

BULLETIN



BRITISH SOCIETY OF RHEOLOGY

1974, Vol. 17, No. 3

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Properties of Fluids Division,

National Engineering Laboratory,

East Kilbride,

GLASGOW, G75 0QU.



FOREWORD

At this time of year as Winter approaches it is very pleasant to contemplate next year's holidays in warmer climes or even a Winter vacation in a continental ski resort where the sun pours down instead of the rain. In a similar vein many of us are concerned with the preparation of papers for the coming year's conferences and trying to convince our superiors that it is in the best interest of the organization for us to spend nearly a week in a college room at the other side of the world.

Unfortunately with the ever rising costs of travelling it is becoming increasingly difficult to budget for both holidays and business conferences. Take for example the forthcoming joint meeting of the United States and Japan Societies of Rheology. Though the very name Honolulu immediately suggests waving palm trees, grass skirts and guitars, all of which are most inviting, few of us in the United Kingdom can seriously consider going there — even at the firm's expense!

If present trends continue one wonders whether it might be advantageous to combine business with pleasure to a much greater extent than has hitherto been envisaged. Conference centres could provide more for family needs—play areas, swimming pool, disco etc. Lecture theatres could even be used to screen the latest Walt Disney film in the evening. No doubt many other little used facilities might be employed more effectively. To realise the maximum potential of such a scheme the events would need to be scheduled to fall within the main holiday periods. However, this would probably be an acceptable limitation as by sharing the cost between the conference and the family recreation in an equitable manner significant economies could be achieved.

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MR. G. GIBSON, C/- Davis Fuller Adhesives, 38 Cromwell Road, Collingwood, Victoria.

MR. R. VINEN, Applied Chemistry Department, Footscray Institute of Technology, Ballarat Road, Footscray, Victoria.

SPRING 1974 CONFERENCE

G. H. TATTERSALL.

It is a curious fact that although Science is constantly aiming at generalisation and at a unification of previously unrelated areas of knowledge, those who have been trained and educated in its discipline can so easily fall into a practice of narrow concentration in a specific field, so that they ignore developments in other areas that are arbitrarily classed as irrelevant. This is bad enough when it applies to "pure research" but when it happens in research in matters of industrial concern it can result in a great deal of wasted effort and duplication of work.

Anyone who has worked in more than one industry must have noticed how similar problems arise in apparently quite different areas of work, and how progress in one can stimulate progress in another. He must also surely have sometimes become impatient with those who see no profit in looking beyond their own immediate problem.

Rheology, by its very nature, does something towards improving the situation in that it inevitably involves a number of traditionally separate disciplines. Nevertheless the unfortunate divisions still exist, and the postive policy of the Council of the Society in sponsoring conferences on wide ranging topics is often defeated by those who still insist on hearing only those papers in which they are "interested".

Both concrete and clay are important in civil engineering and building and yet even for these two materials progress in rheology has been largely independent, so that with some exceptions there has not been cross fertilisation, and for example the same equation has been proposed separately and independently in the two fields of work.

A main aim of the conference on "Rheology of cement pastes and clays" held in Sheffield in April was to provide a means for initiating an improvement in this situation. Although, in order to preserve a logical sequence, the papers on cement paste were grouped together on one day and those on clays on the second day, Each day's session was introduced by a general review paper which was meant not only to summarise "the state of the art" but also to include sufficient background information to make it comprehensible to those who were not expert in the field, and to enable them to understand the later papers. The whole conference proceeded at a leisurely pace; half an hour was allowed for each paper and a further quarter hour for immediate discussion of it. Overseas contributions came from Dr. Daum of Centraal Laboratorium TNO at Delft, Mr. H. H. Bache of Concrete Research Laboratory, Karlstrup and Dr. W. Schempp and colleagues of Institut fur Makromolekulare Chemie der Technische Hochschule at Darmstadt. Dr. Morinaga of Shimizu Construction Co. Ltd. of Tokyo was unable to attend to present his paper because of

the unfavourable change in the economic climate, and last minute backword was received from Dr. I. Ivanov of the Central Laboratory of Physico-chemical mechanics in Sofia. Of course difficulties in communication with Eastern European countries are unhappily no new experience and it became evident that some letters, in both directions, had failed to reach their destinations. There were twelve papers from U.K. contributors and there was a discussion with prepared contributions on the effect of cement chemistry on rheological properties of cement pastes.

Tapton Hall where the conference was held provided excellent conditions for the lively informal discussions and the meeting of old and new friends without which any conference can at best claim only partial success. On the second evening, instead of a Conference dinner, a visit was arranged to Sheffield's Crucible Theatre, which has a thrust stage, to see an excellent production of "School for Scandal".

Most of the papers, which have already appeared in abstract,¹ will be published by their authors and "I think you will like them, when you shall see them on a beautiful quarto page, where a neat rivulet of text shall meander through a meadow of margin. 'Fore Gad, they will be the most elegant things of their kind".²

It is difficult to pick on other topics for special mention, but perhaps two. Dr. T. E. R. Jones' assertion that very small eccentricities in a coaxial cylinder viscometer may cause errors of several hundred per cent in the measured torque provoked some consternation and discussions that are still proceeding, and Dr. I. Smalley's story of the horse that refused to cross an area of quick clay and thus saved its master from disaster provides an alternative to the angelic sword³ for those of rationalist inclinations.

References

1. Rheol. Abstr. 17 (2), 105-9, (1974)
2. Backbite B., School for Scandal, Act I, Sc. I.
3. Num. 22, 22-35.

FUTURE MEETINGS

Plastics in Telecommunications—26th & 27th November, 1974

Efficient telecommunications services are the nerve systems of an Industrial Society. These services could not be provided economically without the extensive use of plastics in cables, exchange equipment and microwave systems. This international conference, the first of its kind, aims to record the state of the art in this rapidly expanding field. The two-day programme will look at the latest techniques and materials being used and in particular, the areas where considerable

development is likely to take place. Wide participation is expected from overseas which, it is hoped, will provide the opportunity for encouraging international co-operation especially in the areas of equipment standardization.

A small exhibition is planned alongside the conference which will be held at the Institution of Electrical Engineers, Savoy Place, London WC2. Registration fees are £29.70 (members) and £39.42 (non-members) and forms containing full details of the programme can be obtained from Mr. D. Cohen, The Plastics Institute, 11 Hobart Place, London SW1W 0HL (telephone 01-245 9555).

ENGINEERING PROBLEM AREAS INTERFACING WITH RHEOLOGY

1975 Engineering Foundation Conference

The Engineering Foundation is pleased to announce a conference on the topic of "Engineering Problem Areas Interfacing with Rheology" which will be held at Asilomar Conference Grounds, Pacific Grove, California during the week of January 12th-17th, 1975. The chairman of this conference is M. Edward Morrison of the American Enka Company in Enka, North Carolina. Serving on his organizing committee are: William C. Brasie of Dow Chemical, Paul Lindenmeyer of NSF, J. G. Savins of Mobil Research & Development Corporation, and J. L. White of the University of Tennessee.

The Engineering Foundation Conferences were established in 1962 to provide an opportunity for the exploration of problems and issues of concern to engineers from many disciplines. The format of the conferences is designed to encourage discussion of recent developments and to provoke suggestions toward profitable methods of approach for making progress. It is intended that all attendees will participate actively in the discussions. In order to protect individual rights and to promote discussion, no information presented at a conference, whether informally or in discussion, is to be used without the specific authorization of the individual.

The organization of this conference was motivated by several contemporary problems and programs related to rheology: constitutive equations; rheological measurements; rheological properties as related to substructure (e.g. solutions, melts, slurries, emulsions, suspensions, and composites) stratified and disperse flow of two-phase melts in extruders, pipelines and porous media; strain-induced crystallization; phase transformation during orientation; uniaxial and multi-axial stretching; stability of extrusion and spinning systems; droplet break-up; entrance and exit flows; petroleum recovery problems; and the effect of economics, political considerations and raw materials on the future of the polymer industry.

The conference program is divided into subjects of common characteristics, although the materials concerned may not be comparable in chemical nature. Ad hoc sessions may be developed for meetings in the free periods in the afternoons.

The atmosphere at the conference is relaxed and informal in order to facilitate open discussions. Casual attire is suggested; ties and jackets are not required.

Asilomar Conference Grounds is located on the scenic Monterey Peninsula. The Monterey Airport is served by Air West and United Airlines from San Francisco and Los Angeles. Transportation from the airport to the conference site can be arranged easily by the airport limousine service. The ride from the airport to Asilomar is less than one half hour.

Attendance at most conferences is limited to 100 persons. All participants are expected to register prior to the conference. The conference fee is \$195 for registration, meals and double occupancy accommodations for the entire conference period. Participants are expected to stay the full time and the full fee will be charged regardless of the time a conferee attends. Single rooms carry a surcharge of \$30. The guest fee is \$125 which provides double occupancy accommodations and meals.

Address further inquiries to the Engineering Foundation, 345 East 47th Street, New York, New York 10017.

REINFORCED PLASTICS IN ELECTRICAL AND ELECTRONIC APPLICATIONS

The Reinforced Plastics Group of the Plastics Institute is planning a symposium on "Reinforced plastics in electrical and electronic applications" at the Grand Hotel, Bristol from Tuesday 25th to Thursday 27th February, 1975.

The programme should appeal to a very wide audience. The first day, in the form of a "teach-in" will be devoted to a number of related tutorial sessions covering materials, processing and product testing which will have a strong educational value for design engineers, technicians or others needing a refresher course. Detailed papers will be published as a booklet.

The following 1½-day symposium will look at applications of reinforced plastics in the electrical and electronics field. Day 2, in two parallel streams, will consider Power and Communications applications and the morning of Day 3 will cover other general applications and international papers.

There is still room for further contributions — *particularly on Day 3* — and anyone interested in submitting an "applications" paper

should write quickly to Mr. D. H. Cohen, Assistant Secretary (Activities), The Plastics Institute, 11 Hobart Place, London SW1W 0HL., sending at the same time if possible, a 100-word synopsis of their proposed contribution.

**SOCIETY OF CHEMICAL INDUSTRY
COLLOID AND SURFACE CHEMISTRY GROUP
OILINESS AND EXTREME PRESSURE AGENTS IN
LUBRICANTS—
THE ROLE OF ADSORPTION AND CHEMICAL REACTION**

London: Monday 10th March, 1975

This will be a joint meeting with the Institute of Petroleum and the British Society of Rheology. The speaker will be Professor A. Cameron of the Department of Chemical Engineering, Imperial College. The meeting will take place at 14 Belgrave Square at 6.00 p.m. Tea and biscuits will be served from 5.30 p.m. All members of the Society are invited.

B.S.R. SPRING MEETING, 1975

**RHEOMETRY: METHODS OF MEASUREMENTS AND
ANALYSIS OF RESULTS**

This meeting will be held at the Royal Military College of Science, Shrivenham, from 8th–11th April, 1975 and will also be sponsored by the Italian Society of Rheology. It will provide a forum for discussion and debate about measuring techniques and the interpretation of rheological data. Papers introducing new or improved rheometers would be particularly welcome as would the presentation of rheometric data obtained by a variety of methods. Any member intending to submit a paper should send the title and abstract before 31st December to:

F. N. Cogswell,
67 Daniells,
Welwyn Garden City,
Hertfordshire AL7 1QT.

THE SOCIETY OF RHEOLOGY

First Announcement

JOINT MEETING OF

THE U.S.-JAPAN SOCIETIES OF RHEOLOGY

to be held at

THE PRINCESS KAIULANI HOTEL, HONOLULU, HAWAII

Tuesday, June 3rd-Friday, June 6th, 1975

A joint meeting of the U.S. and Japan Societies of Rheology will be held at The Princess Kaiulani Hotel, Honolulu, Hawaii, from June 3rd to June 6th, 1975.

The meeting will consist of a program of contributed papers and invited papers, covering all aspects of Rheology.

The registration fee for members of the U.S. or Japan Societies of Rheology is \$20 and for non-members \$25.

Participants in the meeting who wish to contribute papers should submit an abstract, not more than one page (single-spaced type) in length, by January 15th, 1975. American participants should send their abstracts to:

Professor R. B. Bird,
Department of Chemical Engineering,
University of Wisconsin
Madison, Wisconsin, 53706.

Japanese participants should send their abstracts to:

Professor S. Onogi,
Department of Polymer Chemistry,
Kyoto University,
Sakyo-Ku, Kyoto, 606 Japan.

In addition to the scientific program, it is anticipated that an attractive social program will be arranged.

The Local Arrangements Committee for the meeting consists of:

Dr. N. W. Tschoegl, California Institute of Technology, U.S.A.
(Chairman).

Dr. H. Kambe, University of Tokyo, Japan.

Dr. L. G. Leal, California Institute of Technology, U.S.A.

Dr. J. A. Mann, Jr., University of Hawaii, U.S.A.

Dr. W. Stuiver, University of Hawaii, U.S.A.

The Program Committee consists of:

- Dr. R. B. Bird, University of Wisconsin, U.S.A. (Chairman).
- Dr. D. C. Bogue, University of Tennessee, U.S.A.
- Dr. R. S. Marvin, National Bureau of Standards, U.S.A.
- Dr. Y. Mori, University of Tokyo, Japan.
- Dr. S. Onogi, Kyoto University, Japan.
- Dr. K. Umeya, Tohoku University, Japan.

CONFERENCE

POLYMER RHEOLOGY AND PLASTICS PROCESSING

The British Society of Rheology and the Plastics Institute are making a call for papers for a three day conference on "Polymer Rheology and Plastics Processing" which will be held at the University of Technology, Loughborough, on 17th-19th September, 1975.

Purpose

The objectives of the conference will be:

1. To review, at an international level, the state of knowledge and technology relevant to polymer processing.
2. To discuss new developments in this field.
3. To describe those areas where new knowledge is desirable to enhance technology and where new technology could exploit existing knowledge.
4. To provide a forum where delegates from the processing, raw material and machinery industries, together with delegates from universities and research institutes can meet and discuss their work.

Programme

The conference will include sessions on: Plastics Processing Practice, Analysis of, and Engineering Design of Processing, Rheological Properties of Polymers and the Fundamentals of Polymer Rheology. Contributions are invited on these, and associated subjects. The organisers would welcome early notice of intended contributions to this meeting.

Please send details of your proposed paper to:

Mr. F. N. Cogswell,
67 Daniells,
Welwyn Garden City,
Hertfordshire AL7 1QT.
(Telephone: Welwyn Garden City (96) 29928)

Deadlines

Titles are required by 31st December, 1974.

Abstracts should be sent by 1st March, 1975.

Third International Conference
DEFORMATION, YIELD AND FRACTURE OF POLYMERS
Churchill College, University of Cambridge
29th March–1st April, 1976

Following the successful conferences on the physical and structural basis of yield, deformation and fracture of polymers held at Cambridge in 1970 and 1973 a third conference is being organized. It will be held at Churchill College, Cambridge, from 29th March–1st April, 1976 and is being organized by a committee representing the following British societies:

- Plastics Institute (providing the secretariat).
- British Society of Rheology.
- Chemical Society—Macromolecular Group.
- Institute of Physics—Materials and Testing Group
—Polymer Physics Group.
- Institution of Metallurgists.
- Institution of the Rubber Industry.
- Materials Science Club.
- Society of Chemical Industry—Plastics and Polymer Group.

The programme will consist of 24 papers on original research, arranged in six sessions allowing 20–25 minutes for presentation and 10–15 minutes for discussion of each paper. Three of the sessions will be opened by a review paper of 40–45 minutes with discussions of 20–25 minutes.

Those interested in submitting papers for presentation at the conference are asked to write to the Secretary, the Plastics Institute, 11 Hobart Place, London SW1W 0HL, stating their intentions and indicating very briefly the nature of the work to be presented. Detailed outlines of 300–500 words will be required not later than *1st August, 1975* and the committee will choose the papers for inclusion in the program on the basis of these outlines.

Brief scripts of selected papers (about 2,500 words) including the main results and the major illustrations will be required by 1st December, 1975 in a form suitable for photo-litho reproduction, and the reproductions will be circulated to all members of the conference in advance. These brief scripts will constitute only a minor publication and will in no way prejudice subsequent full publication of the work.

Contributed papers should describe new and important investigations of deformation, yield or fracture of synthetic or biological polymeric solids. Contributed review papers will not be accepted. Papers describing microstructural studies will be acceptable if they are con-

cerned with the relationship between mechanical properties and microstructure. Papers on composite materials will be acceptable in so far as they may be regarded as essentially polymeric materials.

Attendance at the conference will require advance registration and will be limited to about 250. Registration forms and further program details will be sent, when available, on request.

KARL WEISSENBERG
80th BIRTHDAY CELEBRATION ESSAYS

Editor: JOHN HARRIS

This volume contains a collection of contributions by a number of well known scientific authors which gives the most comprehensive account available up to the present time of the range and depth of the scientific work of Weissenberg and locates his places in the development of both Crystallography and Rheology.

Price: Soft cover E.A. Shs.37/50, U.S. \$16.00, U.K. £6.40.

Orders to: East African Literature Bureau: P.O. Box 30022, Nairobi; P.O. Box 1317, Kampala; P.O. Box 1408, Dar es Salaam.

CHANGES OF ADDRESS

British

Professor M. Hayes,

is now at:

Department of Mathematical Physics,
University College,
Belfield,
Dublin 4,
IRELAND.

Australian

Mr. B. D. Dixon has changed his correspondence address from Box 11, Werribee, Vic., 3030 to Gilbert Chandler Institute, Werribee, Vic., 3030.

Mr. V. Dutt has left his previous address at 7/1796 Dandenong Road, Clayton and his address is unknown at present.

RECENT ELECTIONS

At the meeting of Council held on 11th July, 1974 the following applications for membership were received and approved:

P. Adams, B.Sc., M.Sc.

University of Manchester,
Institute Science and Technology,
Department Polymer & Fibre Science,
Manchester.

G. Hacking, B.Sc.

University College of Wales,
Department of Applied Mathematics,
Aberystwyth.

Dr. P. B. Smith, B.Sc., Ph.D.

B.P. Research Centre,
Chertsey Road,
Sunbury-on-Thames,
Middlesex.

From the Membership Secretary

MEMBERSHIP

The National Engineering Laboratory is shortly to distribute some 1,500 copies of the latest Survey of Rheological Research in Britain. Each copy will go to a rheologist. The Society has, however, only about 400 members in the U.K. Obviously we are not reaching all of our potential membership. In an attempt to rectify this situation, an Application Form and a sheet giving a brief description of the Society and its objectives will be included with each copy of the Survey. I'm sure you will agree with me that it is in everybody's best interests that as many rheologists as possible should belong to the Society. So use the Application Form you get and encourage your colleagues to join.

ANNUAL SUBSCRIPTIONS

Most members now pay by banker's order. It means that you have no problems about remembering the Subscription and the Society saves on the cost of administration postage, printing, etc. If you do not already pay in this way why not fill in the form below, send it to me and I will take care of the rest.

Alternatively, why not pay in advance? This way you will have a hedge against inflation. A mere £10 will cover 5 years and should the annual subscription rise in that time you will still be covered for the 5 years.

If neither of these alternatives appeal to you, please remember that the Subscription for 1974/75 is due on 1st October 1974. Prompt payment really does help the Society in every way.

J. FERGUSON,
Membership Secretary

STANDING ORDER

TO: Bank Limited
..... Branch

Please pay to Lloyds Bank Ltd., Leatherhead, code 30-94-94, now and on 1st October in each year until further notice the sum of £2 (Two Pounds) for the credit of the British Society of Rheology, Membership Dues Account No. 0180985.

Please cancel any other order in favour of the British Society of Rheology.

Date Signed

Member's Name (Block Capitals please)

DIARY

1974

26-27 November. Plastics in telecommunications. Institution of Electrical Engineers, Savoy Place, London.

19 December. Groupe Francais de Rheologie Annual Conference (see Vol. 17, No. 1)

1975

12-17 January. Engineering problem areas interfacing with rheology. Asilomar, Pacific Grove, California.

25-27 February. Symposium—Reinforced plastics in electrical and electronic applications. Bristol, PI.

10 March. Oiliness and extreme pressure agents in lubricants—the role of adsorption and chemical reaction. Professor A. Cameron, 14 Belgrave Square, London, 6.00 p.m.

8-11 April. B.S.R. Spring Meeting. Rheometry: Methods of measurement and analysis of results. R.M.C.S. Shrivenham.

3-6 June. Joint meeting of the U.S.-Japan Societies of Rheology, Honolulu.

17-19 September. Conference—Polymer Rheology and Plastics Processing. University of Technology, Loughborough.

WE WOULD LIKE TO HEAR FROM YOU

B.S.R. members are reminded that the Editor of the *Bulletin* is always interested in receiving informative articles, comments, news and other material which would help to make the *Bulletin* one of the more welcome sights in the flood of reading matter to which most of us are accustomed and resigned.

Suggestions of possible improvements in the *Bulletin* would also be welcome. So if you have a thought and a minute to put pen to paper why not let us hear about it?