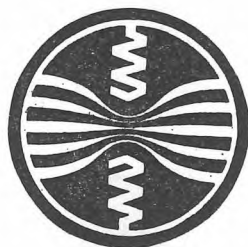


BULLETIN



BRITISH SOCIETY OF RHEOLOGY

1975, Vol. 18, No. 1

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Hon. Editor:

Dr. J. M. HOBBS,
Properties of Fluids Division,
National Engineering Laboratory,
East Kilbride,
GLASGOW, G75 0QU.



Coleg Prifysgol Cymru
The University College Of Wales
Aberystwyth

Acc. No. 8074012442

Class No.



THE PRESIDENT 1974-1976
PROFESSOR K. WALTERS

FOREWORD

The Green Paper "War on Waste", published at the end of last year is a most welcome document. It examines in detail the contributions that all sections of the community may have to make if we are to succeed in this endeavour.

While we all recognise the need for reclamation and re-use of waste, it is becoming increasingly apparent that the normal market forces will not provide sufficient incentive for more than a few limited schemes. For example, half the output of the British Steel Industry is made from scrap and there is consequently a healthy market for ferrous scrap, prices of which have more than doubled in recent months. A similar viable situation is found with non-ferrous metals, many of which are highly priced and thus there is every incentive for reclamation and recycling.

In the paper industry things are much more delicately balanced, because of the laws of supply and demand. Local prices paid for waste paper have fluctuated from £6/tonne about two years ago, up to £17 last year and have now fallen back to £9. Recently for a short period no scrap newsprint was being accepted at all. Such instability does not encourage the investment of large sums in reclamation schemes and natural growth would seem unlikely.

A third type of situation may be found in the glass industry. At present it is uneconomic to reclaim and recycle many of the glass articles found in domestic refuse. We still see soft drinks sold in non-returnable bottles standing adjacent to others for which a deposit is charged. Only when strikes threatened supplies of new medicine bottles did chemists appear to welcome returned empties. Even the trusty milk bottles are in danger of being replaced by waxed paper or plastic containers and beer bottles will soon be museum pieces.

All this serves to illustrate that the wholesale collection and sorting of waste may not be a profitable operation. Although the technology is available to do it, only if prices of raw materials continue to rise, will it ever become so. Can we afford to wait for this to happen or if not who will either foot the bill or do the work of reclamation? Developments will be watched with interest.

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.

Ordinary Members:

DR. K. M. BEAZLEY, 44 Brockstone Road, Boscoppa, St. Austell PL25 3DP.

MR. M. CAMINA, Paint Research Association, Teddington, Middlesex.

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.

A NEW INSTITUTE

At Extraordinary General Meetings held on 20 February members of the Institution of the Rubber Industry (founded 1921—membership 5604) and the Plastics Institute (founded 1931—membership 7030) voted overwhelmingly in favour of forming from their two organizations THE PLASTICS AND RUBBER INSTITUTE.

Of all institutes PRI will have the broadest base in polymeric materials, and as the importance of these in relation to other materials is expected to continue to increase rapidly a strong Institute has been created to ensure that the possibilities offered by this situation are exploited to the full. The substantial combined overseas membership (about 4500) will provide a firm foundation for the development of activities outside the UK.

The Headquarters will be at 11 Hobart Place, London SW1W 0HL (tel: 01-245 9555) the former HQ of the Plastics Institute.

The officers will be

President

Sir HARRY MELVILLE, K.C.B., F.R.S.,
F.P.R.I.

Chairman of Council

J. M. BUIST, B.Sc., F.Inst.P., F.P.R.I.,
A.M.Inst.R.

Vice-Chairman of Council

Professor D. W. SAUNDERS, B.Sc.,
Ph.D., A.R.C.S., F.Inst.P., F.P.R.I.,
F.I.M.

Honorary Treasurer

J. M. CLARKE, F.C.A., F.P.R.I.

Vice-Presidents

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The Lord HEWLETT, C.B.E., M.A.,
F.P.R.I., F.B.I.M., M.I.Ex.

L. MULLINS, Ph.D., D.Sc. F.Inst.P.,
F.P.R.I.

Secretary-General

J. N. RATCLIFFE, F.C.I.S.

Deputy Secretary-General

R. H. CRAVEN.

A New Journal from Elsevier Scientific Publishing Company:

JOURNAL OF NON-NEWTONIAN FLUID MECHANICS

Elsevier Scientific Publishing Company (Amsterdam, The Netherlands) announce the forthcoming publication of a journal entitled "JOURNAL OF NON-NEWTONIAN FLUID MECHANICS".

The journey will appeal to people working on basic rheological science and applications.

Subjects considered suitable for the journal include the following (not necessarily in order of importance):

(1) The development of rheological equations of state for non-Newtonian liquids both from a continuum and microstructure starting point, but the outlook would always be practical in the sense that abstract developments with no hope of application would not be welcomed.

(2) The use of rheological equations of state in the solution of meaningful flow problems involving one or more fluid phases. Analytic and/or numerical solutions would be in order. These should be problems which involve the equations of continuity and motion and energy in a non-trivial way.

(3) Experimental work associated with non-Newtonian liquids, including

- (i) confirmation or otherwise of predictions from rheological equations of state developments and the confirmation of predictions from the solved flow problems
- (ii) novel flow situations which would suggest the need for further analytical work
- (iii) rheometry
- (iv) practical situations of flow which are in need of systematic theoretical and experimental research. These are likely to arise in the polymer processing, Pharmaceutical, food, detergent and petroleum industries, but this list is not meant to be exhaustive.

(4) Problems involving heat and mass transfer and mixing in flowing non-Newtonian liquids.

(5) Instabilities and turbulent flow characteristics in non-Newtonian fluids.

Professor K. Walters (University College of Wales, Aberystwyth) has been appointed Editor of the new journal. He will be assisted by an international Editorial Board: G. Astarita (Naples), R. B. Bird (Madison, Wisc.), H. Giesekus (Dortmund), J. F. Hutton (Chester), J. G. Oldroyd (Liverpool), J. R. A. Pearson (London), R. S. Rivlin (Bethlehem, Pa.), W. R. Schowalter (Princeton, N.J.), Z. Tadmor (Haifa), R. I. Tanner (Providence, R. I.), M. van den Tempel (Vlardingem), G. V. Vinogradov (Moscow), J. L. White (Knoxville, Tenn.), W. L. Wilkinson (Bradford), C. Wolff (Brest), Professor M. M. Denn (Delaware), Professor S. Onogi (Kyoto).

Papers should be submitted to the Editor:

Professor K. Walters,
Department of Applied Mathematics,
University College of Wales,
Aberystwyth, Dyfed, U.K.

or may be communicated through a member of the Editorial Board. The principal language of the journal is English, but papers in French and German will be published. 50 reprints will be supplied free of charge. There are no page charges. "Instructions to Authors" are available on request.

Journal of Non-Newtonian Fluid Mechanics will initially be published in quarterly issues; the first issue is expected to appear towards the end of 1975. Free sample copies of this new journal will be available from the Publishers:

Elsevier Scientific Publishing Company,
P.O. Box 211,
Amsterdam,
The Netherlands.

The subscription price is U.S. \$47.95/Dfl. 120.00, including postage.

THE PRINCE PHILIP GOLD MEDAL AWARD

The Prince Philip gold medal award was instituted to commemorate the presentation by the Plastics Institute of its first Honorary Fellowship to the Duke of Edinburgh K.G., K.T. on May 22nd, 1973, Her Majesty Queen Elizabeth II having graciously approved the recommendation of the Secretary of State for Home Affairs that the Institute be permitted to use this title for the award.

The award, for which the theme is "Plastics in the service of man", will be made to applicants, whether members or non-members and wherever resident, whose achievements are considered by the Council of the Institute to be beneficial to mankind or to the environment, or to both, rather than to be simply innovative commercial successes.

Examples of fields in which a beneficial achievement might be signalised by the award are:

Conservation of resources by improvements in manufacturing methods, materials, and designs for fabricated and composite structures.

Improved methods for recovering plastics for re-use and recycling, or for energy generation from plastics waste.

Plastics used in applications to replace scarce materials.

Plastics used for the preservation of the natural scene by the conservation of land and water resources.

Improved methods for using plastics in food production, preservation and distribution.

Plastics used in the application of medical science and engineering to improve health and to aid the handicapped.

Plastics used to improve education, to increase the enjoyment of leisure, and to further the development of new art forms.

Plastics used to harness indigenous resources economically.

The award will be made not more than one in every two years and not less than once in every five years. It is open both to individuals and to teams from companies, partnerships, associations, societies or academic institutions.

Applications, with a supporting statement of about 500 words describing the contribution, its novelty and scope, together with the names and addresses of at least two referees from whom further independent statements can be obtained, should be sent by September 1975 to:

The Secretary-General,
The Plastic and Rubber Institute,
11 Hobart Place,
London SW1W 0HL.
(Telephone: 01-245 9555.)

PERSONAL NOTES

PROFESSOR K. WALTERS

Ken Walters began his academic career at the University College of Swansea and graduated in 1956 with a 1st class honours B.Sc. in Applied Mathematics. Following that, he went on to do post-graduate research, gaining an M.Sc. in 1957 for a thesis on "The Development of Atmospheric Diffusion as an Exact Science and the Empiricism involved". Two years later he was awarded the degree of Ph.D. for work on elastico-viscous liquids with continuous and discrete relaxation spectra under the supervision of Professor J. G. Oldroyd.

In 1960 he was appointed Lecturer in the Department of Applied Mathematics, University College of Wales at Aberystwyth and his interest and reputation in rheology grew. He was promoted to Senior Lecturer and then Reader in 1965 and 1970 respectively and in 1973 was granted a personal chair in the Department of Applied Mathematics.

A member of the B.S.R. since 1957, his association with Council began in 1964 and he served continuously until 1973. During this period he was Membership Secretary from 1965-9 and in particular played a leading part in the organisation of the two very successful conferences on Theoretical Rheology. He has also represented the B.S.R. on the International Committee on Rheology for a number of years.

As the author of many papers on the subject, his work on rheology has not stopped there for in 1971 he became an Editor of *Rheologica Acta*. Now with the birth of the *Journal of non-Newtonian Fluid Mechanics* it is a fitting tribute to his ability that he has been made Executive Editor.

For a man who works hard it is not surprising to find that he also plays hard and is still an active sportsman. He has captained college staff elevens at cricket and is also keen on swimming and squash. He even manages to contrive the occasional game at B.R.S. conferences after a busy day in the lecture theatre. This full use of his time is typical of the man.

M. CAMINA

Martin Camina has been a member of the society for a year. He works at the Paint Research Association and is concerned with the use of rheological principles to the application of paints and the rheological effects of dissolved polymers and solid particles in suspension. He has written papers on a wide range of subjects including some on paint rheology. In his spare time he plays tennis in the summer and competitive table tennis and bridge in the winter.

DR. D. C-H. CHENG

David Cheng was born in China and came to England in 1951. After graduating from King's College, Cambridge, in Natural Sciences and Chemical Engineering, he went to Imperial College, London, for his Ph.D. In 1962 he took up employment at Warren Spring Laboratory where he started work, and developed an interest, in rheology. He is now Principal Scientific Officer in charge of the Applied Rheology Section at the Laboratory and was awarded the 1972 Wolfe Award for his contribution to research work in this area. He joined the Society in 1964 and has been a member of the Institution of Chemical Engineers since 1962 and recently was elected Fellow. He has sat on various Society and Institution working parties and committees, mostly on rheological matters. What time he has away from rheology is spent in bringing up three boys and doing it himself around the family seat. He also collects scientific anecdotes and humorous items, particularly those with a rheological flavour, and has contributed the odd articles in this vein to the Society's *Bulletin*.

DR. T. E. R. JONES

Dr. Jones, a member of the Society since 1967 began his professional career as a Research Officer at Aberystwyth University where he worked with Professor Walter. In 1971 he became a lecturer in the Department of Mathematical Sciences, Plymouth Polytechnic. His interests include theoretical and experimental studies of polymers, china clays and cement pastes. He believes that future research at

polytechnics is best assured by good relations with local industries and for example works closely with English Clays Lovering Pochin & Co. Ltd., St. Austell. Leisure activities include squash, tennis and golf and he was Welsh Universities Captain of tennis and squash.

FUTURE MEETINGS

4th Bratislava International Conference on MODIFIED POLYMERS, PREPARATION AND PROPERTIES

July 1st-4th, 1975 at Bratislava, Czechoslovakia

Further details may be obtained from:

Dr. A. Romanov,
Polymer Institute,
Slovak Academy of Sciences,
Dubravska cesta,
809 34 Bratislava,
Czechoslovakia.

THE DESIGN AND OPERATION OF SLURRY TRANSPORT SYSTEMS

July 14th-17th, 1975

**Chemical Engineering Department,
University of Bradford**

At this post-experience course, 12 papers will be presented and delegates will receive preprints in the form of a course manual in advance.

The course has been designed for engineers and scientists who are involved in the problems associated with the processing or transport of slurries. It will be largely self-contained and the theoretical background will be developed in the first part of the course. The second part of the course is concerned with the practical design, operation and control of slurry transport systems and a consideration of the associated problems. There is also a visit to the largest slurry pipeline installation in this country and the opportunity to learn of the original design bases and subsequent operational experience.

Opportunity will be provided for discussion on industrial problems of particular interest to course members and on the current research in the University in this area.

Enquiries and further details about the course should be addressed to:—

Mr. J. M. Kenchington,
Schools of Chemical Engineering,
University of Bradford,
Bradford BD7 1DP,
West Yorkshire.
(Telephone: 0274 33466, Ext. 364.)

Euromech Colloquium No. 64

ENERGY METHODS IN FRACTURE MECHANICS

August 20th-22nd, 1975, Stockholm, Sweden

Further information may be obtained from either of the following members of the organising committee:

Professor Janne Carlsson (Chairman),
The Royal Institute of Technology,
S-100 44 Stockholm 70,
Sweden.

Professor Marek Sokolowski (co-Chairman),
Institute of Fundamental Technological Research,
00-049 Warsaw,
Swietokrzyska 21,
Poland.

Continuing Education Course

SOLID-LIQUID SEPARATION

Following the outstanding success of the 1974 course, the Institution of Chemical Engineers is sponsoring a further and extended course on Solid-Liquid Separation to be held at the University of Bradford from September 8th to 11th, 1975.

The course will cover the physical and engineering aspects of separation of particulate matter from liquids. Whilst not exclusively concerned with filtration and separation, these operations will be dealt with in depth. The treatment will be such that prior knowledge of the subject is not essential. Emphasis will be laid on those aspects of this fast-expanding technology which are of immediate practical importance. The course will be particularly useful to industrialists seeking a concise coverage of the essential principles and recent developments of importance in the subject.

Further particulars may be obtained from:

Dr. L. Svarovsky,
Schools of Chemical Engineering,
University of Bradford,
Bradford BD7 1DP,
Yorkshire, England.

Congres Français de Mécanique
ORGANISED BY L'ASSOCIATION
UNIVERSITAIRE DE MÉCANIQUE

September 15th-19th, 1975

15-19 September 1975

Institut National Polytechnique, Université Paul-Sabatier—
Toulouse.

Secretariat for the second congres:

2 rue Charles Camichel,
31071 Toulouse Cedex.

POLYMER RHEOLOGY AND PLASTICS PROCESSING

An international conference sponsored by the British Society of Rheology and the Plastics and Rubber Institute to be held at the University of Loughborough, September 16th-19th, 1975.

Provisional Programme

The time for presentation of papers will be twenty minutes, following each session of three papers thirty minutes will be allowed for discussion and relevant contributions from the floor.

DAY 1—PRINCIPLES AND PROPERTIES

First Session

1. A. Kennaway (Consultant) "Rheology in the broadest sense".
2. J. Parnaby (Bradford University) "The Implication of polymer rheological behaviour in relation to machinery design and control".
3. E. J. Hinch (Cambridge University) "Mechanical models of polymer solutions for strong flows with large polymer deformations".

Second Session

4. R. S. Lenk (Borough Polytechnic) "Rheology in polymer processing—a general review".

5. A. Plochocki, G. Miller, L. Czarnecki and P. Machowski (Industrial Chemistry Institute, Warsaw, Poland) "Some examples of the application of rheological data for the manufacture and processing of polyolefins".
6. J. M. Dealy (McGill University, Montreal, Canada) "New methods for measuring rheological properties of molten plastics".

Third Session

7. D. E. Hanson (I.C.I. Ltd.) "Some aspects of the rheology and processability of polypropylene".
8. M. R. Mackley (Bristol University) "Crystallisation of flowing melts".
9. D. E. Marshall (Loughborough University) "The influence of plasticisers on the rheology of PVC".

Fourth Session

10. P. T. Galvin (I.C.I. Ltd.) and R. W. Whorlow (University of Surrey) "The viscosity of suspensions of spheres in polymer melts".
11. J. Kubat (Chalmers University of Technology, Sweden) "Phase separation effects in glass-containing polymer melts".
12. K. T. Paul (R.A.P.R.A.) "Characterisation of thermosetting materials for moulding".

DAY 2—PLASTICISATION AND PROCESSING

Fifth Session

13. A. Halmos, J. R. A. Pearson and J. Shapiro (Imperial College) "Melting in single screw extruders".
14. J. T. Lindt (Kon/Shell Plastics Laboratory, Delft, Netherlands) "Transport phenomena in the melting zone of a plasticating extruder".
15. R. Worth (Birkby's Viking Ltd.) and H. Helmy (Bone Cravens Ltd.) "Wall Slip and its effect on single screw extruder performance".

Sixth Session

16. J. M. Smith (Laboratory Fysiche Technologie, Delft, Netherlands) "Flow and mixing in double screw extruders".
17. B. S. Glyde (BXL Ltd.) "Aspects of the callendering of plastics compositions".
18. D. C. F. Couzens (I.C.I. Ltd.) "The extrusion of P.T.F.E. pastes".

Seventh Session

19. S. G. Maskell (Harcostar Ltd.) "The realities of large blow moulding".
20. B. H. Gregory (U.S.I. Europe N.V., Belgium) "Development and current status of the extrusion coating process".
21. F. T. Smith (S.T.C. Ltd.) "Thick wall extrusion of low density polyethylene of high molecular weight for dielectric applications".

Eighth Session

An open debate about attitudes to research into polymer rheology and plastics processing in industry and in the universities. What policies should be followed in developing this field?

DAY 3—SHAPING FLOWS

Ninth Session

22. I. T. Barrie (I.C.I. Ltd.) "Where the money goes in injection moulding".
23. G. Menges and G. Wubken (Institut für Kunststoffverarbeitung, Aachen, Germany) "Relaxation behaviour of molecular orientation during the injection moulding process".
24. A. Moroni, A. Ferrario, C. Casale (Montedison SpA, Italy) "Rheotechnics approach to the mould-cavity filling process".

Tenth Session

25. C. J. S. Petrie (Newcastle University) "The analysis of polymer processing operations involving free surface flows".
26. O. Delatycki (Melbourne University, Australia) "The elongational flow of polyethylene".
27. W. J. Bontinck and E. Deprez (U.C.B. Division Sidac, Belgium) "Importance of elongational phenomena in extrusion".

Eleventh Session

28. M. C. Phillips (Kon/Shell Laboratory, Amsterdam, Netherlands) "Prediction of time dependent non-linear stresses in polymer melts using a single integral constitutive equation with a generalised strain measure".
29. P. C. Powell (Loughborough University) "The design of extrusion dies".
30. E. Gaspar (Consultant) "Polymer rheology and plastics processing: the past and the future".

Further details may be obtained from:

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

RHEOLOGY OF COLLOIDS

A two-day joint meeting with the Faraday Society is being planned. It will be held during the week of April 5th-9th, 1976 at Bristol. The organising committee includes Dr. Warburton and Dr. Sherman (B.S.R.) and Professor Parfit and Dr. Goodwin (Faraday Society). Mr. M. Camina will liaise between the organising committee and B.S.R. Council.

It is hoped that between 60 and 100 delegates will take part in this meeting and it is intended to publish the papers which will mainly be invited.

PLASTICS LININGS AND COATINGS IN THE PREVENTION OF CORROSION

The North Eastern Section of the Plastics Institute is in association with the Process Engineering Group of the Institution of Mechanical Engineers is organising a symposium on "Plastics linings and coatings in the prevention of corrosion" which will be held in the Curtis Auditorium, Newcastle University on March 30th-31st, 1976.

The programme will be arranged to present a balance between material properties, application techniques and user experience thereby providing a forum for discussion between the various interested parties. The scope of the symposium is very broad and some suggestions for areas of interest are:

1. Selection and specification including surface preparation, quality control, thickness and continuity testing.
2. The use of coating/linings in heat exchangers.
3. The use of coatings/lining in North Sea Platforms.
4. Coating and lining of pipes for chemical service, e.g. dip coating, sleeve lining.
5. Use of dispersion coatings.
6. Fluorocarbon linings for chemical plant.
7. Coating/linings in the food industry.
8. High build polyester/epoxy coatings against corrosion.
9. The wear properties of linings and coatings.

10. Coatings for immersion service.
11. The protection of steel and concrete in corrosive conditions.
12. Coatings/linings for sea water.

The organising committee invites contributions to the programme and anyone interested should submit a 100-200 word synopsis immediately to:

Mr. A. F. Hall,
N.E. Section Plastics Institute,
c/o I.C.I. Agricultural Division,
Billingham-on-Tees,
Cleveland.

The final selection of papers will take place in June and the texts of those accepted will be required for printing by November.

SEVENTH INTERNATIONAL CONGRESS ON RHEOLOGY

Gothenburg, August 23rd-27th, 1976

While we are still awaiting further news regarding the technical content of this congress, our Secretary has been busy investigating possible schemes for group travel. At the present time the most appropriate arrangements for any number of delegates above 20 would be a package deal, including return air fare and one week's accommodation, ranging from £78 to £131 depending on the class of hotel selected. The Secretary will continue his enquiries and will also seek Professor Kubat's views on the suitability of the suggested accommodation.

POST-DOCTORAL RESEARCH ASSISTANTSHIP

Applications are invited for a Post-Doctoral Research Assistantship to investigate the cavitation of a liquid between rotating rollers. This project is supported by a Science Research Council grant to Dr. F. R. Young. Research experience in fluid flow is desirable but not essential. The appointment will be for two years and the salary will be in the region of £3,000 per annum.

Many industries, notably the printing, paper, linoleum, rubber, plastic and steel industries, use a rolling process to form or otherwise treat sheets of various materials. This, and related processes also occur in many problems on lubrication. In many of these cases, cavitation occurs in the liquid between the rollers. The overall aim of the research is to study this effect, both fundamentally, and with reference to its occurrence in the industrial cases above.

- The project envisaged here would be one of the following:
- either 1. A basic investigation of the threshold pressures for cavitation to occur as a function of nip gap, speed of rotation, various hydrostatic pressures, rollers of different material, rollers of different surface finishes, and viscoelastic liquids.
- or 2. To construct a system for the detection of the cavitation bubbles in opaque printing inks. These could be detected by sending an ultrasonic wave through the liquid to excite the bubbles at their resonant frequency. They will grow and finally collapse sending out a sub-harmonic of the driving frequency which could be detected on an acoustic probe.

Applications, including a curriculum vitae and the names of two referees, should be sent to:

The Principal,
Waterford College of Technology,
Hempstead Road,
Watford, Herts. WD1 3EZ.

References

1. Banks, W. H. and Mill, C. C., Proc. Roy Soc., **A.223**, 414 (1954).
2. Young, F. R. and Coveney, V., "Research Seminar, Watford College of Technology (1974).

BRITISH MEMBERS' ADDRESSES—A REMINDER

The Post Office has given Societies up till July 1st, 1975 to alter their mailing lists using the new Counties/Post Area basis. After that date British mail which does not use the new system will be regarded as wrongly addressed and may be delayed. The Society must, therefore, update its mailing lists in the next two months. If you have not already done so please fill in your name and correct address in the blank spaces below, putting in the new **County** name, and the **Post Code**, and return the slip to me as soon as possible.

To Dr. J. Ferguson, Fibre Science Department, University of Strathclyde, George Street, Glasgow G1 1XW.

My correct mailing address is as follows:

Name

Address

.....

.....

.....

Postal Code

DIARY

1975

- 14-15 May. Conference on "Ionic Polymers", Departments of Polymer Science and Technology, Brunel University.
- 3-6 June. Joint Meeting of U.S.-Japan Societies of Rheology, Honolulu.
- 18-20 June. Conference—"Reclaim, Recycling and Re-use of Polymers and Plastics". Institution of Electrical Engineers, London, W.C.2.
- 1-4 July. 4th Bratislava International Conference on Modified Polymers, Preparation and Properties. Bratislava, Czechoslovakia.
- 14-17 July. "The Design and Operation of Slurry Transport System", University of Bradford.
- 20-22 August. "Energy Methods in Fracture Mechanics", Stockholm, Sweden.
- 8-11 September. "Solid-Liquid Separation", University of Bradford.
- 15-19 September. "Congres Francais de Mecanique", Universite Paul-Sabatier-Toulouse.
- 16-19 September. Joint B.S.R.-P.I. Meeting "Polymer Rheology and Plastics Processing", Loughborough University.

CORRECTIONS TO MEMBERSHIP LIST

UNITED KINGDOM MEMBER

CHAFFEY, C., Research and Development Lab., I.C.I. Paints Division, Wexham Road, Slough, Bucks. SL2 5DS (omission) (pets D.F.G.3) 1967

EUROPEAN MEMBER

LAUNAY, B. (Ing. D.Sc.), Laboratoire de Rheologie Applique aux Industries Alimentaires, ENSIA au CERIA, 9305 Massy, France (slight correction) (fesa D.F.G.H.L.M.) 1970

NORTH AMERICAN MEMBERS

HOLMES, D. B. (B.A., M.Sc., Dr.Eng.), Polaroid Corporation, 600 Main Street, Cambridge, Massachusetts 02139, U.S.A. (change of address) (feta C.D.) 1967

MASON, S. G. (Ph.D. Professor), Dept. of Chemistry, McGill University, P.O. Box 6070, Station "A", Montreal, P.Q., Canada H3C 3G1 (omission) (pes F.G.N.) 1963

SHAPIRO, J., 5152 Westbury Avenue, Montreal 29, Quebec, Canada (omission).

VOCADLO, G., The Shawinigan Engineering Co. Ltd., 620 Dorchester Blvd. West, Montreal, Canada, H3B 1N8 (omission).

WICK, Prof. H. H., Dept. of Mathematics, University of Calgary, Calgary 44, Alberta, Canada (omission) (fts).

OVERSEAS MEMBERS (OTHER COUNTRIES)

BHATNAGAR, R. K. (Ph.D.), Indian Inst. of Technology, Powai, Bombay 400076 (omission) (pes F.G.M.N.) 1971

OCRAN, J. (Ph.D.), Faculty of Pharmacy, University of Science and Technology, Kumasi, Ghana (slight correction) (fe F.G.) 1968

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