CIRCULATION
The Journal of the American Heart Association

No. 1

Chest Pain in Association with Pulmonary Hypertension. Its Similarity to the Pain of Coronary Disease..............................................William N. Viar and T. R. Harrison 1

A Study of the Digitalis-like Action of Thevetoidin in Man
 Ignacio Chavez, Rafael Méndez and Leonardo O. Chait 12

The Treatment of Hypertension with Hexamethonium..............Edward D. Freis, Frank A. Finnerty, Jr., Harold W. Schnaper and Captain Robert L. Johnson 20

The Effect of 1-Hydrazinophthalazine in Hypertension..............Henry A. Schroeder 28

The Effects of the Valsalva-like Maneuver upon the Circulation in Normal Individuals and Patients with Mitral Stenosis......H. Goldberg, E.I. Eltsberg and L.N. Katz 38

Epicardial Electrocardiograms Recorded in the Course of Seven Cases of Heart Surgery
 Georges J. Caruso, Henri A. Chevalier, B. Isabelle Latchea and Jean Lenègre 48

The Distribution of Body Fluids in Congestive Heart Failure. IV. Exchanges in Patients, Refractory to Mercurial Diuretics, Treated with Sodium and Potassium
 J. R. Elkinton, R. D. Squires and L. W. Bluemle, Jr. 58

The Size of the Heart during the Course of Essential Hypertension
 Morris Kleinfeld and Jules Redish 74


Mercurial Diuresis in Edematous Individuals. Gerson T. Lesser, Marcelle F. Dunning, Frederick H. Epstein and Eugene Y. Berger 85

Norepinephrine and Epinephrine Effect on Renal Hemodynamics. With Particular Reference to the Possibility of Vascular Shunting and Decreasing the Number of Active Glomeruli..............................................John H. Moyer and Carroll A. Handley 91

Clinical Progress: Atherosclerosis. A Symposium .................Edgar V. Allen, Guest Editor 98

Experimental Atherosclerosis........................................Louis N. Katz 101

Human Atherosclerosis and the Diet.............................................Ancel Keys, M.D. 115

Blood Lipids and Human Atherosclerosis
 John W. Gofman, Hardin B. Jones, Thomas P. Lyon, Frank Lindgren, Beverly Strisower, David Colman and Virgil Herring 119

Abstracts........................................135

Book Reviews........................................156

American Heart Association........................................160

No. 2

The George E. Brown Memorial Lecture. The Pathogenesis and Treatment of Thrombosis................................................Irving S. Wright 161

Acute Atypical Coronary Artery Insufficiency. Incidence and Clinical Course
 David Littman and J. H. Barr, Jr. 189
The Therapeutic Range of Gitalin (Amorphous) Compared with Other Digitalis Preparations. Robert C. Batterman, Arthur C. DeGraff and O. Alan Rose 201
An Evaluation of Replacement Fluids in Laboratory Animals following Control Hemorrhage. A. Ervine Morrison, Jr., John S. Landy and Hiram E. Essex 208
The Flicker Fusion Frequency and Its Response to Nitroglycerin in Normal Subjects and in Patients with Cardiovascular Disease. Ancel Keys and Ernst Simonson 215
Factors Influencing Cerebral Blood Flow and Metabolism. A Review Peritz Scheinberg and Harold W. Jayne 225
The Spatial Vectorcardiogram Obtained by Use of a Trihedron and Its Scalar Comparisons. Pierre W. Duchosal and Jean R. Grosqurin 237
The Value of High Fidelity Electrocardiography Using the Cathode Ray Oscillograph and an Expanded Time Scale. Paul H. Langner, Jr. 249
The Pulmonary Vascular Responses to Short-Term Hypoxia in Human Subjects Joseph T. Doyle, Joseph S. Wilson and James V. Warren 263
The Effects of Work on the Pulmonary Circulation in Mitral Stenosis Harald Eliasch, Geoffrey Wade and Lars Werkö 271
Serum Cholinesterase Activity and Arterial Blood Pressure Louis J. Vorhaus, II, M.D. 279
Dihydrogenated Ergot Alkaloids in the Treatment of Essential Hypertension Homer J. Dupuy, John Signorelli and Albert M. Attiyah 285
Abdominal Aortic Aneurysm with Rupture into the Inferior Vena Cava William N. Viar and Thomas A. Lombardo 287
Abstracts ................................................................. 300
American Heart Association .................................................. 317
No. 3
The Henry Jackson Memorial Lecture. Dynamics of Ventricular Contraction under Abnormal Conditions. Carl J. Wiggers 321
The Responsibility of the Physician in the Selection of Patients with Mitral Stenosis for Surgical Treatment. Dwight E. Harken, Laurence B. Ellis, Lewis Dexter, Robert E. Farrand and James F. Dickson, III 349
Alcohol Vapor by Inhalation in the Treatment of Acute Pulmonary Edema Aldo A. Luisada, Morton A. Goldmann and Ruth Weyl 363
Comparison of the Circulatory Effects of Epinephrine and Norepinephrine Khalid G. Wakim and Hiram E. Essex 370
Pressor Substances in Arterial Hypertension. IV. Quantitative and Qualitative Studies of Phentolamine. Dean F. Davies, Norman S. Olsen and Henry A. Schroeder 380
Influence of Thyroidal Function on Vascular Reactivity in Dogs Irvine H. Page and James W. McCubbin 390
Effect of Athyroid State on Vascular Reactivity and Arterial Pressure in Neurogenic and Renal Hypertensive Dogs. James W. McCubbin and Irvine H. Page 397
The Relationship of Serum Lipoproteins to Atherosclerosis in the Cholesterol-Fed Alloxanized Rabbit. Frank T. Pierce, Jr. 401
The Tricardiograph: A Rapid Screening Method for Cardiac Disease J. Leonard Brandt, William Dock, Robert Landsman and Charles Passannante 408
CONTENTS OF VOLUME V

The Peripheral Vascular Reactivity of Potassium-Deficient Rats
Ray H. Rosenman, S. Charles Freed and Meyer Friedman 412

Effect of Potassium Administration on (1) Peripheral Vascular Reactivity and (2)
Blood Pressure of the Potassium-Deficient Rat
Meyer Friedman, S. Charles Freed and Ray H. Rosenman 415

Hepatic Circulation in Cirrhosis of the Liver
S. E. Bradley, F. J. Ingelfinger and G. P. Bradley 419

A Newly Modified Electromagnetic Blood Flowmeter Capable of High Flow Regis-
tration ............ Alfred W. Richardson, Adam B. Denison and Harold D. Green 430

The Effect of Posture on Hypertension Induced by Sympathomimetic Amines in Man
A. Littman, R. M. Gunnar, M. I. Grossman and R. Casas 437

The Q Wave in Precordial Electrocardiograms Overlying the Hypertrophied Right
Ventricle: Intracavity Leads
Noble O. Fowler, Richard N. Westcott and Ralph C. Scott 441

Rupture of an Aortic Aneurysm into the Pulmonary Artery. A Case Report
Curtis H. Carter, William N. Agostas and V. P. Sydenstricker 449

Clinical Progress: Needless Restrictions Imposed on Cardiac Patients
Robert L. Levy 454

Abstracts ........................................................................................................ 462

American Heart Association ................................................................. 479

No. 4

The Effect of Aging and of the Development of Disease on the Ballistocardiogram. A
Study of Eighty Subjects, Originally Healthy, Followed from Ten to Fourteen
Years................................................ Isaac Starr and E. A. Hildreth 481

The Tissue Distribution and Excretion of Radioactive Digitoxin. Studies on Normal
Rats and Cats, and Rats with Dietary-Induced Myocardial Lesions
C. S. Fischer, A. Sjoerdsma and R. Johnson 496

The George Fahr Lecture. Certain Mechanical Peculiarities of the Human Cardiac
Pump in Normal and Diseased States
G. E. Burch, C. T. Ray and J. A. Crowich 504

Obesity, Fat Metabolism and Cardiovascular Disease
John W. Gofman and Hardin B. Jones 574

Studies in Experimental Pericardial Tamponade. Effects on Intravascular Pressures
and Cardiac Output
James Metcalfe, John W. Woodbury, Victor Richards and C. Sidney Burwell 518

Use of a Combination of Anion and Cation Exchange Resins in the Treatment of
Edema and Ascites............. B. L. Morts, K. G. Kohlstaedt and O. M. Helmer 524

Studies of Plasma Quinidine Content. III. The Value of Delayed Absorptive Coated
Tablets in Oral Quinidine Therapy
John J. Sampson, Harry Foreman and Bertram C. Solomon 534

An Etiologic Concept of Atherosclerosis Based on Study of Intimal Alterations after
Shock ................................................................. O. J. Pollak 539

The Effects of Intravenous Procaine and Procaine Amide (Pronestyl) upon Ectopic
Ventricular Tachycardia Accompanying Acute Myocardial Infarction
A. Sidney Harris, Antonio Estanda, Tedroe J. Ford, Jr.,
Herbert T. Smith, Roy W. Olsen and Rex F. Tillotson 551

The Electrocardiogram in Heart Disease Detection. A Comparison of the Multiple
and R. B. Streeper 559
CONTENTS OF VOLUME V

Vasodilator Effects of a Substance Present in Normal Human Urine in Comparison with the Effect of Methacholine and Sodium Nitrite. A Statistical Analysis of Reliability of the Method of Assay

Harold D. Green, J. Maxwell Little, Clifford G. Gaddy, Lewis T. Franklin and Howard H. Wayne 567

The Effect of Sympathectomy for Essential Hypertension on the Hallucal Circulation

Milton Mendelowitz and Arthur S. W. Tourouf 577

The Factors Influencing the Circulation Time

Morton Lee Pearce, Alvin E. Lewis and Melvin R. Kaplan 583

Observations Concerning the Metabolism of Cholesterol in the Hypo-and Hyperthyroid Rat.........................Ray H. Rosenman, Meyer Friedman and Sanford O. Byers 589

Tissue Clearance as a Measure of Nutritive Blood Flow and the Effect of Lumbar Sympathetic Block upon Such Measures in Calf Muscle

Samuel I. Rapaport, Albert Saul, Chester Hyman and M. E. Morton 594

The Abnormal Serum Lipid Pattern in Patients with Coronary Arteriosclerosis

Alfred Steiner, Forrest E. Kendall and James A. L. Mathers 605

Clinical Progress: The Functional Importance of Coronary Collaterals. Carl J. Wiggers 609

Abstracts ........................................................................................................................................................................ 616

Book Reviews ..................................................................................................................................................................... 634

American Heart Association ............................................................................................................................................. 636

No. 5

Spontaneous Atherosclerosis in the Rabbit.........................Joseph H. Bragdon 641

Mechanism of Iodide Action on Cholesterol Metabolism

Helen B. Brown and Irvine H. Page 647

Changes in Excretion of Intestinal Cholesterol and Sterol Digitonides in Hyper- and Hypothyroidism......Meyer Friedman, Sanford O. Byers and Ray H. Rosenman 657

Intra-arterial Histamine in the Treatment of Occlusive Peripheral Arterial Disease

John A. Dixon, W. J. Merle Scott and Marvin A. Epstein 661

Endarteriectomy, or Surgical Restoration of the Lumen of an Obstructed Artery in Arteriosclerosis Obliterans. A Preliminary Report

A. Nuñez Nuñez, B. Milanés and J. Rodriguez Iriigo 670

Cerebrovascular Thrombosis in Patients with Buerger's Disease. Lippmann 680

The Syndrome of Short P-R Interval, Normal QRS Complex and Paroxysmal Rapid Heart Action...........Bernard Lown, William F. Ganong and Samuel A. Levine 693

Indications for Bishydroxyeyoumarin (Dicumarol) in Acute Myocardial Infarction


Frontal and Sagittal Electrocardiograms of Normal and Hypertensive Subjects during an Experimentally Produced Phase of Lowered Blood Pressure

Joseph Brumlik and Charles E. Kossman 712

Congenital Aneurysmal Defect of the Membranous Portion of the Ventricular Septum Associated with Heart Block, Ventricular Flutter, Adams-Stokes Syndrome and Death........................................................Richard J. Clark and Paul D. White 725

Arterial Hypertension in Dogs. I. Methods..Henry A. Schroeder and Melvin L. Goldman 730

The Effect on Blood Pressure in the Right Heart, Pulmonary Artery and Systemic Artery of Cardiac Standstill Produced by Carotid Sinus Stimulation

Cation Exchange Resin in the Treatment of Congestive Heart Failure. I. Electrolyte Exchanges during Initial Periods of Resin Therapy
J. R. Elkinton, R. D. Squires and W. C. Klingensmith, Jr. 747

Tissue Cations and Water in Arterial Hypertension
Louis Tobian, Jr. and John T. Binion 754

Heart Failure and Pulmonary Edema Produced by Certain Neurologic Stimuli
Robert Paine, John R. Smith, Harvey R. Butcher and Frank A. Howard 759

Death in Potassium Deficiency. Report of a Case Including Morphologic Findings
John D. Keye, Jr. 766

Clinical Progress: The Specific Treatment of Syphilitic Aortitis
R. H. Kampmeier and Hugh J. Morgan 771

Abstracts .......................................................... 779
Book Reviews ...................................................... 798
American Heart Association ...................................... 800

Revascularization of the Heart. A Study of Mortality and Infarcts following Multiple Coronary Artery Ligation .............................. Richard S. Hahn and Claude S. Beck 801

Revascularization of the Heart. Histologic Changes after Arterialization of the Coronary Sinus ......................... Richard S. Hahn and Maurice Kim 810

Dynamic Responses of the Right Ventricle following Extensive Damage by Cauterization ....................... Abraham Kagan 816

The Effects of Increased Intracranial Pressure on the Pulmonary Circulation in Relation to Pulmonary Edema ..................... William Harrison and Averill A. Liebow 824

Clinical Evaluation of 1-Hydrizinophthalazine (C-5968) in Hypertension. With Special Reference to Alternating Treatment with Hexamethonium
Robert L. Johnson, Edward D. Freis and Harold W. Schnaper 833

Cation Exchange Resin in the Treatment of Congestive Heart Failure. II. Clinical Effectiveness and Chemical Complications during Prolonged Periods of Use
W. C. Klingensmith, Jr. and J. R. Elkinton 842

The Use of Crystalline Visammin in the Treatment of Angina Pectoris. L. A. Nalefski, W. B. Rudy and N. C. Gilbert 851

Surgical Closure of an Aortic Septal Defect ..................... Robert E. Gross 858

A Study of Factors Related to Effects of Quinidine in Experimental Auricular Flutter
Barbara B. Brown 864

Observations on the Atria of the Human Heart by Direct and Semidirect Electrocardiography ..................... R. Wenger and D. Hofmann-Credner 870

Certain Inevitable Relationships among the “Unipolar” Extremity Leads
Paul H. Langner, Jr., J. Malvern Benjamin, Jr. and Samuel R. Moore 878

Studies Utilizing the Portable Electromagnetic Ballistocardiograph. II. The Ballistocardiogram as a Means of Determining Nicotine Sensitivity
Harry Mandelbaum and Robert A. Mandelbaum 885

The Low Frequency Velocity Measurement Ballistocardiograph
J. E. Smith and Samuel Bryan 892

Nutritional Factors in Hemodynamics. II. Hypertension during Pteroylglutamic Acid Administration in Albino Rats
Richard E. Lee, Sachiko Tanaka and Elizabeth A. Holze 903

The Water and Electrolyte Content of the Human Heart in Congestive Heart Failure with and without Digitalization ............ Norman E. Clarke and Robert E. Mosher 907
The Measurement of Total “Sodium Space” and Total Body Sodium in Normal Individuals and in Patients with Cardiac Edema. George F. Warner, Ernest L. Dobson, Caroline E. Rodgers, Muriel E. Johnston and Nello Pace 915

Thromboctytic Acroangiothrombosis. Febrile Anemia, Thrombocytopenia, and Thromboses of Damaged Capillaries and Arterioles. Hall S. Tacket and Russell S. Jones 920

Clinical Progress: The Anesthetic Management of Patients with Heart Disease. Robert D. Dripps and Leroy D. Vandam 927

American Heart Association Heart Models in Health and Disease ................................. 937

Abstracts ................................................................................................................. 941

Book Reviews ........................................................................................................... 957

American Heart Association ....................................................................................... 958
CONTENTS

INDEX ISSUE

REvascularization of the Heart. A Study of Mortality and Infarcts following Multiple Coronary Artery Ligation
Richard S. Hahn and Claude S. Beck 801

REvascularization of the Heart. Histologic Changes after Arterialization of the Coronary Sinus. Richard S. Hahn and Maurice Kim 810

DYNAMIC RESPONSES OF THE RIGHT VENTRICLE FOLLOWING EXTENSIVE DAMAGE BY CAUTERIZATION. Abraham Kagan 816

THE EFFECTS OF INCREASED INTRACRANIAL PRESSURE ON THE PULMONARY CIRCULATION IN RELATION TO PULMONARY EDEMA
William Harrison and Averill A. Liebow 824

CLINICAL EVALUATION OF 1-HYDRAZINOPHTHALAZINE (C-5968) IN HYPERTENSION. WITH SPECIAL REFERENCE TO ALTERNATING TREATMENT WITH HEXAMETHONIUM. Robert L. Johnson, Edward D. Freis and Harold W. Schnaper 833

CATION EXCHANGE RESIN IN THE TREATMENT OF CONGESTIVE HEART FAILURE. II. CLINICAL EFFECTIVENESS AND CHEMICAL COMPLICATIONS DURING PROLONGED PERIODS OF USE. W. C. Kingenomith, Jr. and J. R. Ellinmont 842

THE USE OF CRYSTALLINE VISAMMIN IN THE TREATMENT OF ANGINA PECTORIS L. A. Nalefski, W. B. Rudy and N. C. Gilbert 851

SURGICAL CLOSURE OF AN AORTIC SEPTAL DEFECT. Robert E. Gross 858

A STUDY OF FACTORS RELATED TO EFFECTS OF QUINIDINE IN EXPERIMENTAL AURICULAR FLUTTER. Barbara B. Brown 864

OBSERVATIONS ON THE ATRIA OF THE HUMAN HEART BY DIRECT AND SEMIDIRECT ELECTROCARDIOGRAPHY. R. Wenger and D. Hofmann-Credner 870

CERTAIN INEVITABLE RELATIONSHIPS AMONG THE "UNIPOLAR" EXTREMITY LEADS Paul H. Langner, Jr., J. Malvern Benjamin, Jr. and Samuel R. Moore 878

STUDIES UTILIZING THE PORTABLE ELECTROMAGNETIC BALLISTOCARDIOGRAPH. II. THE BALLISTOCARDIOGRAM AS A MEANS OF DETERMINING NICOTINE SENSITIVITY. Harry Mandelbaum and Robert A. Mandelbaum 885

THE LOW FREQUENCY VELOCITY MEASUREMENT BALLISTOCARDIOGRAPH J. E. Smith and Samuel Bryan 892

NUTRITIONAL FACTORS IN HEMODYNAMICS. II. HYPERTENSION DURING PYROGLUTAMIC ACID ADMINISTRATION IN ALBINO RATS Richard E. Lee, Sachiko Tanaka and Elizabeth A. Holze 903

THE WATER AND ELECTROLYTE CONTENT OF THE HUMAN HEART IN CONGESTIVE HEART FAILURE WITH AND WITHOUT DIGITALIZATION Norman E. Clarke and Robert E. Mosher 907

THE MEASUREMENT OF TOTAL "SODIUM SPACE" AND TOTAL BODY SODIUM IN NORMAL INDIVIDUALS AND IN PATIENTS WITH CARDIAC EDEMA George F. Warner, Ernest L. Dobson, Caroline E. Rodgers, Muriel E. Johnston and Nello Pace 915

THROMBOCYTIC ACROANGIOTHROMBOSIS, FEBRILE ANEMIA, THROMBOCTOPENIA, AND THROMBOSIS OF DAMAGED CAPILLARIES AND ARTERIOLES Hall S. Tackett and Russell S. Jones 920

CLINICAL PROGRESS: THE ANESTHETIC MANAGEMENT OF PATIENTS WITH HEART DISEASE Robert D. Dripps and Leroy D. Vandam 927

AMERICAN HEART ASSOCIATION HEART MODELS IN HEALTH AND DISEASE 937

ABSTRACTS 941

BOOK REVIEWS 957

AMERICAN HEART ASSOCIATION 968