

**THE
BRITISH SOCIETY
OF RHEOLOGY**

BULLETIN — No. 3, 1959



Hon. Secretary :

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THE BRITISH SOCIETY OF RHEOLOGY

New Members, accepted at Committee on 4th June, 1959

NAME AND ADDRESS.

Mr. R. I. Tanner,
Flat 5,
Brantingham Court,
Alexandra Road South,
Manchester 16.

Dr. I. L. Hepner,
21 Heriot Road,
London N.W.4.

Dr. A. Powell,
"Shell" Research Limited,
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Chester.

Dr. H. Kolsky,
3 Rookfield Avenue,
Muswell Hill,
London N. 10.

INTERESTS.

Viscoelasticity in lubrication.

Mixing of viscoelastic bodies.
Extrusion-mixing.

The Viscoelasticity of polymer solutions.
Cone and plate and concentric cylinder
viscometers.

Plastics and rubbers. Their mechanical
behaviour at high rates of strain.



News of Members.

The death occurred on 26th July, 1959, of Dr. C. A. Seyler who was a member of the British Society of Rheology from 1944 until his retirement in 1957. At the time of his retirement, at the age of 90, Dr. Seyler was employed at the British Coal Utilisation Research Association.

Dr. A. Nightingale has moved from Guy's Hospital where he was a lecturer in the Physics Department of the Medical School, to St. Thomas' Hospital. There he is senior lecturer and Honorary Chief Physicist to the hospital.

J. R. Jones and K. Walters of University College, Swansea, were last term both awarded the degree of Ph.D. (Wales).

There are two fresh items of news concerning the new Australian Branch. Firstly, in response to his enquiry, Dr. P. U. A. Grossman received 24 replies of which 18 expressed interest in the Branch. Since some of the replies were sent on behalf of groups, the potential membership is somewhat higher. The branch will at first operate very informally, indeed so much so that it will not even call itself a "Branch." (However, we shall continue to do so in this and future Bulletins partly for convenience and partly because Dr. Grossman and his friends have not suggested an alternative name). The second item is that the first meeting will be held next February (see Future Meetings). If this new organisation is not yet a Branch it is without doubt a very healthy Shoot.

Future Meetings.

The Spring Meeting of the British Society of Rheology will be held on 7th, 8th and 9th April, 1960, in Manchester. Papers presented at this meeting will together form something of a rheological miscellany and range over a variety of topics. Conference Secretary for the meeting is Dr. M. F. Culpin, 8, The Broadway, Pontypool, Mon.

On or about 22nd-24th February, 1960, the first meeting of the Australian Branch of the British Society of Rheology will be a symposium on "Viscoelastic Systems." It will be held at the Division of Forest Products, C.S.I.R.O., 69-77, Yarra Bank Road, South Melbourne. Progress reports on current research as well as full papers will be presented.

The 8th Japanese Annual Rheology Symposium will be held in Fukuoka (Kyushu) from 14th-16th October, 1959, under the joint auspices of the Japanese Chemical Society, Physical Society, High Polymer Society and Society for Testing Materials. The main subject for discussion is "Rheology of High Polymers." Half of the 26 papers will be devoted to this subject whilst the other papers are on miscellaneous topics. Two general lectures will be given: "Rheology from the viewpoint of electric circuit theory" by Dr. Irie (Kyushu Univ.) and "Rheological problems in the viscose industry" by Dr. Wakasa (Asahi Kasei Co.) All the papers, including English abstracts, will be published in the journals of the organising societies. If further information is required members are advised to contact Dr. B. Tamamushi at the address of the Chemical Society of Japan (Nippon Kagaku Kai) 5, 1-Chome, Surugadai-Kanda, Chiyoda-ku, Tokyo.

Current Research Announcements.

In this issue we publish the first of a new series of announcements describing active, current rheological research. The object of these announcements are (i) to assist members who wish to co-operate with one another in their work; (ii) to avoid unnecessary duplication of work; (iii) to provide advance information about the scope of work in progress; (iv) to enable those about to embark on new research to know which aspects are being covered and which are not.

The Committee believes that this series represents something of a new venture in scientific practice. It realises that some scientists may doubt the wisdom of revealing their own research ideas before their results are published in one of the standard journals. It realises too that for commercial reasons industrial scientists may be unable to announce their research programmes. However, it believes that for the advancement of rheology, exchange of views between different research groups is essential and it is good if the exchange can be made in the early stages of a research programme.

The Editor will be glad to consider contributions offered in this spirit. It is requested that contributions describe concisely research which has moved beyond contemplation to active promotion.

The first Current Research Announcement, given below, is contributed by the rheology group of the British Rayon Research Association.

Current Research on Concentrated Polymer Solutions.

N. ADAMS, A. KAYE, A. S. LODGE, D. W. SAUNDERS.

(British Rayon Research Association, Heald Green Laboratories, Wythenshawe, Manchester, 22).

Apparatus has been developed and is now being used to measure normal stress differences, viscosity, and flow birefringence in moderately concentrated polymer solutions (1 to 100 poise) in steady shear flow at shear rates in the range 0.1 to 50 sec.⁻¹:

(i) Normal stress differences are being determined from measured radial distributions of normal pressure on the plates of rotational cone and plate and parallel-plate systems. This method does not depend on measurements made near the rim of the rotating member. Quick-response diaphragm-capacity pressure gauges have been specially developed, and the constructional accuracy necessary in the rest of the apparatus has been carefully investigated.

(ii) A separate cone and plate apparatus with a rotating cone has been constructed for the measurement of viscosity. The plate is mounted on a spring system. For measuring the torque a null method with an air-gauge indicator and an electromagnetically-generated restoring torque is used.

(iii) A concentric cylinder apparatus (gap 2 mm., cylinder radius 7 cm., cylinder height 22 c.m.) has been constructed for the simultaneous measurement of flow birefringence and viscosity. The outer cylinder rotates against a liquid-tight seal in a fixed base containing one of the windows for the light beam. The inner cylinder is mounted on a spring system to enable the torque to be measured, a null method with an air-gauge indicator and a calibrated spring (to give the restoring torque) being used.

It is intended to compare the results so obtained for the stress and optic ellipsoids with the prediction of a network theory of concentrated polymer solutions which has been developed recently.

Special Announcements.

We have been asked to announce that Cyanamid of Great Britain Limited, Bush House, Aldwych, W.C.2, have extended their range of "Accobond" bonding agents. They are water-soluble resins for the pre-treatment of smooth metal, glass, plastics and other surfaces before application of protective or adhesive coatings. The layer of resin, after curing, is said to be hydrophobic, thus reducing the chances of failure by moisture creeping under the coating from scratches and edges.

A pamphlet has been received from Aeon Laboratories, Englefield Green, Nr. Egham, Surrey, describing the facilities they offer for specialist services in electron and light microscopy. Among the types of service available to clients are; complete research investigations on a contract basis, preparation and examination of specimens, and the training of staff in microscope techniques.

SITUATION VACANT

PHYSICIST required to investigate problems arising in the protection of packaged goods against impact and vibration. Initially the work will be on the properties of materials under impact conditions, but will extend to the response of structures to pulse loading and the dynamics of a complete package. Mathematical ability will be necessary, and experience in electronics and in the mathematical techniques required, would be desirable. Salary on scale £650—£1150 according to qualifications and experience. F.S.S.U. 5-day week. Candidates with a good honours degree should apply in writing to the Secretary, The Printing, Packaging and Allied Trades Research Association, Randalls Road, Leatherhead, Surrey, for an application form.

Please quote—Physicist/8/59.