

THE BRITISH SOCIETY OF RHEOLOGY

BULLETIN — No. 3, 1961



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.

A NOTE ON THE FORMATION AND DEVELOPMENT OF THE BRITISH SOCIETY OF RHEOLOGY *

N. WOOKEY (Hon. Secretary 1955-58)



Strange as it may seem it appears that the Society owes its origin in 1940 to a similarity between the rheological properties of printing inks and those of secretions from the uterine cervix of the cow. In an early issue of the Bulletin¹ Dr. Lang, the Secretary of the Institute of Physics, describes how he arranged for Dr. Scott Blair and Dr. Harrison, who were independently working on methods of measuring the properties of these materials, to meet to discuss common aspects of their work and this must be taken as the first meeting of the British Rheologists' Club. These meetings continued, and it was then thought that perhaps twenty or more people might be sufficiently interested to meet at lunch two or three times a year to discuss rheological problems, particularly those of wartime importance. A self-appointed committee of three used to meet in Scott Blair's drawing room at Reading, with help from two co-opted members: Mrs. Scott Blair to provide encouragement and refreshments, and a dog called Wolfgang whose function is not entirely clear from the records (he sounds a very fierce animal and perhaps the early meetings required someone to keep order). It was decided that the Club should differ from other scientific societies in having no rules, no formalities, and a subscription of 5/- per year. It was of course later found that, contrary to early expectations, the Club was "shockingly successful" and, with a membership of some hundreds, a more formal organisation later became necessary.

A circular letter dated August 1940 was sent to scientists interested in problems of deformation and flow, and an Inaugural Meeting on "*Rheology in Industry*" was held on November 16th 1940 at the University of Reading, the first president being Sir Geoffrey Taylor F.R.S. The first Bulletin was published in duplicated form in January 1941 and the first Register of Members containing 105 entries was issued in December.

A subject of considerable interest in the early years was the classification of rheological properties and a meeting on the subject was held at Birmingham in January 1942. Two charts of rheological properties subsequently published in *Nature*^{2,3} are still a useful guide to different types of rheological behaviour.

* 1961 is the 21st Anniversary of the formation of the British Rheologists' Club which later became the British Society of Rheology. To mark the event Mr. N. Wookey has written this brief history. In the later stages of this task he was assisted by Dr. G. W. Scott Blair, a founder-member and past-president, and Mr. D. W. Jopling, a committee-member and past-treasurer. We thank these gentlemen for giving freely of their time and for a most interesting article.

(Editor.)

The first major conference organised by the Club was held at St. Hilda's College, Oxford, in July 1944 and the proceedings were published as the well-known "*Essays in Rheology*". The book contains in its preface an interesting account of the early development of rheology, including the facts that the word "rheology" was first suggested by Professor Bingham and that the American Society of Rheology was formed in 1929 when Dr. Scott Blair attended the first meeting of the new Society. Treloar's paper on "The Meaning and Use of Certain Rheological Terms" also clearly summarises the early ideas on the difficulties of rheological classification and nomenclature.

Late in 1944 the Bulletin became the printed booklet with abstracts which was to be standard for some years. However, as all good things have to be paid for the Club subscription had to be raised to £1 in September 1945, but by now rheology was obviously becoming a very respectable and lucrative profession and the only apparent effect was that the membership increased further.

Later the Society became even more respectable and published a full set of Rules which have been very useful in helping to preserve a continuity in the administration of the Society when changes in officers have occurred.

In 1948 all rheologists who had been unable to take holidays abroad during the war years were glad to hear of the hospitality of our Dutch friends who acted as hosts for the first International Congress on Rheology at Scheveningen, and a large British contingent spent a happy and instructive week at this meeting. The Proceedings of this Congress is still a useful reference book, and it also contains an interesting "Report on the Principles of Rheological Nomenclature" by Burgers and Scott Blair.

In 1950, after some heart-searching discussions amongst original Club members, it was decided to change the name of the Club to the British Society of Rheology. The main reason for this seems to have been the implications attached to the word "Club" by some senior industrialists who raised suspicious eyebrows when their staff wished to obtain a few days off to attend "Club" meetings, particularly when they often seemed to be held in women's colleges and to be on subjects which appeared so abstruse that they were obviously a cover for more pleasant activities. There was little substance in this suspicion as most of our Conferences were heavily loaded with lectures and discussions, although Dr. Mardles did occasionally introduce a much appreciated lighter note with his arrangements for social evenings and visits.

In July 1953 the Second International Congress was held at Oxford and the international links with rheologists abroad were further strengthened in 1956 when on our suggestion all National Societies of Rheology agreed to regularly interchange journals and other infor-

mation. An attempt to form an International Union of Rheology, affiliated to the I.C.S.U., was made at the Oxford meeting and although this was later abandoned the present more informal arrangement maintains adequate liaison between national groups of rheologists. A special arrangement exists with rheologists in Australia who are members of the British Society but are also organised in two flourishing groups holding their own meetings.

In May 1957 a very well attended Conference on the Rheology of Elastomers was held at Welwyn Garden City, and in honour of the many foreign guests the Society members donned their evening dress and held a formal dinner complete with speeches, so that a stranger would have thought the Faraday Society was meeting instead of the usually informal rheologists. About this time we also opened negotiations with Pergamon Press which later resulted in the publication of two volumes of Proceedings of Conferences, the first on "*Elastomers*" and the second on "*Disperse Systems*," both of which are very useful collections of authoritative papers on these two subjects. The introductory papers by Treloar and Oldroyd in these two books are models of clarity in presenting reviews of rheological knowledge.

Later arrangements were made for Pergamon Press to publish "*Rheology Abstracts*" on our behalf and this publication together with its annual index is a most useful addition to the scientific literature. The Bulletin continues to give news of interest to our members and includes items like the list of textbooks of rheology⁴ which is so valuable to newcomers to rheological work.

The 3rd International Congress on Rheology was held in 1958. This time the Congress was organised jointly by the two German Societies, and was held at Bad Oeyenhausen. The opportunity was taken for members to establish contact with colleagues from many countries, including Russia, and to meet friends made at previous Congresses.

The finances of the Society have always been sound and each successive Treasurer has been careful to add his mite to the reserve during his term of office. Other learned Societies always seem to need to raise subscriptions continually and to appeal for more funds on frequent occasions, but in our Society we have always been a little embarrassed by the surplus wealth in the funds and one Committee discussed at length whether we could arrange a reduction in the subscription of £1. We eventually decided against it as we often have pure mathematicians as Treasurers and they prefer integers to fractions in their calculations*. It is perhaps likely that the use of their wives as unpaid, or at least cheap, labour in much of the clerical work of the Society

* G.W.S.B. comments that Kronecker wrote: "Die ganzen Zahlen hat Gott gemacht: alles Andere ist Menschenwerk."

has been a factor in allowing officers to keep subscriptions at their low level.

The Society is now an institution rather than an informal club but the meetings are no less pleasant, and the very considerable amount of voluntary work which has to be done is now spread over a larger number of officers. The welfare of small societies with no permanent staff depends very largely on the energy and ability of the officers, and the Society of Rheology was fortunate in its early years in having officers who combined the keenest interest in rheological matters with unusual ability in committee work and administration. The Society has, perhaps because of its small size, always been a good place for making friends and it is unlikely that anyone who has given time and energy to the Society has not been amply repaid in the human contacts made in the course of the work. The Society has now been in existence for 21 years and it is hoped that future rheologists will obtain as much pleasure and help from the organisation provided by the Society as we have done in the past.

References:

1. Brit. Rheol. Club Bull. Dec. 1946, No. 13, p. 3.
2. Nature, 149, 197, (Feb. 14th, 1942)
3. Nature, 150, 432 (Oct. 10th, 1942)
4. Brit. Soc. Rheol. Bull. No. 4 1960.

New Members

(Elected 13th July, 1961)

NAME AND ADDRESS	INTERESTS
P. Cheney, Farol Research Engineers Ltd., North Bersted, Bognor Regis. Sussex.	Visco-elastic testing devices.
S. E. Orchard, I.C.I. Ltd., Paints Division, Research Department, Wexham Road, Slough, Bucks.	Paints. Flow properties at very low and very high rates of shear.

Victoria (Australia) Branch

P. J. Darragh, 12 O'Hara Street, Blackburn, Victoria, Australia.	Clay suspension in liquids.
--	-----------------------------

NAME AND ADDRESS	INTERESTS
W. G. Garrett, Lot 38 Glenvale Road, Ringwood, Victoria, Australia.	Suspensions of powders in liquids.
Dr. G. W. Benkendorff, 38 Greendale Road, East Doncaster, Victoria, Australia.	Reaction kinetics, heat transfer in macromolecular materials. Organosols, platisols.
H. G. Higgins, Division of Forest Products, C.S.I.R.O., P.O. Box 310, South Melbourne Victoria, Australia.	Paper, fibres, polymers, colloids, hydro- gen-bonded materials.
B. Holdaway, c/o I.C.I.A.N.Z. Ltd., Box 1911, G.P.O., Melbourne, Victoria, Australia.	Plastics.
D. F. Kelsall, 81 Fourth Street, Beaumaris, Victoria, Australia.	Non-Newtonian mixing. Slurry and sus- pension properties.

Changes of Address

- DAVID, R. P. DR.,
5 Paine Street, Wellesley Hills 81, Massachusetts, U.S.A.
- DRAKE, B. DR.,
c/o Quartermaster Food and Container Institute, Food Division,
1819 West Pershing Road, Chicago 9, Ill., U.S.A.
- LAMB, J. PROF.,
8 Bute Gardens, Glasgow W.2.
- LESLIE, F. M. DR.,
Department of Mathematics, Massachusetts Institute of Techno-
logy, Cambridge 39, Massachusetts, U.S.A.
- PAIGE, R. S. MR.,
"Glyndley", 17 Andrew Close, Ailsworth, Peterborough,
Northants.
- WEEKS, D. J. DR.,
I.C.I. Plastics Division, Dumfries Works, Dumfries.

Future Meetings.

It has now been decided that the subject for the Spring 1962, conference of the British Society of Rheology will not be "Soil Mechanics". For various reasons the Soil Mechanics conference will be held over for some future occasion. Plans for Spring, 1962, are still indefinite, but at the time of writing the most likely subject is the effect of temperature on Newtonian and near-Newtonian materials and the most likely venue is the Battersea College of Technology, London.

The Tenth Japanese Annual Rheology Symposium will be held in Ueda, Nagano, at Shinshu University from 16th to 18th October, 1961. Subjects for discussion will be (1) Rheology of fibrous materials, (2) rheology of adhesives, (3) general rheology. The papers will be published in a special issue of the Journal of the Japan Society for Testing Materials during 1962.

On 10th to 14th April, 1962, the *Second International Conference on Stress Analysis* will be held at the Ecole Supérieure d'Aeronautiques, Paris. Contributions will deal mainly with the results of experimental work and there will be no subsequent publication of the complete texts. It is not intended to have any review papers. Prospective authors are invited to write to the Secretary of the Joint British Committee for Stress Analysis at the Institution of Mechanical Engineers, 1, Birdcage Walk, London S.W.1.

The Institution of Mechanical Engineers, jointly with A.S.T.M. and A.S.M.E. will sponsor a *Joint International Conference on Creep and Fracture*. It will be held in New York in August, 1963 and in London in October, 1963. The conference will be devoted to the mechanical properties of engineering materials at elevated temperatures, the emphasis being on the utilisation of creep and rupture data in the design of equipment. The scope of the conference will include: Fundamentals, e.g. mechanisms, plasticity theory, relaxation studies; Design; Correlation of service data with laboratory tests. Tentative offers of papers by authors living in the U.K. should be sent as soon as possible to the Secretary of the Institution from whom further details are available.

Assistance Required.

It is required to measure rheological properties of lime and cement pastes having plastic viscosities of about 2 poises and yield stresses of about 1000 dynes per sq.cm. under conditions in which plug flow is absent. Owing to the fairly large particle size of some of the pastes certain designs of cone and plate viscometer will not be suitable. A preferred instrument is a concentric cylinder viscometer having a shear stress ratio between inner and outer cylinders of less than 1.08. Any Member who can give advice or practical assistance on this problem is requested to write to Mr. G. W. Mack of the Building Research Station, Garston, Watford, Herts.

ABSTRACTORS WANTED

*A practical and most useful way in which a member can assist the
work of the British Society of Rheology is*

FOR

*him to become an abstractor on the honorary staff of the Honorary
Editor of*

“RHEOLOGY ABSTRACTS”

*If you have access to one or more of the following journals and are
willing to supply abstracts please get in touch with the Editor*

IMMEDIATELY

A.S.T.M. Bull.

British Plastics

The Engineer

Engineering

Ind.Eng.Chem.

J.Amer.Ceram.Soc.

J.Appl.Chem.

J.Chem.Phys.

J. Colloid Sci.

J.Polym.Sci.

J.Sci.Food Agric.

J.Soc. Dyeists and Colourists

Mod.Plastics

Plastics, Lond.

Polymer

Rev. de l'Inst. petrole

Soc.Plast.Eng.J.

Trans.Brit.Ceram.Soc.

Trans.Plast.Inst.

PLEASE DON'T LEAVE IT TO SOMEONE ELSE

Honorary Editor :

DR. J. H. C. VERNON, 106 Monkswood Avenue, Waltham Abbey, Essex.