
Symposium on

**NON-NEWTONIAN
VISCOMETRY**



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SYMPOSIUM ON NON-NEWTONIAN VISCOMETRY

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Washington, D. C., October 11, 1960



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FOREWORD

BY THEODORE W. SELBY¹

The papers contained in this book were presented at a symposium held in Washington, D. C. on October 11, 1960, under the sponsorship of ASTM Committee D-2 on Petroleum Products and Lubricants. They were selected with the view that in collected form they might yield a fairly comprehensive review of the methods used in investigating the viscometric properties of non-Newtonian, polymer-modified liquids—a class of liquids which includes many lubricants. The symposium did not, however, include the various liquid suspensions commonly identified as greases, pastes, slurries, and emulsions since these are in themselves extensive fields for research and require viscometry which hopefully will be considered in later symposia.

During the past twenty years of technical progress, the viscometry of non-Newtonian systems has assumed increasing importance. This is particularly true in the field of lubrication where the viscosity of the lubricant is perhaps the most important single property. As a consequence of the more recent need for lubrication at extremes of temperature (less than -100 to over $+600$ C) and at very high shear rates (10^6 to 10^7 sec⁻¹), an additional incentive has been provided for investigating the rheological properties of various lubricating systems under such conditions.

The reader will find that the subject of non-Newtonian viscometry is treated on an applied as well as a basic technical level. Frequently the papers are closely linked by the viscometers, techniques, or experiences reported. In one or two cases a theoretical explanation is given in one paper for the experimental observations newly reported in another paper. Such close alignment of subject matter should make the reader's transition from paper to paper relatively easy and this advantage has been hopefully improved by the order in which the papers have been arranged, by the introductory remarks preceding each paper, by the use of the same symbol for a given physical term from paper to paper, and particularly by the discussions following most of the papers.

Many individuals have contributed to this volume. Of these I would like to mention the Reader's Panel composed of L. C. Brunstrum, J. F. Johnson, and F. J. Villforth, Jr., and the Editorial Group headed by A. E. Becker and ably assisted in this capacity by R. R. Wright. Mr. Wright and Miss Roxy Dowling were responsible for preprinting the symposium papers. Each of these contributed fully of their abilities and time, and it is my hope that this book will remind them of their fine efforts. I would also like to note

¹ Fuels and Lubricants Department, General Motors Research Laboratories, Warren, Mich., Symposium Chairman.

with gratitude the gift of five hundred dollars from the API Committee on Petroleum Products to provide a recording secretary for the meeting. Miss JoAnn Withers, who performed this service, did an outstanding job.

Mr. Theodore W. Selby served as Symposium Chairman and presided over the sessions. Mr. J. B. Rather, Jr., served as Secretary and Vice-Chairman and took the chair during the two papers in which Mr. Selby was personally involved. The work of assembling this symposium was considerable and much credit is due Mr. Selby for his efforts.—EDITOR.

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