ROTHAMSTED RESEARCH

Report for 1934

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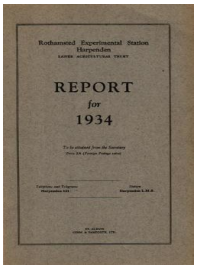

General

Rothamsted Research

Rothamsted Research (1935) *General ;* Report For 1934, pp 110 - 112 **- DOI: https://doi.org/10.23637/ERADOC-1-66**

from those induced by other viruses. It is possible to free a virus from the antigenic constituents of normal plants, but not possible to separate it from the antigenic factor accompanying it, and the latter is probably either the virus itself or a virus-protein complex of haptene nature.

LIII. J. M. BIRKELAND. "*Photodynamic Action of Methylene Blue on Plant Viruses.*" Science, 1934, Vol. LXXX, pp. 357-358.

Unlike certain animal viruses, the viruses of aucuba, tobacco mosaic and tomato streak were found highly resistant to the photodynamic action, though (Wingard's) ring-spot virus was quickly inactivated.

TECHNICAL & OTHER PAPERS

GENERAL.

LIV. E. J. RUSSELL. "*The School and the Research Institute.*" Durham County Association of Teachers' Magazine, "Deira," November, 1934.

LV. E. J. RUSSELL. "*Wireless and the Farmer.*" Discovery, 1934, Vol. XV, pp. 245-246.

LVI. W. G. COCHRAN. "*Recent Advances in Mathematical Statistics* 1933." Journal of the Royal Statistical Society, 1934, Vol. XCVIII, pp. 83-127.

The sections contributed to this review cover papers dealing with moments and semi-invariants of sampling distributions and with orthogonal polynomial theory.

LVII. O. GATTY. "*An Apparent Paradox in the Theory of Heats of Dilution of Completely Dissociated Electrolytes.*" Philosophical Magazine, 1934, Vol. XVIII, pp. 46-63.

LVIII. O. GATTY. "*Membrane Equilibria and the Phase Rule.*" Philosophical Magazine, 1934, Vol. XVIII, pp. 273-288.

LIX. G. W. SCOTT BLAIR and R. K. SCHOFIELD. "*The Constancy of Strong Lithium Chloride Solutions at Low Velocity Gradients.*" Philosophical Magazine, 1934, Vol. XVII, pp. 225-229.

Measurements of the logarithmic decrement of a cylinder executing rotational oscillation while immersed in a strong lithium chloride solution revealed no inconstancy in the viscosity, even though the final amplitude was so small that the maximum velocity gradient was only 0.003 sec.$^{-1}$.

The data confirm and extend that obtained by Ostwald and Malss using a capillary viscometer in which the velocity gradient at the wall for the lowest stress was 0.6 sec.$^{-1}$.

The anomalies reported earlier by the authors appear to have been due to the ability of the strong salt solutions used to "creep"

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under the rubber sleeves which held the capillaries in place, a property not shared by the glycerine-water mixture used to check the standardisation of the apparatus. On sealing the joints, the anomalies in the case of the lithium chloride solution disappear, but the clay pastes still show a characteristic behaviour including departure from the R^4 law.

The flow-meter used in this work has proved itself both trustworthy and convenient in operation.

LX. G. W. SCOTT BLAIR. "*The Thixotropy of Heather Honey.*" Journal of Physical Chemistry, 1935, Vol. XXXIX, pp. 213-219.

Experiments are described on the behaviour of heather honey under shearing, both in its undisturbed ("gel") and stirred ("sol") forms. In both cases, the viscosity increased at low stresses, but in neither case was there found any sharp elastic limit (yield value). The sol form showed (considering its very high viscosity) only a very small deviation from truly fluid behaviour.

A simple viscometric test is described to characterise honeys having thixotropic properties. This test should prove of use in deciding whether excess water in a honey is caused by unripeness, or is natural, owing to its heather origin.

LXI. R. K. SCHOFIELD. "*Metaphosphoric Acid and Proteins.*" Transactions of the Faraday Society, 1935, Vol. XXXI, pp. 390-393.

When a quantity of isolectric protein is brought into contact with an excess of a strong acid in dilute solution a certain quantity of the acid reacts with the protein. If a sufficient excess of acid is present to cause substantially all the carboxyl groups to be unionised, the quantity which reacts is equivalent to the ionisable amino group.

A difficulty arises in estimating the number of ionisable amino groups by this method, when the common mineral acids are used, because the anions of the combined acid, being free to execute thermal movements, affect the activity coefficient of the residual acid. This disturbance should be absent when metaphosphoric acid is used, since, judging by their coagulating action, metaphosphate ions become firmly bound to the amino ions of the protein. The coagulation also makes the separation of an aliquot for back titration a simple matter.

The hypothesis is advanced that a metaphosphate ion condenses with an ionised amino group through the nitrogen atom's association with the three oxygens to form a tetrahedral group about the phosphorus atom. This hypothesis explains why metaphosphoric acid alone among the mineral acids has been found to coagulate white of egg. It also indicates that among the many different kinds of metaphosphoric acid molecules that can be built up by the polymerisation of HPO_3 only a particular group should have this coagulating power.

LXII. R. K. SCHOFIELD and L. W. SAMUEL. "*Titration of Protein with Trichloroacetic Acid.*" Nature, 1934, Vol. CXXXIV, p. 665.

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LXIII. R. K. SCHOFIELD and G. W. SCOTT BLAIR. "*Apparatur zur Bestimmung der mechanischen Eigenschaften von Mehlteigen in absoluten Einheiten.*" Das Mühlenlaboratorium, 1934, Vol. IV, pp. 42-46.

CROPS, SOILS AND FERTILISERS.

LXIV. E. J. RUSSELL. "*Fertility on Mechanised Farms.*" Farmer and Stockbreeder, Special Fertiliser Number, February, 1934.

LXV. E. J. RUSSELL. "*The Soil.*" Manchester Guardian, October 30th, 1934.

LXVI. E. J. RUSSELL. "*New Points about Old Fertilisers.*" The Field, Special Fertiliser Numbers, February, 1934.

LXVII. E. J. RUSSELL. "*Soils and Fertilisers.*" "The Farmer's Guide to Agricultural Research in 1933." Royal Agricultural Society of England, 1934, pp. 173-226.

LXVIII. E. M. CROWTHER. "*Soils and Fertilisers.*" Reports of the Progress of Applied Chemistry, 1934, Volume XIX, pp. 542-577.

LXIX. E. M. CROWTHER. "*Agricultural Chemistry, 1910-1935.*" King's Jubilee Issue of Chemistry and Industry, 1935, Volume LIV, pp. 422-425.

LXX. H. V. GARNER. "*Manuring of Root Crops.*" Farmer and Stockbreeder, 1934, Vol. XLVIII, p. 358.

LXXI. H. L. RICHARDSON. "*Fertilisers—Storing and Mixing.*" Farmer and Stockbreeder, 1934, Vol. XLVIII, p. 360.

LXXII. E. M. CROWTHER. "*Fertilisers and Potato Quality.*" Farmer and Stockbreeder, 1934, Vol. XLVIII, p. 360.

LXXIII. B. A. KEEN. "*Experimental Study of Soil.*" School Nature Study Union Leaflet No. 22, 1934, and School Nature Study, 1934, Vol. XXIX, pp. 98-104.

LXXIV. HUGH NICOL. "*Leguminous Plants in Agriculture.*" School Nature Study, 1934, Vol. XXIX, pp. 66-69.

LXXV. HUGH NICOL. "*The Microbes in your Soil.*" School Nature Study, 1935, Vol. XXX, pp. 10-15,

LXXVI. HUGH NICOL. "*Fires Adjoining Railway Lines: a Useful Preventive.*" Modern Transport, 1934, Vol. XXXI, p. 9. Similar articles recommending the growing of lucerne as a fire-break also appeared in Fire, The Policy, and The Farmer and Stockbreeder during 1934.

LXXVII. HUGH NICOL. "*Microbes in Association.*" Science Progress, 1934, Vol. XXIX, pp. 236-243.

LXXVIII. F. YATES and W. G. COCHRAN. "*Sampling Observations on Wheat.*" Journal of the Ministry of Agriculture, 1934, Vol. XL, pp. 1115-7, Vol. XLI, pp. 218-21; pp. 533-4; pp. 662-6.

BIOLOGICAL.

LXXIX. E. J. RUSSELL. "*Soil Organisms and Crop Production.*" The Times, Trade and Engineering Supplement, November 1934.

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