CIRCULATION
VOLUME XXXIV
July-December, 1966

No. 1

EDITORIAL:
Pediatric Cardiology in Thailand. Patrick A. Ongley ...................... 1

ORIGINAL ARTICLES:
Ventricular Pressure-Flow Dynamics in Tetralogy of Fallot. Aaron R.
Levin, John P. Boineau, Madison S. Spach, Ramon V. Canent, Jr.,
M. Paul Capp, and Page A. W. Anderson .................................. 4

The Hemodynamics of Common (or Single) Ventricle. Shahbudin H.
Rahimtoola, Patrick A. Ongley, and H. J. C. Swan ..................... 14

The Electrocardiogram in Tricuspid Atresia and Pulmonary Atresia
with Intact Ventricular Septum. Raul Gamboa, Welton M. Gersony,
and Alexander S. Nadas .......................................................... 24

Anatomic Evidence for Spontaneous Closure of Ventricular Septal
Defect. Robert L. Simmons, James H. Moller, and Jesse E. Edwards 38

Anomalous Pulmonary Venous Drainage: A Common Trunk Emptying
into the Left Atrium and Inferior Vena Cava. Syed M. Mohiuddin,
Hugh S. Levin, Vincent Runco, and Richard W. Booth .................. 46

Aortic-Left Atrial Communication: A Diagnostic and Therapeutic
Problem. Thomas B. Beach and J. E. McClenathan ....................... 52

Ligation of the Main Pulmonary Artery and Systemic-Pulmonary Ar-
terial Anastomosis: A New Palliative Operation for Complete
Transposition of the Great Arteries. Eugene Braunwald, Andrew G.
Morrow, and William F. Friedman ............................................. 55

An Unusual Late Complication of Pulmonary Artery Banding. James
R. Osborn, Robert J. Hall, Dean F. Winn, Jr., Robert S. Capper, and
Hu A. Blake ................................................................. 61

The Syndrome of Familial Defects of Heart and Upper Extremities
(Holt-Oram Syndrome). R. A. Massumi and D. O. Nutter ............. 65

Vitamin D and the Supravalvar Aortic Stenosis Syndrome: The Trans-
placental Effects of Vitamin D on the Aorta of the Rabbit. William
F. Friedman and William C. Roberts ........................................ 77

Infarction of Papillary Muscles and Mitral Insufficiency Associated
with Congenital Aortic Stenosis. James H. Moller, Ahmad Nakib,
and Jesse E. Edwards ............................................................. 87

Reliability of Vectorcardiography in Assessing the Severity of Con-
genital Aortic Stenosis. Richard Reeve, Kyohei Kawamata, and
Arthur Selzer ........................................................................ 92

Congenital Absence of the Left Pericardium. William Nasser, Harvey
Feigenbaum, and Charles Helmen .............................................. 100

(Continued)
CONTENTS OF VOLUME XXXIV


The Diastolic Murmur of Atrial Septal Defects as Detected by Intracardiac Phonocardiography. Alf Wennevold ........................................ 132

Comparative Ultrastructure of the Sinus Node in Man and Dog. Thomas N. James, Libi Sherf, Gerald Fine, and Azorides R. Morales 139

BOOK REVIEWS .............................................................................. 164

ABSTRACTS ................................................................................. 167

NOTE TO AUTHORS ON PAGE CHARGES ............................................. 172

NEWS FROM THE AMERICAN HEART ASSOCIATION ......................... 173

CONTRIBUTORS TO THIS ISSUE .................................................. 183

No. 2

EDITORIAL:
Dogs and the Search for Health. Howard B. Burchell .......................... 185

ORIGINAL ARTICLES:
Hepatic Hemodynamics During Viral Hepatitis in Man. Rudolf Preisig, James G. Rankin, Joseph Sweeting, and Stanley E. Bradley .......... 188


Digital Vascular Responses to Intra-Arterial Injections of Bradykinin, Kallidin, and Eledoisin in Man. N. P. DePasquale and G. E. Burch 211

Metabolic and Circulatory Responses to Selective Adrenergic Stimulation and Blockade. Donald C. Harrison and John Robert Griffin 218

Studies in Man on the Relationship of Adrenergic Correlates to Pressor Responsivity. Joseph D. Sapira and Alvin P. Shapiro ................. 226

Pulmonary Veno-Occlusive Disease. Donald Heath, Nathan Segel, and John Bishop ................................................................. 242

Pulmonary Blood Volume in Congestive Heart Failure. Bernard F. Schreiner, Jr., Gerald W. Murphy, and Paul N. Yu .................................. 249


(Continued)
CONTENTS OF VOLUME XXXIV


Relationship Between Level of Blood Pressure Measured Casually and by Portable Recorders and Severity of Complications in Essential Hypertension. Maurice Sokolow, David Werdegar, Herbert K. Kain, and Allen T. Hinman ........................................... 279


Total Exchangeable Sodium in Previously Edematous Cardiac Patients: Is There Evidence for Osmotic Inactivation of Sodium? Knud H. Olesen ............................................................. 322

Oxygen Affinity of Hemoglobin in Persons with Acute Myocardial Infarction and in Smokers. Robert S. Eliot and Hiroshi Mizukami .... 331

Annuloplasty for Mitral Insufficiency: A Five to Six-Year Clinical and Hemodynamic Follow-Up. Harold E. Aldridge, Irving H. Lipton, and Wilfred G. Bigelow ......... 337


ABSTRACTS ........................................................................ 346

NEWS FROM THE AMERICAN HEART ASSOCIATION .................. 355

CONTRIBUTORS TO THIS ISSUE ........................................ 359

No. 3

EDITORIAL:
Hyperbaric Oxygenation. Eugene A. Stead, Jr. .................. 361

ORIGINAL ARTICLES:
Alterations in Regional Pulmonary Blood Flow in Mitral Valve Disease Studied by Radioisotope Scanning: A Simple Nontraumatic Technique for Estimation of Left Atrial Pressure. William F. Friedman and Eugene Braunwald ................ 363


Considerations Regarding the Technique for Transseptal Left Heart Catheterization. John Ross, Jr. 391

The Medial Wall of the Right Atrium. Robert Walmsley and Hamish Watson 400

The Junction Between the Left Atrium and the Pulmonary Veins: An Anatomic Study of Human Hearts. H. Nathan and M. Eliakim 412

(Continued)
Kinetocardiogram, Phonocardiogram, and Arterial Pulse Waves During Acute Hemodynamic Changes. Robert C. Daddario and Edward D. Freis .......................................................... 423

Cardiac Catheterization Studies after Combined Tricuspid, Mitral, and Aortic Valve Replacement. J. David Bristow, Frank E. Kloster, Rodney Herr, Albert Starr, Colin W. McCord, and Herbert E. Griswold 437

Hemodynamic State Early after Prosthetic Replacement of Mitral Valve. G. C. Rastelli and John W. Kirklin ...................... 448


Current Experience in the Diagnosis of Pheochromocytoma. Sheldon G. Sheps, Gertrude M. Tyce, Eunice V. Flock, and Frank T. Maher 473

The Chromosomes in Heart Disease: Clinical and Cytogenetic Studies of Sixty-Eight Cases. Russell A. Rohde ................................................................. 484

Familial Congenital Heart Disease: I. Genetic and Environmental Factors. Kathryn H. Ehlers and Mary Allen Engle ....................... 503

Familial Congenital Heart Disease: II. Chromosomal Studies. James German, Kathryn H. Ehlers, and Mary Allen Engle ..................... 517


Studies on Digitalis: XV. Effects of Cardiac Glycosides on Myocardial Force-Velocity Relations in the Nonfailing Human Heart. Edmund H. Sonnenblick, John F. Williams, Jr., Gerald Glick, Dean T. Mason, and Eugene Braunwald ................................................................. 532

ABSTRACTS ..................................................................................................................... 540

NEWS FROM THE AMERICAN HEART ASSOCIATION .................................................. 547

CONTRIBUTORS TO THIS ISSUE .............................................................................. 551

No. 4

EDITORIALS:

Pressure Differences and Obstruction of Left-Ventricular Outflow. Howard B. Burchell ................................................................. 556

ORIGINAL ARTICLES:
The Mechanism of the Intraventricular Pressure Gradient in Idiopathic Hypertrophic Subaortic Stenosis. John Ross, Jr., Eugene Braunwald, James H. Gault, Dean T. Mason, and Andrew G. Morrow 558


The Electrocardiogram in Muscular Subaortic Stenosis: Effect of a Left Septal Incision and Right Bundle-Branch Block. E. Douglas Wigle and Robert H. Baron .................................................. 585

(Continued)
CONTENTS OF VOLUME XXXIV


Left Ventricular Performance During Muscular Exercise in Patients with and without Cardiac Dysfunction. John Ross, Jr., James H. Gault, Dean T. Mason, Joseph W. Linhart, and Eugene Braunwald .. 597

Validity of Indicator-Dilution Determination of Cardiac Output in Patients with Aortic Regurgitation. Phillip Samet, Cesar Castillo, and William H. Bernstein .................. 609

Cardiac Motion in Patients with Pericardial Effusion: A Study Using Reflected Ultrasound. Harvey Feigenbaum, Adib Zaky, and Larry L. Grabhorn .................................................... 611


Intrinsic Properties of Uncorrected and Highly Corrected Leads. Daniel A. Brody and Robert C. Arzbaecher .................. 638

Skin-Electrode Impedance and Its Effect on Recording Cardiac Potentials. Madison S. Spach, Roger C. Barr, James W. Havstad, and E. Croft Long ........... 649

A Theoretic Model of the T Wave. Kenichi Harumi, Mary Jo Burgess, and J. A. Abildskov .................. 657

Application of a Theoretic T-Wave Model to Experimentally Induced T-Wave Abnormalities. Mary Jo Burgess, Kenichi Harumi, and J. A. Abildskov .......... 669

Ischemic Heart Disease, Atherosclerosis, and Longevity. John W. Gofman, Wei Young, and Robert Tandy ............... 679

ABSTRACTS .......................................................... 698

NEWS FROM THE AMERICAN HEART ASSOCIATION .708

CONTRIBUTORS TO THIS ISSUE .................................. 711

No. 5

EDITORIALS:

Atrial Flutter and the Circus Movement Hypothesis. David A. Rytand 713

Some Aspects of the Cardiovascular and Renal Circadian Systems. Franz Halberg, Robert A. Good, and Howard Levine ... 715

The First Annual Stouffer Prize. Irvine H. Page .............. 717

ORIGINAL ARTICLES:

Anatomic Findings in a Case of Ventricular Pre-Excitation (WPW) Terminating in Complete Atrioventricular Block. Maurice Lev, William B. Leffler, Richard Langendorf, and Alfred Pick .......... 718


(Continued)

Circulation, Volume XXXIV, December 1966
CONTENTS OF VOLUME XXXIV

Atrioventricular Junctional Premature and Escape Beats with Altered QRS and Fusion. Albert D. Kistin .................................................. 740

Paroxysmal Atrial Tachycardia with Exit Block. W. Dressler, S. Jonas, and R. Javier ................................................................. 752

Evidence of Concealed Atrioventricular Conduction in Man. Richard A. Carleton and John S. Graettinger ................................. 756


Acute and Chronic Effects of an Adrenergic Beta-Receptor Blocking Agent (Propranolol) in Treatment of Cardiac Arrhythmias. Myron H. Luria, Edward I. Adelson, and Albert J. Miller ............................ 767


Complete Heart Block Induced During Cardiac Catheterization of Patients with Pre-existent Bundle-Branch Block: The Hazard of Bilateral Bundle-Branch Block. Paul D. Stein, Virendra S. Mathur, Michael V. Herman, and Harold D. Levine ............................................. 783

Ineffectiveness of Quinidine in Preventing Atrial Fibrillation Following Mitral Valvotomy. Richard J. McCarty, Edward J. Jahnke, and Weldon J. Walker ................................................................. 792

Role of the Phonocardiogram in Evaluation of the Severity of Mitral Stenosis and Detection of Associated Valvular Lesions. Borys Sura-wicz, Charles Mercer, Henryk Chlebus, John T. Reeves, and Frank C. Spencer ................................................................. 795

Atriogenic Diastolic Reflux in Patients with Atrioventricular Block. Wilhelm Rutishauser, Pierre Wirz, Martin Gander, and Ernst Lüthy ................................................................. 807

Electrocardiographic Changes Reflecting Left Atrial Abnormality in Hypertension. Robert C. Tarazi, Anthony Miller, Edward D. Frohlich, and Harriet P. Dusan ................................................................. 818

Studies in Clinical Shock and Hypotension: IV. Variations in Reflex Vasoconstriction and Cardiac Stimulation. Jay N. Cohn and Myron H. Luria ................................................................. 823

Patterns of Brachial Arterial Blood Flow in Conscious Human Subjects with and without Cardiac Dysfunction. James H. Gault, John Ross, Jr., and Dean T. Mason ................................................................. 833

Diagnostic Use of Radioactive Xenon Clearance and a Standardized Walking Test in Obliterative Arterial Disease of the Legs. J. Alpert, H. Garcia del Río, and N. A. Lassen ................................................................. 849

SPECIAL ARTICLE:
Anticoagulant Therapy in Coronary Artery Disease. Stanford Wessler and Lamont W. Gaston ................................................................. 856

ORIGINAL ARTICLES:
Administration of Tritiated Digoxin with and without a Loading Dose: A Metabolic Study. Frank I. Marcus, Linda Burkhalter, Carol Cuceta, Josee Pavlovich, and Geeta G. Kapadia ................................................................. 865

(Continued)
CONTENTS OF VOLUME XXXIV


Orthostatic Hypotension as a Clue to Primary Systemic Amyloidosis. Robert A. Kyle, Bruce A. Kottke, and Alexander Schirger ........... 883

Stethoscope Acoustics: I. The Doctor and His Stethoscope. Paul Y. Ertel, Merle Lawrence, Richard K. Brown, and Aaron M. Stern .... 889

Stethoscope Acoustics: II. Transmission and Filtration Patterns. Paul Y. Ertel, Merle Lawrence, Richard K. Brown, and Aaron M. Stern 899


SPECIAL ARTICLE:
The Kidney in Essential Hypertension: Victim or Culprit. Herbert Chasis and David S. Baldwin ........................................ 921

BOOK REVIEWS ................................................................ 925

ABSTRACTS ...................................................................... 929

NEWS FROM THE AMERICAN HEART ASSOCIATION ......... 937

CONTRIBUTORS TO THIS ISSUE .......................................... 942

EDITORIAL:
A Selection from the Library: Some Early Nineteenth Century Textbooks on Heart Disease. D. Evan Bedford ............................ 945

ORIGINAL ARTICLES:
Severe Pulsus Alternans Associated with Primary Myocardial Disease in Children: Observations on Clinical Features, Hemodynamic Findings, Mechanism, and Prognosis. Leonard C. Harris, Quang X. Nghiem, Melvyn H. Schreiber, and John M. Wallace ............... 948

The Pulmonary Arterial Bed in Ventricular Septal Defect: Anatomic Features in Childhood. Richard L. Naeye ......................... 962

Correlations of Microradiographic and Histological Findings in the Pulmonary Vascular Bed: Technique and Application in Pulmonary Hypertension. John T. Reeves, Duane Tweeddale, Jacqueline Noonan, James E. Leathers, and Mervyn B. Quigley ................................. 971

Umbilical Vessel Cardiac Catheterization and Angiocardiography. Leonard M. Linde, Stanley M. Higashino, Gerald Berman, Samuel O. Sapin, and George C. Emmanouilides .................................. 984

Left Atrial Volume and Its Changes in Heart Disease. Richard R. Hawley, Harold T. Dodge, and Thomas P. Graham .................. 989

Circulation Time End Points: A Quantitative Comparison of Saccharin and Radioiodinated Albumin as Indicators. Richard N. Pierson, Jr., Michael Grieco, Neil Swinton, and Michael Dubin .......................... 997

Relationship Between Alterations in Renal Hemodynamics During Cardiopulmonary Bypass and Postoperative Renal Function. George A. Porter, Frank E. Kloster, Rodney J. Herr, Albert Starr, Herbert E. Griswold, Jean Kimsey, and Helen Lenertz ......................... 1005

(Continued)
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Inactivity as a Lethal Factor in Myocardial Infarction among Men.</td>
<td>Charles W. Frank, Eve Weinblatt, Sam Shapiro, and Robert V. Sager</td>
<td>1022</td>
</tr>
<tr>
<td>Quantitative Interpretation of the Exercise Electrocardiogram: Use of Computer Techniques in the Cardiac Evaluation of Aviation Personnel.</td>
<td>Raphael F. Smith and Robert J. Wherry, Jr.</td>
<td>1044</td>
</tr>
<tr>
<td>Epidemiological Study of Sudden and Unexpected Deaths due to Arteriosclerotic Heart Disease.</td>
<td>Lewis Kuller, Abraham Lilienfeld, and Russell Fisher</td>
<td>1056</td>
</tr>
<tr>
<td>Serial Electrocardiographic Findings in a Prospective Epidemiological Study.</td>
<td>Leon D. Ostrander, Jr.</td>
<td>1069</td>
</tr>
<tr>
<td>An Epidemiological Assessment of Bundle-Branch Block.</td>
<td>Robert E. Edmands</td>
<td>1081</td>
</tr>
<tr>
<td>Plasma Fibrinogen Patterns in Patients with Coronary Atherosclerosis.</td>
<td>James W. Hampton, James Mantooth, Edward N. Brandt, and Stewart G. Wolf, Jr.</td>
<td>1098</td>
</tr>
<tr>
<td>BOOK REVIEWS</td>
<td></td>
<td>1102</td>
</tr>
<tr>
<td>ABSTRACTS</td>
<td></td>
<td>1106</td>
</tr>
<tr>
<td>NEWS FROM THE AMERICAN HEART ASSOCIATION</td>
<td></td>
<td>1114</td>
</tr>
<tr>
<td>CONTRIBUTORS TO THIS ISSUE</td>
<td></td>
<td>1119</td>
</tr>
<tr>
<td>VOLUME AUTHOR INDEX</td>
<td></td>
<td>1121</td>
</tr>
<tr>
<td>VOLUME SUBJECT INDEX</td>
<td></td>
<td>1123</td>
</tr>
<tr>
<td>SUPPLEMENTS 1966 AUTHOR INDEX</td>
<td></td>
<td>S-VII</td>
</tr>
<tr>
<td>SUPPLEMENTS 1966 SUBJECT INDEX</td>
<td></td>
<td>S-IX</td>
</tr>
</tbody>
</table>