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Rothamsted Report for 1936

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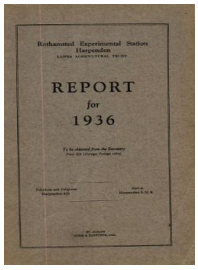

Crops, Soils and Fertilisers

Rothamsted Research

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from many floral sources have been examined, and all except those derived from *Calluna vulgaris* and *Leptospermum scoparium* are found to have viscosities which are unaffected by stirring. Honey from these two exceptional plants increases in viscosity on standing undisturbed, but the viscosity decreases on stirring. This property, well known in many other materials is called thixotropy.

A simple method for measuring the thixotropy of honey is described in detail. Thixotropic honeys can hold more water without fermenting than can non-thixotropic honeys, and for this and other reasons, the property is of practical importance.

An investigation is in progress on the effect of soil, climate, and elevation on the thixotropy of ling honey.

TECHNICAL AND OTHER PAPERS

GENERAL

LXXV. C. B. WILLIAMS. "*A Modified Greenwich Night-Cloud Recorder used for Ecological Work.*" Journal of Animal Ecology, 1936, Vol. V, pp. 348-350.

An apparatus is described which by photographing the track of the pole star at night gives an indication of when this is obscured by cloud and hence an average measure, in these latitudes, of the cloudiness of the night sky. The apparatus will not work in the tropics or the southern hemisphere.

LXXVI. R. K. SCHOFIELD and G. W. SCOTT BLAIR. "*Bemerkung zum Mechanismus der Spinnbarkeit.*" Kolloid-Zeitschrift, 1937, Vol. LXXIX, p. 308.

If a glass rod dipping into certain materials is withdrawn, Erbring has shown that strands of material can be formed, the length of strand depending on the rate of withdrawal, and on a property of the material which he calls "Spinnbarkeit" (Fibrosity).

It is shown that certain honeys called in the trade "stringy" are fibrous, and that when a drop of fibrous honey is extended into a strand on a mercury bath its behaviour is highly elastic, the strand reforming into a spherical drop when the stress is released. The phenomenon is believed to be akin to work-hardening in flour doughs. (See Paper VII in 1932 Report.) Fibrous honeys appear to obey Poiseuille's law fairly exactly when caused to flow through capillary tubes.

LXXVII. G.W. SCOTT BLAIR. "*Ein Mikroviskosimeter für Nicht-Newton'sche Flüssigkeiten.*" Kolloid-Zeitschrift, 1937, Vol. LXXVIII, pp. 19-21.

An apparatus is described for measuring the viscosity of small samples of materials. It is especially suited to determine the extent of deviation from Poiseuille's law in the case of non-Newtonian liquids and thixotropic systems, and gives an empirical measure of degree of thixotropy.

LXXVIII. R. K. SCHOFIELD and G. W. SCOTT BLAIR. "*Influence of Viscosity Variation on the Rupture of Plastic Bodies.*" Nature, 1935, Vol. CXXXVI, p. 147.

LXXIX. B. A. KEEN. "*A Preliminary Report on the Behaviour of the Ashby and Owens Evaporimeters.*" Ministry of Agriculture Report on Agricultural Meteorological Conference, 1935.

LXXX. HUGH NICOL. "*Quiescence at the Surface of a Liquid Disturbed by at least Two Agencies.*" "The School Science Review," 1936, pp. 87-90.

CROPS, SOILS AND FERTILISERS.

LXXXI. E. J. RUSSELL. "*Soils and Fertilisers.*" The Farmer's Guide to Agricultural Research in 1935. Royal Agricultural Society of England, 1936, pp. 177-229.

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LXXXII. E. J. RUSSELL. "*Manures and Malting Barley.*" Farmer and Stockbreeder, 1936, Vol. L, pp. 326-327.

LXXXIII. E. M. CROWTHER. "*The Lesser-known Plant Foods.*" Farmer and Stockbreeder, February 23rd 1937, Vol. LI, p. 475.

LXXXIV. E. M. CROWTHER. "*Soils and Fertilisers.*" Reports on the Progress of Applied Chemistry, 1936, Vol. XXI, pp. 562-588.

LXXXV. E. M. CROWTHER. "*The Technique of Modern Field Experiments.*" Journal of the Royal Agricultural Society of England, 1936, Vol. XCVII, pp. 54-81.

The main steps in the development of the technique and co-ordination of field experimentation during the past century are reviewed and some of the more recent developments are illustrated.

LXXXVI. B. A. KEEN. "*The Functions of Mechanical Power in Soil Cultivation.*" Proceedings of the Institution of Automobile Engineers, 1935, Vol. XXIX, pp. 179-194.

LXXXVII. B. A. KEEN. "*A Miscellaneous Causerie on Current Agricultural and Engineering Topics. V. Tillage and Power.*" The Implement and Machinery Review, 1936, Vol. LXII, p. 381.

LXXXVIII. F. YATES and W. G. COCHRAN. "*Sampling Observations on Wheat.*" Journal of the Ministry of Agriculture, 1936, Vol. XLII, pp. 1202-1204 ; 1937, Vol. XLIII, pp. 208-210, 517-519, 620-624.

LXXXIX. A. G. NORMAN. "*Chemical Nature of the Jute Fibre.*" pp. 7-11 in S. G. Barker, "Jute Research in 1935-36." Indian Jute Mills Association.

XC. M. F. NORMAN and A. G. NORMAN. "*Nutrition and the Halogens.*" Food Manufacture, 1937, Vol. XII, pp. 5-7.

XCI. HUGH NICOL. "*The Utilisation of Atmospheric Nitrogen by Mixed Crops.*" Monthly Bulletin of Agricultural Science and Practice (International Review of Agriculture), 1936, pp. 201T-216T, 241T- 256T.

Appendix II contains suggestions for the planning of pot and field experiments upon associated crops.

XCII. HUGH NICOL. "*The Two Ends of Straw.*" Chemistry and Industry, 1936, Vol. 55, pp. 560-562.

XCIII. HUGH NICOL. "*Die zwei Enden des Strohs.*" Jahrbuch der Gesellschaft für Geschichte und Literatur der Landwirtschaft. Vol. XXXV, pp. 65-70.

XCIV. HUGH NICOL. "*Some Scientific Advances of Interest to Dairy Farmers.*" Journal of the British Dairy Farmers' Association. 1936, Vol. XLVIII, pp. 3-12.

BIOLOGICAL.

XCV. C. B. WILLIAMS. "*Our Butterfly Visitors from Abroad.*" Country Side, Spring, 1936.

XCVI. H. F. BARNES. "*Insect Fluctuations : Population Studies in the Gall Midges (Cecidomyidae).*" Annals of Applied Biology, 1936, Vol. XXIII, pp. 433-440.

XCVII. K. J. GRANT. "*Studies of Migrant Insects.*" Biology, 1936, Vol. II, pp. 214-219.