

THE
RHEOLOGY
LEAFLET



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Publication
of the
SOCIETY OF RHEOLOGY

No. 2

July, 1937

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This is the second issue of the Rheology Leaflet. The Editor would be glad of suggestions for future numbers. He would appreciate, too, news items telling of temporary or permanent changes of address, new publications, new discoveries, etc.

Address:

Wheeler P. Davey, Editor
Society of Rheology
School of Chemistry and Physics
The Pennsylvania State College
State College, Pennsylvania

OUR NEXT MEETING

The annual meeting of the Society of Rheology will be held in Akron, Ohio, October 22 and 23, 1937. The Hotel Mayflower will be the headquarters for this meeting. The technical sessions of the Society will probably be held in the Hotel.

Tentative arrangements now include trips through the Tire Division of the Firestone Tire and Rubber Company, the Mechanical Goods Division of the B. F. Goodrich Company, and the Laboratories of the Guggenheim Airship Institute.

The personnel of the local committee will be:

W. F. Busse, B. F. Goodrich Company
A. M. Keuthe, Guggenheim Airship Institute
J. W. Liska, Firestone Tire and Rubber Company
J. H. Dillon, Firestone Tire and Rubber Company

With this committee we are assured of the best accommodations as well as all we could desire in the way of entertainment. In addition, since Akron is the capital of the rubber industry, the multitude of direct and indirect applications of Rheology employed there will prove of interest to our membership. Akron is close to the ideal location for a meeting of our Society, as a recent analysis of the geographical distribution of our membership has shown that our "center of gravity" lies somewhere in Ohio.

The chairman of our program committee writes:

"The business of arranging the formal program will be carried on as fast as paper titles and abstracts are received. This note may be considered a general call upon all members to give immediate thought to what contributions they can make and to encourage non-members

in their acquaintance to adopt the Society of Rheology as their outlet for papers dealing with appropriate subjects.

"Titles and abstracts should be submitted to the Program Chairman as early as possible. Each title should include the author's name and business or scholastic connection. The abstract should be concise (preferably not more than three hundred words) but should give the general nature of results as well as a statement of the problem. Mimeographed preprints of the paper in its final form are desirable, for distribution at the meetings, and should be furnished if at all possible. About one hundred and fifty of such preprints are advised; these may be brought to the meetings by the author."

The Program Chairman hopes that all members will give this meeting their whole-hearted support and make it the best in the life of the Society.

Send all names and titles of papers to:

H. R. Lillie, Program Chairman
Corning Glass Works
Corning, New York

RHEOLOGY IN THE A. S. T. M.

Consistency Symposium

Materials testing is in large measure applied Rheology. This is most conspicuously the case in the testing of those materials to which current studies in Rheology are directly applicable, such as lubricants, plastics, asphaltic and rubber compounds. Tests of these and similar materials were reviewed in a symposium which was one of the features of the annual meeting of the American Society for Testing Materials, which was held in New York City in June. At this Consistency Symposium the following papers were presented:

Recent Progress in Consistency Measurement,

by E. C. Bingham,

Definition of Consistency and Theoretical Considerations,

by Melvin Mooney,

Consistency Measurements in the Paint Industry,

by D. L. Gamble,

The Flow Properties of Asphalts Measured in Absolute Units,

by R. N. Traxler,

The Desirability of Replacing Some of the Consistency Tests at Present Employed in the Tar Distilling Industry by Absolute Viscosity Measurements,

by E. O. Rhodes, E. W. Volkmann, and C. T. Barker,

Viscosity Measurements of Petroleum Products and Lubricants,
by J. C. Geniesse,

Consistency Measurement of Rubber and Rubber Compounds,
by J. H. Dillon and L. V. Cooper,
Measurements of Flow Characteristics of Thermosetting Resins,
by H. L. Bender, H. F. Wakefield, and H. E. Riley,
Cold Flow of Insulating Materials,
by R. Burns and I. L. Hopkins.

It is of interest to note that the majority of the above authors are members of the Society of Rheology. Each of these papers gave a very complete review of the status of rheological studies and testing methods in the field covered by its title, and it is hoped that they will be published and made available for reference. It is not known, as yet, whether they will be included in the A. S. T. M. Proceedings.

Definitions of Consistency, etc.

Another feature of the A. S. T. M. meeting of special interest to rheologists was a meeting of Technical Committee II of Committee E-1. This committee, of which Prof. Bingham is chairman, is responsible for formulating definitions and testing methods in the field of Consistency Plasticity, etc. Some years ago it adopted and published a tentative series of definitions. At this meeting a new series of definitions, prepared by Mr. R. Burns, of the Bell Telephone Laboratories, were introduced as a proposed substitute for the series previously adopted. After some discussion and revision, these new definitions were adopted by the committee, which recommended that they be adopted as a new Tentative Standard.

These new definitions are largely based upon, and are wholly consistent with the definitions developed by our own Committee on Definitions, and published in the first number of this Leaflet. The adoption of these new definitions by the A. S. T. M. is further evidence of the increasing co-operation between Rheologists and Materials Testing Engineers.

RHEOLOGY OF CHEWING GUM

Dr. D. K. Berkey, of the Beech-Nut Packing Company, writes:

"We are currently engaged in moving and enlarging our laboratory, and in our new quarters we have set aside a small room to be known as The Rheology Laboratory. In it we shall do parallel plate plasticity measurements on chewing gum with a modified Shore Monotron. We also make penetration and bending tests on chewing gum and its components. At present we are engaged in correlating the hardness of chewing gum with its composition."

WHAT'S WHAT

The Virginia Polytechnic Institute has a bulletin out by E. B. Norris on "The Plastic Flow of Metals." The Journal of the Aeronautical Sciences of November, 1936, has two articles of special interest to Rheologists . . .

"Friction losses in an artificially roughened rectangular channel" by W. Tripp.

"Effect of roughness on the friction coefficient of a closed channel" by V. J. Skoglund.

The February 1937 issue of the same Journal has:

"The fundamentals of the statistical theory of turbulence" by T. L. vanKarman.

This is followed by a second article on the same subject by R. F. Bache and W. B. Klemperer.

In the Journal of Applied Mechanics, p. A-63, is an article by A. Egle, "The Leakage of Gases through Narrow Channels."

In Mechanical Engineering, p. 59 is a paper by H. L. Parr, "Fluid Flow Analyser".

The December 1936 number of the Proceedings of the Royal Society has four interesting articles:

"Forces on a circular cylinder submerged in a uniform stream" by T. H. Havelock.

"Correlation measurements in a turbulent flow through a pipe" by G. I. Taylor.

"Fluid Friction between rotating cylinders"

I. Torque measurements by G. I. Taylor.

II. Distribution of velocities by G. I. Taylor.

The December 1936 issue of Proc. Camb. Phil. Soc. has an article on "The slow motion of a fluid" by W. R. Dean.

An article of general interest to Rheologists is "On the calculation of errors" by L. T. DeVore, in Phys. Rev. 51, 349-354, (1937).

Then, if you read German, you will read "Zur Temperaturabhängigkeit der Kristalplastizität" by Boas and Schmid in Zeit. f. Physik 100, 463-470, (1936) and "Die Kinetik der plastischen Deformation von Kristallen" by Von M. Kornfeld in Phys. Zeitschrift der Sowjetunion, 10, 605-617, (1936).

We don't need to tell you of the almost continuous stream of articles on various Rheological topics which appears in The Journal of Applied Physics, for of course as a good Rheologist you see that excellent journal every month.

WHO'S WHO

(Just to make sure that it's as nearly correct as possible, these are abstracts from American Men of Science.)

Our President

Melvin Mooney. Born in Kansas City, Missouri, July 1, 1893. A. B., University of Missouri, '17; Ph.D., University of Chicago, '23; National Research Council Fellow, 24-27; Physicist, Western Electric Company, 28-29. Since 1929, physicist, General Laboratories, United States Rubber Company, Passaic, New Jersey. Research on colloidal physics, and plasticity.

Our 1st Vice-President

Mayo D. Hersey. Born in Pawtuxet, Rhode Island, August 30, 1886. A. B., Colorado College, '07; S.B., M.I.T., '10; A.M., Olivet College, '10; Bureau of Standards, '10-'20; Associate Professor of Properties of Matter, M.I.T., '20-'22; U. S. Bureau of Mines, '22-'26; Bureau of Standards, '26-'31; Vacuum Oil Company, '31-33. Brown University since 1933. Engineer, Kingsbury Machine Works, Philadelphia, since 1936. Research on aeronautic instruments; viscosity; elasticity; mining physics; friction, and lubrication.

Our Secretary-Treasurer

R. L. Peek, Jr., Born in Roselle, New Jersey, September 11, 1898. A.B., Columbia University, '21; Met. Eng., Columbia University, '23; U. S. Metals Refining Company, '23-'24. Since 1924, Bell Telephone Laboratories, Inc., Research on physics of materials, diffusion theory, plasticity, viscosity and physical testing.

Your Editor

W. P. Davey. Born in Cleveland, Ohio, March 19, 1886. A.B., West. Reserve University, '06; M. S., Pennsylvania State College, '11; Ph.D., Cornell University, '14; research physicist, General Electric Company, '14-'26. Since 1926, School of Chemistry and Physics, The Pennsylvania State College. Research Professor of Physics and Chemistry. Has just been put in charge of the training of students at Penn State who wish to study physics because of its industrial applications. Research on X-rays, crystal structures, orientation of crystals, theory of solid solutions.

We hasten to add that the above four were picked out merely because their names appear on the current letter-head of the Society. Let us know whom you would be interested in hearing about next time.

A REMINDER

Send titles of proposed papers for the Akron Meeting to Dr. H. R. Lillie, Corning Glass Works, Corning N. Y.

THE SOCIETY OF RHEOLOGY

The Society of Rheology was founded in 1929 to further the study of the deformation and flow of matter. This purpose has been interpreted in the broadest sense, as covering types of deformation ranging from the viscous flow of fluids, through the plastic flow of soft substances, to the elastic deformation of solids. Rheology may be regarded as the science whose industrial application constitutes the field of materials testing.

Papers dealing with Rheology are presented to the Society at its annual meetings, and are published in the Journal of Applied Physics. All members of the Society receive the Rheology Leaflet, which is issued at irregular intervals, and which tells who is who and what is what in Rheology. They receive additional publications according to their class of membership, as indicated on the application blank appearing on the page following.

Membership is for the calendar year and new members receive the issues of the journal published prior to their applications. After September 1, application may be made, if desired, for membership to start January 1 of the year following.

The Society of Rheology is one of the member societies of the American Institute of Physics, and its members are entitled to subscribe to the following additional journals published by the Institute, at the rates shown:

	Domestic	Foreign
Physical Review	\$15.00	\$16.50
Reviews of Modern Physics	3.00	3.40
Journal of the Optical Society of America.....	6.00	6.60
Review of Scientific Instruments	1.50	2.00
Journal of the Acoustical Society of America	6.00	6.60
Journal of Chemical Physics	10.00	11.00
American Physics Teacher	3.00	3.30

APPLICATION

Mr. R. L. Peek, Jr., Secretary
The Society of Rheology
Bell Telephone Laboratories, Inc.
463 West Street
New York, New York

I hereby apply for membership in the Society of Rheology for the year _____ as follows:

- [] Sustaining membership (including subscriptions to both **Journal of Applied Physics** and **R. S. I.**) \$25.00 or more
- [] Regular membership (including subscription to **Journal of Applied Physics**) \$6.00 (foreign, \$6.50)
- [] Associate membership (including subscription to **Review of Scientific Instruments**) \$2.50 (foreign, \$3.00)

Please also enter my subscription for the following additional periodicals published by the American Institute of Physics:

_____ at \$ _____

_____ at \$ _____

_____ at \$ _____

I enclose \$ _____ to cover the above.
(Please print)

(Name) _____

(Title)

(Corporation or School)

(No.)

(Street)

(City and State)

