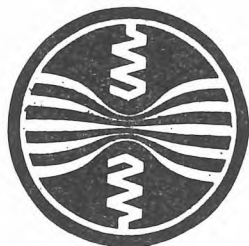


BULLETIN



BRITISH SOCIETY OF RHEOLOGY

1975, Vol. 18, No. 3

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Hon. Editor:

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FOREWORD

Sir Geoffrey Taylor, whose death was announced earlier this year, was not only the first President, but was also regarded as the father of our Society. As a tribute to his early guidance it is perhaps of interest to look back over the past thirty-five years and review the progress of his offspring.

From all reports it grew quite rapidly in the first few years, but retained a fairly intimate "family" atmosphere as the British Rheologists Club. However, a definite personality developed and this was finally manifested in the British Society of Rheology as we now know it. During the teenage period physical growth was less dramatic, but the formation of character continued and valuable experience was gained.

At about eighteen the Society began its first job, that of preparing Rheology Abstracts for publication. Thanks to the faithful band of abstractors this proved to be a viable enterprise which earned a significant part of the Society's assets.

When it was twenty the two Australian branches were born and they grew up independently for some years until their recent merger.

Now a mature thirty-five with a strong constitution the Society is playing an active role in various aspects of international rheology. It contributes many papers annually to conferences and journals. Within the last few years some of its members have undertaken considerable editorial responsibilities with leading publications. Although these are due to the personal standing of the members concerned they most certainly enhance the Society's reputation in the world of rheology.

Surely this would gratify any father.

OFFICERS AND MEMBERS OF COUNCIL 1974-75

President: PROFESSOR K. WALTERS, Department of Applied Mathematics, University College of Wales, Aberystwyth.

Secretary: MR. F. N. COGSWELL, I.C.I. Ltd., Plastics Division, Welwyn Garden City.

Treasurer: DR. D. R. OLIVER, Department of Chemical Engineering, University of Birmingham, Birmingham B15 2TT.

Membership Secretary: DR. J. FERGUSON, Department of Fibre Science, University of Strathclyde, Glasgow G1 1XW.

Abstracts Editor: DR. D. MARSHALL, Institute of Polymer Science, Loughborough University of Technology, Loughborough.

Bulletin Editor: DR. J. M. HOBBS, National Engineering Laboratory, East Kilbride, Glasgow.

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DR. D. C-H. CHENG, Warren Spring, Laboratory, Stevenage.

MR. A. EVANS, Department of Surgery, Royal Victoria Infirmary, Newcastle-upon-Tyne NE1 4LP.

DR. T. E. R. JONES, Plymouth Polytechnic, Plymouth.

DR. P. SHERMAN, Department of Food Science, Queen Elizabeth College, London W8.

PUBLICATIONS

NON-NEWTONIAN FLOW

SRC review of problems and research

A Science Research Council Working Party, under the Chairmanship of Professor J. R. Richardson of University College, Swansea, has examined the flow problems which many industries experience in handling materials. In a Report which the Council believes will be valuable to researchers seeking practical problems, and to industrialists and others wishing to encourage research on their problems in universities and polytechnics, the Working Party has identified those areas in which further research is vital.

Most simple fluids such as gases and many low-molecular weight liquids behave according to Newton's well known law and flow in a simple, laminar way. However, a wide range of industrially important fluids, such as liquids or solids of high molecular weight, colloids, suspensions and emulsions, behave in a more complex manner which is termed non-Newtonian. As the UK output of materials exhibiting non-Newtonian behaviour is in the region of 15 million tonnes annually, a comparatively small improvement in the efficiency of handling them would lead to large savings.

The SRC Working Party reports on its surveys of work in progress and of problems that emerged during discussions with representatives of the professions and industries principally involved—the food, polymer processing, pharmaceuticals, cosmetics, petroleum and lubricant industries, and the industries handling materials in suspension. The Report also details work being carried out on non-Newtonian liquids in the medical field such as blood, mucous and synovial fluids, and there are sections devoted to tribological research and the agricultural industry.

The Report concludes with an extensive list of projects which the Working Party recommends should be studied in university laboratories or in collaboration with industry or government laboratories, stressing that problems should not be studied in abstract but with the industrial context in mind.

CARBON FIBRES:

THEIR PLACE IN MODERN TECHNOLOGY

The proceedings of the second international conference on Carbon fibres, organized by the Plastics and Rubber Institute in 1974, have now been published and are available from the Plastics and Rubber Institute at £12.30 to members (£20.30 to non-members).

The conference highlighted the areas where carbon fibre technology has been successfully applied and covered new work in research, materials development, processing technology and the evaluation of

composite structures. Forty papers were presented, by authors from France, Japan, UK and the USA.

The bound proceedings contains up-dated versions of all papers plus a record of the discussions, and runs to 308 pages (size 330 x 210 mm).

Copies may be obtained from the Plastics and Rubber Institute, 11 Hobart Place, London SW1W 0HL (payment with order please).

PRI PUBLISHES FIFTH REVIEW OF RESEARCH ACTIVITIES

The fifth review of research activities in polymer science and technology has now been published by the Plastics and Rubber Institute; copies are available from the PRI at 11 Hobart Place, London SW1W 0HL, price £1.00 on a payment-with-order basis.

The review, running to 20 pages in A4 size, covers 41 UK colleges, universities and other research organizations. Detailed information on current research projects is provided, together with the names of principal research scientists and general information on the work of the department.

Previous reviews in this series were published in 1964, 1967, 1969 and 1971 in *Plastics & Polymers* and its predecessor *Transactions & Journal*, but the latest review is too long for publication in a PRI journal and has therefore been published as a separate document.

CALLS FOR PAPERS

Conference

LARGE PLASTICS COMPONENTS

November 1976

The Processing and Engineering Group and the Reinforced Plastics Group of the Plastics and Rubber Institute are co-sponsors of a 1½-day conference entitled "Large plastics components", to be held in the UK in November 1976.

Purpose

- (a) To increase market penetration by providing manufacturers, designers, users and potential users of large components, in plastics or more traditional materials, with a critical review of the current state of thermoplastics and GRP technology and of future trends.
- (b) To provide a forum of international status within which the largely complementary merit of thermoplastics and GRP may be widely appreciated.

- (c) To provide an opportunity for those primarily engaged in any one section of the plastics industry, be it as supplier, equipment manufacturer or fabricator, to enlarge their technical horizons in the field of large components as well as their range of personal contacts.

Programme

Papers are requested in the following subject areas:

1. Materials fabrication methods, design and future trends.
2. Case histories in the thermoplastics and GRP applications, e.g., big chimneys, minesweepers, tanks and drums.
3. Present position and future possibilities in various industrial applications including construction, land transport, pipes and tanks, sea transport, air transport, home and leisure.
4. Advances in manufacturing technology.

Contributions of varying length are requested, and synopses of 100–200 words are initially required. Offers of papers, enclosing a synopsis where possible please, should be sent to Miss S. M. Keeble, The Plastics and Rubber Institute, 11 Hobart Place, London SW1W 0HL. Submissions will be considered until mid-November.

Sandra M. Keeble (Miss),
Secretary,
Processing and Engineering Group.

INTERNATIONAL SYMPOSIUM

“THE WEATHERING OF PLASTICS AND RUBBERS”

MAY/JUNE 1976

The weathering behaviour of plastics and rubbers is often of major importance. In many applications satisfactory durability out-of-doors is a primary requirement of the user. The purpose of this international symposium, being organized by the Building and Construction Group of the Plastics and Rubber Institute, is to bring together research workers, manufacturers, users and anyone else interested, to consider original work in the field and to review specific aspects of the subject which will eventually point the way to improved materials and better means of assessing their performance.

The programme is divided into the following main sections:

- A—PROCESSES OF WEATHERING—oxidation, photolysis, hydrolysis, ozone attack, microbiological degradation, etc.
- B—MEASUREMENT OF CONDITIONS—energy characteristics of solar radiation, UV light, moisture, temperature.

- C—TECHNIQUES IN STUDYING WEATHERING—outdoor weathering trials including tropical and exposure under stress, accelerated laboratory weathering tests.
- D—EFFECTS OF WEATHERING AND THEIR PREDICTION—thermoplastics,, thermosets, elastomers, including specific materials. Prediction of weathering behaviour, extrapolation, definition of requirements as basis for evaluation.
- E—STABILIZATION OF POLYMERS—anti-degradents, pigments, UV absorbers, etc.
- F—DEVELOPMENTS AND APPLICATIONS—analysis of requirements for particular applications, case studies. Long-term studies, e.g., for building, solar heating equipment.

each of which will commence with invited key papers by authorities in the particular areas. These will be followed by a number of other papers based upon original work and upon analytical reviews of specific aspects of the subject.

Contributions are invited and prospective authors should submit details in the form of a 100-word synopsis to: Mr. D. H. Cohen, Assistant Secretary (Activities), The Plastics and Rubber Institute, 11 Hobart Place, London SW1W 0HL, no later than THURSDAY, 20 NOVEMBER, 1975.

CONFERENCE ON "FLUOROCARBONS" AUTUMN 1976

A major conference on "Recent advances in fluorocarbon polymer applications, processes and materials" is being considered for autumn 1976 in the UK.

The purpose of the conference will be to report and discuss recent international progress in the development of new applications for fluorocarbon products, their performance and durability characteristics, new and improved fluorocarbon materials and modern processing techniques for them.

The conference will be of particular interest to chemical, civil, electrical and electronics and mechanical design and development engineers as well as those engaged in the supply of fluorocarbons materials, products and processing equipment. The programme is being divided into the following areas of interest:

- A—MATERIALS—current grade of PTFE; mouldable fluorocarbons, filled polymers, reinforced fluorocarbon materials, performance and durability,
- B—PROCESSING—extension equipment and methods, sintering of PTFE; moulding and tooling, rod and tube manufacture and use; modern coating techniques, bonding and joining methods, lining techniques for vessels and pipes; health and safety aspects,

C—APPLICATIONS—price/performance v. other materials; new and improved applications in civil, chemical, electrical and electronics and mechanical engineering; cooking utensils; market prospects in UK, USA, France, W. Germany, etc.

A number of UK and overseas organizations have already indicated their support for the conference which will be the first of its kind in the UK.

The organizing committee invites contributions to the programme from users and suppliers of fluorocarbons and appropriate processing equipment, and from research establishments and trade associations. Prospective authors should submit details in the form of a 100-word synopsis to: Mr. D. H. Cohen, Assistant Secretary (Activities), The Plastics and Rubber Institute, 11 Hobart Place London SW1W 0HL, no later than MONDAY, 1 DECEMBER, 1975.

FUTURE MEETINGS

NEW PROCESSING TECHNIQUES FOR POLYMERS

9 March 1976

The Processing and Engineering Group of the Plastics and Rubber Institute is organising a full-day symposium (starting at 09.45) entitled "New processing techniques for polymers" which will be held at the Hotel Leofric, Coventry, West Midlands, on Tuesday, 9 March, 1976.

Programme

The programme will discuss modern and future processing techniques for a wide range of polymeric materials and papers will cover subjects from the machinery required for the manufacture of HDPE film through modern techniques with engineering type materials to views of the future trends in processing both existing materials and new polymers.

The authors have been chosen for their eminence in their particular field and are drawn from the machinery, material and processing fields.

The symposium should be of interest to all people concerned both with the manufacture and the use of thermoplastic parts that require superior or unusual properties. It is intentionally not limited to "exotic" materials.

For further information, please contact Miss S. M. Keeble, Executive Officer (Meetings), The Plastics and Rubber Institute, 11 Hobart Place, London SW1W 0HL (Telephone: 01-245 9555).

RHEOLOGY OF COLLOIDS

A two-day joint meeting with the Faraday Society will be held at Bristol on 8 and 9 April, 1967. The organising committee includes Dr. Warburton and Mr. M. Camina (BSR) and Professor Parfit and Dr. Goodwin (Faraday Society).

It is hoped that between 60 and 100 delegates will take part in this meeting. Further information will be given as soon as it becomes available.

HYDRAULIC CEMENT PASTES: THEIR STRUCTURE AND PROPERTIES

This is the subject of a two-day conference to be held at Tapton Hall, Sheffield University, UK, on 8-9 April, 1976. The meeting is being organized jointly by the British National Committee on Materials, the Materials Technology Divisional Committee of the Concrete Society (UK) and the Materials and Testing Group of the Institute of Physics (UK). The provisional programme is briefly:—

Session I—Structure of cement Pastes, opening paper by Professor S. Diamond (Perdue University, USA), entitled “Cement paste structure: Retrospective and Prospective Views”.

Session II—Inter-relationship between structure and properties, opening paper by Dr. F. H. Wittman (Munich University, West Germany), entitled “The structure of hardened cement paste, a basis for a better understanding of the material’s properties”.

Session III—Cement pastes in relation to concrete, opening paper by Dr. J. M. Illston (King’s College, London), entitled “Aspects of the behaviour of the cement paste phase of composite materials, with some reference to practical problems of concrete technology”.

Additional papers will be presented on a range of topics including the rheology of fresh cement paste,* permeability and pore size distribution in hardened cement paste, and the influence of curing, water-cement ratio, additives and impregnants on the structure and properties of hardened cement pastes and concrete.

Further details and application forms for the conference are available on request from the Meetings Officer of the Institute of Physics, 47 Belgrave Square, London SW1X 8QX.

*“The use of the coaxial cylinders viscometer to measure the rheological properties of concentrated cement pastes”—C. R. Diamond and G. H. Tattersall (Sheffield University, U.K.).

“A study of the rheological properties of cement pastes”—T. E. R. Jones and G. Brindley (Plymouth Polytechnic, U.K.).

PNEUMOTRANSPORT 3

7-9 April, 1976

General

Following the success of the two previous conferences on Pneumatic Transport, BHRA has decided to sponsor and organise a third meeting in the series. Pneumotransport 3 will take place at the University of Bath, England, in April 1976.

The essential theme of the Conference will again be the pneumatic transport of solids in closed circuits of all kinds and, as on previous occasions, the meeting is expected to attract the attention of leading authorities on the subject, world-wide.

The Conference will be preceded by a two-day course of lectures on fundamentals of transport in pipelines.

Scope

The final scope and programme of the Conference will obviously be influenced by the subject matter of the papers accepted, but the following list of topics gives an indication of the areas considered appropriate:

- Fundamental gas/solid flow studies
- Flow characteristics/friction losses
- Systems design and construction
- Pipeline installations and operating experience
- Economics; Equipment
- Wear of plant and degradation of materials
- Pneumatic capsule transport
- Health and safety aspects.

HYDROTRANSPORT 4

18-20 May, 1976

General

The fourth in the series of International Conferences on the Hydraulic Transport of Solids in Pipes will take place in Banff, Alberta, Canada, on 18-20 May, 1976.

It will again be sponsored and organised by BHRA Fluid Engineering, on this occasion with the collaboration of the Alberta Research Council who have special interests in this field. Previous conferences in this series took place at University of Warwick, England, and at the Colorado School of Mines in the USA.

Immediately prior to the Conference there will be an intensive short Course on the fundamentals of hydraulic transport and for the period of the Conference it is hoped to arrange facilities for participating firms to stage small exhibitions of their products.

Scope

The Conference is expected to cover a wide range of papers dealing with all aspects of solids pipelining with the emphasis on technology rather than theoretical aspects; the programme will be limited to some 35 papers. In all cases the work reported should be recent and original and should not already have been published or offered for publication elsewhere.

Typical subjects will include:

Pilot plant studies; System design and construction; Pipeline installations and operating experiences; Economics; Feeders and pumps; Wear and corrosion of plant and degradation of materials; Hydraulic capsule transport; Fundamental liquid/solid studies; Flow characteristics and friction losses.

Further information:

BHRA Fluid Engineering,

Cranfield, Bedford MK43 0AJ, England.

Tel: Bedford (0234) 750422. Telex: 825059.

CHAPTER AND VERSE

From time to time members write in frustration that they have not been allowed to claim their membership dues against tax. Now a routine investigation of the more dusty of the Society's files has revealed a letter signed by the Senior Principal Inspector of Taxes (do they come any greater) which approves the British Society of Rheology for the purposes of Section 16 of the Finance Act of 1958 and that the whole of the annual subscription paid by a member will be allowable as a deduction. If that is not enough then please quote

Your ref: C.I./SUB/872 10th September 1959

and if you are due for any relief that you have not been allowed then you should apply to your tax office for form P358.

Good Luck,

and if that is not enough then please let me know.

F. N. Cogswell,

67 Daniells, Welwyn Garden City, Hertfordshire AL7 1QT

Telephone: Welwyn Garden 29928.

DIARY

1975

11-12 November. "Recent Advances in Injection Moulding." Solihull, Warwickshire.

12-14 November. "Polymers at Work." London.

19-10 November. The Appearance, Protection and Restoration of Buildings." London.

1976

9 March. "New Processing Techniques for Polymers." Coventry.

7-9 April. "Pneumotransport 3." Bath.

8-9 April. "Colloid Rheology." Bristol.

8-9 April. "Hydraulic Cement Pastes." Sheffield.

CHANGE OF ADDRESS

Professor J. Harris is now Head of Mechanical Engineering at the University of Rhodesia. Address: P.O. Box MP 167, Mount Pleasant, Salisbury, Rhodesia.

NEW MEMBERS

Dr. G. Astaria, M.Chem.Eng., Ph.D. Istituto di Principi di Ingegneria
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