VOLUME XV
January-June, 1957
CIRCULATION
Official Journal of the American Heart Association

No. 1

EDITORIAL
Pathogenesis of Essential Hypertension...........George E. Wakerlin 1
Present Status of Diagnosis and Treatment of Pheochromocytoma
U. S. von Euler and G. Ström 5

Effect of Cardiac Contraction on Coronary Blood Flow
David C. Sabiston and Donald E. Gregg 14

Arterial Homografts for Peripheral Arteriosclerotic Occlusive Disease
Michael E. De Bakey, E. Stanley Crawford, Oscar Creech and Denton A. Cooley 21

Differential Effect of Dietary Fat and Weight Reduction on Serum Levels of Beta-Lipoproteins
Weldon J. Walker, Norman Weiner and Lawrence J. Milch 31

Primary Pulmonary Hypertension: Review of Literature and Results of Cardiac Catheterization in Ten Patients
Don W. Chapman, Jack P. Abbott and Joseph Latson 35

Comparison in Man of Adrenergic Blockade Produced by Dibenzyline, Ilidar, Priscoline, and Regitine.................Harold D. Green 47

A Heart Function Test with Continuous Registration of Oxygen Consumption and Carbon Dioxide Production
J. Jongbloed, C. L. C. Van Nieuwenhuizen and H. Van Goor 54

Alveolar Walls in Mitral Stenosis
Robert M. O’Neal, Wilbur A. Thomas, Kyu Taik Lee and Erwin R. Rabin 64

Symposium on the U Wave of the Electrocardiogram

Introduction........................................Eugene Lepeschkin 68
II. Various Types of Fusion Between T and U Waves
Max Holzmann 70

VI. Genesis of the U Wave.........................Eugene Lepeschkin 77

XI. Coupling Intervals of Ventricular Extrasystoles in Relation to the Heart Rate, the U Wave and the Supernormal Phase of Excitability......Eugene Lepeschkin and Mauricio B. Rosenbaum 82

XII. Polarity and Amplitude of the U Wave of the Electrocardiogram in Relation to that of the T Wave
Borys Surawicz, Robert L. Kemp and Samuel Bellet 90

XIII. Prognostic Significance of Negative U Waves in the Electrocardiogram in Hypertension
Robert L. Kemp, Borys Surawicz, John C. Bettinger, Harry Gottlieb and Samuel Bellet 98

XIV. Clinical Study of the Abnormalities of the Terminal Complex TU-U of the Electrocardiogram..................Joseph Lambert 102

XV. U Wave in Coronary Disease.....................Cornelio Papp 105
CONTENTS OF VOLUME XV

CLINICAL CONFERENCE
Symposium on coronary dilatory drugs
Lloyd L. Hefner, Ben Friedman, T. Joseph Reeves, E. E. Eddleman, Jr.
and Tinsley R. Harrison 111

CLINICAL PROGRESS
Procaine amide: a review
Herbert J. Kayden, B. B. Brodie and J. Murray Steele 118

Books received ................................................................. 127
Book reviews ........................................................................ 129

Abstracts ............................................................................ 133

American heart association .................................................. 150

Prevention of rheumatic fever and bacterial endocarditis through control of streptococcal infections
Committee on Prevention of Rheumatic Fever and Bacterial Endocarditis,
Charles H. Rammelkamp, Chairman 154

Contributors to this issue ..................................................... 159

No. 2

Editorial
Constrictive pericarditis ....................................................... C. Sidney Burwell 161

The Lewis A. Conner Memorial Lecture: functional pathology of the pulmonary vascular tree in congenital cardiac disease
Jesse E. Edwards 164

Clinical and anatomic features in five hundred patients with fatal acute myocardial infarction
Kyu Taik Lee, Wilbur A. Thomas, Erwin R. Rabin and R. M. O'Neal 197

Relation of the postcommissurotomy syndrome to the rheumatic state
Daniel L. Larson 203

Ebstein's anomaly ................................................................. S. Gilbert Blount, Jr., Malcolm C. McCord and Ira J. Gelb 210

Effect of prolonged steroid therapy for rheumatic fever on the exchangeable potassium content and body weight...Jerry K. Aikawa 225

Pressor effects of norepinephrine after drastic reduction of sodium intake ................................................................................. L. K. Dahl 231

Thrombotic obliteration of the branches of the aortic arch
Robert B. Kalmansohn and Richard W. Kalmansohn 237

Measurement of cardiac output and central volume by a modified decholin test of circulation time
Hadley L. Conn, Jr., Donald F. Heiman and Claude R. Joyner 245

Effect of cigarette smoking on coronary blood flow and myocardial metabolism ...................................................... L. M. Bargeron, Jr., D. Ehmke, F. Gonlubol, A. Castellanos, A. Siegel and R. J. Bing 251

Chest pain in patients with isolated pulmonic stenosis
Richard P. Lasser and Gabriel Genkins 258

Immunologic evidence of group A streptococcal infection in patients undergoing mitral commissurotomy ......................... Gene H. Stoller, William F. Lynch, Mario A. Dolan, Dennison Young and John B. Schwedel 267

Effects of meals of different fats on blood coagulation
Ancel Kejes, Ratko Buzina, Francisco Grande and Joseph T. Anderson 274
## CONTENTS OF VOLUME XV

**Experimental Responses of the Human Body to a Known Periodic Force as a Measure of Ballistocardiographic Fidelity**
*G. P. Wilson, D. M. Cunningham and H. E. Griswold, Jr.* 280

**Clinical Progress**

The Artificial Kidney—Past, Present, and Future........... W. J. Kolff 285

**Abstracts**................................. 295

American Heart Association................................................ 316

Contributors to this Issue............................................. 319

---

No. 3

**Editorial**

Gallop Rhythm..................................................*James V. Warren* 321

Variations in Serum Glutamic Oxaloacetic Transaminase Activity in Experimental and Clinical Coronary Insufficiency, Pericarditis, and Pulmonary Infarction

*Irwin Nydick, Paul Ruegsegger, Felix Wróblewski and John S. LaDue* 324

Ventricular Dynamics in Atrial Fibrillation

*Harold T. Dodge, Frederic T. Kirkham, Jr., and Clara V. King* 335

Distribution of Pain in Myocardial Infarction............... *Kenneth Kreines* 348

Relationship of Platelet Serotonin to Disturbances of Clotting and Hemostasis.................................*Murray Weiner and Sidney Udenfriend* 353


Biochemical Observations of Human Atheromatosis: Analysis of Aortic Intima...........*Nancy L. Noble, Robert J. Boucek and Kung-Ying Tang Kao* 366

Cardiovascular Disturbances in Chronic Severe Anemia

*L. M. Sanghvi, R. Sharma and S. N. Misra* 373

Effect of Morphine and N-allylnormorphine on Cerebral Hemodynamics and Oxygen Metabolism

*John H. Moyer, Robert Pontius, George Morris and Robert Hershberger* 379

Primary Mesothelioma of the Pericardium

*John Thomas and James M. Phytyon* 385

Failure of α-Phenylbutyrate and β-Phenylvalerate in Treatment of Hypercholesterolemia...........*Donald S. Fredrickson and Daniel Steinberg* 391

Congenital Absence of the Pulmonary Valve

*Lucien A. Campeau, Paul E. Ruble and Warren B. Cooksey* 397

Assay of Anti-Anginal Agents: I. A Curve Analysis with Multiple Control Periods.........................*Seymour L. Cole, Harry Kaye and George C. Griffith* 405

Hemodynamic Alterations in Hemorrhagic Fever

*George Entwisle and Edward Hale* 414

Clinical Evaluation of a New Oral Nonmercurial Diuretic

*Benjamin Wainfeld, Jacob J. Yarvis and Arthur Fankhauser* 426

Relationship of Left Atrial Volume to Pulmonary Artery and Wedge Pressures in Mitral Stenosis

*Louis A. Soloff, Jacob Zatuchni and George E. Mark, Jr.* 430

Extreme Bilateral Atriomegaly: Review of the Literature and Report of a Case.........................*Wayne R. Rogers and Benjamin Wittels* 434

Clinical Conference

Myxedema Heart Disease............*John D. Hamilton and W. F. Greenwood* 442
CONTENTS OF VOLUME XV

CLINICAL PROGRESS

VELOCITY OF BLOOD FLOW IN HEALTH AND DISEASE
  Leslie E. Morris and Herrman L. Blumgart 448

ABSTRACTS ................................................................. 461

AMERICAN HEART ASSOCIATION .................................... 476

CONTRIBUTORS TO THIS ISSUE ......................................... 479

No. 4

EDITORIAL

AUDITORY AND VISUAL PERCEPTION OF CARDIAC VIBRATIONS
  J. Scott Butterworth 481

AORTIC ANEURYSM: REPORT OF 101 CASES
  Brooke Roberts, Gordon Danielson and William S. Blakemore 483

PULMONARY FUNCTION IN LEFT VENTRICULAR FAILURE, INCLUDING CARDIAC ASTHMA
  Richard S. Cosby, Ellery Cory Stowell, Jr., W. Ray Hartwig and Mary Mayo 492

DIAGNOSTIC AND PROGNOSTIC SIGNIFICANCE OF SERUM TRANSAMINASE LEVELS IN CORONARY OCCLUSIVE DISEASE . . . A. A. Kattus, R. Watanabe and C. Semenson 502

CARDIOVASCULAR FUNCTION IN HYPOTHERMIC ANESTHETIZED MAN
  John C. Rose, Thomas F. McDermott, Lawrence S. Lilienfield, Frank A. Porfido and Robert T. Kelley 512

VASOMOTOR RESPONSES IN THE EXTREMITIES OF SUBJECTS WITH VARIOUS NEUROLOGIC LESIONS: I. REFLEX RESPONSE TO WARMING
  Walter Redisch, Francisco F. Tangco, Lothar Wertheimer, Arthur J. Lewis and J. Murray Steele 518

BACTERIAL ENDOCARDITIS FOLLOWING CARDIAC SURGERY
  Elias G. Pappas, Joseph F. Uricchio, Harry Goldberg and William Likoff 525

"LEFT HEART" RADIOPOTASSIUM DILUTION CURVES IN PATIENTS WITH RHEUMATIC MITRAL VALVULAR DISEASE . . . . Hadley L. Conn, Jr., Donald F. Heiman, William S. Blakemore, Peter T. Kuo and Stephen B. Langfeld 532

HEALED DISSECTING ANEURYSM IN CYSTIC MEDIAL NECROSIS OF THE AORTA
  Peter B. Hukill 540

VENTRICULAR ARRHYTHMIAS AFTER INTRAVENOUS SODIUM LACTATE IN HEART BLOCK
  John F. Murray and S. H. Boyer 547

ELECTROCARDIOGRAPHIC AND PLASMA POTASSIUM RESPONSES ELICITED ON COOLING THE CHEST WALL OF MAN . . . . Benjamin Kaminer and Ralph E. Bernstein 559

INTERATRIAL-PRESSURE RELATIONSHIPS AFTER CLOSURE OF ATRIAL SEPTAL DEFECTS IN MAN . . . . Albert H. Pemberton, John W. Kirklin and Earl H. Wood 568

HIGH ANTERIOR MYOCARDIAL INFARCTION: XX. STUDIES ON THE MECHANISM OF VENTRICULAR ACTIVITY
  Myron Prinzmetal, Rexford Kennamer and Rashid A. Massumi 575

INDICATIONS AND CONTRAINDICATIONS FOR THE USE OF MOLAR SODIUM LACTATE
  Samuel Bellet and Fred Wasserman 591

CLINICAL PROGRESS

DIGITALIS AND THE ELECTROCARDIOGRAM .................................. Alfred Pick 603

ABSTRACTS ........................................................................ 609

AMERICAN HEART ASSOCIATION ........................................ 624

CONGENITAL CARDIAC DEFECTS: A PHYSICIAN'S GUIDE FOR EVALUATION AND MANAGEMENT
  Ruth Whittemore, S. Gilbert Blount, Jr., Sidney Blumenthal, Frank Glenn, Edward C. Lambert and Helen B. Taussig 631

CONTRIBUTORS TO THIS ISSUE ........................................... 639
CONTENTS OF VOLUME XV

No. 5

EDITORIAL

STAPHYLOCOCCI, ANTIBIOTICS AND ENDOCARDITIS .......... Maxwell Finland 641

GEORGE E. BROWN MEMORIAL LECTURE: OXYGEN TENSION OF TISSUES IN VIVO

Hugh Montgomery 646

SURGICAL TREATMENT OF MITRAL INSUFFICIENCY BY TOTAL CIRCUMFERENTIAL "PURSE-STRING" SUTURE OF THE MITRAL RING

Robert P. Glover and Julio C. Davila 661

SELECTIVE ROENTGENOGRAPHIC CONTRAST EXAMINATION AND ELECTROKYMOGRAPHY OF THE LEFT HEART IN EXPERIMENTAL MITRAL INSUFFICIENCY

Björn Nordenström, J P. Stamer, Jr., Melvin Figley and Herbert Sloan 682

TREATMENT OF GANGRENE OF THE FEET AND LEGS BY WALKING ........ William T. Foley 689

COR TRiloculare Biatratum ........................................ Donald Heath 701

CLINICAL EVALUATION OF A NEW ORAL ANTICOAGULANT "SINTROM"

Emmett C. Neill, Richard Y. Moon and Joseph B. Vander Veer 713

EFFECT OF CIRCULATORY CHANGES ON THE PULMONARY COMPLIANCE OF NORMAL SUBJECTS AND PATIENTS WITH MITRAL STENOSIS

W. W. Pryor, J. B. Hickam, H. O. Sieker and E. B. Page 721

SPECIAL ARTICLE

KNOWLEDGE OF THE CIRCULATION BEFORE WILLIAM HARVEY

Arnold M. Katz 726

CLINICAL PROGRESS

CARDIOVASCULAR DISTURBANCES IN POLIOMYELITIS .......... Louis Weinstein 735

CLINICAL CONFERENCE

CHRONIC PULMONARY EMPHYSEMA AND COR PULMONALE: A CLINICAL-PATHOLOGIC CONFERENCE

C. Bruce Taylor, Oglesby Paul, Armin F. Schick and George M. Hass 757

BOOK REVIEWS .......................................................... 770

ABSTRACTS ............................................................. 775

AMERICAN HEART ASSOCIATION ..................................... 795

CONTRIBUTORS TO THIS ISSUE ...................................... 799

No. 6

EDITORIAL

REFLECTIONS ON ELECTROCARDIOGRAPHY ................. Franklin D. Johnston 801

SERUM LIPOPROTEIN AND CHOLESTEROL CONCENTRATIONS: COMPARISON OF RURAL COSTA RICAN, GUATEMALAN AND U. S. POPULATIONS

Nevin S. Scrimshaw, Martha Trulson, Carlos Tejada, D. Mark Hegsted and Fredrick J. Stare 805

VALVULAR PULMONARY STENOSIS WITH INTACT VENTRICULAR SEPTUM: PHYSIOLOGIC CLINICAL RESPONSE TO OPEN VALVULOPLASTY

S. Gilbert Blount, Jr., Jack van Elk, Oscar J. Balchum and Henry Swan 814

AGING OF ARTERIES IN RELATION TO HYPERTENSION

James Conway and K. Shirley Smith 827

CIRCULATORY STUDIES IN WERNICKE'S ENCEPHALOPATHY: WITH SPECIAL REFERENCE TO THE OCCURRENCE OF A STATE OF HIGH CARDIAC OUTPUT AND POSTURAL HYPOTENSION ....... Michael A. Gravallese, Jr. and Maurice Victor 836

OBLITERATIVE BRACHIOCEPHALIC ARTERITIS: PULSELESS DISEASE OF TAKAYASU

Thomas B. Gibbons and Robert L. King 845

THE AUSCULTATORY GAP IN ARTERIOSCLEROTIC HEART DISEASE

Simon Rodbard and Jack Margolis 850
CONTENTS OF VOLUME XV

COMPARISON OF MERCURIAL DIURETICS AND BED REST IN NORMAL AND TOXEMIC PREGNANCIES.................N. S. Assali, J. Voskian and J. Roller 855

SIGNIFICANCE OF PULMONARY ELASTIC AND VISCOS RESISTANCE IN ORTHOPNEA
R. M. Cherniack, T. E. Cuddy and J. B. Armstrong 859

STENOSIS OF A BRANCH OF THE PULMONARY ARTERY: AN ADDITIONAL CAUSE OF CONTINUOUS MURMURS OVER THE CHEST
Frederic Eldridge, Arthur Selzer and Herbert Hultgren 865

VASODEPRESSOR SYNCPE: FACTORS INFLUENCING CARDIAC OUTPUT

ATRIAL DISSOCIATION AND UNIATRIAL FIBRILLATION
George W. Deitz III, Henry J. L. Marriott, Evan Fletcher and Samuel Bellet 883

HEPARIN-ACTIVATED CLEARING FACTOR: STANDARDIZED TEST, AGewise APPLICATION, AND CLINICAL OBSERVATIONS.................................Saul P. Baker 889

CANCELLATION OF ESOPHAGEAL ELECTROCARDIOGRAMS
Ralph F. Morton, William E. Romans and Daniel A. Brody 897

IDIOPATHIC MYOCARDIAL FAILURE IN THE LAST TRIMESTER OF PREGNANCY AND THE PUERPERIUM........................W. R. Meadows 903

SPECIAL ARTICLE
THE EVOLUTION OF OUR KNOWLEDGE ABOUT THE HEART AND ITS DISEASES SINCE 1628............................Paul D. White 915

CLINICAL PROGRESS
SELECTION OF PATIENTS FOR MITRAL AND AORTIC VALVULOPLASTY
Laurence B. Ellis, Walter H. Abelman and Dwight E. Harken 924

ABSTRACTS.................................................. 936

AMERICAN HEART ASSOCIATION.................................. 955

CONTRIBUTORS TO THIS ISSUE................................. 959