CIRCULATION
VOLUME XXXIII
January-June 1966

No. 1

FOREWORD:
Volume XXXIII. Howard B. Burchell ........................................ 1

EDITORIALS:
Herrman Blumgart: An Appreciation. Harry Goldblatt ............... 4
Venous Return. Howard B. Burchell ........................................ 6
Does a Metabolic Barrier to Circulating Cholesterol Protect the Arterial Wall? D. B. Zilversmit and H. A. I. Newman .......... 7

ORIGINAL ARTICLES:
Influence of Respiration on Venous Return in Pulmonary Emphysema. Fred K. Nakhjavan, Wilfred H. Palmer, and Maurice McGregor ...... 8
Hemodynamic Effects of Aminophylline in Cor Pulmonale. John O. Parker, Kumar Kelkar, and Roxroy O. West ..................... 17
Valve Replacement for Tricuspid Stenosis or Insufficiency Associated with Mitral Valvular Disease. C. Walton Lillehei, Paul G. Gannon, Morris J. Levy, Richard L. Varco, and Yang Wang ............. 34
Hemodynamic Changes Associated with Injection of Angiocardiographic Contrast Medium in Assessment of Valvular Lesions. Shahbudin H. Rahimtoola, John P. Duffy, and H. J. C. Swan ...... 52
Cirrhosis of Liver Simulating Congenital Cyanotic Heart Disease. R. C. Hansoti and N. J. Shah ........................................ 71
Abnormalities of Renal Function and Circulatory Reflexes in Primary Aldosteronism. Edward G. Biglieri and Malcolm B. McIlroy ........ 78
Essential Hypertension: A Twenty-Year Follow-Up Study. Donald J. Breslin, Ray W. Gifford, Jr., and John F. Fairbairn II ............. 87
Etiologic Considerations in Peripheral Vascular Diseases of the Lower Extremity with Special Reference to Diabetes Mellitus. Herman T. Blumenthal, Aline W. Berns, Sidney Goldenberg, and Paul W. Lowenstein ......................................................... 98

(Continued)
## CONTENTS OF VOLUME XXXIII

L. Bernstein, G. C. Friesinger, P. R. Lichtlen, and R. S. Ross ............... 107

**The Effect of Exercise on Postural Changes in the Electrocardiogram.**
Samuel Bellet and Laurian Roman ........................................... 117

**Elective Countershock in Unanesthetized Patients with Use of an Esophageal Electrode.** E. M. McNally, E. C. Meyer, and R. Langendorf .......................................................... 124

**Perforation during Indwelling Catheter Pacing.** David A. Nathan, Sol Center, Raul E. Pina, Aaron Medow, and Walter Keller, Jr. .......... 128

**Pre-Excitation as a Cause of Appearance and Increased Intensity of Systolic Murmurs.** John M. Bergland, Warren R. Rucker, John T. Reeves, and Borys Surawicz .................................................. 131

**Lymphatics of the Heart.** Robert A. Johnson and Thomas M. Blake ........ 137

**Digital Casts for the Study of Clubbing of the Fingers.** Robert B. Mel- lins and Alfred P. Fishman ...................................................... 143

### SPECIAL ARTICLE:

**The Main Functions of the Pulmonary Circulation.** Julius H. Comroe, Jr. 146

### BOOK REVIEWS ................................................................. 159

### BOOKS RECEIVED ............................................................ 160

### ABSTRACTS ................................................................. 161

### NEWS FROM THE AMERICAN HEART ASSOCIATION ......................... 170

### CONTRIBUTORS TO THIS ISSUE ........................................... 174

---

**EDITORIALS:**

**The Preterminal Arterioles in the Pulmonary Circulation of High-Altitude Natives.** Sixto Recavarren .................................................. 177

**Some Hemodynamic Problems in Transposition of the Great Vessels.** Howard B. Burchell ......................................................... 181

### ORIGINAL ARTICLES:

**Adaptation to Exercise in Angina Pectoris: The Electrocardiogram during Treadmill Walking and Coronary Angiographic Findings.**
Rex N. MacAlpin and Albert A. Kattus ........................................ 183

**Infarction Patterns in Endocardial Fibroelastosis.** John P. Lintermans, Edward L. Kaplan, Beverly C. Morgan, David Baum, and Warren G. Guntheroth .................................................. 202

**Bacterial Endocarditis Following Aortic Valve Replacement: Clinical and Pathologic Correlations.** Lawrence H. Cohn, William C. Roberts, S. David Rockoff, and Andrew G. Morrow .............................................. 209

**Evaluation of the Severity of Mitral Stenosis and Regurgitation.** Albert J. Libanoff and Simon Rodbard ......................................... 218

**Intercoronary Anastomoses in Congenital Heart Disease.** Colin M. Bloor, John F. Keefe, and Marie J. Browne ................................. 227

(Continued)
CONTENTS OF VOLUME XXXIII

Transposition of the Great Vessels: Pathophysiologic Considerations Based upon a Study of the Lungs. Charlotte Ferencz .................................................. 232

Percutaneous Suprasternal Puncture (Radner Technique) of the Pulmonary Artery in Transposition of the Great Vessels. Shahbudin H. Rahimtoola, Patrick A. Ongley, and H. J. C. Swan ........................................ 242

Pulmonary Pressure, Cardiac Output and Arterial Oxygen Saturation during Exercise at High Altitude and at Sea Level. Natalio Banchero, Francisco Sime, Dante Peñaloza, Julio Cruz, Raúl Gamboa, and Emilio Marticorena ........................................ 249

The Assessment of Operative Results in Congenital Heart Disease by Intraoperative Indicator-Dilution Curves. Andrew G. Morrow, H. Newland Oldham, George M. Callard, and Eugene Braunwald ...... 263

Epidemiological Study of the Electrocardiographic Diagnosis of Left Ventricular Hypertrophy. Leon D. Ostrander, Jr. .................................................. 270


Plasma Cephalins of Patients with Acute Myocardial Infarction. Martin M. Nothman and Samuel Proger .................................................. 287


Fistula from Circumflex Coronary Artery to Superior Vena Cava. Goffredo G. Gensini, Adoracion Palacio, and Carlo Buonanno .... 297


ABSTRACTS .................................................. 328

NEWS FROM THE AMERICAN HEART ASSOCIATION ........................................ 340

CONTRIBUTORS TO THIS ISSUE .................................................. 343

No. 3

EDITORIAL:
Heart Attacks and Workmen's Compensation Acts. Howard B. Burchell 345

ORIGINAL ARTICLES:


(Continued)
CONTENTS OF VOLUME XXXIII

Effects of Amyl Nitrite in Aortic Valvular and Muscular Subaortic Stenosis. E. W. Hancock and W. C. Fowkes ........................................ 383

Renal Hemosiderosis in Patients with Prosthetic Aortic Valves. William C. Roberts and Andrew G. Morrow ........................................ 390


Effective Closure of the Mitral Valve without Atrial Systole. Eugene Braunwald, S. David Rockoff, H. Newland Oldham, Jr., and John Ross, Jr. ........................................ 404

Validity of Indicator-Dilution Determinations of Cardiac Output in Patients with Mitral Regurgitation. Philip Samet, William H. Bernstein, and Cesar Castillo ........................................ 410

Rheumatic Pneumonitis. R. A. Massumi and J. F. Legier ........................................ 417

Renal Circulation in Man Studied by Means of a Dye-Dilution Method. François C. Reubi, Nicolas Gossweiler, and René Gurtler ........................................ 426

Measurement of Renal Artery Pressures by Catheterization in Patients with and without Renal Artery Stenosis. Stefan A. Carter and Gordon W. Ritchie ........................................ 443


Electrocardiograms of Dogs with Heart Homografts. Richard R. Lower, Eugene Dong, Jr., and Frederic S. Glazener ........................................ 455

Analysis of Experience in Workmen's Compensation for Heart Cases: Factors Influencing the Decision re Compensability in Heart Attacks Occurring among Industrial Workers. Gordon G. Bergy and Donal R. Sparkman ........................................ 461

SPECIAL ARTICLES:
Interarterial Shunts in the Cerebral Circulation. James F. Toole ........................................ 474
Role of the Veins in the Circulation. John T. Shepherd ........................................ 484

ABSTRACTS ........................................ 492

NEWS FROM THE AMERICAN HEART ASSOCIATION ........................................ 499

CONTRIBUTORS TO THIS ISSUE ........................................ 503

No. 4

EDITORIAL:
The Labeling of Medications. Howard B. Burchell ........................................ 505

ORIGINAL ARTICLES:
Left Ventricular Function Following Replacement of the Aortic Valve: Hemodynamic Responses to Muscular Exercise. John Ross, Jr., Andrew G. Morrow, Dean T. Mason, and Eugene Braunwald ........................................ 507

The Hemodynamics of the University of Cape Town Aortic Prosthetic Valve. W. Beck, C. N. Barnard, and V. Schrire ........................................ 517

Serial Cardiac Output and Blood Volume Studies Following Cardiac Valve Replacement. Frank E. Kloster, J. David Bristow, Albert Starr, Colin W. McCord, and Herbert E. Griswold ........................................ 528

(Continued)
CONTENTS OF VOLUME XXXIII

Open-Heart Surgery on the Elderly: Results in 54 Patients Sixty Years of Age or Older. L. Thompson Bowles, Grady L. Hallman, and Denton A. Cooley .......................................................... 540

Measurement of Aortic Regurgitation by Upstream Sampling with Continuous Infusion of Indicator. Martin J. Frank, Pablo Casanegra, Manouchehr Nadimi, Angelo J. Migliori, and Gilbert E. Levinson .... 545

Observations on the Assessment of Cardiac Hypertrophy Utilizing a Chamber Partition Technique. Kevin E. Bove, David T. Rowlands, and Ralph C. Scott ................................................................. 558

The Vectorcardiogram of Left Ventricular Hypertrophy: Analysis and Criteria (Frank Lead System). Philip Varriale, Joseph C. Alfenito, and Richard J. Kennedy .......................................................... 569

Analysis of Right and Left Atrial Vectorcardiograms: Timed Records of 100 Normal Persons. L. Julian Haywood and Ronald H. Selvester 577


Relationship of Fibrillatory Waves and P Waves in the Electrocardiogram. Robert H. Peter, James J. Morris, Jr., and Henry D. McIntosh 599

The Audible Sounds of Atrial Tachyarrhythmia (Flutter?): A Note on Their Genesis. R. A. Massumi, T. Hernandez, G. Just, and A. A. Tawakkol ................................................................. 607

Anomalus Systemic Venous Drainage with Hypoplasia of the Right Ventricular Myocardium. H. R. Overy, P. G. Steinbicker, Jr., and S. Gilbert Blount, Jr. ............................................................. 613

Blood Cell Aggregation and Screen Filtration Pressure. Roy L. Swank and Eli Davis. ............................................................. 617

The Cardiomyopathy of Progressive Muscular Dystrophy. Joseph K. Perloff, Antonio C. de Leon, Jr., and Desmond O'Doherty ........... 625

ABSTRACTS ................................................................................. 649

NEWS FROM THE AMERICAN HEART ASSOCIATION ............. 659

CONTRIBUTORS TO THIS ISSUE ................................................ 671

No. 5

EDITORIALS:

Excitation-Contraction Coupling and Control of Cardiac Contractility. Edward J. Leonard ............................................................. 673

The Search for the "Coronary" Archetype and the Damocles Test. Howard B. Sprague ............................................................. 676

ORIGINAL ARTICLES:


Glucose Metabolism in Subjects with Behavior Pattern A and Hyperlipemia. Ray H. Rosenman, Meyer Friedman, and Sanford O. Byers . (Continued)
CONTENTS OF VOLUME XXXIII


Off-Line Monitoring in Ischemic Heart Disease. John A. Mazzarella, Robert A. Bruce, and Elmer Green ................. 719

Anomalous Left Coronary Artery Arising from the Pulmonary Artery in an Adult: A Review of the Therapeutic Problem. Ivan Likar, J. Michael Criley, and Kenneth B. Lewis ............. 727


Myocardial Infarction with Shock: Hemodynamic Studies and Results of Therapy. Rolf M. Gunnar, Antonio Cruz, Jeb Boswell, Bun S. Co, Raymond J. Pietras, and John R. Tobin, Jr. .................... 753

Diagnostic Signs in Compressive Cardiac Disorders: Constrictive Pericarditis, Pericardial Effusion, and Tamponade. Ramon L. Lange, James T. Botticelli, Theofilos J. Tsagaris, John A. Walker, Mukhtar Gani, and Rodrigo A. Bustamante ............ 763


Correlation of the Pressor Activity of the Renal Venous Effluent with Excretory Function and Other Tests in Focal, Parenchymal, and Vascular Renal Disease. John J. McPhaul, Jr., Duncan A. McIntosh, Lester F. Williams, Emil J. Gritti, and Arthur Grollman 781


Depletion of Body Potassium by Diuretics. Alexander P. Remenchik, Charles Miller, Peter J. Talso, and Edward O. Willoughby ........ 796

Use of Modern Diuretics. Robert W. Berliner ..................... 802

BOOK REVIEWS ........................................................................ 810

BOOKS RECEIVED .................................................................. 814

ABSTRACTS ............................................................................. 816

NEWS FROM THE AMERICAN HEART ASSOCIATION ............. 827

CONTRIBUTORS TO THIS ISSUE ............................................. 830

No. 6

EDITORIALS:

The Surgical Treatment of Acute Iliofemoral Thrombophlebitis. Oscar Creech, Jr. ........................................ 833

The Volume of Blood in the Lungs? Alfred P. Fishman ............ 835

ORIGINAL ARTICLES:

CONTENTS OF VOLUME XXXIII


The Pulmonary Capillary Bed in Various Forms of Pulmonary Hypertension. R. Michael McCredie ........................................ 854

Pulmonary Venous and Arterial Hypertension due to Chronic Fibrous Mediastinitis: Hemodynamics and Pulmonary Function. James T. Botticelli, Donald P. Schlueter, and Ramon L. Lange .............. 862


Cardioversion and Digitalis: II. Clinical Studies. Robert Kleiger and Bernard Lown .................................................. 878

Coronary Angiographic Findings in Correlation with Age, Body Weight, Blood Pressure, Serum Lipids, and Smoking Habits. Kim Cramér, Sven Paulin, and Lars Werkö .......................... 888

Selective Cine Coronary Arteriography: Correlation with Clinical Findings in 1,000 Patients. William L. Proudfit, Earl K. Shirey, and F. Mason Sones, Jr. .................................................................... 901

Familial Aggregation of Factors Associated with Coronary Heart Disease. Sigismond Deutscher, Frederick H. Epstein, and Marcus O. Kjelsberg ........................................................................ 911

The Relation of Heart Rate to Cardiovascular Dynamics: Pacing by Atrial Electrodes. Emanuel Stein, Anthony N. Damato, Bernard D. Kosowsky, Sun Hing Lau, and John W. Lister ........................................ 925

Cardiac Hemodynamics During Stimulation of the Right Atrium, Right Ventricle, and Left Ventricle in Normal and Abnormal Hearts. Alberto Benchimol and Marvin S. Liggett .......................... 933

Effects of Heart Rate on the Dynamics of Force Development in the Intact Human Ventricle. Edmund H. Sonnenblick, Andrew G. Morrow, and John F. Williams, Jr. .................................................. 945

Bilateral Simultaneous Sphygmanometry: A New Diagnostic Test for Subclavian Steal Syndrome. James F. Toole and E. Frank Tulloch ........................................ 952

Studies on the Control of Hypertension: VIII. Mortality, Morbidity, and Remissions During Twelve Years of Intensive Therapy. H. Mitchell Perry, Jr., Henry A. Schroeder, Frank J. Catanzaro, Dominic Moore-Jones, and Greta H. Camel ........................................ 958

ABSTRACTS ................................................. 973

NEWS FROM THE AMERICAN HEART ASSOCIATION .................................. 987

CONTRIBUTORS TO THIS ISSUE ........................................ 991

AUTHOR INDEX VOLUME XXXIII ........................................ 993

SUBJECT INDEX VOLUME XXXIII ........................................ 995