EDITORIAL:
Coronary Artery Disease and Myocardial Infarction. Robert C. Horn, Jr...... 1

ORIGINAL ARTICLES:
Epinephrine in the Treatment of Cardiac Failure due to Shunts. Abraham
M. Rudolph, Emmanuel Mesel, and Jay M. Levy............................... 3
Subclavian Steal. Carl L. Williams, Stewart M. Scott, and Timothy Takaro.. 14
A Longitudinal Study of Coronary Heart Disease. Oglesby Paul, Mark H.
Lepper, William H. Phelan, G. Wesley Dupertuis, Anne MacMillan, Harlley
McKean, and Heebok Park............................................................. 20
Bigeminy on Exertion. Muhammad Abdel Razzak............................ 32
Location of Coronary Arterial Occlusions and Their Relation to the Arterial
Pattern. Bertram Pitt, Paul M. Zoll, Herrman L. Blumgart, and David
G. Freiman ...................................................................................... 35
Physiologic Studies Early after Repair of Tetralogy of Fallot. Richard A.
Theye and John W. Kirklin............................................................ 42
The Role of Catecholamines in the Free Fatty Acid Response to Cigarette
Smoking. Alfred Kershbaum, Rostam Khorsandian, Raymond F. Caplan,
Samuel Bellet, and Leonard J. Feinberg........................................... 52
Comparison of the Thrombotest with the Modified Quick Test. Drug-Induced
Hypoprothrombinemia Countered with Phytonadione. Milton Shoshk's
and Melvin Odze ............................................................................. 58
Atrial Activity and Systemic Blood Pressure during Anesthesia in Man.
Myron B. Laver and Herman Turndorf.............................................. 63
Anatomy of the Atrioventricular Conduction System in Ventricular Septal
Defect. Jack L. Titus, Guy W. Daugherty, and Jesse E. Edwards........... 72
Lesions of the Atrioventricular Conduction System after Repair of Ventricular
John W. Kirklin, and Jesse E. Edwards............................................ 82
CONTENTS OF VOLUME XXVIII

The Acute Hemodynamic Effects of Diazoxide in Man. William R. Wilson and Ronald Okun .................................................. 89


Myocardial Infarction Following Transmural Extravasation of Contrast Medium during Left Ventricular Cineangiography. Tsung O. Cheng .................. 105

Termination of Supraventricular Tachycardia Complicating the Wolff-Parkinson-White Syndrome with External Countershock. Suzanne B. Knoebel, Harold King, and Charles Fisch ........................................ 111

Phrenic Nerve Stimulation as a Complication of the Implantable Cardiac Pacemaker. James D. Sprinkle, Timothy Takaro, and Stewart M. Scott .... 114

CLINICAL PROGRESS:
Recent Concepts of the Performance of the Heart. Louis N. Katz .......... 117

ABSTRACTS ............................................................................. 136

NEWS FROM THE AMERICAN HEART ASSOCIATION ................. 150

CONTRIBUTORS TO THIS ISSUE .......................................... 159

No. 2

EDITORIAL:
Chemotherapy of Hypertension: Yesterday—Today—Tomorrow.
Albert Sjoerdsma ..................................................................... 161

ORIGINAL ARTICLES:

Calcific Embolization Associated with Valvotomy for Calcific Aortic Stenosis. Keith E. Holley, Robert C. Bahn, Dwight C. McGoon, and Harold T. Mankin.. 175

The Narrow Infundibulum in Pulmonary Valvular Stenosis. Its Preoperative Diagnosis by Angiocardiology. John B. Little, J. Peter Lavender, and Roman W. DeSanetis ................................................................. 182


Left Ventricular Angiocardiography by Transeptal Puncture of the Left Atrium. A. J. Beuren and J. Apitz ................................................. 209

Circulation, Volume XXVIII, December 1963
CONTENTS OF VOLUME XXVIII

Chronic Pericardial Effusion Complicating Endomyocardial Fibrosis. D. Gordon Abrahams and E. H. O. Parry .................................................. 221


Basilic Artery Insufficiency Secondary to Obstruction of Left Subclavian Artery. Gordon Sproul .................................................. 259

Pathology of the Cardiac Conduction System in a Case of Diphtheria Associated with Atrial Arrhythmias and Heart Block. Thomas N. James and Ernest W. Reynolds, Jr. ........................................... 263

COMMITTEE REPORT:

Minority Report of the Effect of Strain and Trauma on the Heart and Great Vessels. J. C. Paterson ........................................... 268

SYMPOSIUM:

Pitfalls in Diagnosing Coronary Artery Disease. Louis N. Katz, Moderator, E. N. Silber, Charles E. Kossmann, George E. Burch, and Herrman L. Blumgart ........................................... 274

CLINICAL PROGRESS:

Pulmonary Stenosis. Electrocardiographic, Vectorcardiographic, and Catheterization Data. Leonard Scherlis, Rolf J. Koenker, and Yu-Chen Lee ........ 288

ABSTRACTS .......................................................... 306

NEWS FROM THE AMERICAN HEART ASSOCIATION ............. 318

CONTRIBUTORS TO THIS ISSUE ........................................ 321

No. 3

EDITORIAL:

Cardiovascular and Biomedical Research Support in the United States with Particular Reference to National Voluntary and Official Health Agencies. George E. Wakerlin ........................................... 323

ORIGINAL ARTICLES:

Rebound Phenomena after Anticoagulant Therapy in Cerebrovascular Disease. John Marshall ........................................... 329
## CONTENTS OF VOLUME XXVIII

**Demonstration of Peripheral Conduction System in Human Hearts.** Madison S. Spach, Shao-nan Huang, Sara I. Armstrong, and Ramon V. Canent, Jr... 333

**An Angiocardiographic Analysis of the Thickness of the Left Ventricular Wall and Cavity in Aortic Stenosis and Other Valvular Lesions. Hemodynamicangiographic Correlations in Patients with Obstruction to Left Ventricular Outflow.** Norman D. Levine, S. David Rockoff, and Eugene Braunwald... 339

**Hemodynamic Effects of Chronic Severe Anemia.** Sujoy B. Roy, Madan L. Bhatia, Virender S. Mathur, and Shyama Virmani.................. 346


**Analysis of the RSR' Complex in Lead V1.** N. P. DePasquale and G. E. Burch ........................................................... 362

**Hypertension and Ischemic Heart Disease in Hiroshima, Japan.** Sam Switzer. 368

**Coronary Heart Disease among Minnesota Business and Professional Men Followed Fifteen Years.** Aneel Keys, Henry Longstreet Taylor, Henry Blackburn, Josef Brozek, Joseph T. Anderson, and Ernst Simonson..... 381

**Changes in Pulmonary Hemodynamics Produced by Isoproterenol Infusion in Emphysematous Patients.** John F. Williams, Jr., Douglas H. White, Jr., and Roy H. Behnke................................. 396

**Effect of Exercise on Cardiac Performance in Human Subjects with Coronary Artery Disease.** Joseph V. Messer, Herbert J. Levine, Richard J. Wagman, and Richard Gorlin..................... 404


**Digital Hemodynamics in the Normotensive and Hypertensive States. II. Venomotor Tone.** Francis S. Caliva, Rudolph J. Napodano, and Richard H. Lyons 421

**Pseudoaneurysm of the Heart. Report of a Case and Review of Literature.** Clyde O. Hurst, Gerald Fine, and John W. Keyes................. 427

**Single Coronary Artery with Fistulous Communication. Report of Two Cases.** Raymond H. Murray................................................. 437

**Observations on the Pulmonary Vasculature in a Case of Centrilobular Emphysema with Hemosiderosis.** Donald Heath, R. M. Norris, and Paul Davison... 444


**CLINICAL PROGRESS:**

**External and Internal Electric Cardiac Pacemakers.** Paul M. Zoll and Arthur J. Linenthal........................................... 455

**ABSTRACTS** ................................................................. 467

**NEWS FROM THE AMERICAN HEART ASSOCIATION** .................... 475

**CONTRIBUTORS TO THIS ISSUE** ........................................... 480

*Circulation, Volume XXVIII, December 1963*
CONTENTS OF VOLUME XXVIII

No. 4

PART ONE

EDITORIAL:

Some Instrumental Errors in Electrocardiography. Gordon E. Dower..... 483

ORIGINAL ARTICLES:


Studies on the Metabolism and Mechanism of Action of Methyldopa. Albert Sjoerdsma, Aado Vendsalu, and Karl Engelman.......... 492

Cinefluorographic Studies of the Extracranial Cerebral Circulation. Robert E. Whalen, Albert Heyman, and Henry D. McIntosh............... 503

Effect of Heart Rate, Exercise, and Nitroglycerin on the Cardiac Dynamics in Complete Heart Block. Alberto Benchimol, Yeou-Bing Li, E. Grey Dimond, Robert B. Voth, and Arnold S. Roland..................... 510

Intrapericardial Aortico-Pulmonary Artery Shunt. S. Frank Redo and Roger R. Eeker .................................................. 520


Dextro-Thyroxine as a Cholesterol-Lowering Agent in Patients with Angina Pectoris. Roger W. Robinson and Raoul J. LeBeau........ 531

Observations on Renal Hypertension. The Role of Renal Biopsy. Victor Vertes and James A. Grauel................................. 536


The Cost of Respiratory Effort in Postoperative Cardiac Patients. Nalda Thung, P. Herzog, Ignacio I. Christlieb, W. M. Thompson, Jr., and J. Francis Dammann, Jr........................................ 552


Combined Supravalvular Aortic and Pulmonic Stenosis. M. G. Bourassa and L. Campeau .............................................. 572


Perforation of Heart during Cardiac Catheterization and Selective Angiocardiography. P. G. Keates and G. R. Wagner.................. 585
### CONTENTS OF VOLUME XXVIII

**CONGENITAL ANEURYSM OF AORTIC ROOT WITH FISTULA TO LEFT VENTRICLE. A CASE REPORT WITH AUTOPSY FINDINGS.** R. Irvin Morgan and John H. Mazur........ 589

**SYMPOSIUM:**

**MEDICAL MANAGEMENT OF HYPERTENSION.** Colin T. Dollery, H. Mitchell Perry, Jr., Harriet P. Dustan, and Richard H. Lyons................. 595

**CLINICAL PROGRESS:**

**CURRENT CONCEPTS IN SURGICAL CORRECTION OF ACQUIRED MITRAL INSUFFICIENCY.** Malcolm B. McKenzie and F. Henry Ellis, Jr......................... 603

**ABSTRACTS** ........................................................... 617

**NEWS FROM THE AMERICAN HEART ASSOCIATION** .................. 636

**CONTRIBUTORS TO THIS ISSUE** .................................... 640

### PART TWO

**ABSTRACTS, American Heart Association, 36th Annual Scientific Sessions, and 17th Annual Meeting, Council on Arteriosclerosis** ........ 643

#### No. 5

**EDITORIAL:**

**ON LYMPH AND LYMPHATICS.** H. S. Mayerson......................... 839

**ORIGINAL ARTICLES:**

**VISUALIZATION OF THE RENAL ARTERY.** A COMPARISON OF TRANSLUMBAR AND PERCUTANEOUS RETROGRADE CATHETER APPROACHES, SINGLE-FILM AND SERIOGRAPHIC TECHNIQUES.** Yihong Kong, William F. Barry, Jr., Robert E. Whalen, Victor A. Politano, and Henry D. McIntosh............. 843

**INTERATRIAL COMMUNICATION AND LEFT ATRIAL HYPERTENSION. A CAUSE OF CONTINUOUS MURMUR.** John Ross, Jr., Eugene Braunwald, Dean T. Mason, Nina S. Braunwald, and Andrew G. Morrow......................... 853

**THE CONTINUOUS HEART RATE IN MEN EXHIBITING AN OVERT BEHAVIOR PATTERN ASSOCIATED WITH INCREASED INCIDENCE OF CLINICAL CORONARY ARTERY DISEASE.** Meyer Friedman, Ray H. Rosenman, and Alvin E. Brown.................. 861

**STUDIES ON THE MECHANISM OF THE ABNORMAL SODIUM EXCRETION IN ARTERIAL HYPERTENSION.** Irwin B. Hanenson, Edmond Ricanati, and Nathan Polasky........... 867

**OBSERVATIONS ON THE ATRIAL SOUND IN HYPERTENSION.** Hermes A. Kontos, William Shapiro, and V. Eric Kemp......................... 877

**COMPLETE TRANSPOSITION OF THE GREAT VESSELS: IMPORTANCE OF SEPTAL DEFECTS AND PATENT DUCTUS ARTERIOSUS.** Analysis of 132 Patients Dying Before Age 4. Ib Boesen .................. 885
CONTENTS OF VOLUME XXVIII


The Electrocardiographic and Hemodynamic Findings in Pulmonary Stenosis with Intact Ventricular Septum. James B. Bassingthwaite, Thomas W. Parkin, James W. DuShane, Earl H. Wood, and Howard B. Burchell. .... 893

Long-Term (10 to 13 Years) Follow-Up Study after Transventricular Pulmonary Valvulotomy for Pulmonary Stenosis with Intact Ventricular Septum. M. Mirowski, Kishor D. Shah, Catherine A. Neill, and Helen B. Taussig... 906

The Terminal Portion of the Pulmonary Arterial Tree in People Native to High Altitudes. Javier Arias-Stella and Mario Saldanía........................ 915

Coronary Heart Disease and Hypertension in the White Mountain Apache Tribe. Nathan J. Clifford, John J. Kelly, Jr., Thomas F. Leo, and Howard A. Eder... 926


Massive Myocardial Necrosis with Calcification. Report of Two Cases of Possible Hypokalemic Etiology. Margaret S. Littman and W. R. Meadows. 938

Communication of the Coronary Sinus with the Left Atrium. H. Edward MacMahon .......................................................... 947


Congenital Aneurysm of the Left Aortic Sinus. A Rare Lesion and a Rare Cause of Coronary Insufficiency. Robert S. Eliot, Adrian Wolbrink, and Jesse E. Edwards................................................... 951

CLINICAL PROGRESS:

Symposium: The Role of the Adrenergic Nervous System in Cardiovascular Control:

Introduction. Richard S. Ross ........................................... 957

Studies on the Function of the Adrenergic Nerve Endings in the Heart. Eugene Braunwald, Charles A. Chidsey, Donald C. Harrison, Thomas E. Gaffney, and Richard L. Kahler ........................................... 958

Recent Views on Mechanisms for Lowering Sympathetic Tone. Bernard B. Brodie ................................................................. 970

Adrenergic Receptors Within the Cardiovascular System. Neil C. Moran... 987

BOOK REVIEWS ................................................................. 994

BOOKS RECEIVED ............................................................... 1003

ABSTRACTS ................................................................. 1005

NEWS FROM THE AMERICAN HEART ASSOCIATION ...................... 1024

CONTRIBUTORS TO THIS ISSUE ........................................... 1028

EDITORIAL:

Clinical Use of Digitalis: Science or Empiricism? Arthur Selzer .......... 1031

Circulation, Volume XXVIII, December 1963
CONTENTS OF VOLUME XXVIII

ORIGINAL ARTICLES:

Selective Renal Arteriography in the Diagnosis of Renal Hypertension. Thomas F. Meaney and Harriet P. Dustan. 1035

Five Years' Experience with the Evaluation of Diuretic Agents. Charles Swartz, Robert Seller, Morton Fuehs, Albert N. Brest, and John H. Moyer. 1042

Persistent Truncus Arteriosus: A Clinical, Hemodynamic and Autopsy Study of Nineteen Cases. Rajendra Tandon, Anna J. Hauck, and Alexander S. Nadas. 1050

Cardiac Performance after Open Intracardiac Surgery. John W. Kirklin and Richard A. Theye. 1061

Pathogenesis of Dissecting Aneurysm. Herbert Braunstein. 1071

Cardiac Hypertrophy in Acute Myocardial Infarction. A Study Based on 100 Autopsied Cases. Edward C. Zaino and Sidney H. Tabor. 1081

Congenital Aortic Stenosis Syndrome in Infancy. Alois R. Hastreiter, Masahiro Oshima, Robert A. Miller, Maurice Lev, and Milton H. Paul. 1084

Hypertonicity Following Selective Angiocardiography. Samuel T. Giannonna, Paul R. Lurie, and William E. Segar. 1096

Spread of the "Mital" Sound over the Chest: A Study of Five Subjects with the Starr-Edwards Valve. P. M. Shah, D. M. MacCanon, and A. A. Luisada. 1102

The Giant "A" Wave of the Left Atrial Appendage. D. Edmond Miller, Donald H. Tucker, and William J. Jacoby, Jr. 1110

The Electrocardiogram in Patients with Both Great Vessels Arising from the Right Ventricle Combined with Pulmonary Stenosis. An Analysis of 22 Cases with Special Reference to the Differential Diagnosis from the Tetralogy of Fallot. M. Mirowski, Ali Mehrizi, and Helen B. Taussig. 1116

Modification of the Atrial Sound by the Cold Pressor Test, Carotid Sinus Massage, and the Valsalva Maneuver. Willard S. Harris, Philip Rodin, and Bernard Tabatznik. 1128

Left-Sided Patent Ductus Arteriosus and Right-Sided Aortic Arch. Angiocardiographic Findings in Three Cases. Israel Steinberg. 1138

Rupture of the Coronary Sinus with Hemopericardium. A Rare Complication of Coronary Arteriovenous Fistula. J. H. Habermann, M. L. Howard, and E. S. Johnson. 1143


The Congenital Variety of the "Subclavian Steal" Syndrome. R. A. Massumi. 1149

CLINICAL PROGRESS:

Possibly Unrecognized Forms of Heart Disease. Howard B. Burchell. 1153

ABSTRACTS .......................... 1165

NEWS FROM THE AMERICAN HEART ASSOCIATION .................. 1184

CONTRIBUTORS TO THIS ISSUE .................. 1188

VOLUME AUTHOR INDEX .................. 1191

VOLUME SUBJECT INDEX .................. 1193