

RHEOLOGY BULLETIN

Publication of The Society of Rheology, Inc.

Volume 41, No. 1



June, 1972

43rd ANNUAL MEETING

JANUARY 29-31, 1973
CINCINNATI, OHIO

This meeting, postponed from October 1972 on account of the 4th International Congress, will take place under the auspices of the University of Cincinnati, on January 29 through 31. Accommodation have been reserved at Stouffer's Cincinnati Inn. Profs. R. P. Chartoff and A. Strauss of the Department of Chemical and Nuclear Engineering are co-chairmen of the local arrangements and will act as hosts. Dr. L. Marker, of General Tire and Rubber, One General St., Akron, Ohio 44305, is the Program Chairman. Inquires and suggestions should be directed to him. This applies also to the Special Session on Monday evening for which, at this time, a discussion on the Definition of Rheological Problems in Industry is being considered. In case of sufficient interest, a Short Course would be conducted again on Saturday and Sunday prior to the Annual Meeting. Suggestions on topics are welcome and should be directed to Prof. M. Birboim of the Department of Mechanics, Rensselaer Polytechnic Institute, Troy N.Y. 12180.

4th INTERNATIONAL CONGRESS OF RHEOLOGY

LYON, FRANCE
SEPTEMBER 4-8, 1972

An interesting program will be presented, including 5 plenary lectures, 28 special lectures (10 from USA) and a large number of submitted papers. Unfortunately, the registration fee is very high, \$95. (President Eirich has unsuccessfully protested against it). On the other hand, a charter flight on very good terms is available; see the announcements in the preceding Bulletin; enquiries should be directed to R. Coulehan. Since our Society, as such, has not been solicited to participate, only some individual members received invitations and/or registration forms; however, the program as now received is of sufficient interest to warrant consideration. Interested members should write for information to: Dr. C. Smadja, Boite Postale n°1, 69-Lyon-Mouche, France. Registration and charter flight forms are available from the secretary: John C. Miller, Union Carbide Corp., Bound Brook, N.J. 08805.

U.S. - JAPAN JOINT SEMINAR ON POLYMER PROCESSING AND RHEOLOGY

A long series of most fruitful meetings between Japanese and U.S. Rheologists and Polymer Physicists has been augmented by the above Joint Seminar. This

important new venture has the support of the National Science Foundation and was initiated by our colleagues at the University of Tennessee, Knoxville. The Coordinators are: Professor Misazo Yamamoto, Department of Physics, Tokyo Metropolitan University, Setagaya-ku, Tokyo, Japan and Professor D. C. Bogue, Department of Chemical and Metallurgical Engineering, University of Tennessee, Knoxville, Tennessee 37916, USA. Though the number of participants is limited to 30, the proceedings are going to be published in the Journal of Applied Polymer Symposia. Participants will come by invitation, from industry, and university.

IMPORTANT INTERNATIONAL MEETINGS

IUPAC International Symposium on Macromolecules,
July 2-8, 1972, **Helsinki**.

Conference on "General Principles of Rheology", Sep-
tember 11-14, 1972, Prague.

VIth International Congress of Surface Active Substances,
September 11-15, 1972, Zurich.

Appointments

Dr. L. Marker, Chairman, as completed his selection of the Program Committee for Cincinnati and the following were appointed: A. Gent, University of Akron, I. Krieger, Case Tech, Cleveland, S. Sternstein, Rensselaer Polytech, and N. Nakajima, B. F. Goodrich.

Louis J. Zapas, National Bureau of Standards. Pro-
gram Chairman for the 4th Annual Meeting, Montreal,
October 1973.

F. R. Eirich, H. Markovitz and J. Miller were part of a group of AIP members that, together with other members of Physical Societies, were invited to a briefing by Dr. E. David on the President's message to Congress on the role of science in the nation's welfare and economy. The thrust of the document, since published, was that, while basic sciences will continue to be sponsored, there is to be new emphasis on the utilization of existing knowledge, and on cooperation between university and industry. The general response of the group was that basic science support through NSF was inadequate and, in terms of purchase power not increased by the budget, that industrial cooperation can hardly be expected unless economically encouraged to a much larger extent, and that the scientific community would like to have an input into the formulation of the budget, not just being presented with a de facto situation. A short report to this extent appeared in "Physics Today" in the last April issue. Many individuals, including F. R. Eirich, sent strong personal pleas for better government-science understanding to Dr. David.

RHEOLOGY BULLETIN
Raymond R. Myers, Editor
Department of Chemistry
Kent State University
Kent, Ohio 44242

ANNOUNCEMENT— INTERNATIONAL BOOK YEAR 1972

Books and Journals are Needed in Asia . . .

Donations of books in excellent condition dated 1962 or later, and scientific, technical, and scholarly journals in runs of 10 years or more dated from 1950 are needed for Asian colleges, libraries, and research groups.

If you will get your donations to BOOKS FOR ASIAN STUDENTS, 451 Sixth Street, San Francisco, CA. 94103, this program will arrange for overseas shipping and country distribution.

Contributions of money specifically for shipping expenses are also needed. Donations in kind, or money, to The Asia Foundation, sponsor of the program, are tax deductible. Write the program if you wish further information.

MEMBERSHIP

If anyone would like to acquire a membership application form contact the chairman of the Membership Committee. He is Glenn E. Flumer, W. R. Grace & Company, Clarksville, Maryland 21029.

EMPLOYMENT OF RHEOLOGISTS

One rheologist, 55, a Brown graduate, Ph.D. from Cornell advised the editor of his availability. This response and one from Nobu Nakajima which we excerpted and present below represent the only replies we received to our question about employment in the December 1961 bulletin.

Dr. Nakajima writes "Although superficially most of the rheologists may be employed, the following questions may be appropriate. (1) Are the rheologists assigned to the areas of rheology? (2) Are the capabilities of rheologists fully utilized? Less effort it devoted to the basic research in rheology . . . than . . . ten years ago . . . Rheologists are asked to solve immediate problems . . . little knowledge is available to solve practical problems . . . engineering aspects of polymer processing have been developed way ahead of rheological knowledge (and) solve problems on the basis of practical experience . . . industries are trimming R and D . . . are asking . . . whether they need rheologists.

My analysis of the situation as to why rheology has developed to such a narrow scope:

- (1) too much emphasis on linear viscoelasticity and material behavior at small deformations
- (2) too much emphasis on amorphous homogeneous material.
- (3) too much emphasis on the steady state flow behavior and too much emphasis on the shear rates lower than the current practice.

(4) neglect of accompanying chemical change in rheological behavior."

Dr. Nakajima then comments on each item. Do you want the next issue of the Bulletin to devote more space to this question?

RHEOLOGICAL "ENGINEER" WANTED

Rheologist interested in process rheology and its effect on product properties. Salary commensurate with experience.

Relocation required to small midwest community. Excellent hunting and fishing. Several golf courses available. A leading manufacturer of fishing tackle and marine equipment. Send replies to Personnel Department, Berkley & Company, Spirit Lake, Iowa, 51360.

* * *

Deferment of Dues for Members

The Executive Committee of the Society of Rheology has decided that unemployed members may have their dues to the Society deferred until they are employed again because of the importance of remaining active in rheology during a period of difficulty. Only members who have been regular members for at least one year are qualified for the deferment of dues.

If you are unemployed and wish your dues deferred, please write a letter stating you are unemployed to:

John C. Miller
Union Carbide Corporation
Bound Brook, ew Jersey 08805

SOCIETY OF RHEOLOGY

Report of the Secretary for 1971

Publication Charges

The honoring of publication charges by authors has not improved from 1970. The percentage of pages paid for 1971 is 37%. It is imperative that action be taken to improve this situation and the Executive Committee decided that no free reprints will be distributed and that a two-track system will be instituted in which preference will be given to authors who agree to pay the page charges. One hundred reprints will be supplied to authors who pay the page charge.

Membership

As of June 30, 1971, the membership totaled 788, one less than last year. Since all technical societies are experiencing some difficulty in obtaining new members, a constant membership figure represents an excellent effort by the Membership Chairman Glenn Fulmer.

Short Course on Rheology

A one day course on rheology was conducted on October 24, 1971, by Prof. R. B. Bird. The course was arranged by Prof. M. Birnboim.

Publications

Three issues of the Rheology Bulletin were published and sent to the membership. Transactions distributed in 1971 were Volume 14, 3 and 4, and Volume 15, 1, 2 and 3. Some improvement in publishing rate is evident since Volume 15, No. 4 is expected to be sent before the end of the year.

AMERICAN INSTITUTE OF PHYSICS INCORPORATED
for
SOCIETY OF RHEOLOGY

Statement of Receipts and Disbursements
Year Ended December 31, 1971

Balance in Account - January 1, 1971	\$16,105.83
RECEIPTS (January 1 - December 31, 1971)	
Dues Collections	8,538.68
Interest Income on U.S. Government Bond*	\$ 60.00
Income from Annual Meeting at Princeton	865.00
One Day Course	776.55
Total Receipts	\$ 1,701.55
	\$26,346.06
DISBURSEMENTS (January 1 - December 31, 1971)	
Charge for Dues Billing and Collection	\$ 522.14
Charge for Preparation and Maintenance of Member Record File	796.06
Financial Handling Charge - 1971	94.45
Member Society Dues - 1971	789.00
Winter Meeting	119.83
Editorial Expenses:	
Salaries, Telephone and Postage	1,293.84
APS Special Report on Manpower	130.78
Ballot Mailing	104.81
S of R Transactions	
Mailing Expense	3,026.13
Spring Bulletin	178.28
Sixth International Congress Mailing	78.02
Fall Bulletin	348.90
Fall Meeting	141.10
Membership Directory	119.25
Other Miscellaneous	229.38
Transaction of the Society of Rheology - <i>Schedule A</i>	1,198.53
Total Disbursements	9,170.50
Balance in Account, December 31, 1971	\$17,175.56

TRANSACTIONS OF THE SOCIETY OF RHEOLOGY
SCHEDULE A

Statement of Income and Expense
Year Ended December 31, 1971

INCOME	
Publication Charges	\$4,455.00
Reprint Sales	2,014.00
Total Income	\$6,469.00
EXPENSE	
Publishing Expense	\$5,297.24
Printing Reprints (Wiley)	2,019.00
Order Handling Charge	351.29
Total Expense	7,667.53
Net Income or (Expense)	(\$1,198.53)

E. A. Collins

Meetings

Two technical meetings were held in 1971; the Winter meeting at University of Utah and the Fall Meeting at the University of Tennessee.

Executive Committee Meetings were held on March 15 and October 24.

H. Markovitz and R. R. Myers attended the Assembly of Society Officers in September in New York.

Relations with the American Institute of Physics AIP Society — Member Programs

An ad hoc committee which consisted of one member from each member Society of AIP reviewed the status and usefulness of the History of Physics program, Public Relations program and the Manpower program. The committee recommended that Public Relations and Manpower programs be continued at present levels with some shift of emphasis. The recommendation for the history of physics program was to decrease AIP support. Because of resignations from the staff on Manpower and Public Relations Divisions, the AIP Budget for this year was adequate.

The financial support of these programs is cloudy for the next few years and the Executive Committee of the Governing Board has voted to submit a proposal to the Governing Board to amend the AIP Constitution to increase the dues from \$1 to \$2 per member. The amendment must be approved by the Member Societies.

All due collections, mailings and accounting of funds are made by AIP.

Acknowledgements

The Secretary wishes to thank the officers of the Society, Committee Chairmen, and the American Institute of Physics.

The Secretary is grateful for minor services and expenses supplied by Union Carbide Corporation.

John C. Miller
Secretary

SOCIETY OF RHEOLOGY EXECUTIVE COMMITTEE MEETING

October 24, 1971
University of Tennessee
Knoxville, Tennessee

Executive Committee Present: H. Markovitz, R. Coulehan, T. Smith, R. Myers, E. Collins, F. Eirich, J. Miller.

Others present: R. Marion, W. Graessley, M. Birnboim, G. Fulmer.

1. The meeting was called to order at 8:40 p.m.
2. The minutes of the previous meeting were accepted as published in the Bulletin.
3. The Secretary reported that publication charge payments remained at 40% for 1971.
4. The Treasurer reported a projected balance at the end of 1972 of \$19,755 and the budget was accepted as presented.
5. R. Myers, the Editor reported that publication delay in the Transactions has evaporated and that the 1972 Transactions should be 600 pages, lowered from 800 in 1971.
6. A motion to publish 600 pages in the Transactions for 1972 was made and seconded. After discussion, the motion was passed unanimously.

7. A motion to allow the Editor to establish the ratio of paid papers to unpaid papers in any volume was made and seconded. The Editor will report this ratio to the Executive Committee on each volume. The motion was passed unanimously.
8. W. Graessley reported on the program and asked that some money be allotted to the program chairman for invited speakers. It was moved and seconded to allot \$400 to 1972 chairman. After discussion about where the money should be obtained, i.e., meeting fees, general funds or previous meeting fees, a motion was made to table the original motion. The tabling motion passed by vote of 4 to 3.
9. The 1973 Annual Meeting in October will be held in Montreal.
10. The site of the Annual Meeting of 1972 (to be held in January 1973) was not determined. An ad hoc committee which consists of F. Eirich, E. Collins, and R. Marvin was appointed to investigate sites.
11. The Membership Chairman, Glenn Fulmer reported that the membership was 788 as of June 30, 1970.
12. The short course on Rheology run on Sunday, October 24, was attended by 22 rheologists, taught by Prof. Bird and considered by the attendees a excellent idea. It was recommended that a one day course be taught next year. The Executive Committee passed a resolution thanking Prof. M. Birnboim for his work in organizing the course.
13. R. Coulehan reported on the Charter Flight to Lyon. The flights are September 2 and September 23 to and from Lyon with Kennedy International, the U.S. airport.
14. The National Academy of Sciences requested a \$500 donation from the Society to help support an International Union of Pure and Applied Physics Assembly in Washington, D.C. Because our interests have been more oriented to Theoretical and Applied Mechanics, it was decided to obtain more information before committing the Society.
15. R. S. Marvin reported that the International Committee on Rheology is considering the advisability of joining the International Union on Theoretical and Applied Mechanics. The final decision will be made by the participating Societies from each country.
16. In the rheological survey, the response from SOR members has been poor, although 650 responses have been received. Another questionnaire will be sent to SOR members.
17. The meeting was adjourned at 11:50 p.m.

Respectfully submitted,
John C. Miller, Sec.

SOCIETY OF RHEOLOGY BUSINESS MEETING 1971

University of Tennessee
Knoxville, Tennessee
October 26, 1971

1. The meeting was called to order by President Markovitz at 4:45 p.m.
2. The minutes of the previous meeting were accepted as published in the Bulletin. The Secretary's report was read and accepted.

3. The Treasurer, R. Coulehan presented the 1972 budget. The budget was accepted as presented.
4. President Markovitz announced that the 1972 Annual Meeting would be held in early 1973. Possible sites include — Ohio University — Batelle, University of Cincinnati, Avon Lake, Ohio and Williamsburg.
5. The President announced the following people were elected to the Executive Committee:
 - President — F. R. Eirich
 - Vice Pres. — R. S. Rivlin
 - Secretary — J. C. Miller
 - Treasurer — E. A. Collins
 - Editor — R. R. Myers
 - At Large — A. N. Gent
 - W. W. Graessley
6. R. Coulehan described some of the details of the Charter Flight to France. He encouraged early deposits for the flight. A new mailing to the membership will be made.
7. Profs. D. C. Bogue and J. L. White were given a vote of thanks for the excellent local arrangements at the University of Tennessee.
8. A resolution thanking H. Markovitz for his services as president passed unanimously.
9. The meeting was adjourned at 5:15 p.m.

Respectfully submitted,
John C. Miller
Secretary

MINUTES EXECUTIVE COMMITTEE MEETING April 27, 1972

Executive Committee members present: F. R. Eirich, R. R. Myers, J. C. Miller, and R. S. Rivlin.

Others present: R. S. Marvin.

1. The meeting was called to order at 4:30 p.m. by President Eirich.
2. The minutes of the previous meeting in Knoxville were approved as sent the Executive Committee.
3. The Secretary reported that we had 60 members delinquent in dues for 1972 and 70 last year. This number has substantially increased the last two years. The possibility that some of these members might be unemployed was raised and after some discussion the Secretary was instructed to arrange to keep unemployed members on the roster without payment of dues.
4. A proposal from the advisory committee for Physics Today to publish review or tutorial papers from technical meetings from the individual Societies was reviewed. It was decided to answer the proposal affirmatively and instruct the program chairman for the next meeting to submit titles of appropriate papers to the editor of Physics Today.
5. R. R. Myers, the Editor, passed out a brief report on the status of papers for the Transactions. At present there are enough papers to publish Volume 16.
6. A brief report on the treasury was given by President Eirich. The balance appears to be adequate to pay our expenses at this time.
7. The International Congress on Rheology to be held in Lyon was discussed thoroughly because of the confusion surrounding the registration. Some members who desire to go have not received their regis-

tration forms. The Secretary will write to the organizing committee to obtain registration forms. The question of how the International Committee could help administer an International Congress was discussed. No recommendations were found suitable.

8. R. S. Marvin, the Society representative on the International Committee presented the desire of the International Committee to join the International Union on Theoretical and Applied Mechanics. Some form of International affiliation seems desirable to avoid Congressional conflicts and have a voice in an International Union.

Various objections to affiliation with IUTAM have been voiced by member societies and after discussion by Executive Committee members present it was decided to postpone a decision until the next meeting.

9. The Annual Meeting for 1972 will be held in Cincinnati on January 29-31, 1973.
10. The Annual Meeting for 1973 will be held in Montreal at the Queen Elizabeth Hotel, October 28-30, 1973.
11. No decisions on future meetings were made pending further invitations.
12. President Eirich pointed out that he received information from AIP which would be available to members of the Executive Committee if they desired the information.
13. In March, the Presidential Science Advisor, Dr. David, gave a briefing to the officers of member societies of AIP on the science and technology budget and current policies. F. R. Eirich, H. Markovitz, and J. C. Miller attended. The emphasis was on applied science in the field of environmental technology and mass transportation.
14. President Eirich brought up the question of the "Rheology Gap" which created considerable conflict at an evening meeting in 1972. It was the President's opinion that it will be necessary to build a bridge between the academic and industrial workers and new means of creating this bridge should be sought. The short course on rheology taught by Professor Bird at the Annual Meeting last fall was considered very successful but incomplete. A suggestion was made that a sessions devoted to applied rheological problems from industrial scientists might be useful. It is apparent that the desire for a bridge between theory and practice is one sided at this time. Another short course on rheology will probably be offered at the next Annual Meeting.
15. President Eirich proposed that efforts be made for the Society to grow up to 30% in membership over the next 5 years. Methods for doing this are, possibly, to include in the program rheological work in fields besides the more conventional areas. Food rheology, dispersion rheology and plastics processing were considered good areas to develop. The Secretary suggested that a continuing effort be made over a period of years because similar developments in the past had been somewhat unproductive because of lack of continuing effort.
16. The meeting was adjourned at 8:30 p.m.

Respectfully submitted,
John C. Miller
Secretary