

## Societies and Academies

## Dublin

Royal Dublin Society, February 22.

PHYLLIS CLINCH, J. B. LOUGHNANE and P. A. MURPHY: A study of the infiltration of viruses into seed potato stocks in the field. The infiltration of viruses into seed potato stocks in the north-west of Ireland was studied. The only viruses found were X, B and A. It was found possible to grow stocks for six years without incurring any virus infection.

J. B. LOUGHNANE and P. A. MURPHY: Dissemination of potato viruses X and F by leaf contact. Virus X (*Solanum virus* 1) spread freely to potatoes under controlled experimental conditions both under glass and in the field by leaf contact, virus F (*Solanum virus* 8) was found to spread similarly under glass, and there is evidence that virus B (*Solanum virus* 4) can be conveyed in the same way. Some potato viruses are transmitted by leaf contact as well as by insects.

E. J. SHEEHY and W. KEARNEY: The occurrence of the uræmic condition in chickens, and its relation to protein and other dietary factors. Evidence is presented to show that this disorder is connected with both the protein and the non-protein constituents of the dietary, and that it is controllable.

G. T. PYNE and L. Ó. Droma: The role of albumin in cheese-making. Experiments on the preparation of Cheddar cheese from pasteurized milk to which albumin had been added both before and after pasteurization show that the detrimental effect of pasteurization on cheese-making (in so far as it acts through its effect on albumin) is due to precipitation of albumin on the casein micelles rather than to any change in the soluble albumin content of the milk.

## Edinburgh

Royal Society, March 7.

W. T. GORDON: *Tetrastichia bupatides*, a carboniferous Pteridosperm from East Lothian. On the theory that magmatic waters emitted from volcanoes in eruption might decompose the ashes and thus produce petrifying solutions, a successful search for petrified plants was made at Tantallon Castle, East Lothian, in ashes of Lower Carboniferous age. One of these plants, *Tetrastichia bupatides*, possessed a stem with central xylem cylinder, cruciform in section, and, save for the spiral protoxylem elements, composed entirely of reticulately thickened tracheids. The petiole at certain levels had a trace similar to that described in *Lyginorachis papilio*, and the sclerotic elements resemble those found in *Telangium affine*. The new plant has the simplest structure of any known Pteridosperm.

N. W. RADFORTH: An analysis and comparison of the structural features of *Dactylothea plumosa* Artis and *Senftenbergia ophiodermatica* Göppert. Of these two Carboniferous fern-like compressions, the former has been regarded as a true fern with annulate sporangia, while the latter was believed to be a Pteridosperm from the nature of its apparently exannulate sporangia. However, this analysis has shown that the fructifications of *Dactylothea plumosa* are definitely annulate and identical with those of *Senftenbergia*. Moreover, from a comparison of other structural features it is clear that these two fossils are merely different parts of the same plant, and

therefore can no longer be regarded as belonging to separate genera. Since the name *Senftenbergia* has priority, this genus must now embrace the forms previously described as *Dactylothea plumosa*. The spores, which hitherto had not been revealed, have been isolated from the sporangia in their various developmental stages. Both the sporangia, the structure of which has been worked out in detail, and the mature spores which are characteristically ornamented, resemble so closely the sporangia and spores of the living fern *Aneimia* that the view of a possible relationship between *Senftenbergia* and the living Schizaeaceous ferns to which *Aneimia* belongs, is now greatly strengthened.

A. C. ATKEN: Studies in practical mathematics. (3) The application of quadratic extrapolation to the evaluation of derivatives and to inverse interpolation. The first part of the paper shows how to interpolate by quadratic proportional parts (quadratic extrapolation) for the value of a function and several of its derivatives at the same time. The second part of the paper shows how quadratic extrapolation may be made available for inverse interpolation. A set of crude approximations to the desired value of the variable, given by ordinary proportional parts, yields in general very accurate values when treated by quadratic extrapolation.

## Paris

Academy of Sciences, February 21 (*C.R.*, 206, 545-632).

ALFRED LACROIX: The granular rocks found with the ankaratrite of Takarindoha, at Madagascar.

GEORGES BOULIGAND: The distance of a variable point to a fixed ensemble.

JULES DUBOURDIEU: Absolutely monotonic functions and the mathematical theory of assurance accidents.

E. J. GUMBEL: The prediction of floods.

KENTARO YANO: Remarks relating to the theory of spaces with conformal connexion.

KARL MENGER: An abstract form of the generalized theorem of Borel-Lobesgue.

CHRISTIAN PAUC: Semi-continuities of inclusion in the general spaces of Fréchet.

DRAGOSLAV S. MITRINOVITCH: Geometrical problems where various differential equations intervene.

V. A. KOSTITZIN: The general differential equations of the problem of natural selection.

JEAN DELSARTE: A new extension of the idea of almost periodicity.

GEORGES VALIRON: The Borel directions of metamorph functions of infinite order.

MARCEL SÉDILLE: Extension of the methods of calculation of the wheels of axial turbo-machines.

MAURICE DENIS: The aerodynamics of a wing in vibration.

JEAN MANDEL: The equilibria by parallel sections of soils and of media plastic at the limit of flow.

FÉLIX CERNUSCHI: The adsorption of gases by surfaces as a particular case of dissociation equilibrium.

FRANS VAN BERGEN: The variation of the resistivity of an electrical conductor placed in a magnetic field.

PIERRE VERNOTTE: A new solution of the problems of heat, allowing the commencement of the propagation to be studied in all cases.

F. BEDEAU and L. HERMAN: A new amplifier with valves for weak currents.

MIROSLAW ROMANOWSKI and MAXIME PICARD: A potentiometer bridge for the comparison of standards of electrical resistance.

EMILE PIERRET and CHARLES BIGUENET: A resonance phenomenon observed in electronic oscillations of triode valves.

NOEL FELICI: The movement of supraconductors.

GEORGES CARPÉNI: The electrometry and ultraviolet spectrography of croconic acid. The comparative constitution of rhodizonic and croconic acid.

PAUL LAFFITTE and ANDRÉ PARISOT: The projection of flame in gaseous mixtures.

ARNOLD LASSIEUR: A method of determining carbon dioxide based on the electrical conductivity of baryta solutions.

RAYMOND PAUL and GUY HILLY: The preparation of an active iron and its application to the semi-hydrogenation of acetylene derivatives. The iron was prepared by attacking iron-aluminium alloys containing 20-30 per cent of iron with caustic soda solution. At 100° C., and under pressure, hydrogenation is selective, acetylene derivatives giving the corresponding ethylene compounds.

HENRI CLÉMENT and JEAN SAVARD: The methylation of xylene. From a quantitative study of the methylation of xylene by the Friedel and Crafts reaction it is concluded that the reactions leading to the different derivatives are successive and not simultaneous.

ANDRÉ LENOBLE: The chronology of the volcanic eruptions of the massif of Ankaratra (centre of Madagascar).

FRIDOLIN FIRTIION: The faunal characters of the Givetian limestones of the Schirmeek region.

JEAN LACOSTE: The style of the internal branches of the south Riffian virgation and the massif of Karia.

JEAN DUFAY and JUNIOR GAUZIT: The spectrum of the aurora of January 25, 1938. This aurora was essentially characterized by the considerable intensity of the two OI red lines with respect to that of the green line and by the presence of the bands of the first positive system of nitrogen.

ALBERT VANDEL: The chromosomes of the *Asellota*.

GEORGES SCHÄFFER: The origin of the extra heat in the specific dynamic action of proteins.

JEAN ROCHE and MAURICE FONTAINE: The respiratory pigment of the sea lamprey (*Petromyzon marinus*) and on the zoological distribution of the protohæmatinic respiratory pigments (hæmoglobins and erythrocrucorines).

R. DUJARRIC DE LA RIVIÈRE and P. GARNAL: The toxicity of the spores of *Amanita phalloides*.

### Rome

National Academy of the Lincei (*Atti*, 26, 55-128; 1937).

G. FANO: Observations on some finite geometries (1).

P. BUZANO: Ruled surfaces of the  $n$ th order of  $n$ -dimensional space having  $\infty^n$  homographies in themselves.

A. CONSIGLIO: The calculation of the integrals contained in Villat's formula relative to a circular corona.

R. L. GOMES: Dirac's matrices in the broad sense.

M. SCHÖNBERG: The function  $\delta(x)$  of Dirac.

A. TERRACINI: A possible particularity of the principal lines of a surface (1).

G. N. WATSON: Study of a particular function defined by an improper integral.

P. CICALA: Non-stationary motion of a wing of finite lengthening.

P. GALLITELLI: Chemical analysis of the granite of Montorfano and of the granite and tourmaline of Alzo.

G. GOIDANICH: A little-known disease of the vine.

M. BENAZZI: The prehypophysis of *Rana esculenta* does not bring about oestrus in the undeveloped female rat.

E. SACERDOTE: Photo-electric photometer for the determination of hæmoglobin in very dilute solutions of blood.

V. ZAGAMI: Experimental researches on the seminal fluid (2). The pH value of the seminal fluid of the cock.

### Sydney

Royal Society of New South Wales (71, 1937).

C. E. FAWSITT and R. W. STANHOPE: Viscosities of some complex salts in aqueous solution. Solutions of complex salts containing copper, silver, zinc, nickel and cobalt along with ethylenediamine and pyridine were examined for viscosity. Most of these solutions have a greater viscosity than that of the corresponding simple salts. However, the viscosities of zinc and nickel salts with ethylenediamine are scarcely different from the viscosities of the simple salts. The ethylenediamine copper salts have a lower viscosity than the corresponding simple copper salts. The electrical conductivities of the complex zinc and copper salt solutions (dilute) containing ethylenediamine are slightly greater than those of the simple salt solutions.

A. J. BIRCH: (1) Exudation of *Araucaria Bidwilli*. The exudation is shown to consist of a gum oleoresin, the former containing pentosans, and the latter *d*-limonene and unidentified esters. (2) The  $\alpha$ -phellandrene fraction of eucalyptus oils. An extension of the method already described by Birch for the detection and estimation of  $\alpha$ -phellandrene is given, which enables the detection of *dl*  $\alpha$ -phellandrene in the presence of active substance. The method is applied to the examination of the  $\alpha$ -phellandrene fractions of the oils of *Eucalyptus dives*, *E. Risdoni*, *E. Radiata* and *E. Amygdalina*, the first three of these oils containing large amounts of *p*-cymene, and the last dipentene. In no case is *dl*  $\alpha$ -phellandrene present. A commercial sample of  $\alpha$ -phellandrene contains *p*-cymene and origanene. It is suggested that the presence of *p*-cymene in  $\alpha$ -phellandrene largely accounts for the variations observed in the optical rotation.

GERMAINE A. JOPLIN and ALMA G. CULEY: Geological structure and stratigraphy of the Molong-Manildra District. Silurian, Devonian, Tertiary and Recent formations have been recognized, and a detailed description is given of the Palæozoic strata. The Silurian has been divided into an upper (Manildra) and lower (Molong) series. Middle Devonian (Garra Beds) and Upper Devonian (Lambie Beds) are both recognized and all the Palæozoic rocks have been shown to be conformable. It has been pointed out that folding took place during the Kanimbla Epoch at the close of the Devonian, and that the Palæozoic series have been thrown into folds trending a little to the west of north.

[To be continued.]