

the British Isles. "Stimulated by continued heat, vegetation of all kinds was forced on rapidly, and without any check worth mentioning, into leaf and flower, and in some cases into fruit, long in advance of its usual time. Even in parts of Scotland strawberries were gathered in May and new potatoes and peas ready for use." (Report on the Phenological Observations, p. 127.) In south-west England the greater bindweed was in flower on May 9, five weeks in advance of its usual date, and even in western Scotland it was only two days later. The foliage of trees was abundant and well developed, flowering trees and shrubs bloomed with extraordinary freedom. In the fields and hedgerows flowers were abundant and followed each other in rapid succession, but the dry and forcing weather weakened the plants themselves and they soon faded. Insects were very numerous, and the swarms of wasps amounted to a plague. The earliness of the seasons was maintained into the autumn, and the harvests began everywhere at almost unprecedented dates, but were very poor over most of England.

May 9, 1919. Cloud formed by Aeroplane.—During a high flight over Germany, the aviator observed that at a height of 26,000 feet a streak of cloud formed behind him. This cloud attained a length of about 40 miles, then gradually spread and developed into a typical cirro-cumulus cloud, about 3000 feet broad. Similar phenomena were repeated on May 11. On both days the weather conditions were inclined to thunder, and it seems probable that the exhaust gases supplied condensation nuclei to the air, thus giving the necessary stimulus to cloud formation.

May 10, 1879. Meteorite.—During the afternoon a great meteorite fell and burst near Estherville in Iowa. The largest fragment recovered weighed more than 400 pounds. This is the largest meteorite in America which has been actually observed to fall.

Societies and Academies.

LONDON.

Geological Society, Mar. 26.—W. Campbell Smith: A classification of some rhyolites, trachytes, and phonolites from part of Kenya Colony, with a note on some associated basaltic rocks. Comparison of specimens collected on two expeditions by Prof. J. W. Gregory in 1893 and 1919, previously described by Dr. G. T. Prior (1903) and Miss A. T. Neilson (1921), supported by some new analyses, has led to a revision of the nomenclature.—T. N. George: *Ambocœlia* Hall and certain similar British Spiriferidæ. The British forms do not exhibit the features emphasised by Hall in his description of *Ambocœlia*; in particular, they differ in the surface-ornament, in the cardinal process, and in the musculature of the dorsal valve. Two new genera, distinguished one from the other by details of ornament and cardinal area, are therefore established for their reception, and it is proposed to create a new subfamily for the reception of *Ambocœlia* and the new genera. The later portion of the paper consists of a detailed description of the British species from the Devonian, Carboniferous, and Permian systems. Some of these are new.

Linnean Society, April 3.—H. Lister: Observations on the comparative morphology of the protozoan fauna found in the paunch and reticulum of ruminants. The actual species vary with the geographical environment of the host. By using suitable culture media and a specially designed microculture incubator, they have, during the present investigation, been kept alive for longer periods than hitherto. The cultures have shown that the bacteria inevitably introduced

with the protozoa render the medium acid, and that this proves fatal to them.—H. S. Holden: Some wound reactions in *Ankyropteris corrugata*. The tissues of the fossil fern *Ankyropteris corrugata* show well-defined wound reactions. In the root these consist of irregularly disposed wedges of meristem and are confined to the cortex. In the stem, wounds usually take the form of irregular cortical fissures bordered on either side by a strip of meristem. In the petiole, where the wound is superficial, a pad of healing meristem is developed, but, where it is deep-seated, the vascular tissues may be involved.—J. M. Cowan: Botanical exploration through North-West Persia. A brief survey of the vegetation of Iraq and North-West Persia observed on a tour made on behalf of the John Innes Horticultural Institution and Kew Gardens.

Optical Society, April 10.—T. Smith: Charts for simple two and three thin lens problems. A variety of charts can be drawn, each of which furnishes complete first-order information on systems constructed from two or three thin lenses.—M. O. Pelton: The lustre of textile fibres is due to a geometrical property of transparent cylindrical filaments with polished surfaces. Some of the factors, notably double refraction and diffraction, which might affect lustre, are discussed, and a method is suggested for measuring lustre based on the high lights visible on a curved lustrous surface.—W. D. Wright: A re-determination of the mixture curves of the spectrum. The paper describes a method that has been developed for calculating the sensation curves and mixture curves from an average set of trichromatic coefficients and the standard luminosity curve, without recourse to any further experimental data. A complete table of colour mixture data is given. The practical value of different methods of colorimetry and the most desirable primaries for use as reference standards are briefly discussed.

DUBLIN.

Royal Society, April 2.—J. Joly: The application of gamma radiation to deep-seated tumours. The applicator operates on the principle of a pseudo focus, formed by the convergence of two inclined gamma ray beams intersecting at the tumour. The beams are kept in continual rotation round a vertical axis, while at the same time they are carried along a path determined by a template which has been derived from X-ray exploration of the tumour. The movements are controlled by clockwork, and the whole applicator, in certain cases, may be worn by the patient without serious inconvenience. The γ -radiation may be derived from radon tubes or radium tubes such as are used in needle radio-therapy; some twenty-five or thirty such tubes being packed into each radiator.—J. Reilly and D. T. McSweeney: A study of the polysaccharides (Pt. 2).

GENEVA.

Society of Physics and Natural History, Feb. 6.—J. Briquet: The number of carpels in the flowers of *Campanula*. The character of the trimery and pentamery of the gynæcium plays an important part in the systematics of this genus. Now the author has observed that both these arrangements occur in the flowers of *Campanula Medium*. It is therefore necessary to review carefully the behaviour of various species and to modify the diagnoses and analytical tests.—J. Briquet: The carpology of the genus *Mantisalca* Cass. The author's studies have proved that the genus *Mantisalca* has been erroneously joined to the genus *Centauraea*.—E. Briner, J. P. Lugin, and R. Monnier: The action of nitrogen peroxide and of

sulphur dioxide on lime, calcium carbonate and calcium phosphate. The study of these reactions has been undertaken methodically with the aid of the technique utilised in the laboratory for work on gases, and it has led to the proof of the attack, in the absence of water, of calcium carbonate by nitrogen peroxide and by sulphur dioxide. The reactions differ from those taking place in the presence of water.—L. Duparc and L. Galopin: The phenocrystals and microlites of the plagioclases of the Abyssinian basalts. The authors have recognised six types of rocks, aphyric, porphyric feldspar, augitic, porphyric, doleritic or ophitic, and finally a tokeite type. In the porphyric types the microlites of the mass are more acid than the phenocrystals. A difference in the same direction but to a less extent exists also in the augitic and ophitic types.—L. Duparc and Ch. Wakker: The auriferous layers of St. Yrieix. The authors have studied several deposits of the region now being worked. Nearly everywhere traces of workings are found dating from the Roman occupation. The auriferous quartz is always found associated with granulites and pegmatites traversing and penetrating the schists. At Cheni the auriferous quartz forms veins of variable thickness reaching sometimes two to three metres. It is also in the form of auriferous quartz veins that it is found at Champvert, la Tournerie, and la Fagassière.—G. Ladame: The metalliferous deposits of Mt. Chemin, Valais. The author distinguishes three groups of deposits, (1) magnetite, (2) marbles, (3) fluorspar and galena. The magnetite appears to have been worked from the time of the Roman occupation. Its mode of formation cannot be specified. On the other hand, the fluorspar and the galena are clearly in veins.

ROME.

Royal National Academy of the Lincei, Dec. 15.—S. Franchi: The Franco-Italian border between the Colle del Piccolo S. Bernardo and the Colle della Seigne, to the south of Mont Blanc.—E. Raimondi: The geodetic curvature on a surface, and Liouville's formula.—L. Labocetta: General method for the construction of Fourier's 'separate functions' and of De La Vallée Poussin's 'characteristic functions'.—G. Mazzone-Sangiorgi: The first elements of a new general theory for the motion of waters and other fluids (2). Seven different cases of jets are considered, the results obtained in each instance being in complete accord with those derived from the author's theory.—A. de Mira Fernandes: Odographic systems.—A. Tonolo: Integration of the Maxwell-Hertz electromagnetic equations. The author's method of integration, published in 1910, is extended to the more general form of the Maxwell-Hertz equations of the electrodynamics of bodies at rest. The resulting formulæ, although complex, are simpler than those obtained by Tedone in 1916.—M. Lecat: Relations between the behaviour of a binary system on distillation and the course of the temperature-vapour pressure curves of the components. The conditions for determining if any particular binary system is or is not azeotropic are considered.—Remo de Fazi and F. Monforte: New reaction of aldehydes (4). Acenaphthene and cyclic aldehydes do not form condensation products, although, in presence of concentrated sulphuric acid, they give a characteristic colour reaction. If the acenaphthene is converted into acenaphtheneone, this condenses with cyclic aldehydes to products which also give the colour reaction general for those aldehydes. Guglielmelli and Delmon's view that the coloration is due to condensation products of fluorene is not in accordance with the experimental results.—A. Cavinato: New investigations on euclase. Euclase from Valle Aurina. Analysis of this euclase gives results in agreement

with the molecular ratios, $\text{SiO}_2 : \text{R}_2\text{O}_3 : \text{RO} : \text{H}_2\text{O} = 1.98 : 1 : 2 : 1$, and, if constituents present in small proportions are neglected, the formula becomes HBeAlSiO_5 . Thus the accepted formula, based on Damour's analysis, is confirmed, and that given by Rammelsberg disproved.—Giulia Martinez: Basalt from Cucchiara Zeppara near Guspini (Sardinia).—G. Pupilli: Periodic respiration caused by sympatheticotomy.—S. Ranzi: Experimental embryology of the cyclostomes.—P. Pasquini: Nervous relations of the transplanted eye and olfactory organ in axolotl embryos.—G. Pollacci and Maria Bergamaschi: Demonstration, by means of dimethylhydroresorcinol, of the formation of formaldehyde in living plants during chlorophyll photosynthesis. Experiments made with water plants in presence of dimethyl-dihydroresorcinol ('dimedon') demonstrate the formation of formaldehyde when the conditions necessary for chlorophyll synthesis, namely, presence of carbon dioxide and chlorophyll and action of light, are fulfilled. The dimedon has a narcotic effect on the plants, but does not kill them, since after the experiment the plants are still capable of assimilation.—R. Savelli and N. Soster: Apogamocarpy in *Cucurbita pepo* and *Cucurbita moschata*.—L. S. Da Rios: Suction fans and rings.

VIENNA.

Academy of Sciences, Jan. 23.—K. Morsch: The action of chloral hydrate and hydroxylamine on the isomeric phenylene diamines.—F. Hölzl, R. Kügerl, and K. Rokitsansky: The mobility of some ions containing iron (1). Comparison of simple and complex iron salts.—G. T. Whyburn: (1) Derived continua dividing the plane.—(2) A theorem on derived continua of the plane connected in detail.—(3) Connected quantities completely dissectible.—(4) Undivided elemental quantities from connected point quantities.—L. Kober: The distribution of masses on the earth's surface. The ratio of the surfaces of continents to oceans is about 1 to $2\frac{1}{2}$. The ratio of the densities of land to sea is about $2\frac{1}{2}$ to 1. Surface and density of continents and oceans are reciprocally proportional. Assuming heights of continents equal to depths of oceans, then the weight of the continents is equal to the weight of the oceans.—F. Machatschek: Remarks on the question of the distribution of masses on the earth's surface. The ratios just quoted are changed if the continental shelf is reckoned with the continents.

Jan. 30.—A. Sommerfeld: The paramagnetic forces of the rare earths.—E. Beutel and A. Kutzelnigg: Contributions to analysis of luminescence (1).—G. Lock: Derivatives of phenyl-ether (1). Mono-nitro, amino- and oxy-derivatives.—K. Beaucourt: Constituents of resin (2). Dehydrogenation of boswellinic acid. By the action of selenium or palladium on incense resin, a mixture of aromatic hydrocarbons is produced.—T. Pintner: *Tetrarhynchus* from Pacific Grove, Cal., U.S.A.—H. Hornich: The characteristics of connexion *im grossen* and *im kleinen*.—A. Rollett and O. Schneider: Resins and resinous substances (7). Tolubalsam.—F. Morton: Report on a botanical expedition to Guatemala, 1928–29.

Feb. 6.—R. Janoschek: Strata sequence and stratification of the Miocene of Ritzing, Burgenland.—O. Kühn: The Danic stage in the Alps and Carpathians.—L. Waagen: The geological structure of the Eichkogel near Rein, not far from Graz.—O. Gugenberger: The Cardita strata in Middle Carinthia and their fauna (1). Brachiopoda.

Feb. 13.—K. Menger: The introduction of complex numbers into general metrics.—P. Gross and K. Schwarz: Salting out.—K. Federhofer: Kinostatics of systems moving on surfaces.