

HISTORY
NOT TO BE REMOVED
FROM
FILE.

THE
BRITISH SOCIETY
OF RHEOLOGY

BULLETIN — No. 3, 1960

Hon. Secretary :

DR. M. F. CULPIN,
8 The Broadway,
Pontypool,
Monmouthshire.

Hon. Editor (Bulletin) :

MR. J. F. HUTTON,
"Shell" Research Ltd.,
P.O. Box No. 1,
Chester.

THE BRITISH SOCIETY OF RHEOLOGY

Professor E. G. Richardson

President of the British Society of Rheology, 1957/59

Edward Gick Richardson died on March 31st at the age of sixty-three. He had devoted his life to the study of acoustics and fluid motion, publishing about a hundred books, monographs and original papers between 1923 and 1960. His knowledge of the literature of these subjects was encyclopaedic and his books and monographs, which he wrote with ease and fluency, are excellent as introductory treatises and works of reference.

Although most of his own work was concerned with acoustics, Richardson was able to devote a considerable amount of time to rheology as well as to meteorological and aerodynamic problems. His rheological work, which gave scope for his aptitude in making simple and rather spectacular experiments, commenced with the publication of a paper with Dr. E. Tyler in 1925 on the break-up of liquid jets. This subject, which he pursued for many years with fruitful results, led later to an investigation of drop-size in liquid sprays and the break-up of falling drops.

In a paper published in 1929, he described an application of the hot-wire anemometer to the determination of the velocity distribution and the onset of turbulence in liquids in concentric-cylinder viscometers and tube viscometers. Later, in collaboration with Tyler, he demonstrated the presence of abnormal velocity gradients in flowing suspensions by the same method; and in 1945 he used the hot-wire anemometer in an elegant demonstration of the existence of nodal surfaces in elastic liquids and gels subjected to oscillatory stress.

Between 1933 and 1954, Richardson published a number of papers on emulsions dealing with the dependence of viscosity on rate of shear, concentration, globule size and size distribution, and he sought to correlate the viscosity of concentrated emulsions with the deformability of the globules. At the same time he became interested in the behaviour of particles in turbulent streams and wrote papers on the transport of silt, and this led on to an investigation on particle size determination by sedimentation. Other subjects which engaged his attention were the gelation process in gelatin suspensions, the viscosity of liquid sulphur, the use of ultrasonics for the investigation of visco-elastic properties, and the bulk viscosity of liquids.

For many years Richardson directed a flourishing research group in the Physics Department of King's College at Newcastle upon Tyne, from which there came an ever increasing output of published work. He was known to rheologists all over the world and his genuine modesty and kindness endeared him to all who knew him well.

R. R.

New Members Approved 15th June, 1960.

Dr. F. J. Lockett,
Deeleap Cottage,
Halstead Lane,
Knockholt, Kent.

Mathematical theory of visco-elasticity.

R. F. Eagling,
Flat 3, Brantham Place,
Brantham,
Nr. Manningtree, Essex.

Plastics, Dynamic mechanical properties,
Rheology of high polymers.

P. A. Tydeman,
British Paper & Board Industry
Research Association,
St. Winifred's Laboratories,
Welcomes Road, Kenley,
Surrey.

Mechanical properties of paper and its
constituents. The rheological behaviour
of structures of a similar nature to paper,
i.e. random networks.

Dr. H. Spitzer,
Monsanto Chemicals
(Australia) Limited,
Terry Street,
Rozelle, N.S.W., Australia.

Plastics, paints.

Prof. R. W. Douglas,
Dept. of Glass Technology,
The University, Sheffield.

Glass.

Dr. A. Charlesby,
Royal Military College of Science,
Shrivenham,
Swindon, Wilts.

Mechanical properties of polymers in
relation to structure and molecular
arrangement.

News of Members.

We have been notified of the following changes of address:

BROMLEY, R. H., Mr.

Leicester College of Technology and Commerce, Leicester.

COUNSELL, J. N., Mr.

70 South Road, Northfield, Birmingham, 31.

FARROW, P. A. T., Mr.

c/o Farol Research, Chichester Road, Bognor Regis, Sussex.

FREEMAN, P. R., Mr.

1800, K Street N.W., Washington D.C., U.S.A.

STAINSBY, G., Dr.

29 Gainsborough Avenue, Adel, Leeds, 16.

PLEASE, A., Mr.

11 Eastheath Gardens, Wokingham, Berks.

Mr. W. Johnson, formerly Senior Lecturer in the Faculty of Science has recently taken up an appointment as Professor of Mechanical Engineering at the Manchester College of Science and Technology, University of Manchester.

At a General Meeting on 14th June, 1960, the Australian Branch elected its Committee which will serve until October, 1961. The Committee is:

Branch President: Prof. R. C. L. Bosworth, School of Chemistry, University of N.S.W.

Branch Hon. Secretary: Mr. L. Dintenfass, School of Chemical Technology, University of N.S.W., Kensington, N.S.W.

Branch Hon. Treasurer: Dr. N. W. Tschoegl, Bread Research Institute, Private Bag, P.O. North Ryde, N.S.W.

Ordinary Members: Prof. F. W. Ayscough, School of Chemical Technology, University of N.S.W. Dr. A. A. Palmer, Kanematsu Institute of Pathology, Sydney Hospital. Mr. D. R. Axelrad School of Mechanical Engineering, University of Sydney.

Future Meetings

The Spring Meeting of the British Society of Rheology will be held in Reading in April, 1961. The theme will be theoretical aspects of rheology.

On Monday to Wednesday, 31st October to 2nd November, 1960, the U.S. Society of Rheology will hold its Thirty-first Annual Meeting at the Mellon Institute, Pittsburg, Pa. Local arrangements are in the charge of Dr. H. Markovitz of the Mellon Institute. In addition to sessions devoted to the reading of miscellaneous papers, there will be two special Symposia. The first is on Free Volume Theories and the second is on the Rheology of Suspensions. Publication of the Transactions of this meeting is expected in the summer of 1961.

The Internal Combustion Engine Group of the Institution of Mechanical Engineers will hold a Symposium on the Mechanics of Combustion Deposit Formation and Adhesion. The date is provisionally 8th May, 1961. Four or five papers will be presented.

The ThirteenthACHEMA, Chemical Engineering Exhibition and Congress, will be held in Frankfurt am Main from 9th to 17th June, 1961. Among the sessions of lectures will be a Symposium on The Physical and Chemical Durability of Structural Materials in the Chemical Industry. Organisation is by DECHEMA, (16) Frankfurt (Main) 7, Postfach, W. Germany.

Courses in Higher Technology in the London area.

AT WOOLWICH POLYTECHNIC:

Fluid Dynamics. 30 lectures by Mr. C. H. Sefton.

Wednesdays 6.30—7.45 p.m., commencing 28th September, 1960.

Elasticity. 30 lectures by Dr. D. E. R. Godfrey.

Wednesdays 7.45—9.00 p.m., commencing 28th September, 1960.

Introduction to Tensor Analysis. 6 lectures by Mr. P. Robertson.

Tuesdays 6.30—8.30 p.m., commencing 27th September, 1960.

The Mathematics of Rheology. 6 lectures by Mr. P. Robertson.

Tuesdays 7.30—8.30 p.m., commencing 8th November, 1960.

AT BATTERSEA COLLEGE OF TECHNOLOGY :

Rheological Techniques. 10 lectures by Mr. R. W. Whorlow.
Tuesdays 6.30—8.30 p.m., commencing 4th October, 1960.
Emphasis will be on the theory of experimental methods leading to absolute measurements of stress and strain. Examples of instruments and results will be drawn from a wide range of industries. Fee £1.

AT NORTHAMPTON COLLEGE OF ADVANCED TECHNOLOGY :

Hydrodynamics. 24 lectures by Dr. C. T. Moss.
Mondays 6.30—7.30 p.m., commencing 3rd October, 1960.

Compressible Flow. 24 lectures by Mr. R. Jordinson.
Mondays 7.30—8.30 p.m., commencing 3rd October, 1960.

Tensor Calculus. 24 lectures by Dr. W. J. Robinson.
Wednesdays 6.30—7.30 p.m., commencing 5th October, 1960.

Elasticity. 24 lectures by Mr. A. C. Butcher.
Wednesdays 7.30—8.30 p.m., commencing 5th October, 1960.

“Rheology Abstracts”.

Will Members please note that, under the terms of the agreement between the British Society of Rheology and Pergamon Press Ltd., their copies of *Rheology Abstracts* are for their own personal use. Library copies can be obtained, by direct subscription, from Pergamon Press Ltd., 4 & 5, Fitzroy Square, London, W.1.

Members and Librarians requiring back numbers should apply directly to Pergamon Press Ltd.

The Honorary Secretary would like to hear from any Member willing to dispose of a complete set of *Bulletins*.

Rheological Instruments.

For some time the Committee has given consideration to the publication of a list of instruments and suppliers of instruments of use to a rheologist. This list would have a similar purpose to the list of books on rheology which was published in Bulletin No. 48, September 1956, and which is at present being brought up to date. In view of the magnitude of the task it has been decided, reluctantly, to abandon the project. A major problem is tracking down all the suppliers of a particular instrument: another one is tracking down all the hundreds of types of rheological instruments. When the problems are multiplied by the number of countries exporting instruments, the task becomes one which is outside the capabilities of a few honorary officers of the Society.

In place of a list of instruments we draw the attention of Members to a book entitled “British Instruments” which is published annually by United Science Press Ltd., in association with the Scientific Instrument Manufacturers Association of Great Britain. It is obtainable,

at a price of 2 guineas, from SIMA House, 20 Queen Anne Street, London W.1. The 1959 edition contains over 400 entries for instruments that could be classified as rheological. For a classification of viscometers and a list of suppliers of the lesser known ones, Members are referred to a paper in the McGraw Hill journal "Chemical Engineering" for 4th April, 1960 page 145. Entitled "A guide to industrial viscometry" the paper lists 56 instruments under 11 types.

Finally, we remind Members that they may advertise in the Bulletin for contacts with others who have used particular instruments or types of instruments.

Joint British Committee for Stress Analysis.

Following an exploratory meeting on 1st March 1960, arranged by the Institute of Physics, a Joint British Committee for Stress Analysis has been set up in Great Britain.

This Committee will represent the interests of Great Britain in the field of Stress Analysis at the periodic meetings of the Permanent Committee which are held in Europe and will thus ensure adequate British participation in International conferences in the field of Stress Analysis.

The principal object of the Permanent Committee, membership of which is open to all west European countries, is the furtherance of international collaboration in the field of Stress Analysis and in seeking to achieve this end international conferences will be arranged at four-year intervals. Such conferences will normally be phased with the International Congresses on Applied Mechanics. The Officials and Secretariat of the Permanent Committee will normally be appointed by the National Committee in whose country the next international conference is due to be held.

The objectives of the Joint British Committee for Stress Analysis will be to act in the collective interest of the constituent bodies:

- (a) by maintaining liaison with the Permanent Committee for European or International Conferences on Stress Analysis, and
- (b) by maintaining liaison with oversea Societies and Institutions concerned with Stress Analysis.

The Joint British Committee consists of representatives appointed by The Royal Aeronautical Society, The Institution of Civil Engineers, The Institution of Electrical Engineers, The Institute of Marine Engineers, the Institution of Mechanical Engineers, The Royal Institution of Naval Architects, The Institute of Physics and the Physical Society, The Institution of Structural Engineers and the Institute of Welding.

Mr. A. F. C. Brown of the National Physical Laboratory, and the representative of the Institution of Mechanical Engineers, has been elected the first Chairman of the Committee, and The Institution of Mechanical Engineers provides the Secretariat for the Committee.

Book Review.

"Introduction à l'étude de la rhéologie", B. Persoz (Editor) (Dunod, Paris 1960)

This new volume by fifteen eminent French rheologists is in two parts. The first, entitled "Généralités", amounts to an introduction to the mathematics of rheology, including tensor calculus. It is clearly done, and quotes many authors. Unfortunately there is no indication where any of these authors' original work is to be found. Some chapters in the first part of the book are followed by exercises for the student.

The second part, "Matériaux Particuliers et Essais d'Interprétation" contains chapters which would be of general interest to the non-specialist, but otherwise appear to be rather superficial. Out of eleven chapters, there are only four with bibliographies.

M.F.C.

Assistance Required.

We have had a request for assistance from Mr. I. L. Thomas of the Welsh School of Pharmacy, Welsh College of Advanced Technology, Cathays Park, Cardiff. He wishes to buy a viscometer having a continuously variable rate of shear, requiring less than 5 mls. of fluid and capable of measuring viscosities of a few centipoises. He is also interested in buying a commercially made instrument for measuring surface pressures. Any Member who can assist should communicate with Mr. Thomas.

Mr. J. N. Counsell of Alfred Bird & Sons Ltd., P.O. Box No. 236, Devonshire Works, Birmingham 12, wishes to contact a Member who has had experience in the same, or related, field as his own. His problem is the establishment of a method for the measurement of "flowability" of powders, particularly soluble instant coffee.

Fletcher & Co.
Printers
Farnborough