

# Contents

## A. Inaugural Session

Welcome Address by the Chairman. By H. H. HARTERT . . . . .	1
Opening Address by the President of the Society. By A. L. COPLEY . . . . .	2

## B. Ceremony of Poiseuille Award

Presidential Address Honoring GEORGE WILLIAM SCOTT BLAIR. By A. L. COPLEY . . . . .	5
The Rheology of Blood and of Other Things. By G. W. SCOTT BLAIR . . . . .	10

## C. Scientific Sessions

### I. Theoretical Hemorheology

The Importance of Plasma Mixing in Bolus Flow. By J. AROESTY and J. F. GROSS. With 2 Figures . . . . .	16
Physical Stability of the Microcirculation. By T. AZUMA and S. OKA. With 8 Figures . . . . .	20
Model Studies of the Hydrodynamic Characteristics of an Erythrocyte. III. Drag and Lift in Erythrocyte-Erythrocyte Interactions. By G. BUGLIARELLO, M. DUFFEY, and T.-K. HUNG. With 11 Figures . . . . .	30
Some Model Experiments in Hemodynamics. IV. By H. L. GOLDSMITH and S. G. MASON. With 8 Figures . . . . .	47
A Numerical Model for Two-Dimensional Oscillatory Flow and Oxygen Transfer in the Axial Plasmatic Gaps of Capillaries. By T.-K. HUNG, M. H. WEISSMAN, and G. BUGLIARELLO. With 10 Figures . . . . .	60
Theoretical Studies in Blood Vessel Hemorheology. By S. OKA and T. AZUMA. With 5 Figures . . . . .	71
Particle Interactions in Suspension Flows. By W. M. PRICE and A. D. MAUDE. With 8 Figures . . . . .	79
On the Viscosity of Blood. By A. H. SACKS and E. G. TICKNER. With 4 Figures . . . . .	89
Surface Chemical Aspects of Flow Characteristics of Blood. By B. TAMAMUSHI. With 1 Figure . . . . .	99
Flow in Locally Constricted Tapered Tubes. By W. P. WALAWENDER, C. TIEN, and L. C. CERNY. With 10 Figures . . . . .	104
The Distribution of Pulse Pressure as Related to the Non-Uniformity of the Arterial System. By E. WETTERER and TH. KENNER. With 4 Figures . . . . .	117

### II. Experimental Hemorheology

Velocity Profile Effects in the Electromagnetic Flow-Measurement of Pulsating Flow. By M. K. BEVIR. With 5 Figures . . . . .	122
Role of Mutual Cellular Repulsions in the Rheology of Concentrated Red Blood Cell Suspensions. By D. E. BROOKS and G. V. F. SEAMAN. With 11 Figures . . . . .	127

Change of Erythrocyte Deformability During Fixation in Acetaldehyde. By S. CHIEN, S. USAMI, R. J. DELLENBACK, C. A. BRYANT, and M. I. GREGERSEN. With 8 Figures . . . . .	136
Influence of Fibrinogen and Globulins on Blood Rheology at Low Shear Rates: Comparison among Elephant, Dog and Man. By S. CHIEN, S. USAMI, R. J. DELLENBACK, and M. I. GREGERSEN. With 10 Figures . . . . .	144
Gelation of Fibrinogen and Plasma Systems Studied by Light Scattering and Rheogoniometric Methods. By A. L. COPLEY, A. DEVI, R. G. KING, B. M. SCHEINTHAL, and P. OHLMEYER. With 9 Figures . . . . .	154
Studies on Thrombus Prevention in an Extracorporeal Arteriovenous Microshunt. By P. DIDISHEIM, E. J. W. BOWIE, and C. A. OWEN, Jr. . . . .	165
Considerations of the Internal Viscosity of the Red Cell and of the Rheology of the Red Cell Membrane, and of the Effect of these Factors on Blood Flow. By L. DINTENFASS. With 5 Figures . . . . .	174
Disaggregation of Erythrocyte Aggregates and Decrease of the Structural Viscosity of Human Blood by 2-Phenyl-benzyl-aminomethyl-imidazolidine (Antazolin). By A. M. EHRLY. With 4 Figures . . . . .	184
On the Relation between Blood Viscosity and Dynamic Viscoelasticity in the Clotting Process of the Blood. By Y. ISOGAI, K. ICHIBA, A. IDA, I. CHIKATSU, M. ABE, E. FUKADA, and M. KAIBARA. With 6 Figures . . . . .	190
The Viscoelastic Properties of Whole Blood. By A. LESSNER, J. ZAHAVI, A. SILBERBERG, E. H. FREI, and F. DREYFUS. With 9 Figures . . . . .	194
Functional Coupling between Endo-Endothelial Layer and Capillary Flow. By H. K. MÜLLER. With 3 Figures . . . . .	206
The Influence of the Length of a Capillary Channel on the Axial Accumulation of Red Cells. By A. A. PALMER. With 5 Figures . . . . .	213
Possible Effect of Blood Flow on the Turnover Rate of Vascular Endothelial Cells. By H. P. WRIGHT and G. V. R. BORN. With 2 Figures . . . . .	220
Velocity Dependent Interaction between Platelets and Different Surfaces. By H. POLIWODA, G. HAGEMANN, and E. JACOBI. With 5 Figures . . . . .	227
Model Experiments in Red Cell Rheology: The Mammalian Red Cell as a Fluid Drop. By H. SCHMID-SCHÖNBEIN, R. WELLS, and J. GOLDSTONE. With 6 Figures . . . . .	233
Electrokinetic Methods in the Study of Biological Surfaces. By G. V. F. SEAMAN. With 4 Figures . . . . .	242
Stability of the Blood Suspension and Zeta Potential of Blood Components. By J. F. STOLTZ, M. STOLTZ, A. PETERS, and A. LARCAN. With 7 Figures . . . . .	253
Dacron and Glass Wool Filtration of Blood. By R. L. SWANK. With 2 Figures . . . . .	262
Viscometric Behavior of Young and Aged Erythrocytes. By S. USAMI, S. CHIEN, and M. I. GREGERSEN. With 3 Figures . . . . .	266
Viscometric Measurements for Blood and Blood Plasma. By H. WAYLAND and H. J. MEISELMAN. With 9 Figures. . . . .	271
Vessel Wall Permeability. A Method of Quantitative Determination by Vital Microscopy. By S. WITTE. With 7 Figures . . . . .	284
Dependence of Electromagnetic Flow-Meter Sensitivity upon Cell Distribution and Orientation. By D. G. WYATT. With 7 Figures. . . . .	291

### III. Clinical Hemorheology

Dynamic (VFTV) Blood Coagulation in Patients with Hypertension, Renal Failure, and Peripheral Arterial Disease. Formation Times, Viscosities and Degradation of Red and White Thrombi. By L. DINTENFASS, G. E. BAUER, J. H. STEWART, and A. SHARP. With 4 Figures . . . . .	296
Dynamic Blood Coagulation: Effect of Velocity Gradient on the Clotting Times, Rheology and Morphology of Clots and Thrombi in Normals and Patients. By L. DINTENFASS, J. S. YU, and C. GRACE. With 5 Figures . . . . .	303
Specific Red Cell Aggregating Activity in Normal Blood Donors and in Patients with High Erythrocyte Sedimentation Rate. By H. HINT and K.-E. ARFORS. With 2 Figures . . . . .	321
Viscosity of Blood and Plasma in Various Diseases. By Y. ISOGAI, K. ICHIBA, A. IIDA, I. CHIKATSU, and M. ABE. With 9 Figures . . . . .	326
Erythrocyte Deformability and its Significance to Survival in the Microcirculation. By P. L. LA CELLE. With 9 Figures . . . . .	333
Red Cell Aggregation and Red Cell Deformation: Their Influence on Blood Rheology in Health and Disease. By H. SCHMID-SCHÖNBEIN and R. WELLS. With 7 Figures . . . . .	348
A Hemorheological View on Molecular Interactions between Red Blood Cell Constituents in the Pathogenesis of Constitutional Hemolytic Anemias. By P. TEITEL. . . . .	356
Flow Behavior of Red Cells in Pathologic Sera: Existence of a Yield Shear Stress in the Absence of Fibrinogen. By R. WELLS, H. SCHMID-SCHÖNBEIN, and J. GOLDSTONE. With 6 Figures . . . . .	358
Reduction in Blood Viscosity and Disaggregation of Erythrocyte Aggregate by Streptokinase. By A. M. EHRLY and B. LANGE. With 7 Figures . . . . .	366

### IV. Hemorheological Methods

A Variable Shear Rate Capillary Viscometer for Outflow Viscometry in Dogs. By W. G. FRASHER, H. J. MEISELMAN, and H. WAYLAND. With 6 Figures . .	375
Velocity Profile Measurements in Living Microvessels by a Correlation Method. By P. GAEHTGENS, H. WAYLAND, and H. J. MEISELMAN. With 1 Figure . . .	381
Some Modifications of the Weissenberg Rheogoniometer for Adaptation to Hemorheological Studies. By R. G. KING and A. L. COPLEY. With 1 Figure . .	386
A Method for Measuring the Electrophoretic Mobility of Colloidal Particles in Suspension. Theory and Comparison between Four Different Cells. By J. F. STOLTZ and A. LARCAN. With 7 Figures . . . . .	388

### V. Standards and Terminology

2nd International Conference on Hemorheology, 1969. Committee on Classification and Nomenclature. Introductory Paper by G. W. SCOTT BLAIR. „Classification: Conditions, Properties and Processes“ . . . . .	400
Notes on the Poiseuille Medal and the Award Ceremony. By H. H. HARTERT and A. L. COPLEY . . . . .	404
List of Contributors . . . . .	405
Subject Index . . . . .	406