maximum velocity of longitudinal waves through such rocks at 15,000 megabaryes and 30° C. is 7.4 km. a second. Garnet and jadeite have low compressibilities, indicating that eclogites transmit such waves at greater velocities.—A. Oppenheim: The minima of indefinite quaternary quadratic forms.—G. A. Miller: On the number of cyclic subgroups of a group.—Henry P. Thielman: On new integral addition theorems for Bessel functions.—George D. Snell: Dwarf, a new Mendelian recessive character of the house mouse. Mature individuals are about one-quarter the size of normal adults, are fairly healthy though subnormally active, and apparently sterile.—Sophia Satina and A. F. Blakeslee: Criteria of male and female in bread moulds (*Mucors*). There is no constant vegetative difference between gametangia of dioecious species, and an attempt to differentiate between them by imperfect sexual reactions failed.—H. W. Leavitt, J. W. Gowen, and L. C. Jenness: (1) Influence of aluminium on mortar strength. As aluminium content of sand increases from 0.25 per cent to 3.75 per cent, the tensile strength of mortar increases by more than 100 pounds; compression strength is not affected. (2) On the joint influence of iron and aluminium in native sands on mortar strength. The total correlation coefficient is +0.538. An equation is deduced: Mortar strength = 20 aluminium (per cent) + 43 iron (per cent) + 272. There must be chemical interaction between sand and cement.—Roy J. Kennedy: Planetary motion in a retarded Newtonian potential field. The idea corresponding to that of effective charge developed by Lienard and Wiechert in electro-magnetism is applied to gravitation.—J. H. Van Vleck: On the vibrational selection principles in the Raman effect.