J. SCOTT BUTTERWORTH, M.D.

J. Scott Butterworth, M.D., the new President of the American Heart Association, is an eminent clinician and authority on the development of audio-visual instruments and aids for teaching cardiology.

Dr. Butterworth is Associate Professor of Medicine, New York University School of Medicine. He is also Attending Physician at University Hospital, Visiting Physician at Bellevue Hospital, and Consulting Cardiologist at five other hospitals in the New York metropolitan area.

Over the years, he has been a member and chairman of many Heart Association councils and major committees, especially those concerned with professional and public education. His AHA activities date back to 1950 when he served a two-year term on its national Board. He has since been Chairman of the Association’s Professional Education Committee and of its Publications Committee. He has served on the Editorial Board of Circulation, has been a Vice President of the national organization since 1959, and has served on the Board of the New York Heart Association since 1950.

Born in Iowa City, Iowa, Dr. Butterworth’s family moved to Ithaca, New York, where he attended Cornell University, receiving an A.B. degree in 1932, an M.S. in chemistry in 1933, and an M.D. degree in 1937. In 1942, he obtained a Doctor of Medical Science degree from Columbia University.

Following his internship at New York Post-Graduate Medical School and Hospital in 1937-38, he was a Melville Fellow in Cardiology from 1939-41.

Dr. Butterworth was awarded the Billings Gold Medal of the American Medical Association in 1953 and the Award of Merit of the American Heart Association in 1959. He is a member of Sigma Xi, the American Federation for Clinical Research, a Fellow of the American College of Physicians and a diplomate of the American Board of Internal Medicine and the subspecialty board of Cardiovascular Diseases.

Dr. Warren Chosen as President-Elect; New AHA Officers Elected for 1961-62

James V. Warren, M.D., Professor and Chairman of the Department of Medicine, Ohio State University, Columbus, was named President-elect of the American Heart Association and J. Scott Butterworth, M.D., was installed as President for the 1961-62 term at the Association’s Annual Meeting in Bal Harbour, Florida.

Retiring President Oglesby Paul, M.D., Clinical Associate Professor of Medicine, Uni-
1962 Subscription Renewals

Subscriptions for Circulation and Circulation Research, official scientific publications of the American Heart Association, may now be renewed for 1962 through the Subscription Department, American Heart Association, 44 East 23rd Street, New York 10, New York.

The new subscription rate for Circulation Research, which becomes a monthly instead of a bi-monthly in January, 1962, is $14 a year ($15 foreign). In combination with a subscription to Circulation the rate is $25 ($28 foreign). A special rate of $9 annually for Circulation Research is available in the U. S. only for medical students, interns, residents and research fellows.

The rate for Circulation remains unchanged at $14 yearly ($15 foreign). A special rate of $9 is available for medical students, interns and residents in the U.S. only.

Fourth World Cardiology Congress Maps Program of Varied Interest

The Organizing Committee for the Fourth World Congress of Cardiology is planning to have at least 275 original scientific papers presented at the sessions from October 7-13, 1962, in Mexico City.

Of this number, it is anticipated that approximately 260 papers will be by individual investigators or small research groups. The remainder are to be based on results obtained by a laboratory, clinic or institution. The program will also include symposia, panels and informal conferences through which specialists may develop various aspects of a given subject in their particular fields.

To assure the maximum presentation of a variety of papers and the widest possible participation by those attending, methods are being devised by the Organizing Committee for abridged presentations of some papers.

Subjects officially approved for discussion in papers from institutions, and at symposia, panels and conferences, are:

- Biochemistry of heart failure; Electrolytes in the cardiac patient; Diagnostic value of dye dilution curves; Aldosteronism and arterial hypertension; Inhibitors of monoaminooxidase; Fibrinolysis and coagulation; Intracardiac conduction disturbances; Basic advances in experimental electrocardiography; A-V block and artificial pacemakers; Phonocardiography and its contributions to hemodynamics; Anatomy and etiology of congenital heart disease; Selective angiocardiography; Late advances on pulmonary circulation.

- Also, Cardiopathies in diseases of the connective tissue; Space medicine in the cardiovascular field; Stress in cardiovascular diseases; Cerebral anoxia in the cardiac patient; Intraavitary cardiac surgery; Neurological complications in cardiovascular surgery; Long-term results of mitral commissurotomy; Cardiac resuscitation; New aspects of cardiac arrhythmias; Cholesterol and atherosclerosis; Recent advances in arterial hypertension; Diagnostic pitfalls in myocardial infarction; Myocarditis of uncertain origin; New physiogonomy of bacterial endocarditis; and Diagnosis of cardiac tumors.

Further information regarding the Congress may be obtained from Dr. I. Costero, Secretary General, Instituto Nacional de Cardiologia, Ave. Cuauhtemoc 300, Mexico 7, D.F.
Meetings Calendar


February 8-10: Society of University Surgeons, Cleveland. C. F. Kittle, University of Kansas Medical Center, Kansas City 12, Kansas.


April 6-8: American Society of Internal Medicine, Philadelphia. G. T. Bates, 350 Post St., San Francisco 8, California.


May 1-2: Association of American Physicians (members only), Atlantic City. Eugene A. Stead, Jr., Duke Hospital, Durham, North Carolina.


Abroad

September 5-8: International Congress of Internal Medicine, Munich. Prof. E. Welheim, Luipeldkrankenhaus, Wurzburg, Germany.

October 7-13: Fourth World Congress of Cardiology, Mexico City. I. Costero, Secretary General, Ave. Cuauhtemoc 300, Mexico 7, D.F.
CONTRIBUTORS TO THIS ISSUE

Paul Adams, Jr., M.D.
Associate Professor, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota.

B. K. Anand, M.D.
Professor and Chairman, Department of Physiology, All India Institute of Medical Sciences, Safdarjang, New Delhi, India.

Ray C. Anderson, Ph.D., M.D.
Associate Professor, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota.

B. K. Bagchi, Ph.D.
Professor of Electroencephalography, Department of Psychiatry, University of Michigan, Ann Arbor, Michigan.

Cardiothoracic Surgeon, Green Lane Hospital, Auckland, New Zealand.

Richard J. Bing, M.D.
Professor and Chairman, Department of Medicine, Wayne State University College of Medicine, Detroit, Michigan.

Herbert Constantine, M.D.
Research Fellow of the American Heart Association, Department of Medicine, University of Rochester School of Medicine and Dentistry, Rochester, New York, 1958-60; Present address: University of Pennsylvania Graduate School of Medicine, Philadelphia, Pennsylvania.

Frederic G. Dalldorf, M.D.
Resident in Pathology, North Carolina Memorial Hospital; Post-doctoral Fellow, Department of Pathology, School of Medicine, University of North Carolina, Chapel Hill, North Carolina.

Pancras B. den Bakker, M.D.
Research Fellow in Medicine, Department of Medicine Wayne State University College of Medicine, Detroit, Michigan.

N. P. G. Edling, M.D.
Associate Professor, and Director of Roentgen-diagnostic Department B, Karolinska sjukhuset, Stockholm, Sweden.

Jesse E. Edwards, M.D.
Formerly Consultant, Section of Pathologic Anatomy, Mayo Clinic; Professor of Pathology, Mayo Foundation, Graduate School, University of Minnesota, Rochester, Minnesota. Presently Director of Laboratories, Charles T. Miller Hospital, St. Paul, Minnesota.

Alice Faulkner, M.S.

James K. Finlayson, M.B., M.R.C.P.
Research Fellow in Medicine, University of Rochester School of Medicine and Dentistry, 1958-60; Present address: Department of Medicine, University of Aberdeen, Aberdeen, Scotland.

F. Joseph Flately, M.D.
U. S. Public Health Service Postdoctoral Fellow, Department of Medicine, University of Rochester School of Medicine and Dentistry, 1959-60; Currently, Assistant Physician, Strong Memorial Hospital, Rochester, New York.

Robert L. Frye, M.D.
Fellow in Medicine, Johns Hopkins Hospital, Baltimore, Maryland.

Sigmundur Gudbjarnason, Ph.D.
Research Fellow in Medicine, Department of Medicine, Wayne State University College of Medicine, Detroit, Michigan.

A. J. Gunning, F.R.C.S.

William L. Jamison, M.D.
Formerly Attending Surgeon, Charleston General Hospital, Charleston, Virginia; Presently, Head of Division of Cardiovascular Surgery, Doctors Hospital, Washington, D. C.

Norman Jolliffe, M.D.

Earle B. Kay, M.D.
Chief of Staff, Chief of Section on Cardiovascular and Thoracic Surgery, Director of Cardiovascular Research, St. Vincent Charity Hospital, Cleveland, Ohio.
CONTRIBUTORS TO THIS ISSUE

Albert I. Lansing, M.D.
Professor of Anatomy and Chairman of the Department, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania.

David H. Lewis, M.D.
Established Investigator, American Heart Association, Chief, Hemodynamics Section, Division of Cardiology, Philadelphia General Hospital, Philadelphia, Pennsylvania.

C. Walton Lillehei, M.D.
Professor, Department of Surgery, University of Minnesota, Minneapolis, Minnesota.

Rose E. London, M.D.
Chairman of Electrophysiology, Miami Heart Institute, Miami, Florida.

Seymour B. London, M.D.
Attending Physician, Miami Heart Institute, Miami, Florida.

Cardiologist, Green Lane Hospital, Auckland, New Zealand.

Russell V. Lucas, Jr., M.D.
Postdoctoral Research Fellow, National Heart Institute, Institutes of Health, U. S. Public Health Service; Medical Fellow Specialist, Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota; Research Associate, The Charles T. Miller Hospital, St. Paul, Minnesota; Presently, Instructor, Department of Pediatrics, West Virginia University, Morgantown, West Virginia.

George W. Lund, M.D.
Pediatric Cardiologist, St. Louis Park Medical Center; Clinical Assistant Professor of Pediatrics, University of Minnesota Medical School, Minneapolis, Minnesota.

Milton Luria, M.D.
U. S. Public Health Service Postdoctoral Fellow and Senior Instructor in Medicine, University of Rochester School of Medicine and Dentistry, 1958-61; Assistant Physician, Strong Memorial Hospital, Rochester, New York.

Ethel Maslansky, M.S.

Dean T. Mason, M.D.
Fellow in Medicine, Johns Hopkins Hospital, Baltimore, Maryland.

David Mendelsohn, Jr., M.D.
Director of Anesthesia, St. Vincent Charity Hospital, Cleveland, Ohio.

Nicholaas G. Meyne, M.D.
Traveling Scholar of the American Association for Thoracic Surgery, Department of Surgery, University of Minnesota; Minneapolis, Minnesota. Present Address, Kliniek A. Chirurgische Universiteit Van Amsterdam, Amsterdam, Netherlands.

Charles P. Newcombe, M.D.
Fellow in Physiology, Mayo Foundation, Graduate School, University of Minnesota; Rochester, Minnesota.

Cid Nogueira, M.D.
Research Fellow, Department of Cardiovascular Surgery, St. Vincent Charity Hospital, Cleveland, Ohio.

Patrick A. Ongley, M.B., Ch.B.
Consultant, Section of Pediatrics, Mayo Clinic; Assistant Professor of Pediatrics, Mayo Foundation, Graduate School, University of Minnesota, Rochester, Minnesota.

Alphonse J. Palubinskas, M.D.
Assistant Professor of Radiology, University of California, School of Medicine, San Francisco, California.

Dorothee Perloff, M.D.
Clinical Instructor in Medicine, University of California, School of Medicine, San Francisco, California.

Armand J. Quick, Ph.D., M.D.
Professor of Biochemistry and Director of the Department, Marquette University School of Medicine; Attending Staff, Milwaukee Children's Hospital; Consulting Staff St. Anthony's, St. Luke's and Columbia Hospitals; Honorary Staff, Milwaukee County Hospital, Milwaukee, Wisconsin.

Morton J. Robinson, M.D.
Resident in Pathology, Philadelphia General Hospital, Philadelphia, Pennsylvania.

Florence Rudensky, R.N., B.S.

R. W. Ross Russell, M.D., M.R.C.P.
Registrar, Department of the Regius Professor of Medicine, Radcliffe Infirmary, Oxford, England.

Marvin A. Sackner, M.D.
Resident in Medicine, Philadelphia General Hospital, Philadelphia, Pennsylvania.
Martha Simon, M.S.

Donald R. Smith, M.D.
Clinical Professor of Urology and Chairman of the Division of Urology, University of California School of Medicine, San Francisco, California.

Maurice Sokolow, M.D.
Professor of Medicine and Chief of the Cardiovascular Division, Department of Medicine, University of California, School of Medicine, San Francisco, California.

C. Alpheus Stanfield, M.D.
Advanced Research Fellow of the American Heart Association, Department of Medicine, University of Rochester School of Medicine and Dentistry, 1959-60; Currently, Assistant Physician, Strong Memorial Hospital, Rochester, New York.

John F. Sundermeyer, M.D.
Fellow of the U. S. Public Health Service, Department of Medicine, Wayne State University College of Medicine, Detroit, Michigan.

Richard L. Varco, M.D.
Professor, Department of Surgery, University of Minnesota, Minneapolis, Minnesota.

Henry N. Wagner, Jr., M.D.
Assistant Professor of Medicine and Radiology, Diagnostic Radioisotope Laboratory, Johns Hopkins Hospital, Baltimore, Maryland.

Vernon E. Wendt, M.D.
Fellow of the U. S. Public Health Service, Department of Medicine, Wayne State University College of Medicine, Detroit, Michigan.

M. A. Wenger, Ph.D.
Professor of Psychology, University of California, Los Angeles, California.

J. C. P. Williams, M.B., B.A., B.Sc., M.R.A.C.P.
Assistant Cardiologist, Green Lane Hospital, Auckland, New Zealand.

Earl H. Wood, M.D., Ph.D.
Consultant, Section of Physiology, Mayo Clinic; Professor of Physiology, Mayo Foundation, Graduate School, University of Minnesota; Rochester, Minnesota.

Edwin J. Wylie, M.D.
Associate Professor of Surgery, University of California, School of Medicine, San Francisco, California.

Paul N. Yu, M.D.
Associate Professor of Medicine, University of Rochester School of Medicine and Dentistry; Senior Associate Physician, Strong Memorial Hospital, Rochester, New York.

Henry A. Zimmerman, M.D.
Chief of Medicine, Director of Marie Coakley Research Laboratory, St. Vincent Charity Hospital, Cleveland, Ohio.

Circulation, Volume XXIV, December 1961
CIRCULATION

VOLUME XXIV

AUTHOR INDEX

For Authors of Abstracts in Annual American Heart Association Scientific Sessions See Pages 1109-1122

Abelmann, W. H., 720
Abraham, S., 643
Adams, P., Jr., 171, 1372
Akgun, S., 729
Alexander, B., 123
Alvis, D. L., 82
American Heart Association Committee on Professional Education, 543
Anand, B. K., 1319
Anderson, R. C., 171, 1372
Andreev, S. V., 281
Andreev, S. V., 281
Baggenstoss, A. H., 549
Barrett-Boyes, B. G., 1311
Bassett, D. R., 213
Beard, R. R., 274
Becker, R., 1137
Bergstrand, L., 669
Best, M. M., 58
Bianchi, C. P., 518
Bing, R. J., 483, 1348
Björk, V. O., 204
Blake, J., 1185
Blount, S. G., Jr., 1206
Blumgart, H. L., 1
Brandenberg, R. O., 1126
Braunwald, E., 267, 633, 1227
Braunwald, N. S., 54
Brodburnough, H. C., 267
Brooks, J. McC., 498
Brown, A. L., Jr., 1126
Buckberg, G. D., 657
Burch, G. E., 94
Burchell, H. B., 161
Burrows, B. A., 743
Caceres, C. A., 643
Carberry, W. J., 643
Carleton, R. A., 720
Carman, G. H., 712
Carroll, H. J., 626
Castle, R. F., 180
Chobanian, A. V., 743
Cohen, L., 164
Connor, W. E., 87
Constantine, H., 1164, 1326
Cooley, D. A., 51, 290
Crawford, E. S., 290
Creech, O., Jr., 782
Cullhed, I., 204
Dalldorf, F. G., 1367
Davis, R. B., 599
De Bakey, M. E., 290
DeHaan, R. L., 458
del Missier, P., 349
de Mesquita, Q. H., 41
den Bakker, P. B., 1348
DePasquale, N. P., 94
Derrick, J. R., 1192
Dimond, G. E., 736
Dolle, W., 797
Dollery, C. T., 617
Downey, F. M., 223
Duncan, C. H., 58
Dvorjkin, J., 1224
Edling, N. P. G., 1407
Edwards, J. E., 171, 1356, 1409
Ehrlich, L., 1185
Eichna, L. W., 446
Eliot, R. S., 1206
Elli, H., 471
Ellis, F. H., Jr., 739
Ewell, C. W., 1151
Ezra, P. S., 710
Farber, S. J., 626
Faulkner, A., 1415
Fawcett, D. W., 336
Finlayson, J. K., 1164, 1326
Fishman, A. P., 324, 433, 677
Fishman, I. W., 263
Flattery, F. J., 1164, 1326
Forkner, C. E., Jr., 825
Fowler, N. O., 657
Frahm, C. J., 267, 633
Frazier, R. S., 1224
Freiman, A. H., 643
French, D., 5
Friedman, M., 1173
Fromm, P. L., 1227
Frye, R. L., 1358
Furchgott, R. F., 416
Garst, J. B., 592
Gauthier, J., 1137
Gedge, S. W., 270
Gerbode, F., 250, 572
Gifford, R. W., Jr., 1197
Goldstein, R. I., 5
Granta, R. P., 223, 1123
Greenstone, S. M., 23
Gudbjarnason, S., 1348
Guevara, L., 797
Gunning, A. J., 1305
Hajdu, S., 530
Hallén, A., 204
Harris, L. C., 51
Heller, F. N., 607
Henley, W. S., 290
Heringman, E. C., 23
Hoffman, B. F., 506
Holland, W., 743
Howard, E., 729
Hugenholtz, P. G., 808, 825
Hugh-Jones, P., 617
Hultgren, H. N., 250
Huxley, H. E., 328
Iber, F. L., 797
Idris, F. S., 5
Ivins, J. C., 27
Iyengar, R., 471
James, T. N., 761
Jamison, W. L., 1388
Jelliiffe, R., 592
Johnson, P. D., 707
Jolliffe, N., 1415
Jones, K. L., 180
Jones, R. J., 164
Jorgens, J., 851
Juergens, J. L., 549
Kako, K., 483
Katz, L. N., 12
Kay, E. B., 1542
Keith, T. R., 1295
Kellogg, F., 263
Kenamer, R. A., 41
Keys, A., 1239
Kirklin, J. W., 739
Kistin, A. D., 236
Klatte, E. G., 662
Konigsberg, I. R., 447
Koosman, C. E., 326
Kumar, V., 68
Kuo, P. T., 213
Lange, R. L., 712
Langendorf, R., 12
Lansing, A. L., 1283
Larson, R., 263
Lee, R. S., 416
Leonard, E., 530
Lester, R. G., 171
Lev, M., 41
Levine, B. E., 29
Levine, H. D., 808, 825
Levinston, G. E., 720
Lewis, D. H., 1388
Lieber, A., 851
Lillehei, C. W., 171, 1372
Lipschultz, B., 1185
Liu, C. K., 263
Lodin, H., 204
London, R. E., 1403
London, S. B., 1403
Longnecker, C. G., 782
Lowe, J. B., 1311
INDEX OF AUTHORS

Lown, B., 1185
Lucas, R. V., Jr., 1372, 1409
Lund, G. W., 1409
Luria, M. N., 1164, 1326
Lyman, C. P., 434

MacCarty, C. S., 1215
McMahon, H., 223
Maddocks, L., 1220
Maler, E., 204
March, H. W., 250, 572
Marshall, R. J., 76
Maslansky, E., 1415
Mason, D. T., 1338
Mathur, K., 368
Meyne, N. G., 1372
Michael, O., 1151
Mommaerts, W. F. H. M., 410
Morales, M. F., 390
Morris, G. C., Jr., 290
Morrow, A. G., 34
Moschos, C. B., 1137

Naeye, R. L., 754
Newfeld, H. N., 171
Newcombe, C. P., 1356
Nogueira, C., 1342
Novotny, H. R., 82

Ochsner, J. L., 51
Olson, R. E., 471
Ongley, P. A., 1356
Orvis, A. L., 1197

Palade, G. E., 368
Palubinskas, A. J., 1286
Pankey, G. A., 599
Patney, N. L., 68
Perloff, D., 1286
Pfaff, W. W., 1227
Piek, A., 12

Pierson, R. N., Jr., 613
Podolsky, R. J., 399
Potts, W. J., 5
Prinzmetal, M., 41
Quick, A. J., 1422

Reemtsma, K., 782
Reid, L. C., 349
Remington, R. D., 29
Reuscher, C. S., 1143
Rhodin, J. A. G., 349
Rikli, A. E., 643
Robinson, M. J., 1388
Roedling, H. A., 1215
Rosenman, R. H., 1173
Rosevear, J. W., 1197
Ross, H. C., 650
Ross, J., Jr., 267
Ross, J. K., 572
Ross, J. V., Jr., 549
Rossall, R. E., 1224
Roth, G. M., 1215
Rudensey, F., 1415
Russell, R. D., 374
Russell, R. W. R., 1305

Sackner, M. A., 1388
Sagarminaga, J., 1235
Samuel, P., 578
Schirger, A., 76
Schrader, W. H., 599
Shaldon, S., 797
Sharp, J. T., 669
Shepherd, J. T., 76
Sherlock, S., 797
Shick, R. M., 1215
Shumacker, H. B., Jr., 662
Simon, M., 185, 1415
Simonson, E., 1239
Sise, H. S., 1137
Smith, D. R., 1286
Sokolow, M., 1386
Sones, D. A., 1197
Sippel, J. A., Jr., 270
Stanfield, C. A., 1164, 1326
Staple, E., 513
Stein, S. W., 720

Steinberg, C. A., 643
Steiner, A., 729
Stormont, J. M., 191
Strong, J. P., 777
Sundermeyer, J. F., 1348

Taggart, J. V., 389
Tench, W. R., 650
Thal, A. P., 1154
Theologides, A., 599
Thoma, J., 1151
Tolles, W. E., 643
Travis, R. H., 592
Tuna, N., 1154
Tyson, K. R. T., 1192

Udelnov, M. G., 110

Vakil, R. J., 557
Valle-Cavero, C., 1224
Varco, R. L., 1372
von Kaula, K. N., 1206

Wagner, H. N., Jr., 1338
Waithe, W. I., 578
Watanabe, S., 390
Waterhouse, C., 191
Watson, R. M., 613
Weidmann, S., 499
Weirich, W. L., 572
Weissbein, A. S., 607
Weller, J. M., 29
Welsh, R. A., 777
Wendt, V. E., 1348
Wenger, M. A., 1319
Wesseler, S., 123
West, J. B., 617
Whereat, A. F., 213
Whipple, G. H., 508
Wickram, D. E. L., 617
Williams, J. C. P., 1311
Winegrad, S., 1319
Winer, B. M., 788
Wood, E. H., 1356
Wylie, E. J., 1286

Yu, P. N., 1164, 1326

Zimmerman, H. A., 1342

Circulation, Volume XXIV, December 1961
CIRCULATION

VOLUME XXIV

JULY-DECEMBER, 1961

SUBJECT INDEX

(Page numbers in italics refer to abstracts)

A
A-bands, 329
in chronic stretch, 493, 494
and mitochondria, in cardiac muscle, 450
and muscle contraction, 401
and muscle memory, 432
and myosin, 330
and sarcomere contraction, 338
of toadfish muscle, 340
Abdominal compression test, 306
Abdominal lymph, in endotoxin shock, 876
Acenocoumarol therapy, 128
Acetate incorporation into fatty acid, 1070
Acetazoleamide, and respiratory-stimulating action of aminophylline, 937
Acetrizoate sodium, and indocyanine green, in whole blood, 383
Acetylcholine
and atria, 430
atrial fibrillation from, 1057
cardiac arrest from, myocardial metabolism after, 658
effects on action potential, 514
effects on isolated heart cells, 659
effects on pulmonary vascular bed, 884
effects on ventricle, 985
in mitral stenosis, 1164-1171
muscle contraction, and phosphates, 420
in paroxysmal tachycardia, 1269
in pulmonary disease, 904
Acetyl digitoxin therapy, 862
Acetylsalicylic acid
extraocular vascular effects of, 695
and myocardial glucose utilization, 946
and serotonin, with, 1185-1191
Achromycin, effects on serum cholesterol, 732
Acid Citrate Dextrose Formula B, in open heart surgery, 1062
Acidosis
in cyanotic congenital heart disease, 945
and fibrinolytic parameters, 917
in hypothermia, 1012
and myocardial contractions, 1058
ACTH, cardiac glycogen after, 512
Actin
and ATP, 471, 483
and ATPase rate, 397
and calcium influx, in contraction, 527
enzymology of, 397
filaments
in chronic stretch, 493
cross-bridges, 333
thin, 329
and I-bands, 330
polymers, 396
Action potential
acetylcholine effect on, 514
atrial effects on, 514
of A-V node, 512
drugs affecting, 515
of bundle of His, 537
and conduction disturbances, 515
single fibers of, 513
conducted, and contraction, 518
and ion exchange, 501
length of, 501
plateau, 501, 504
in Purkinje fibers, 502, 513
and conduction disturbances, 515
in ungulates, 493
and sodium permeability, 501
transitions in, from Purkinje fibers to
ventricular muscle, 537
transmembrane, 500, 511
in A-V node, 511
supernormality and, 516
Actomyosin
ATPase system, and calcium, 521
cardiac, 333
and heart failure, 478
and ions, 483
Actomyosin bands, contraction of, 485
Adenosine
diphosphate, 391
in heart, 417
monophosphate, in heart, 417
pyrophosphate, 391
triphosphatase
and actin, 397
actomyosin system, and calcium, 521
in heart failure, 495
myofibrilar, in heart failure, 876
myosin activity from failing and
normal hearts, 476
triphosphate
actin, 396, 471
and actomyosin, 483
analogos of, 391
with anoxia, and protein synthesis, 486
in cardiac muscle, 1006
and contraction, in cell cultures, 491
and creatine phosphate, 429
effects on isolated heart cells, 699
and energy, 412
free energy of hydrolysis, 390
in heart, 417
high energy phosphate, 416
and hypodynamic heart, 531
metal cation chelation, chemistry of, 390-392
in myocardial tissue, 1266
and myosin, 471
and shortening, 387
splitting, and sonic radiation, 397
tripolyphosphate, 391
Adenyl-methylene diphosphonate, 392
Adhesions of pleuropicardium, 855
Adipokinase, defect in, 1098
Adipose tissue, fatty acids of, 1102
Adoniside, effect on cardiac vessels, 285
Adrenaline. See Epinephrine and norepinephrine
Adventitia of capillary wall, 369
INDEX

[Aerospace flight—Angiocardiography]

Ameroid coronary artery constriction, 146
Amino acids
cardiovascular activity of, 696
in myocardial infarction, 1257
r-Amino-N-butyric acid, cardiovascular activity of, 696
6-Amino-N-caproic acid, cardiovascular activity of, 696
8-Amino-N-caprylic acid, cardiovascular activity of, 696
8-β-Aminomethylisothiuronium, and myosin activity, 394
Aminophylline, respiratory-stimulating action of, acetazolamide affecting, 937
5-Amino-N-valeric acid, cardiovascular activity of, 696
Amobarbital sodium, in hypertension, 1059
Amyl nitrate, effects on cardiac shunts, 913
Anastomosis
aortopulmonary, 1031
intralumina-implantation, 1081
Anemia, normovolemic, and pulmonary arterial pressure, 984
Anesthesia
cardiac effects of, 1044
for cardiopulmonary bypass, 1015
Anesthetics, local
and oxidative phosphorylation, 421
and ventricular conduction, 1011
Aneurysms
aortic
abdominal, 1032
dissecting, 290-302, 1054, 1433
thoracic, 1054
left ventricular, in Africans, 313
myocardial
cardiac systole in, 1865
carotid pulse in, 1863
post-infarction, 143, 933
simulation of, 939
popliteal, 23-28, 270-273
of sinus of Valsalva, 1403-1406
of ventricular septum, 513
Aneurysmorrhaphy, in ischemic heart disease, 146
Angina pectoris
drug therapy in, evaluation of, 1028
exercise in, 984
exercise test in prognosis, 737
intermediate coronary syndrome, 557-570
iproniazid in, 141
monoamine oxidase inhibitor in, 959
and myocardial infarction, 935
skeletal chest pain with, 993
status anginosus, 144
sublingual erythrol tetranitrate in, 140
syphilitic, 143
vasomotor activity in, 281-288
vectorcardiogram in, after exercise, 1044
Angiocardiography
in bilateral stenosis of pulmonary arteries, 875
cinefluorography in, 855
detecting bullets and metallic fragments, 1455
in dextrorotation of heart, 880
in left atrial thrombosis, 963
left ventricular, in mitral stenosis, 1451
left ventricular puncture with, 304-311
open, 887
origin of great vessels from right ventricle, 957
in pulmonary hypertension, 875

Circulation, Volume XXIV, December 1961
INDEX

Angiography, in heart failure, and high energy phosphates, 423
dextro-position of, 231
histochemical studies of, 1108
lesions after bacterial endotoxins, 1095
occlusion of, 959
and pulmonary artery anomaly, 662-668, 860
retrograde perfusion of, mesenteric artery in, 900
transposition. See Transposition of great vessels

Aortic arch, pseudoaortic, and, 1049

Aortic valve
cardiopulmonary bypass in surgery of, 900
insufficiency, 179, 914
prosthesis, 969, 994, 1002, 1029
pulse tracings in disease, 1260
regurgitation
dilution curves in, 989
valve, treatment of, 961
in Valsalva sinus aneurysm, 1430-1436
stenosis
acquired, 960
cardiac catheterization in, 1062, 1063
cardioglobulin C in, 533
genital, surgery in, 982
and pseudoaortic arch of aortic arch, 1049
subvalvular, 739-742, 984, 997, 1071, 1126-1135
supravalvular, 1311-1317

Aortography
in hypertension, 1089
intravenous, 452
in Marfan syndrome, 1154-1162
retrograde, in coronary artery fistula, 176

Aortopulmonary anastomosis, 1031

Apex cardiogram
in atrial flutter, 1266
in ischemic heart disease, 884
phonocardiogram with, 307

Aplodontia, 443

Arcus senilis
employment affecting, 1101
in women, 1178, 1179

Arfonad chlorothiazide affecting, 944
response to infusion, 698

Arrest, cardiac
left ventricular function after, 1274
myocardial metabolism after, 698
“voluntary” control in India, 1319-1325

Arrhythmia
atrial, and myocardial infarction, 761-775
ballistocardiography in, 1073
after closure of atrial septal defects, 1015
from digitalis, 982
electrocardiography in, 1046
in myocardial infarction, 141, 922
nodal tachycardia with block, 12-21
triple cardiac rhythms, 1263
and valvular insufficiency, 936
ventricular, lidocaine in, 1270
Wolff-Parkinson-White syndrome, 41-49, 1264

Arteries. See also specific arteries
intraluminal-implantation anastomosis, 1081
skin temperature and digital plethysmography in
disorders, 908

Arteriography. See Angiography

Arterioles
in arteriosclerosis obliterans, 692
pulmonary resistance, in mitral stenosis, 712-719

[in Angiocardiography—Arterioles]

in right ventricular hypoplasia, 1394
in sleroderma, 1049

Angiography
in carotid artery occlusion, 1305
complications from, 1291
coronary, 982
and anatomic findings, 929
electrocardiography compared with, 914
postmortem, 312, 1005
femoral, 1432
and mediastinal exploration, 1434
percutaneous subclavian, 1450
in popliteal aneurysm, 27
pulmonary, 1451
renal, 916, 1194-1195, 1286-1303
serial, high speed, 1453
toxic reactions to, 935

Angiotensin, 1356-1356
effects on cardiac shunts, 915
intrarenal infusion of, 917
and phosphorylase activity, 489
skin test, value of, 964

Angiotensin II
 degradation of, 1074
in hypertension, 1075
pressor response to, 792

Antisindione therapy, 128

Annuloplasty, mitral, changes after, 877

Antibiotics, affecting serum cholesterol, 578-590, 729-735

Anticoagulant therapy, 123-138
and aspirin-induced gastrointestinal bleeding, 613-616
contraindications to, 131
coumarin derivatives, 127-131
heparin activity, 90, 91, 125-131
lipemic clearing action of, 887

long-term
in coronary atherosclerosis, 961
interruption of, 1137-1142
morbidity and mortality in, 907
in myocardial infarction, 908, 1258
nomogram, 650-656
problems with, 1015
in menstruation, 135
in myocardial infarction, 143, 895, 945, 990
cessation of therapy and recurrent infarction, 1357
long-term therapy, 908, 1258
prothrombin time tests, 131-134
rebound phenomenon, 137
surgery during, 134-135

Antidiuretic hormone, metabolic basis for action, 915

Aorta
albumin entrance into wall, blood pressure affecting, 1090
aneurysms
abdominal, 1088
dissecting, 290-302, 1054, 1453
atherosclerotic, in India, 68-75
blood flow in, 980
negative, 974
coeccartation
pseudoaortic, and aortic stenosis, 1049
surgery in, 872
vascular changes in, 754-759
ventricular septal defect with, 1356-1366
configuration in congenital heart disease, 1434
constriction
coronary blood flow after, 885

Circulation, Volume XXIV, December 1961
Arteriosclerosis. See also Atherosclerosis
Monckeberg, after hematoporphyrin injections, 1082
oblit rates
arteriolar disease in, 688
prognosis of, 996
Arteriovenous fistula. See Fistula
Arthritis, rheumatoid, heart block in, 1088
Ascites, in congestive failure, 473
Ascorbate dilution curves, diagnostic use of, 1227-1233
Asphyxia
and cardiac output, 701
and cardiac phosphates, 419
and contraction force, of heart, 419
Aspirin-induced gastrointestinal bleeding, anticoagulants affecting, 613-616
Aspiration, experimental, 1098
triparanol affecting, 1107
Atherosclerosis, 857-858
acetate incorporation into intima, 1070
antibiotics affecting serum cholesterol in, 729-735
baboons susceptible to, 1083
blood lipid variations, 858
cholesterol-induced, isolation affecting, 1100
and colloid goiter, 777-781
coronal
in diabetes, 1083
and iodine number of depot fat, 1086
long-term anticoagulant therapy, 961
pathogenesis of, 1066
post mortem studies, 145
sudden death in, 1047, 1259
vasomotor activity in, 281-288
in diabetic Yemenite Jews, 895
in dog, spontaneous, 1101
elastase inhibitor in, 887
endothelial activators, 1095
environmental stimuli in, 1100
grading of lesions, 1090
heparin inhibiting, 87
histochemical studies in, 1108
hyperparathyroidism with, 1053
and hypothyroidism, 1096
in India, 68-75
lipemic clearing action of anticoagulants, 857
localization of, factors in, 691
macrophage in, 1106
in monkeys, 857, 858
nature of arterial wall, 1283-1285
nialamide in, 2040
in pigeon, 1087, 1097
popliteal aneurysms with, 23-28
and tentacular fibrosis, 1367-1370
thyroxin analogues in, 58-66
triparanol, effects of, 857
in twins, 1097
vitamins in, 1239-1246

Atresia, tricuspid
electrocardiography in, 1046
right ventricular bypass in, 928
Atrial artery, left anterior, 1000
Atrial conditions. See Atrium
Atrioventricular block
digitalis in, 1006
etiology of, 913
in metastatic cardiac disease, 657-661
myocardial electrodes in, 1272
nodal tachycardia with, 12-21
pacemaker for, subcutaneously implantable, 903
ventricular stimuli affecting, 925
Atrioventricular bundle. See Bundle of His
Atrioventricular canal persistence, 861
electrocardiography in, 985
pulmonary valvular stenosis with, 874
Atrioventricular conduction
in myocardial infarction, 141, 769
necrosis affecting, 117
V-A conduction, 236-247
in Wolff-Parkinson-White syndrome, 41-49
Atrioventricular cushion defect, electrocardiogram in, 860
Atrioventricular node, 350
action potentials of, transmembrane, 511
conduction through, disturbance of, 513
differentiation of, embryonic, 459
electrical activity of, 506
electron microscopy of, 357-360
impulse conduction in, 365
light microscopy of, 353-357
retrograde transmission from, 510
and S-A node, 349
structure of, 354
tachycardia, with block, 12-21
velocity of conduction in, 510, 512

Atrioventricular shunts, constriction of, 838
Atrium
appendages, used in surgery, 959
arrhythmias
electrocardiography in, 1048
and myocardial infarction, 761-775
beats, rate of, and action potential, 514
contraction, nitroglycerin affecting, 884
coronary artery communication with, 171-177
enlargement
electrocardiography in, 1077
P-wave and P-R segment in, 1261
flutter, in children, 1076
left
giant, left ventricle in, 882
great vein connection to, anomalous, 996
hemodynamic functions of, 633-641
pressures in, 267-269
pulmonary artery communication with, 1409-1414
and pulmonary vein junction, sphincter mechanism in, 1087
thrombosis, 963, 1062
venous connection anomalies, 669-676
parasytole with interpolation, 977
pressure, in mitral stenosis, 712-719
right
pressure-pulses in tricuspid regurgitation, 1026
pressure studies, 506
septal defect
anatomical types of, 859
arrhythmia after closure of, 1015
electrocardiography in, 1055
pulmonary blood flow in, 623
right ventricular hypoplasia with, 1388-1401
risk quotient rate in surgery, 903
Valsalva maneuver in, 1009
ventricular septal defect with, 861
turtle, sarcomplasmic reticulum, 345, 348
Atropine
effects on coronary vascular resistance, 938
effects on sinus node, 769
and necrotic tissue action, 114
Auenbrugger, Leopold, 1-4, 28, 33, 40, 50, 57, 67,
81, 86, 93, 109, 122, 138
Aureomycin, effects on serum cholesterol, 578-590,
732
Auscultation
after open heart surgery for mitral stenosis, 1033
defects in mitral insufficiency, 1014
respiration and cardiac murmurs, 980
in right ventricular hypoplasia, 1398
splitting of second heart sound, 180-184
Autoimmune reactions in pulmonary vasculature, 898
Autonomic nervous system
and response to exercise, 967
and serum cholesterol variability, 1097
Autoregulation
of coronary blood flow, 1025
in passive collapsible vessels, 1021
Avsep analyzer, 940
B
Baboon
arterial lesions in, 691
serum lipids in, 1083
Bacitracin, effects on serum cholesterol, 732
Bacteremia shock syndrome, 1067
Bacterial endotoxin, vascular lesions from, 1094,
1095
Ballistocardiogram
anoxemia affecting, 1013
in arrhythmias, 1073
compared with coronary arteriography, 914
in myocardial infarction, 1074
timed vector, 966
ultra low frequency, 957
Basophilia of cell, multinucleated, 449
Bat
erieothyroid muscle, 341
heart rate, 343
as hibernator, 437
Beaumont, William, 606
Beaver, as hibernator, 443
Behavior pattern
and cardiovascular findings, 1173-1184
and catechol excretion, 141
Bendrofluazide, diuretic activity of, 693
Benzoethidiazine
and aldosterone excretion, 1197-1204
in hypertensive disease, 965, 1073
as oral diuretic, 693
salt depletion from, pressor responses to, 788-795
Bigeminy, ventricular, 14, 1185
Bile acids, after mevalonic acid injections, 1083
Biopsy, needle, of myocardium, 1267
Bishydroxycoumarin, heparin compared with, 858
Bistimethalammonium compounds, cardiac actions
of, 695

Circulation, Volume XXIV, December 1961

Blalock-Hanlon operation, in transposition of great vessels, 51-56
Blalock vs. Potts operation, 965
Blood
clotting factors, 124-125. See also Coagulation in hibernation, 437
plasma. See Plasma serum. See Serum transfusions, cardiovascular response to, 698
viscosity, 1098
in peripheral circulation, 1069
Blood flow
arterial, analog computer in determination of, 1046
bronchial, dilution curves of, 929
carotid, hypothermia affecting, 1274
cerebral
exercise affecting, 1077
radioactive krypton studies, 305
coronary
after aortic constriction, 885
autoregulation of, 1025
in cardiac bypass, 556
dilution curves of, 929
measurement of, 864
and oxygen supply, 1271
and deposit formation in extracorporeal shunts, 1089
in descending thoracic aorta, 930
digital, in reactive hyperthermia, 898
distribution in heart, 986
dye-dilution determinations, 923, 929
in human calf, after walking, 1271
in lower extremity, after sympathectomy, 1057
measurement of, 1273
myocardial, 967, 1272
radioactive sodium chloride measuring, 885
negative, in aorta, 974
in obesity, 876
pulmonary
krypton in estimation of, 1045
regional, 817-824
reflex oscillation of, 971
renal, 937
blood pressure affecting, 987
Blood pressure
and albumin entrance into aortic wall, 1090
in baboon, 1083
elevated, from 20 to 100 years of age, 991
in Fiji, 1220-1223
after heating of carotid blood, 701
in hibernation, 437, 441
hypertension. See Hypertension
hypotension, arterial wall response to, 962
hypotensive action
of diuretics, 309
of guanethidine, 683
of hydralazine, 1266
interobserver variability, 966
kymographic phase analysis studies, 1435
left atrial and ventricular, 267-269
measurements, accuracy of, 1284
physiologic influences on, 351
and plasma 17-hydroxycoctieosterone levels, 511
pulmonary arterial, and normovolemic anemia, 984
and renal blood flow, 987
renal pressor substances, 990
right heart, after pericardiectomy, 1020
and Valsalva maneuver in atrial septal defect, 1009
variations in, 894
INDEX

**Blood Pressure (Cont’d)**
venous and edema formation, 887
in right ventricular hypoplasia, 1397

**Blood vessels.** See also specific vessels
distended wall, 897
in hibernation, 437
intraluminal-implantation anastomosis, 1031
peripheral. See Peripheral circulation
reactivity of, 281-288
resistance in passive collapsible vessels, 1021
response to bacterial endotoxin, 1094
vasopressor drugs in shock, 1068

**Blood volume**
cardiopulmonary, exercise affecting, 981
in cardiopulmonary bypass, 957
central, 969
heart, surface counting for, 1036
hemodynamic effects of oligemia, 788-795
hypervolemia, 998
in left heart, measurement of, 904
in mitral insufficiency, 720-727
and neonatal respiratory distress, 920
normovolemic anemia and pulmonary arterial pressure, 984
normovolemic hemorrhagic shock, 1029
in open heart surgery, 879
orthostatic changes in, 925
pulmonary, 980, 969
measurement of, 904
in mitral valve disease, 1008
ventricular, 1018

**Book reviews**
Blood Flow in Arteries (McDonald), 1252
Clinical Disorders of the Pulmonary Circulation (Daley, Goodwin & Steinier), 1250
Congenital Malformations of the Heart (Taussig), 1251
Demonstration of Physical Signs in Clinical Surgery (Bailey), 1253
Heart Sounds and Murmurs (Ongley, et al.), 1250
Prosthetic Valves for Cardiac Surgery (Merendino, ed.), 1249
Quantitative Vectoriograms (Brinberg), 1251
Surgery of the Aorta and Its Branches (Hardy), 1252
Systemic Lupus Erythematosus (Larson), 1249

**Books received**, 1254-1255

**Bowditch law**, 334, 461

**Bradycardia, no-flow reflex, 888**

**Bradykinin, action of, 899**

**Breathing.** See Respiration

**Bretilum tosylate**
antihypertensive effects of, 1045
in hypertension, 1045
pulmonary hypertensive effects of, 998

**Bronchial blood flow, dilution curves of, 989**

**Bronchogenic carcinoma, atrophic venous block with, 657-661**

**Buerger’s disease, incidence of, 995**

**Bullets, localization by angiography, 1455**

**Bundle**
common, 350-353
and basement membrane, 388
of His, 350
action potential of, 513, 515, 517
electrical activity of, 506
velocity of conduction in, 510

**Bundle-branch block**
intermittent, spatial ventricular gradient in, 910
left and activation of ventricular epicardial surface, 1094
myocardial infarction with, 1007, 1280
right, with cardiac hypertrophy, 992, 1564
vectoriograms in, 888

**Butylamine, cardiovascular activity of, 696**

**Butyrate sodium, cardiovascular activity of, 696**

**Bypass**
cardiopulmonary
anesthesia form, 1015
in aortic valve lesions, 900, 988
blood volumes in, 957
digoxin concentrations after, 975
effect on digitalis, 950, 1078
in mitral stenosis, 901
in myocardial infarction, 976
in resection of postinfarction myocardial aneurysms, 983
serum turnover rates after, 920
syndrome after, 1070
ventricular contraction weakening in, 968
left heart, and cardiac oxygen utilization, 918
oxygenation without pump, 1017
of right ventricle, in tricuspid atresia, 928
total cardiac, coronary flow requirements in, 956

**C**

**Caffeine, contraction induced by, 518, 520**

**Calciferol, in atherosclerosis, 1242**

**Calcific constrictive pericarditis, 952**

**Calcification, cardiac**
cinefluorography of, 852, 1433
roentgen television study of, 1407-1408

**Calcium**
effect on mechanical efficiency, 425
effect on myocardial phosphorylase, 694
in excitation-contraction coupling, 523-529
hyperelemia in myocardial infarction, 771
influx and contraction, 525-528
in depolarization, 519, 524
and potassium, 520
movement in muscle, 518-522
and myocardial oxygen consumption, 910
and myocardial plasticity, 1272
and myofibril contraction, 538
and ouabain action on contractile tension, 957
outflux of, and contraction, 520
and phosphates, 420
relaxing factor system inhibition, 521, 528

**Capillaries**
fragility of, aspirin affecting, 615
of heart and other organs, 368-384
permeability and edema, 1069
transport through, of fluid and gases, 386

**Capillary wall**
eel junctions of, 372
fenestrated endothelium, of renal glomeruli, 378
glomerular, tracer studies on, 378
as laminar gel, 369
multilayered, 369
permeability of, 368, 383
pores in, 369
structure of, fine, 369-374
variations in, 369

Circulation, Volume XXIV, December 1961
INDEX

Carbohydrate—Cholesterol

Carbohydrate
intolerance, and degenerative disease, 1089
metabolism, digitoxin affecting, 683

Carbon dioxide
intoxication, in oxygen therapy in emphysema, 937
radioactive, measuring pulmonary blood flow, 617-624
Carcinoma, bronchogenic, atrioventricular block with, 657-661
Cardiac conditions. See Heart
Cardioglobulins, 532, 533
Cardiovascular anomalies, detection in Ruanda, 1435
Carotid artery
internal, occlusion of, surgery in, 1305-1310
ligation of, 897
pressure tracing, 147-148
Carotid blood
heating of, responses to, 701
hypothermia affecting flow, 1274
Carotid pulse
in aortic valvular disease, 1260
in myocardial aneurysm, 1265
Catechol excretion
in coronary artery disease, 141
in phochromocytoma, 308
Catecholamines
anesthesia affecting, 1044
cardiac, effect of, 694
circulating, in myocardial infarction, 771
in cold pressor test, 912
and contractile force, 421
effects of, enhancement of, 1375
and heart, hypodynamic, 539
reserpine affecting, 988
Catheter, J-shaped, 978
Catheterization, cardiac
in anomalous venous drainage into atrium, 670
coronary artery, effects on left ventricle, 1082
in coronary artery fistula, 175
electrode, 881
flow-guided, 881
left-heart, 306
in aortic stenosis, 1063
transseptal, 267-269, 633-641, 1007
in pectus excavatum, 1145
percutaneous, spring-guided, 1452
retrograde arterial, in aortic stenosis, 1062
in right ventricular hypoplasia, 1393
in ventricular septal defects, 258-259
Cell(s)
common-bundle, 351-352
on conduction system, 463
conductive, and contraction, 492
cross-striated, 448, 450
in cultures, 448, 451
differentiation of, 448-451
electrical transmission in, 463
endothelial, of capillary wall, 369, 370, 376
growth and replacement, in hibernation, 458
isolated heart, in vitro studies of, 699
mononucleated, 448, 456
motion, and muscle contraction, 399
multinucleated, 448, 452, 491
of myocardium, 463, 492
proliferation, 451, 452
of specific-tissue, 350
Central nervous system, in hibernation, 442
Cephalins, plasma, diet affecting, 1007
Cerebral arteries
atherosclerotic, in India, 68-75
disease, and hypertension, 1264
Cerebral arteriovenous fistula
heart failure with, 885
in infancy, 980
Cerebral blood flow
exercise affecting, 1077
radioactive krypton studies, 505
Cerebral ischemia
focal, 871
hypothermia in, 891
radiology in, 1430
Cerebrospinal fluid oxygen tension, hypothermia affecting, 1274
Cerebrovascular disease
and hypertensive disease, 978
serum lipids in, 955
Chagas myocardiitis, atrioventricular communications in, 41-49
Chara, 501
Chemical transmission of nervous impulse, 190
Chest pain, skeletal, with angina pectoris, 993
Cheyne-Stokes respiration, circulatory changes of, 1088
Chicago, coronary artery disease in, 145
Chick, embryonic muscle cells, in vitro culture of, 447
Children
atrial flutter in, 1076
cerebral arteriovenous fistula in infancy, 980
closure of foramen ovale and ductus arteriosus in newborn, 698
congenital heart malformations in infancy, 890
detection of heart disease, 999
Ebstein's anomaly in newborn, 1000
electrocardiography of newborn, 349
heart failure in newborn with cerebral arteriovenous fistula, 863
heart rate variability in newborn, 1060
lead intoxication in, electrocardiogram in, 1044
premature infants, electrocardiography of, 1069
quantitative anatomy of normal heart, 1026
respiratory distress, neonatal, and blood volume, 920
serum lipoprotein parameters in newborn, 1103
transposition of vessels. See Transposition of great vessels
vascular changes in coarctation of aorta, 754-759
ventricles and great vessels in, 1267
ventricular septal defect, 34-40, 1067
Chloramycetin, effects on serum cholesterol, 732
Chlorothiazide
and cardiac output response to norepinephrine, 925
and ganglion-blocking agents, 944
hemodynamic effects of, 1026
hypotensive action of, 309
tissue electrolytes after, 1068
Chlorotetracycline, affecting serum cholesterol, 578-590, 732
Cholesterologenic activity of dietary triglycerides, 1100
Cholesterol
acetate incorporated into, 1070
biosynthesis
nicotinic acid affecting, 1099
ToProp affecting, 1090
in vitro, 1088
Circulation, Volume XXIV, December 1961
Cholesterol (Cont'd)
dietary, 1105, 1106
atherosclerosis from, isolation affecting, 1100
effects on serum lipids, 1098
dihydrocholesterol in tissues, 1084
hepatic synthesis, reduction in, 1099
hypercholesteremia
blood lipid variations in, 858
electrocardiogram in, 857
hydrocortisone in, 1098
and hyperlipemia, serum protein in, 1091
nicotinic acid in, 1042
in prairie dogs and ground squirrels, 1083
regression in unloading diets, 1101
treatment of, 1082
triparanol failing to inhibit, 1082
hydrocholesteremic agents, 58-66, 164, 983, 1059
lipid metabolism in hypertension, 311
serum
age factors in, 1028
antibacterial drugs affecting, 578-590, 729-735
and behavior pattern, 1173-1184
decreased levels, and cardiovascular disease, 1104
diet affecting, 1054, 1055, 1058, 1094, 1415-1420
employe't affecting, 1101
exercise affecting, 1056
lipid parameters during control of, 1050
magnesium ingestion affecting, 953
neomevin reducing levels, 1105
and reticuloendothelial stimulation, 1038
sodium dextrorhynhoxyuting, 1059
thyroid analogs affecting, 58-69, 164-170, 1046, 1084
triplanar affecting, 857, 1082, 1086, 1086, 1107
in twi's, 993
variability, autonomic nervous system affecting, 1097
yolk, triparanol affecting, 1079
Choline, in
atherosclerosis, 1244
acetylease, of conduction tissue, 463
Cholinesterase
activity at H-band, 385
of conduction tissue. 464
and impulse mediation, 365
Chondroitin sulfate formation, and atherosclerosis, 957
Chorea, Sydenham, 856
Chronometry of carotid systole in myocardial aneurysm, 1963
Chylomicron lipase, 1093
Chylomicrons, serum, fatty acids of, in hyperlipemia, 213-221
Cine-angiography, in tetralogy of Fallot, 911
Cine-angiography, 1433
coronary, 1037
in ventricular septal defect, 905
Cinefluorography
of cardiac calcifications, 1433
in heart disease, 851-853
of pulmonary artery pulsations, 1070
Circulation, peripheral
blood viscosity in, 1069
failure, and shock, 554-555
physiology of, 871-872
Circulatory arrest, prolonged, problems with, 923
Cirrhosis, portal hypertension in, 797-806
Cisternae
of capillary endothelial cells, 370
terminal, 337
Clearing factor, activity of, 87, 125, 1092
Coagulation, 124-125, 858-859
clotting factors, 124-125
and deposit formation in extracorporeal shunts, 1099
fibrinogen-fibrin transition, 858
heparin compared with bishydroxycoumarin therapy, 858
hypercoagulable state and Hageman factor, 1056
in lipemia, 1002
and pulmonary megakaryocytes, 1038
Coarctation of aorta. See Aorta
Colchicine, and multinucleated cells, 491
Cold, and hibernation, 434
Collagenosis, mediastinal, 981
Collateral coronary arteries, 1036
Collateral pulmonary circulation, 677-688
Coma, with hypothermia, electrocardiography in, 1263
Commissurotomy, mitral See Mitral valve
Computer analysis of electrocardiogram, 643-649
Conduction
atrioventricular. See Atrioventricular conduction disorders after surgery, 1436
multiple pathways of, 973
ventricular, local anesthetics affecting, 1011
ventriculo-atrial, 230-247
Conduction system
differentiation of, 458-470
identification of, 979
refractoriness of, 966
specialized, activation sequence of, 507-510
spontaneity in, 467
steer, functional considerations, 364-366
Conduction tissue
action potentials in, 465
blood supply to, 986
electrical alternans in, 973
elements of, 460
embryonic character of, 464
enzymes of, 465-465
lipogenesis of, aberrant, 464
pacemaker function, 466
physiologic differentiation, 465
velocity of conduction in, 465
Congenital anomalies, 139, 869-882. See also specific anomalies
cardiovascular, murmurs in, 999
heart block, 315
heart disease
acidosis and cyanosis in, 943
nortie configuration in, 1434
asplenia with, 1004
with congenital urinary tract anomaly, 997
coronary artery distribution in, 782-787, 1018
cyanotic, thromboctytopenia with, 1013
in early infancy, 890
epicardial electrocardiographic potentials in, 1065
glomerular alterations in, 139
mild defects, 862
phonocardiography in, 984
pregnancy with, 1005, 1075
renal hemodynamics in, 901
roentgen diagnosis, 1434

Circulation, Volume XXIV, December 1961
Connective tissue
of common bundle, 350
corneal, plasma lipids in, 1107

Constriction of pulmonary artery, in ventricular septal defect in infancy, 34-40

Constrictive force, 402, 403
decreased, factors in, 420, 421
filament model in, 404-407
increased, factors in, 420
mechanochemical factors in, 404
and oxygen consumption, 424
and phosphates, 416-423
and phosphorylase activity, 694
possible processes causing, 405
tension release in, 407

Contraction. See also Relative motion
anaerobic, 488
anions and, 518
and blood plasma, 530
caffeine-induced, 520
calcium activation of mechanism, 521
and calcium influx, 525-528
and calcium outflux, 520
and cell motion, 399
of cell, multinucleated, in embryo-tissue culture, 450
chemical energy flux in, on conduction system, 492
continuity of, 385
and contractile proteins, 483-490, 496
electrical effect and chemical processes, 365
energy for, 416
energy production, and relative motion, 401
energy release in, 410-415
factors in, 408
and filaments, relative motion of, 401
force-velocity relation, 399
of heart
and lyssolecithin, 532
and norepinephrine, 539
plasma effect on, 534
and heat, metabolic pathways of, 429
and high energy phosphates, 423-427
isometric, factors influencing, 943
and membrane depolarization, calcium as link, 518
metabolism regulation in, 410-415
mitochondria regulating, 487
myocardial acidosis affecting, 1068
afterload in, 581
of myofibrils, and calcium, 538
ouabain affecting tension, 957
and phosphorylase, 489
potassium-induced, 520, 523
and protein synthesis, 487
of Purkinje fibers, in ungulates, 493
sliding-filament in, 336
tetanic
and calcium release, 520
phosphorylase in, 488
release of, 405, 407
theories, and muscle physiology, 399-409
viscoelastic model, 389
work in, 411

Cor pulmonale
angiocardiography in, 1049
in cystic fibrosis of pancreas, 942
edema with, oxygen therapy in, 139
electric signs of, 1262
right ventricular hypertrophy with, 308

Core resistance, 462
Corneal connective tissues, plasma lipids in, 1107

Coronary arteries, 140-147 1256-1260. See also Angina pectoris; Infarction, myocardial
Ameroid constriction in, 146
anomalies of, myocardial infarction with, 143
anomalous communication, 171-177
anomalous distribution, 782-787, 1018
anticoagulant therapy, 143
arteriography, 982
and anatomic findings, 929
electrocardiography compared with, 914
and myocardial infarction in young subjects, 982
and percutaneous
arteriovenous fistula, 1258
atheromas, 1084, 1106
atherosclerosis
and blood viscosity, 1098
in diabetes, 1093
in India, 68-75
long-term anticoagulant therapy, 961
pathogenesis of, 1066
sudden death in, 1047, 1059
behavior pattern in disease, 1173-1184
blood flow
after aortic constriction, 885
autoregulation of, 1025
in cardiac bypass, 956
dilution curves of, 929
measurement of, 964
and oxygen supply, 1271
blood lipid variations in disease, 888
calcification, cinefluorography of, 853
catechol excretion in disease, 141
catheterization, effects on left ventricle, 1032
in Chicago labor force, 145
cytomembrane fatty acids in serum, 213-221
cinearteriography, 1057
circulation studies, 146-147
collateral arteries, 1096
collateral circulation, 1089
collateral studies, 1092
coronary stenosis, relief of, 1056
definition of, 1056
diagnosis of disease, 1048
distribution in congenitally malformed hearts, 782-787, 1018
electrocardiogram, postexercise, 144, 145
electrocardiograms in young subjects, 982
and emotional stress, 1027
employment of female patients, 1101
erythrol tetranitrate therapy, 140
exercise by patients, 148
exercise test in, 736-738
fat tolerance tests in, 1084
fluorescence microscopy of, 1867
and gastrointestinal hemorrhage, 141
histochemical studies of, 1106
insufficiency, radiolodine in, 1266
intermediate coronary syndromes, 557-570
ionization in anemias, 141
in Israel, 896
left, pulmonary origin of, 1060
lipid abnormalities, localization of, 1087
lipid patterns in Yemenite Jews, 896
metabolic lesions of, 899
neurogenic disease, 144
occlusion
Coronary Arteries (Cont'd)
- Coronary Care Unit for, 1071
- Coronary dilatation of heart after, 914
- Coronary factors in incidence of, 1254
- Coronary isolated premonitory phase of, 145-146
- Coronary periarterial post mortem pericoronary denervation, 1105
- Coronary preparation evaluation program, 1105
- Coronary segmental anatomy, 325, 331
- Coronary segmental anatomy of, 281
- Coronary segmental changes after, 893

Coronary veins, roentgen studies, 1451
- Coronary veins, roentgen studies, 1453

Coumarin drugs, 127-131
- Coumarin drugs, 127-131
- Coumarin, 127-131

Creatine phosphate
- ATP system, changes in, in twitch, 429
- Creatine phosphate, 429
- Creatine phosphate system, changes in, 429
- Creatine phosphate system, changes in, 429

Crista supraventricularis, 223
- Crista supraventricularis, 223
- Crista supraventricularis, 223

Cross-bridges
- demonstration of, 386
- Cross-bridges, 386
- Cross-bridges, 386

Cyanosis
- acidosis with, 948
- in anomalous venous drainage into atrium, 669
- in anomalous venous drainage into atrium, 669

D
- Degenerative disease, 1089
- Degenerative disease, and carbohydrate intolerance, 1089

Dehydrogenases
- in muscular dystrophy, progressive, 1352
- succinic, and impulse mediation, 365

INDEX [Coronary arteries—Dilatation of heart]
Dilution curves
analysis of, 909
in anomalous venous drainage into atrium, 674-675
in aortic regurgitation, 939
ascorbate dilution curves, 1227-1233
of blood flow in limb, 929
of cardiac output, 886
of coronary and bronchial blood flow, 929
injection site, influence of, 1028
in pectus excavatum, 1145
pressor amines affecting, 1055
rapid analysis of, 1035
reactive hyperthermia in, 148
in regurgitation, 1008
simultaneous, from systemic arteries and right heart, 1029
Dinecamine, as ganglion blocking agent, 695
Dinitrophenol, and myosin activity, 394
Diphenadione therapy, 128
Disc, intercalated
in A-V and S-A nodes, 364
and electrical conduction, 387, 537
and impulse conduction, 365
and ionic movement, 537
resistance of, 539
of S-A node, 359
structure of, 462, 539
and syncytium, 491
Distended vascular wall, architecture of, 897
Distensibility, arterial, in lower extremities, 901
Diuresis
abnormal, after open cardiotomy, 904
antihypertensive mechanisms of salt depletion, 788-795
bendrofluazide, 693
benzothiadiazine, 693
combined administration of chemically different agents, 1084
hyponatremia with overhydration, 191-202
hypotensive action of diuretics, 309
L-lysine monohydrochloride with, 1269
mercurial
extra renal action of, 1056
renal site of action of, 838
in nonedematous cardiac disease, 752
potassium metabolism during therapy, 1054
pteridine, 1026
Dopamine, cardiac effects of, 958
Ductus arteriosus
closure in newborn, 698
patency
and coarctation of aorta, 754-759, 1356-1364
disappearing murmur of, 1235-1237
over narrowing of left lung in, 937
pulmonary artery anomaly with, 662-668
pulmonary blood flow in, 623
unusual manifestations of, 912
and ventricular septal defect, 1356-1364
Dye-dilution curves, See Dilution curves
Dyspnea, in right ventricular hypoplasia, 1397
Dystrophy, progressive muscular, 1013, 1052, 1348-1354

E

Ebstein’s anomaly, 233, 234, 1000
changes in, 932
Eclampsia, protoveratrine in, 309
Ectopic beats, ventricular, 1053

INDEX

Edema and capillary permeability, 1059
in cor pulmonale, oxygen therapy in, 139
extracorporeal ultrafiltration in, 878
hydrochlorothiazide in, 1858
Persistence of high body sodium, 626-632
pulmonary experimental, 1270
at high altitude, 855
and myocardial infarction, 933
and pulmonary lymphatics, 1060
spironolactone in, 1268
and venous pressure, 887

EDTA, and myosin, 395

Education
medical-student research, 1123-1125
postgraduate, 543-547

Ejection time, systolic, in myocardial disease, 964

Elastase inhibitor, in atherosclerosis, 857
Electric alternation mechanisms, 973, 1263
Electric countershock, in refractory tachycardia, 1078
Electric current, and contraction of potassium-depolarized ventricles, 1048

Electric pacemakers. See Pacemaker
Electric potentials of Purkinje tissue, 1262

Electric shock, myocardial infarction after, 1259

Electrical activity
A-V conducting system transmitting, 506-517
of cardiac muscle, 499-505

Electrical transmission, in disaggregated cell clusters, 463

Electrocardiogram, 940

Electrocardiography
ABC leads in ischemia, 305
amplification techniques in, 1076
analyzer for, 1004
in anomalous venous drainage into atrium, 669
in anoxemia, 1273
in aortic stenosis, 1062
subvalvular, 1131
in atrial arrhythmias, 1046
in atrial enlargement, 1077, 1261
in atrial septal defect, 1035
in ativoventricular cushion defects, 860
in coma with hyothermia, 1263
compared with coronary arteriography, 914
computer analysis in, 643-649
continuous ambulant, 940
in cor pulmonale, 308, 1262
in coronary artery fistula, 174
in coronary heart disease, 736
direction of meta QRS vectors, 906
in Ebstein’s malformation, 895
electronic analysis, 1021
epicardial potentials in congenital heart disease, 1065
and exercise, 144, 145, 736, 884
fetal, 305
high amplification in, 1263
in hypertensive heart disease, 910
in hypothyroid heart disease, 304
in intermediate coronary syndrome, 546-567
in ischemic heart disease, 991
in lead intoxication in children, 1044
in muscular dystrophy, 1350
in myocardial infarction, 110-121, 821, 843, 1014
rudimentary anterior, 1860

Circulation, Volume XXIV, December 1961
Electrophysiology (Cont’d)

S-T segment shift in, 1075
transitory Q waves in, 1261
in neurogenic coronary insufficiency, 144
normal values, 305, 707-709, 710-711
in pectus excavatum, 1147
in persistent common atrioventricular

canal, 985
phase shift of repolarization, 305
in pilots, 306
in pregnancy, 1069
in premature infants, 1069
prognostic implications, 306
relationships between abnormalities, 887
in right bundle branch block with ventricular
hypertrophy, 1264
in right ventricular hypertrophy, 308, 1264
in right ventricular hyperplasia, 1400
RS-T segment variant, 1065
septal electrical activity and QRS complex, 959
serial, long-term study of, 1010
Slapak and Partilla leads, 507
T-wave changes, 1045
functional and organic, 1065
in newborn, 949
in tetralogy of Fallot, 94-108
in total, natural community, 891
in tricuspid atresia, 1046
ventricular gradient, 1261
ventricular overload affecting, 1030
in ventricular septal defect, 148, 258
voltage criteria, in left ventricular
hypertrophy, 1022
in “voluntary” cardiac control, 1319-1325
wide triphasic and quadriphasic waves, 907
Wolf-Parkinson-White syndrome, 1264

Electrodes
in cardiac catheterization, 881
myocardial, in atrioventricular block, 1272

Electrograms, bipolar,of specialized conducting
system, 507-510

Electrokymography, in myocardial infarction,
1262, 1430

Electrolytes
after chlorothiazide, 1068
and myosin ATPase, 393
in severe heart disease, 743-753
thiazide diuretics affecting, 1197-1204

Electron microscopy
of capillary wall, 370
of cardiac muscle, in cold cardioplegia, 875
and cardiac synectum, 462
of common bundle, 351-353
of filaments, shortening, 430
of heart biopsies, 955
of Purkinje fibers and ventricular muscle, 954
of specific tissue, sheep, 360
of ultrastructure, 326
resolution limits, 326

Electrophoresis
mobility of lipoproteins, 1094
and renin purification, 1429

Electrostatic-entropic process, of muscle
contraction, 405

Embden-Meyerhof cycle, carbohydrate
intermediaries in, 488

Emboli
arterial, and mitral valvuloplasty, 926
atheromatous, spontaneous, 312
 peripheral arterial, 1075

INDEX

[Electrocardiography—Epinephrine and
norepinephrine]

Embryonic cardiac tissue, injury potential of, 979

Emotional stress, and coronary heart disease, 1087

Emphysema
cardiopulmonary hemodynamics in, 883
mephenetermine in, 881
oxygen inhalation and CO2 intake in, 937
radioactive krypton in, 1275

Employment
of cardiac patients, 1101
and heart disease, 962

Endocardial pathology, from cardiac lymph
cell influx in, 998

Endocarditis
bacterial
antibiotic prophylaxis, 1010
changing spectrum of, 1074
penicillin therapy in allergic patients, 1055
nonbacterial, 882
 nonspecific aspects of, 308

Endocrine glands, in hibernation, 435

Endothelium
activators in atherosclerosis, 1095
capillary, fenestrated, 378, 380

Endotoxins
aortic lesions after, 1095
shock from, 876
vascular response to, 1094

Energy
activation heat A, 410
ATP as primary donor, 412
chemical, conversion to mechanical, 425-427
chemical reaction in, 429
definition of, 400
expenditure, in hibernation, arousal from, 442
free, of ATP hydrolysis, 390
initial, and recovery heat, 429
maintenance heat, 410
and mitochondria, 385
and muscle contraction, 324, 410, 416
muscle sources of, 412
phosphates for, 416
production, 400, 401
and relative motion, 401
and relaxation, 411
release, 331, 332
shortening heat, 411, 429
and tetanus, 431
total, and recovery heat, 429

Enzymes
of adult and embryonic heart, 464
and energy release, 331
heparin releasing into plasma, 1041
of lipogenesis, aberrant, 464
localized intimal defects, and coronary
atherosclerosis, 1066
and myocardial infarction, 879, 1259
in pulmonary infarction, 879
serum
after arterial occlusion, 978
elevation in shock, 1041

Ephedrine, and contractile force of heart, 694

Epicardio-fibrous-pericardiectomy, for
myocardial revascularization, 1009

Epicarditis, constrictive, after pericarditis, 1072

Epinephrine and norepinephrine
and cardiac metabolism in hemorrhagic
shock, 699
cardiac output response to, chlorothiazide
affecting, 923

Circulation, Volume XXIV, December 1961
and contractile force of heart, 420, 694
calcium, and contractile, 420, 694
contraction, and phosphates, 420
effects on fetal and maternal circulation, 965
effects on pulmonary vascular bed, 884
and guanethidine activity, 693
and heart, hypodynamic, 531, 539
hypertension, norepinephrine in, 1073
hypertensive effect of norepinephrine, 1064
long-term norepinephrine infusion, 939
myocardial infarction, 1-norepinephrine after, 911
and myocardial metabolism, 1019
myocardial uptake of fatty acids after norepinephrine, 1155
pressor response to, 790, 792
in diabetes, 1051
reserpine affecting response to infused norepinephrine, 888
shock, norepinephrine in, 1068
and sympathetic stimulation, 697
vascular reactivity after, 283
Epithelial layer of glomerular capillary wall, 378, 380
Erythrocyte lipids, 1051
Erythrol tetranitrate
in angina pectoris, 140
pressor response to, 791
Eserine, effects on isolated heart cells, 699
Esophageal pressure, and body position, 1053
Estrogens
and atherogenesis, 145
effect on interlipid relationships, 989
effect on serum lipids, 1087
Ethanol, effects on fatty acids, 970
Ether
anesthesia, effects of, 1044
test for right-to-left shunts, 1244-1246
Ethylene diaminetetra-acetate, and myosin, 395
Ethynylnlestradiol 3-methyl ether and norethynodrel, serum lipid effects of, 1087
Euphyllin, vascular reactivity after, 285
Excitation-contraction coupling, 430
calcium in, 523-529
and sarcoplasmic reticulum, 347
Exercise
in angina pectoris, 934
and atrial contraction, 884
and atrial fibrillation conversion to sinus rhythm, 939
and autonomic nervous system activity, 967
blood flow after walking, 1371
and cardiac output, 948, 1059
and cardiopulmonary blood volume, 981
cardiovascular response to, 1064, 1066
and cerebral blood flow, 1077
and chest x-rays in mitral stenosis, 949
and cholesterol levels, 1055
and coronary circulation, in neurocirculatory asthenia, 144
electrocardiogram after, 144, 145, 884
graded activity program, 889
and isometric contraction time, 942
metabolic and hemodynamic responses to, 965
myocardial hyperemia persistence after, 1003
after myocardial infarction, 142
and stroke volume, 1274
and supine, in orthostatic hypotension, 76-81
as test in coronary heart disease, 736-738
vectorcardiogram after, in angina pectoris, 1042

Circulation, Volume XXIV, December 1961

INDEX

Extracorporeal circulation. See Bypass
Extracorporeal shunts
deposit formation in, 1099
plastic models as, 1099
Extrasystoles, myocardial contractility in, 894

F

F-actin, 396
Facial features, in aortic stenosis, supravalvular, 1311-1317
Factors, blood clotting, 124
Fallot tetralogy
acyanotic, 979
cine angiography, 911
electrophysiologic variations in, 94-108
phonocardiography in, 939
postoperative studies, 893
pulmonary blood flow in, 620
pulmonary stenosis after repair, 1006
surgery in, 1342-1346
unsuccessful closure of ventricular septal defect, 250-262
Familial cardiomegaly, 599-605, 977
Fat
absorption
antibiotics affecting, 584, 733
in heart failure, 885
in hyperlipemia, idiopathic, 882
depot, iodine number of, and coronary atherosclerosis, 1086
diabetic
and atherosclerosis, 1097
effects on serum lipids, 1088
and platelet survival, 1038
lines, cardiac, cinefluorography of, 854
tolerance
oral and intravenous tests, 1084
thyroid analogs affecting, 1084
whiskey affecting, 1084
types of, in hibernators, 435
unsaturated, diet high in, 916
Fatty acids
acetyl incorporated into, 1070
of adipose tissue and plasma lipids, 1103
ethanol affecting, 970
free, ganglionic blockade affecting, 697
myocardial uptake of, 941, 1025, 1105
plasma, origin and fate of, 1095
renal extraction of, 986
saturated, chain length of, 1094
of serum chylomicrons, in hyperlipemia, 213-221
smoking affecting, in myocardial infarction, 970
Fecal steroids, after mevalonic acid
injections, 1083
Fecal sterols, dietary cholesterol affecting, 1083
Femoral conditions
arteriography, 1432
graft, late occlusion of, 1436
pulse, in aortic valvular disease, 1280
sound, double, 696
vascular resistance, in hypertension, 904
Ferritin, as tracer, in capillary wall, 376, 378
Fetus
electrocardiography, 306
epinephrine action on circulatory system, 965
INDEX

Fever
in postoperative syndrome, 1070
in rheumatic heart disease, 926

Fibers
of conduction system, cells of, 351
of heart muscle, 333
of skeletal muscle, 333

Fibrillation
atrial
acetylcholine-induced, 1067
biochemical and enzymatic changes in, 939
conversion to sinus rhythm, and exercise, 939
and myocardial arrhythmia, 761-775
and nodal tachycardia with block, 12
cause of, 697
and electrical activity, 497
and phosphorylase, 488
ventricular
after coronary artery occlusion, 1259
duration of, before external massage, 1051
induced, for cardiac arrest, 333
in hypothermia, dichloropropenepronenol in, 907
and procaine amide, 1004
sensitization to, 694-695

Fibrils
of basement membrane, of capillary wall, 374
birefringent, in embryo-tissue culture, 450

Fibrinogen-fibrin transition, 868

Fibrinolysis
acidosis and alkalosis affecting, 917
lipemia affecting, 1008
in thrombotic venous segment, 859

Fibrinolytic therapy
in coronary thrombosis, 973
heparin affecting, 1001
resistance to, 960
in venous thrombosis, 859

Fibrosis
cystic, of pancreas, cor pulmonale with, 948
testicular, and arteriosclerosis, 1367-1370

Fiji, blood pressure in, 1220-1223

Filaments. See also Myofibrils
actin, 330-333, 336, 493
composition, 329
cross-bridges, 328, 332, 333, 387
folding, in contraction, 405, 408, 430
and muscle change, 330
myosin, 330, 338, 387, 528
Purkinje-like, of, see common bundle, 352
sliding, 387, 404, 403

First heart sound, 919, 938

Fistula, arteriovenous
cerebro
heart failure with, 863
in infancy, 980
coronary artery, 171-177, 1858
pulmonary, 669
variant of, 1409-1414

Fluids
interstitial, and blood-plasma exchange, 368
in severe heart disease, 743-753
transport through capillaries, 386

Fluorescence
microscopy, of coronary arteries, 1267
in retina, 82-86

Fluorescent antibody technic, to identify streptococci, 964

Fluoracetate, and phosphate decrease, 420

Fluoroscopy. See Cinefluorography

Flutter, atrial, in children, 1076

Foramen ovale
closure in newborn, 698
patency, right ventricular hypoplasia
with, 1388-1401

G
G-actin, 396

Ganglion blocking agents
chloretazide affecting, 944
circulatory reflexes after, 77
dimeamine, 695
and hypervolemia, 698

Gangrene
with coronary thrombosis, 147
venous occlusion with, 549-555

Gas
blood, in cyanotic heart disease, 915
transport through capillaries, 386

Gastrointestinal tract
aspirin-induced bleeding, anticoagulants affecting, 613-616
fat absorption after neomycin, 733
myocardial infarction after hemorrhage, 141

Genitourinary infection, unsuspected, in pregnancy, 533

Gitalin, effects of, 1263

Gliomerular alterations in congenital heart disease, 139

Gliomerulonephritis, 1012

Glycine, in myofibrils, 496

Glycogen
in anaerobic contraction, 488
anoxia resistance of, in conduction system, 492
in cardiac hypertrophy, 912
in conduction tissue, 463
digitoxin affecting, 693
of heart, in failure, 486
and lactic acid, 325
metabolism of, rate of, 492
in muscle contraction and relaxation, 411
of myocardium, 463
phosphorylase activity, myocardial, 694
of specific-tissue cells, 351, 366
storage disease, myocardial, and subaortic stenosis, 924
use of, periodic, and resynthesis, 492

Glycogenolysis, and phosphorylase, 488

Glycosides, cardiac, 421, 425, 426
and aldosterone secretion, 915
and hypodynamic heart, 532
muscle contraction, and phosphates, 420

Golter, colloidal, and atherosclerosis, 777-781

Gold, colloidal, as tracer, in capillary wall, 376

Grants
arterial, plastic sponge in, 936
failures of, 1456

Circulation, Volume XXIV, December 1961
Grafts
femoral, late occlusion of, 1436
heart transplants, 1018
popliteal, 23-28, 1436
Great vessels
in normal children, 1867
origin from right ventricle, 927
transposition of. See Transposition of great vessels
Guanethidine
antihypertensive effects of, 1045
in hypertension, 1285
intravenous, hemodynamic effects of, 906
and norepinephrine depletion, 693
vasodilator effects of, 873
H
H-band, cholinesterase activity at, 385
H-zone, 328, 385, 432
Hageman factor, and hypercoagulable state, 1056
Halothane anesthesia, effects of, 1044
Heart
action potentials of, 499
after aortic stenosis, protein synthesis in, 486
apex cardiogram
in atrial flutter, 1868
phonocardiogram with, 307
apex impulse, palpation of, in ventricular hypotrophy, 960
arrest
from ventricular fibrillation, 938
left ventricular function after, 1274
myocardial metabolism after, 698
"voluntary" control in India, 1319-1325
artificial, in chest, 974
atrioventricular conducting system, differentiation of, 458-470
beat, initiation of, in embryo, 459
block
artificial pacing in, 925, 952, 958. See also Pacemakers
atrioventricular. See Atrioventricular block bundle-branch. See Bundle-branch block complete, cardiodynamics in, 898
genital, 313
peri-infarction, 991
in rheumatoid arthritis, 1038
sino-atrial, 977
surgery in, 834
ventricular asystole in, 1031
blood flow distribution in, 986
bypass. See Bypass calcifications
cinefluography of, 1433
roentgen television study of, 1407-1408
calcium, in excitation-contraction coupling, 523-529
capillaries of, 368-384
cardiomegaly
in Ebstein's anomaly, 1000
familial, 599-605, 977
cardiomyopathy, in ischemic heart disease, 146
cardioplegia, cold, electron microscopy during, 875
competence index, 420
conduction tissue, elements of, 460
genital disorders
aortic configuration, 1434
with congenital urinary tract anomalies, 997
roentgen diagnosis of, 1454
contractile proteins of, 446, 483-490
dextrocardia, 951
dilatation after coronary occlusion, 914
disease
and alcoholism, 1001
employment with, 962
and rheumatic fever, 931
and Workmen's Compensation, 274-280
efficiency of, mechanical, 424-427
electron microscopy of biopsy material, 955
electrophysiology of, 498
embryonic, 458-460
exercise, response to, 943, 1089, 1064
failure, 139-140, 249, 862-863
acetyl digitoxin therapy, 862
and acetonysin, 478, 485, 489
and anoxia, 496
and cardioglobin, 533
cerebral arteriovenous fistula with, 863
as disturbance of contractile proteins, 484
edema of, 1059
experimental, types of, 422
fat absorption in, 885
force-velocity relation, 494
and high energy phosphate, 421-423, 496
and Hill's equation, 431
hypoxemia in, 1151-1153
iliac vein ligation in, 863
isoproterenol in, 863
left, 985, 1039
mitochondria in, 496
myofibrillar adenosine triphosphatase in, 876
myosin in, 471-482, 494, 486
and orthostatic changes in blood volume, 925
oxygen therapy in edema with cor pulmonale, 159
protein synthesis during, 486
from reduced energy utilization, 539
regulation of breathing in, 878
reticuloeytosis in, 1151-1153
reversibility of, 493
and rheumatic heart disease, 1047
right, hyperaldosteronism in, 915
serum glutamic oxalacetic transaminase in, 140
sodium retention in, inotropic agents and, 493
surgery in, 471
THAM in, 897
and tricuspid insufficiency, 1042
triolein absorption in, 140
glycosides. See Glycosides, cardiac
hypersensitivity reaction of, 998
hypodynamic, 531, 539
hypertrophy. See Hypertrophy of heart
injury potential of embryonic cardiac tissue, 979
isolated cells, in vitro cells of, 699
jelly, cardiac, 458
laetic acid production in, 425
left
blood volume in, 904, 981
Thebesian drainage in, 1000
muscle. See Myocardium
in muscular dystrophy, 1013, 1350
output
computer technic for monitoring, 1047
eexercise responses in thyroid disease, 1039
forgotten factor in measurements of, 992
of hyperthyroidism, 916
mechanical effects of muscular contraction, 948

Circulation. Volume XXIV. December 1961
INDEX
1459
Heart (Cont’d)

mechanisms affecting, 701
in muscular dystrophy, progressive, 1350
posture and exercise affecting, 945
in pulmonary disease, positive-pressure breathing affecting, 701
new pulse-contour measurement, 886
response to norepinephrine, chlorothiazide affecting, 583
and stroke volume, 1275
plasma constituents, effect on, 531
postoperative function, 1010
protein synthesis in, 497
pump as substitution for cardiac function, 976
rate
in hibernation, 436, 437, 440
and phosphates, 420
radiotelemetry, 963
variability in newborn, 1060
senile, 926
sounds
in aortic stenosis, subvalvular, 1130
double femoral sound, 686
first, 919, 938
frequency-intensity analysis of, 990
Korotkov’s sounds, 700
opening snap in mitral stenosis, 697
in pectus excavatum, 1019, 1147
posture affecting, 1022, 1270
second sound, 180-184, 338, 1270
tape-recorded, 999
third sound in mitral valve disease, 1033
steer, impulse-conducting system of, 348-367
structure of, 460
tamponade, 1037, 1274
telemetry, cardiopulmonary, 1032
transplants, homologous, 1018
tubular elements of, 345
volume
kymographic phase analysis studies, 1435
roentgen studies, 1435
work capacity of, and phosphates, 420
Heat
and energy, 332, 410, 429
exchanger for hypothermia, 1436
maintenance, and tension, 431
types of, and contraction, 332, 410, 411, 429
Helium-oxygen inhalation test, in left-to-right shunts, 877
Hematomas, surgery in, 1069
Hemorrhage
and anticoagulant therapy, 124, 135
gastrointestinal
aspirin-induced, anticoagulants affecting, 613-616
myocardial infarction after, 141
in long-term anticoagulant therapy, 1137-1142
and pericarditis, 932
and precordial pulsatory motions, 1023
Hemorrhagic shock
cardiac metabolism in, epinephrine affecting, 699
circulating volume in, 1089
digitalization in, 912
sympathoadrenal response in, 1023
Hemostatic mechanism, 124-125
Heparin
administration of, 136
anticoagulant activity of, 90, 91, 125-131
bis-hydroxyxycoumarin compared with, 858
clearing factor lipase activity, serum inhibitors of, 1092
and electrophoretic mobility of lipoproteins, 1094
lipemic clearing action of, 857
long-term, in coronary atherosclerosis, 961
after myocardial infarction, 1256
plasma, effects on thromboplastin generation, 1091
plasma lipoprotein lipase after, 87-88
releasing enzymes into plasma, 1041
thrombocytopenia from, 1093
thromboelastogram after, 1206-1214
and thromboembolic activity of fibrinolytic agents, 1001
and thrombus growth, 1078
Hepatic conditions. See Liver
Hexamethonium, physiological disposition of, 694
r-Hexane poisoning, myocardial tissue changes in, 1266
Hexosephosphate, in anaerobic contraction, 488
Hibernation, 433
arousal from, 438, 440-443
body processes during, 436-440
endocrine glands in, activity reduced in, 435
events in, summary of, 442
and food stores, 435
and lipid, of fat mitochondria, 344
and longevity, 438
in mammals, 434-445
and neoplasms, effect on, 429
physiologic thermostat in, 443
preparation for, factors in, 434-436
and radiation, effect of, 439
and sleep, 445
Hill’s equation, 332, 431
Hill’s law, of muscle efficiency, 415
Histamine, and capillary permeability, 382
Histochemical studies, evaluation of, 1108
Howard test, in hypertension, 1039
Humid atmosphere, effects of, 1003
Hunter ligation, in popliteal aneurysm, 26
Hydralazine, intravenous, renal responses to, 1024
Hydrochlorothiazide
in edema, 1265
in hypertension, 1073
salt depletion from, 788-795
sodium intake affecting, 879
Hydrocortisone
and arteriovenous shunts, 1012
in hypercholesterolemia, 1098
Hydroquinethamide, hypotensive action of, 1266
17-Hydroxy corticoids
in coronary artery disease, 141
plasma levels, and blood pressure, 511
5-Hydroxyindole excretion, in coronary artery disease, 141
Hyperemia, reactive, effects of, 898
Hypertension, 1964-1966
aldosterone antagonist in, 1073
and aldosterone excretion, 592-597
alpha methyl dopa in, 880, 882
anatomical basis of, 985
angiotensin II degradation in, 1074
antihypertensive drugs in, 311, 1045
baseline for, 945
antihypertensive mechanisms of salt depletion, 788-789
benzothiadiazines in, 963, 1073
bretylium tosylate in, 1265

Circulation, Volume XXIV, December 1961
catechol excretion in pheochromocytoma, 308
and cerebrovascular accidents, 978
diagnostic studies, 1039
cellulase inhibitor in, 857
electrocardiography in, 887
employment in, 1101
essential, 310
-cardioglobulins in, 533
serum sodium and potassium in, 29-33
femoral vascular resistance in, 994
guanethidine in, 1265
hyperparathyroidism with, 1033
hyperrnic acidosis in, 972
lipid metabolism in, 311
malignant, and aldosterone secretion, 309
methotrexate in, 966
norepinephrine, and pressor responses to norepinephrine, 1051
supine exercise in, 76-81
portal, in cirrhosis, 797-806
proveratrine in eclampsia, 309
psychogenic, 1265
pulmonary
angiography in, 875
after bretylium tosy late, 993
and congenital shunts in adults, 916
isoproterenol in, 1035
pulmonary artery stenosis with, 1275
in tuberculosis, 308
ventricular septal defect with, 34-40, 890
renal arteries in, aberrant, 1192-1195
renal artery occlusive disease with, 1286-1303
renal biopsy in, 1094
and renal blood flow, 987
renal, and ischemia, 309, 918
renal juxtaglomerular cells in, 902
renal photoscanning in, 1043
renal revascularization for, 810
and renal vascular disease, unilateral, 949
renal vascular resistance in, 994
renography in, radioisotopic, 898
renovascular, split renal function studies in, 947
retinal fluorescence in, 88
right ventricular, 1017
severe, effects of therapy for, 830
sodium amobarbital in, 1059
sodium chloride-lactate solution in, 511
sodium excretion in, 860
spatial area vectors in, 1360
and stroke, 1264
thiazide diuretics in, 1197-1204
tone of small veins in, 399

Hyperthermia, reactive, in dye-dilution tests, 148

Hypertonic solutions, vascular effects of, 1272

Hypertrophy of heart
aortic coarctation with, 756-757
biventricular, and increased shunt tolerance, 930
infantile, 605
left ventricular
anomalous venous drainage with, 669
electrocardiography in, 910, 1022
glycogen levels in, 312
mitochondria in, 511
right bundle-branch in, 692, 1264
right ventricular
electrocardiography in, 305, 308
right bundle branch block with, 1264
ventricular septal, differential diagnosis of, 1071

Hypoplasia, right ventricular, 1388-1401

Hypotension
arterial wall response to, 962
orthostatic, 76-81, 1051

Hypotensive action
of diuretics, 309
of guanethidine, 693
of hydroflumethiazide, 1266

Hypothermia
cold exposure, 305, 910, 941
and angina pectoris, 935
anticoagulant therapy, 143, 895, 945
cessation of, 1257
“voluntary” cardiac control in, 1319-1325

Indicator dilution curves. See Dilution curves

Indocyanine green, and sodium acetrizoate, in whole blood, 883

Infants. See Children

Infarction, myocardial
amino nitrogen levels in, 1257
aneryxism after, 143
and angina pectoris, 935
anticoagulant therapy, 143, 895, 945
cessation of, 1257
“voluntary” cardiac control in, 1319-1325

Coronary artery anomaly with, 143
in diabetes, 1093
diet in, 1100
diabetic-induced, 1085
after electric shock, 1259
electrocardiography in, 110-121, 821, 843, 1076
electrokymography in, 1262
exercise after, 142
exercise test in prognosis, 737
and fatty acids after smoking, 970
and gastrointestinal hemorrhage, 141
hepatic after, 1256
hypothermia and extracorporeal circulation in, 976

INDEX

Hypotension—Infarction, myocardial

electrocardiography in, 887
employment in, 1101
essential, 310
-cardioglobulins in, 533
serum sodium and potassium in, 29-33
femoral vascular resistance in, 994
guanethidine in, 1265
hyperparathyroidism with, 1033
hyperrnic acidosis in, 972
lipid metabolism in, 311
malignant, and aldosterone secretion, 309
methotrexate in, 966
norepinephrine, and pressor responses to norepinephrine, 1051
supine exercise in, 76-81
portal, in cirrhosis, 797-806
proveratrine in eclampsia, 309
psychogenic, 1265
pulmonary
angiography in, 875
after bretylium tosy late, 993
and congenital shunts in adults, 916
isoproterenol in, 1035
pulmonary artery stenosis with, 1275
in tuberculosis, 308
ventricular septal defect with, 34-40, 890
renal arteries in, aberrant, 1192-1195
renal artery occlusive disease with, 1286-1303
renal biopsy in, 1094
and renal blood flow, 987
renal, and ischemia, 309, 918
renal juxtaglomerular cells in, 902
renal photoscanning in, 1043
renal revascularization for, 810
and renal vascular disease, unilateral, 949
renal vascular resistance in, 994
renography in, radioisotopic, 898
renovascular, split renal function studies in, 947
retinal fluorescence in, 88
right ventricular, 1017
severe, effects of therapy for, 830
sodium amobarbital in, 1059
sodium chloride-lactate solution in, 511
sodium excretion in, 860
spatial area vectors in, 1360
and stroke, 1264
thiazide diuretics in, 1197-1204
tone of small veins in, 399

Hyperthermia, reactive, in dye-dilution tests, 148

Hypertonic solutions, vascular effects of, 1272

Hypertrophy of heart
aortic coarctation with, 756-757
biventricular, and increased shunt tolerance, 930
infantile, 605
left ventricular
anomalous venous drainage with, 669
electrocardiography in, 910, 1022
glycogen levels in, 312
mitochondria in, 511
right bundle-branch in, 692, 1264
right ventricular
electrocardiography in, 305, 308
right bundle branch block with, 1264
ventricular septal, differential diagnosis of, 1071

Hypoplasia, right ventricular, 1388-1401

Circulation, Volume XXIV, December 1961
Infarction (Cont'd)
impending, 390
infra-atrial, 1014
intermediate coronary syndrome, 557-570
isoenzymes in, 879, 1259
kinetocardiography of precordial bulges in, 977
and left bundle-branch block, 1007, 1260
nialamide in, 1040
l-norepinephrine and ouabain after, 911
and papillary muscle rupture, 892
peri-infarction block, 991
pleuro-pericarditis after, 140
in pregnancy, 1259
premenopausal, 902
and pulmonary edema, 933
radiosotope scanning in, 1338-1341
recurrent, 1356, 1357
revascularization after, 888
rudimentary anterior, 1260
serum lipids in, 1257
serum manganese values in, 954
short-term prognosis of, 142
silent, 144
transitory Q waves in, 1261
vacular reactive after, 281-288
vectocardiography in, 992
Frank system, 825-849
Grishman cube system, 808-823
in women, 145
in young subjects, 982
Infarction, pulmonary
isoenzymes in, 879
and staphylococcal infections, 701
Infrared spectrophotometry, in coronary atheromas, 1106
Infundibular stenosis, 232, 250
atrioventricular canal persistence with, 874
Inhalation test, in shunt detection, 943
Inogen, 412
Inosine
diphosphate, 391
triphosphate, 396
triphosphate, 391
Inotropic effects on muscle contraction, 421
Instruments, early history of, 548, 711, 824
Insufficiency
aortic valvular, 179
surgery in, 516
cardiac, radiiodine therapy in, 1266
coronary
neurogenic origin, 144
radiiodine in, 1266
mesenteric vascular, 909
mitral. See Mitral valve
pulmonary valve, phonocardiography in, 980
tricuspid, and cardiac failure, 1042
valvular, from arrhythmias and stress, 936
Insulin, and myocardial uptake of fatty acids, 1105
Iodine, radioactive
in cardiac and coronary insufficiency, 1266
localized in myocardial infarction, 1338-1341
Ions
and action potential, 501
distribution of, in muscle fiber, 500
exchange, cellular, 500
movement of, and intercalated disc, 537
Iproniazid, in angina, 141

Index

Ischemia
cerebral. See Cerebral ischemia
renal, and hypertension, 918
ventricular contraction in, 968
Ischemic heart disease
apex cardiogram in, 884
electrocardiography in, 305, 991
serum lipid levels in, 894
D-thyroxin affecting, 1046
Isoenzymes, in myocardial and pulmonary infarction, 879, 1559
Isoproterenol
and contractile force of heart, 694
effects on pulmonary vascular resistance, 1025
in heart failure, 863
Israel, coronary artery disease in, 896

J
Jugular vein, porto-spleno-infero caval external jugular venous reflux, 1270

K
Kanamycin, affecting serum cholesterol, 578-590, 731
17-Ketosteroid excretion, in coronary artery disease, 141, 902
Keith-Flack node, 349
Kibbutzim, coronary artery disease in, 896
Kidney
antibody in nephritis, 1084
biopsy in hypertension, 1084
blood flow measurements, 987
cholesterol turnover rate, 1029
circulation in left-to-right shunts, 1017
in congenital heart disease, 901
diagnosis in renal disease, 1059
inflammation after hematoporphyrin injections, 1064
extraction of fatty acids, 986
failure, SC-7525 in, 1066
glomerular alterations in congenital heart disease, 139
glomerular capillaries, fenestrated endothelium of, 378-382
glomerulonephritis, 1012
erythropoietin chronic, 972
hemodynamic effects of hydralazine, 1024
intrarenal infusion of angiotensin, 917
ischemia hypertension, 309, 918
juxtaglomerular cells in hypertension, 902
diagnosis in hypertension, 1043
photodynamic effect in pregnancy, 933
renography in hypertension, 1029
renography for hypertension, 310
secretion of renal pressor substances, 990
site of action of mercurial diuretics, 882
sodium loss and hyperaldosteronism, 592-597
split renal function studies in hypertension, 947
unilateral vascular disease and hypertension, 949
vascular resistance in hypertension, 994
Kinetocardiography of precordial bulges in myocardial infarction, 977
Korotkov's sounds, 700
Krypton, radioactive
measuring cerebral blood flow, 305
in pulmonary embolism, 1275
Kymographic phase analysis studies, 1435

Circulation, Volume XXIV, December 1961
**L**

**Lactate**
- in anaerobic contraction, 488
- in muscular dystrophy, 1352

**Lactic acid, 412**
- cardiac production of, 425
- and contraction, 324, 325
- of heart, in failure, 486

**Lanatoside-C**
- intravenous, cardiodynamic response to, 945
- and myocardial oxygen consumption, 910

**Lead intoxication, electrocardiogram in, in children, 1044**

**Lewis law, of cardiac muscle, 462**

**Lidocaine, in ventricular arrhythmias, 1270**

**Ligation**
- of carotid and vertebral arteries, 897
- of iliac veins, in heart failure, 863

**Light, polarized, and fibrils in embryo-tissue culture, 450**

**Lipase**
- chylomicron, 1093
- clearing factor activity, serum inhibitors of, 1092
- lipoprotein, after heparin, 87-93

**Lipemia**
- clearing action of heparin, 87, 125
- and clotting changes, 1002
- nicotinic acid in hyperlipemia, 1042

**Lipemic clearing action of anticoagulants, 857**

**Lipids**
- blood and cholesterol control, -1050
- in Trappist monks, 857
- triparanol affecting, 1107
- variations in, 888
- erythrocyte, 1051
- hepatic, and reticuloendothelial stimulation, 1088
- hyperlipemia, 213-221
- and adipokinesia, 1092
- fat absorption in, 882
- and hypercholesteremia, serum protein in, 1091
- nicotinic acid in, 1042
- metabolism in hypertension, 311
- in mitochondria of bat, 344
- plasma, 1051
- in pheochromocytoma, 905
- and reticuloendothelial stimulation, 1088

**Lipoproteins**
- electrophoretic mobility of, heparin affecting, 1094
- formation by isolated perfused liver, 1101
- lipase, plasma, after heparin, 87-93
- serum in coronary artery atherosclerosis, 1066
- parameters in newborn, 1103
- variant of, 1103
- uptake by atheromatous plaques, 1096

**Liver**
- cholesterol synthesis, reduction in, 1099
- lipoprotein formation by, 1101
- pitressin affecting splanchic circulation, 797-806
- portal hypertension in cirrhosis, 797-806
- portal vein occlusion, myocardial necrosis in, 700
- porta-spleno-feroceval external jugular venous reflux, 1270
- reticuloendothelial stimulation and hepatic lipids, 1088
- vitamin K affecting function, 696

**Lizard, 338**

**Lungs. See Pulmonary conditions**

**Lymph, abdominal, in endotoxin shock, 876**

**Lymph flow, cardiac, impairment of, effects of, 998**

**Lymphatics, pulmonary, and pulmonary edema, 1060**

**Lymphocytes, in postoperative syndrome, 1070**

**L-lysine monohydrochloride, diuretics with, 1269**

**Lysolecithin, effect on hypodynamic heart, 532**

**M**

**Macrophage, in atherosclerosis, 1106**

**Magnesium, oral, and cholesterol levels, 955**

**Malic dehydrogenase, in muscular dystrophy, 1352**

**Manganese, serum value in myocardial damage, 954**

**Marfan syndrome, 1154-1162**

**and aortic stenosis, supravalvular, 1314-1316**

**pectus excavatum in, 1148**

**Mayer waves, 971**

**Mebutamate, in hypertension, 956**

**Mediastinum**
- collagenosis, 951
- exploration, angiography with, 1434

**Megakaryocytes, pulmonary, and coagulation, 1038**

**Membrane**
- basement barrier to glomerular filtration, 380
- of capillary wall, 389, 370, 374, 376, 378
- and common bundle, 388
- of eponestral and glomerular capillaries, 383
- as filter, in muscle capillaries, 382
- glomerular capillary ferritin in, 378
- mucopolysaccharide composition of, 383
- pores in, 386
- and sarcodomain, 387
- cell, ion exchange through, 500
- depolarization, and contraction, calcium as link, 518
- excitation of, 499-505
- and intercalated disk, 462
- nerve, conductance in, 502
- nuclear, steer, 364
- plasma, around myocardial fiber cells, 352, 462
- pores, 327, 386
- resistance, and action potential, 501

**Menstruation, anticoagulant therapy in, 135**
Mental retardation, in aortic stenosis, supravalvular, 1311-1317
Mental stress, serum lipoproteins in, 900
Methamphetamine, actions of, 881
MIB-29. See Triparanol
Mercuric sulfide, as marker, in capillary permeability studies, 382
Mesenteric vascular conditions artery, in retrograde perfusion of aorta, 900
insufficiency, 909
roentgenography of, 1435
Metabolism anaerobic, and contraction, 488
carbohydrate, digitoxin affecting, 693
cardiac
after cardiac arrest, 698
in hemorrhagic shock, epinephrine affecting, 699
effects on circulation, 1266-1267
glycogen levels in cardiac hypertrophy, 312
in hibernation, 435, 436, 437
arousal from, 442
endogenous depressant of, 445
in hypothermia, 436
lesions of coronary heart disease, 899
lpid, in hypertension, 311
myocardial, in muscular dystrophy, 1348-1354
oxidative, 418, 420-422
pathways of, and heat, 429
and phosphorylation, 416
Metaramine, in shock, 1063
Metastatic disease, atrophic ventricular block from, 657-661
S-Methionine, and proteins, 486, 496
Methoxamine
and contractile force of heart, 694
in paroxysmal supraventricular tachycardia, 1077
response to, 925
α-Methyl dopa, effects of, 940, 1072
Methadone acid injections, effects of, 1083
Michigan, electrocardiographic survey in, 891
Microscopy electron. See Electron microscopy
interference, 330
light
of common bundle, 350
resolution limits, 326
phase-contrast, of cells in embryo-tissue culture, 450
Microvascular system, dynamic absorption curves of, 889
Mitochondria atrial, 345
bat, 341, 343
of capillary endothelial cells, 370
in cardiac glycoside poisoning, 421
in cardiac hypertrophy, 311
cardiac and skeletal muscle, 333, 385
in cell, in embryo-tissue culture, 449
of common bundle, 351
and contraction regulation, 487
and cross-striations, 450
and energy requirements, 385
in heart failure, and phosphorylation, 496
and oxidative phosphorylation, 423
Mitr al valve annuloplasty, changes after, 877
commissurotomy
emboli after, 263-266, 926
late effects of, 919
new safety measures, 872
in patients aged 50 years or over, 1057
function of, 911
insufficiency
blood volume measurements in, 720-727
phonocardiography and auscultation in, 1014
stenosis with, 969
surgery in, 971
open heart surgery, 953
prosthesis, 946, 1029
pulmonary blood volume in, 1008
stenosis
regurgitation
differentiation from stenosis, 948
measurements, 720-727
stenosis
surgery for, 1005
Molar sodium lactate, in quindine intoxication, 1269
Monoamine oxidase inhibitor
in angina pectoris, 959
new type of effect of, 1040
Monckeberg arteriosclerosis, after hematoporphyrin injections, 1082
Monks, atherosclerosis in, 827, 881
Mortality from cardiovascular disease, 1005
sudden death in coronary atherosclerosis, 1047
Muconiquidaric acids
composition of basement membrane, 383
sulfated, and thromboplastin generation, 1091
Murmurs, cardiac, 642
in congenital cardiovascular lesions, 999
in coronary artery fistula, 173
disappearing, in patent ductus arteriosus, 1235-1237
late systolic, 1083
in pectus excavatum, 1019
respiration affecting, 899
Muscle calcium movement in, 518-522
cell culture of, 447
cells of, common-bundle, 350
contractile, as impulse-conducting system, 349
contractile force. See Contractile force
contraction. See Contraction
cricothyroid, bat, and supersonic sound, 341
dystrophy heart in, 1019
myocardial metabolism in, 1052, 1348-1354
fibers, calcium influx, 521
filaments
atrial, 345
and contraction, 401, 430

Circulation, Volume XXIV, December 1961
INDEX

Myocardium

钙化和lauratoside-C in, 910
after exercise, 1003
oxygen supply, and electrocardiography in
anoxemia, 1273
oxygen tension, coronary artery catheterization
affecting, 1032
and pacemaker function, 466
physiologic differentiation, 465
plasticity, calcium affecting, 1272
power, 1022
revascularization operations, 145, 146, 1009
rupture of, 145
sarcoplasmic reticulum, 342-345
structure of, fine, 328
systolic ejection time in disease, 954, 1263
tissue changes with rigor mortis, 1266
velocity of conduction in, 465

Myofibrils
adenosine triphosphatase, in heart failure, 876
cells, common-bundle, 353
contraction of, calcium and, 538
properties of, functional, 460
skeletal, C14-glycine in, 496
types of, 480

Myogenesis, in vitro, 447-457

Myosin
and A-bands, 330
and actin, 396, 471
amino acid of, 475, 478
and ATP, 392, 471
and ATPase, 476
and actin polymerization, 396
displacement hypothesis, 393, 395
effect of, 393
effect of, 394
and calcium influx, in contraction, 527
characterization of, 472
and contraction, 324
gastroepiploic, 493
from failing and normal hearts
ATPase activity of, 476
diffusion contents of, 475, 480
sedimentation of, 474, 480
viscosity of, 475, 480
weight of, 475, 478, 480
filaments and calcium influx, in contraction, 528
in chronic stretch, 493
thick, 329, 553
in heart failure, 474-480, 494, 862
physical constants of, 474
polymerization of, from chronic stretch, 478
post mortem studies, 495
weight of, 393, 478, 494, 495, 539

Myosin C, weight of, 478

Myosin F, weight of, 478

Myotis lucifugus, 343

N

Naphazoline, and contractile force of heart, 694
Natori preparation of muscle fiber, 538
Neamine, affecting serum cholesterol, 578-590

Necrosis
and electrocardiography in myocardial infarction, 110-121
myocardial, in portal vein occlusion, 700
Neomycin, affecting serum cholesterol, 578-590, 729-735, 1102

Circulation, Volume XXIV, December 1961
Neoplasms, hibernation effect on, 439
Nephritic conditions. See Kidney

Nerves
periaortic denervation, 1871
terminations in ventricular muscle, 1267

Nervous Impulse, chemical transmission of, 190

Nervous system
autonomic
and response to exercise, 367
and serum cholesterol variability, 1097
central, in hibernation, arousal from, 442
in hibernation, 443
sympathetic
blockade, and cardiac output in hyperthermoids, 916
norepinephrine affecting, 697

Neurogenic coronary insufficiency, 144

Neuropathy, diabetic, and pressor responses to norepinephrine, 1051

Nialamide, as antithrombotic drug, 1040

Nicotine, effects on cardiovascular tissue, 1096

Nicotinic acid
in atherosclerosis, 1243
and cholesterol biosynthesis, 1099
effects on serum lipids, 927
in hypercholesteremia, 1062
in hyperlipemia, 1042

Nitrate
and calcium influx, 519
and contraction, 518

Nitrate sodium, effects on coronary vascular resistance, 936

Nitrogen levels, in myocardial infarction, 1257

Nitrogen mustard
in cell culture, 491
DNA synthesis inhibition by, and nuclear replication, 454
in embryo-tissue culture, 456
and nuclei, 456

Nitroglycerin
effects on atrial contraction, 884
effects on coronary vascular resistance, 936
effects on stroke volume, 1871
vascular reactivity after, 285

Nomogram for anticoagulant therapy, 650-656

Norepinephrine. See Epinephrine and norepinephrine

Norethynodrel and ethynylestradiol 3-methyl ether, serum lipid effects of, 1087

Nuclei
replication, 453
syncytial, 452

Nucleotides, adenine, in heart, 417

Nuns, cardiovascular findings in, 1179

Nutrition. See Diet

Obesity
blood flow in, 876
electrocardiography in, 887
fatty acids of adipose tissue, 1102
respiratory mechanics in, 1038

Occlusion
of aorta, 959
arterial, serum enzyme levels after, 987
of carotid artery, internal, 1305-1310
coronary. See Coronary arteries
portal vein, myocardial necrosis in, 700

INDEX

pulmonary artery, 951
pulmonary vascular, and ventricular septal defects in children, 1067
renal artery, and hypertension, 1286-1303
venous, gangrene with, 549-555

Oleic acid absorption, in heart failure, 140

Ophthalmic artery, pressure measurements of, 1305

Opsanuns tau, 339

Ouabain
and aldosterone secretion, 915
concealed ventricular automaticity after, 1061
and contractile force of heart, 694, 957
and efficiency, mechanical, 425
in heart failure, 423
after myocardial infarction, 911

Owen thrombotest, 131

Oxidative metabolism, myocardial, strophanthidin G affecting, 1267

Oxidative phosphorylation. See Phosphorylation

Oxygen
anoxemia
ballistocardiogram in, 1013
electrocardiography in, 1273
anoxia
myocardial, 419, 488
protective effect of hypothermia during, 1006
blood saturation in mitral stenosis, 1164-1171
cerebrospinal fluid, hypothermia affecting, 1274
consumption
activity, determination of, 424
in hibernation, 436, 441
and high energy phosphates, 425-427, 430
myocardial, 910, 1005
and salicylate ingestion, 975
tension, determination of, 434
coronary supply, and flow rate, 1871
extracorporeal oxygenation, without pump, 1017
hypoxemia in heart failure, 1151-1153
hypoxia
myocardial anaerobic metabolism in, 1063
myocardial uptake of fatty acids in, 1105
phonocardiography in, 1260
and weakening of ventricular contraction in ischemia, 968
therapy
CO2 intoxication with, 287
in edema with or pulmonale, 139

Oxyhemoglobin dissociation curve, and acidosis in hypothermia, 1012

Pacemaker
artificial
electronic autopacing, 952
hazards of, 161-163
induction, 958
new implantable, 967
responses to, in heart block, 928
in Stokes-Adams disease, 1078
subcutaneously implantable, 903
ectopic, exit block of, 1014
in myocardial cells in culture, 492
sino-atrial node, 349, 466, 468
and A-V node, 349, 360
cells, structure of, 358
electrical activity of, 506
electrical alternans in, 973
heart tissues and, 468
impulse conduction in, 365
intercalated disc, 359

Circulation, Volume XXIV. December 1961
Peripheral vascular disease, triparanol and warfarin in, 1023
Perogonathus, 435
Peruvoside, effects of, 1269
Phagocytes of platelets, 902
Phenindione therapy, 128
Phenoxymenzamine, and contractile force of heart, 694
Phenylbutazone, and phosphate decrease in heart, 420
Phoeochromocytoma
catechol excretion in, 308
plasma lipid levels in, 905
shock after excision of, 995
Phenopropanolone therapy, 128
Phlegmasia cerulea dolens, 554-555
Phonocardiography
apex cardiogram with, 507
in congenital heart disease, 984
in Ebstein malformation, 895
during breathing of oxygen-poor mixture, 1260
in mitral insufficiency, 1014
after open heart surgery for mitral stenosis, 1038
in pectus excavatum, 1145
pressure recordings with, 981
in pulmonary insufficiency, 980
splitting of second heart sound, 180-184
in tetralogy of Fallot, 389
in ventricular septal defects, 861, 968
Phosphates
and contraction, 420
creatinine, 417, 496
and heat, 429
high energy, 416-428, 430, 496, 531
inorganic, 84
and oxalate, 418
in muscle, atrial and ventricular, 418
and oxidative metabolism, 418
Phosphofructokinase, in contraction, anaerobic, 488
Phospholipids
and hypodynamic heart, 531
metabolism in hypertension, 511
serum, in coronary artery disease, 140-141
Phosphorylase
and anoxia, 489, 497
in fibrillation, 488
in glycogenolysis in skeletal muscle, 488
myocardial, 694
in muscle, atrial and ventricular, 418
Phosphorylation, oxidative
mitochondria and, 423
in muscular dystrophy, 1353
in myocardial tissue, 1286
Phosphorylcreatinine, as energy source, 412-415
Photography, retinal, fluorescence in, 82-86
Photoscanning of kidney in hypertension, 1043
Pigeon, atherosclerosis in, 1087, 1097
Pinocytosis, and transport mechanism, 386
Pitressin
effect on splanchnic circulation, 797-806
hyponatremia from, 191-202
Pituitary fraction H, and plasma free fatty acid, 1095
Plasma
cardiac active principles in, 530-536
cardiolipin, 532
cephalins, diet affecting, 1007
and contraction, 530
Plasma (Cont’d)

fatty acids in, origin and fate of, 1095
heparin
inhibitors of clearing factor lipase activity, 1092
lipoprotein lipase after, 87, 93
releasing enzymes into, 1041
and thromboplastin generation, 1091
17-hydroxy corticosteroid levels, and blood pressure, 311
and interstitial-fluid exchange, 368
isoenzymes, in myocardial and pulmonary infarction, 879
lipoic acid in corneal connective tissue, 1107
fatty acids of, 1102
in pheochromocytoma, 905
and reticuloendothelial stimulation, 1088
volume re-expansion, effects of, 791
thiazide diuretics affecting, 1197-1204
Plastic models, as extracorporeal shunts, 1089
Plastic sponge, in arterial transplants, 936
Platelets
phagocytosis of, 902
survival, and dietary fat, 1098
Plethysmography, digital, 898, 899, 908
Pleural pressures and body position, 1053
Pleuropericardial adhesions, cinefluorography of, 855
Pleuro-pericarditis
after myocardial infarction, 140
postoperative, 976, 994
Polyacrylamide, in anomalous venous drainage into atrium, 675
Polymer melting process, of contraction, 405, 430, 432
Polymerization in A-band, and chronic stretch, 494
Popliteal artery
aneurysm of, 270-273
arteriosclerotic, 23-28
graft, late occlusion of, 1436
Pores
in capillary permeability, 369
in membrane, basement, 386
Portal conditions. See Liver
Posture
and blood volume changes, 925
effect on added heart sounds, 1022
effect on cardiac output, 943
effect on circulation, 1270
effect on splitting of second heart sound, 1270
effect on stroke volume, 1270, 1274
effect on ventilatory-pulmonary vascular mechanics, 1058
orthostatic hypotension, 76-81
diabetes with, and pressor responses to nor-epinephrine, 1051
and plasma 17-hydroxy corticosteroid levels, 311
Potassium
and calcium influx, 520
chloride, in quinidine intoxication, 1269
citrate, cardiac arrest from, myocardial metabo-

lisum after, 698
and contraction, 420, 518, 520, 523
and depolarization, 520, 523
digitalis antagonism by, 694
extracellular, and membrane resistance, 504
levels in hypertension, essential, 29-33
in severe heart disease, 749
thiazide diuretics affecting, 1198
metabolism in diuretic therapy, 1054
and necrotic tissue action, 114
and ouabain action on contractile tension, 597
quinidine affecting exchange, 1268
salts, oral, effect on T waves, 1065
sodium exchange, and energy, 412
Potentiometric electrode, in left-to-right shunts, 924
Potts vs. Blalock operation 965
Precondi tional pulsatory movements, and hemorrhage, 1023
Pregnancy
and congenital heart disease, 1003, 1075
electrocardiography in, 1069
epinephrine action on circulatory system, 965
fetal electrocardiography, 305
myocardial infarction in, 1259
prothrombinate in eclampsia, 309
unsuspected pyleonephritis in, 933
Premature infants, electrocardiography of, 1069
Pressor amines, effects on dilution curves, 1055
Pressor test, cold, 912, 964
Pressure
atrial, 267-269
left, 633-641
in mitral stenosis, 712-719
right, 306
in tricuspid regurgitation, 1026
in bilateral stenosis of pulmonary arteries, 875
breathing
negative, venous obstruction from, 1010
positive, and cardiac output in pulmonary disease, 701
carotid artery, 1306
hydrostatic and osmotic, in fluid exchange, 369
ophthalmic artery, 1305
and peripheral resistance, 1052
pulmonary, in mitral stenosis, 712-719
simultaneous recordings, 921
suit, effects of, 1060
ventricular, 267-269
first derivative of, 941
left, 633-641
right, 306
Procaine amide, and ventricular fibrillation, 1004
Prosthesis
aortic valve, 969, 994, 1002, 1029
artificial heart, 974
mitral, 946, 1029
new valve designs, 1029
for outflow tract of right ventricle, 964
Protamine sulfate, as antidote to heparin, 127
Protein
dietary, and atherosclerosis, 1097
serum
and hypercholesteremia hyperlipemia, 1091
in rheumatic fever, 886
synthesis, 486, 487
Proteinuria, asymptomatic, 972
Prothrombin
aspirin affecting time, 613
depressing agents, 1506-1214
hypoprothrombinemia and pericarditis, 932
vitamin K affecting, 696
one-stage prothrombin time, 1422-1428
tests, 131-134
Prothrombinopenic drugs, 127-131
Prothrombinase
in eclampsia, 507
pressor response to, 791
Circulation, Volume XXIV, December 1961
Pseudocoarctation of aortic arch, and aortic stenosis, 1049
Psychogenic hypertension, 1265
Psychotic patients, myocardial rupture in, 142
Pteridine diuretic, effects of, 1026
Pulmonary artery
agenaesis of, unilateral, 861
anomalies, 662-668
aortic coarctation and ventricular septal defect
with, 1364-1385
aorta, anatomosis to, 1031
and aortic anomalous communications, 860
atherosclerotic, in India, 68-75
constriction, in ventricular septal defect
in infancy, 34-40
contrast media injection into, 1080
coronary artery communication with, 171-177, 1050
and left atrial communication, 1409-1414
left coronary artery arising from, 1050
occusion, 351
perfused wedge segments, 1053
pulsations, cinefluorography of, 1070
stenosis
bilateral, 875
pulmonary hypertension with, 1275
transporation. See Transportation of great vessels
Pulmonary conditions
arteriovenous fistula, 669, 1409-1414
blood flow
krypton in estimation of, 1045
regional, 617-624
blood volume, 930, 969
exercise affecting, 931
in mitral valve disease, 1008
circulation
angiotensin affecting, 1326-1336
in aortic coarctation, 754-759
blood volume measurements, 904
collateral, 677-688
hypothermia affecting, 941
in left-to-right shunts, 1017
congenital malformations, 932
cor pulmonale. See Cor pulmonale
disease, 1276
acetylcholine infusions in, 904
edema
experimental, 1270
and myocardial infarction, 933
emphysma. See Emphysema
hypertension
angiocardiography in, 875
and congenital shunts in adults, 916
infarction
isoenzymes in, 879
and staphylococcal infections, 701
intermittent positive-pressure breathing and
cardiac output, 701
lymphatics, and pulmonary edema, 1060
megakaryocytes, and coagulation, 1053
overaeration of left lung in patent ductus
arteriosus, 937
postoperative function, 1010
pressure
arterial, and normovolemic anemia, 384
capillary, in severe heart disease, 743-753
in mitral stenosis, 712-719
resistance, in ventricular septal defect, 1372-1386
respiration. See Respiration
thromboembolism, hemodynamic alterations of,
1011
Radiation
during hibernation, 439
sonic, and ATP splitting, 397
Radioelectrocardiography, in exercise, 884
Radioisotope scanning, in myocardial infarction, 1338-1341. See also specific isotopes
Radiology, 1450-1456
in aortic stenosis, subvalvular, 1131
in congenital heart disease, 1454
in coronary artery fistula, 175
of coronary veins, 1431
in dissecting aneurysm of aorta, 1453
exercise chest x-rays in mitral stenosis, 949
of heart volume, 1432
in ischemia of brain, 1450
in left-heart failure, 935
in mesenteric vascular disease, 1455
in pectus excavatum, 1148
of pulmonary vessels, in ventricular decompensation, 185-189
in right ventricular hypoplasia, 1400
television study of cardiac calcifications, 1407-1408
in ventricular septal defect, 258
Radiotelemetry, of heart rate, 963
Rat
capillary walls of, 370
nephrotic, glomerular capillary wall of, 380
Norway, as hibernator, 443
Rebound phenomenon, in anticoagulant therapy, 137, 1137-1142
Reciprocal rhythm, 978
Regurgitation, valvular
aortic. See Aortic valve
dilution curves in, 1008, 1056
mitral. See Mitral valve
tricuspid, right atrial pressure pulse in, 1026
Relative motion, 401-403
Relaxants, muscle, effect on cardiac output, 701
Relaxing factors system, calcium inhibition of, 521, 528
Renal arteries
aberrant, in hypertension, 1192-1195
arteriography, 916
atherosclerotic, in India, 68-75
occlusive disease, and hypertension, 1286-1303
Renal condition. See Kidney
Renin purification by electrophoresis, 1489
Renography in hypertension, 898, 1039
Repolarization, 501, 503
Research, as community project, 880
Resection, in popliteal aneurysm, 23-28
Reserpine
digitalis with, 925, 1185-1191
effect on catecholamines, 988
Resistance
core, 462
peripheral
computer technic for monitoring, 1047
after coronary artery constriction, 1036
and pressure gradients, 1058
pulmonary
isoproterenol affecting, 1025
in mitral valve disease, 1035
in ventricular septal defect, 1372-1386
Respiration
and cardiac murmurs, 980
and cardiac output, 701
Cheyne-Stokes, circulatory changes of, 1058
gas exchange ratio in exercise, 1068
heart rate reflex, 905
and heating of carotid blood, 701
in hibernation, 436, 437, 440
hyperventilation, breath-holding test for, 974
negative pressure breathing, venous obstruction from, 1010
neonatal distress, 920, 1060
in obesity, 1038
positive-pressure breathing, and cardiac output in
pulmonary disease, 701
regulation of breathing, in heart failure, 878
and splitting of second heart sound, 180-184
Retardation, mental, in aortic stenosis, supravalvular, 1311-1317
Reticulocytosis, in heart failure, 1151-1153
Reticuloendothelial stimulation, and cholesterol levels, 1088
Retinilum
endoplasmic, 337, 370
sarcoplasmic, 356-358
sarcotubules, and H zone, 385
triad of, 337
Retina, fluorescence in, 82-86
Retrograde transmission, from A-V node, 510
Revascularization
after myocardial infarction, 888
operative
in ischemic heart disease, 145-146
myocardial, 1009
renal, for hypertension, 510
in renal ischemia, 1195
Rheoplethysmography, digital, 898, 899
Rheumatic fever, 1429-1450
and beta hemolytic streptococci, 1430. See also Streptococci
cardiac sequelae of, 531
control program in Chicago, 1048
prevention of first attacks, 947, 964, 992
reactivation of, 931
residual effects of, 932
serum proteins in, 886
streptococcal infections after, 1429
Rheumatic heart disease, 1450
f ever in, 926
and heart failure, 1047
left atrial thrombosis in, 1062
pulmonary veins in, 1454
streptococcal prophylaxis, prolonged, 919
without rheumatic fever, 1006
Rheumatoid arthritis, heart block in, 1038
Rhythm, reciprocal, 973 See also Arrhythmia
Ribonucleic acid, and basophilia of multinucleated cells, 449
Ribonucleoprotein
absent in sarcoplasmic tubules, 337
of capillary endothelial cells, 370
in specific tissue, sheep, 361
Riboosome, absent in sarcoplasmic tubules, 337
Rigor mortis, myocardial tissue changes with, 1266
Roentgenology. See Radiology
Ruanda, detection of cardiovascular anomalies in, 1455
Rupture, myocardial, 142

Circulation, Volume XXIV, December 1961
Russian research—Spectrophotometry

Russian research on vitamins and atherosclerosis, 1239-1246
Ryanodine muscle contraction, and phosphates, 420

S

S-region, 353, 360
Salicylates gastrointestinal bleeding from anticoagulants affecting, 613-616 prothrombinopenic effect of, 136
Sarcolemma, 338 and basement membrane, 387 and Z-band, of bat, 344
Sarcomere bat, 344 size, 328 and terminal cisternae, 337
Sarcoplasm, interfibrillar, atrial, 345
Sarcosomes, increase in, in cardiac hypertrophy, 486
Sarcotubes, rat, 343
Sarcoptubes, reticular, and H-zone, 385
SC-7525, in renal failure, 1066
Scanning, radioisotope, in myocardial infarction, 1338-1341. See also specific isotopes
Schizokinesis, blood pressure changes in, 1965
Scientific Sessions, abstracts of lectures, 871-1079
Second heart sound, 938 splitting of, 180-184 posture affecting, 1270
Senile heart, 926
Septal defects atrial. See Atrium small, visualization of, 1030 ventricular, 228-232. See also Ventricles
Serotonin and capillary permeability, 382 and contractile force of heart, 694 release in hemorrhagic shock, 1053
Serum fatty acid levels, ganglionic blockade affecting, 697 glutamic oxalacetic transaminase, in heart failure, 140 inhibitors of heparin clearing factor lipase activity, 1092 lipids. See Lipids lipoprotein parameters in newborn, 1103 phospholipids, in coronary artery disease, 140-141 potassium, in hypertension, essential, 29-33 proteins. See Proteins sodium in hypertension, essential, 29-33 hyponatremia, genesis of, 191-202 turnover rates after cardiopulmonary bypass, 280 Sheep specific tissue, 349, 360
Shock bacteremic, 1067 electric, myocardial infarction after, 1259 endotoxin, 876 hemorrhagic cardiac metabolism in, epinephrine affecting, 699 circulating volume in, 1089

INDEX

Digitalization in, 912 sympathoadrenal response in, 1023 and peripheral circulatory response, 554-555 after pheochromocytoma excision, 995
serum enzyme elevation in, 1041 vasopressor drugs in therapy of, 1068
Shunts amyl nitrate affecting, 318 arteriovenous, and hydrocortisone, 1012 atrioventricular, constriction of, 898 congenital, and pulmonary hypertension, 916 extracorporeal, deposit formation in, 1099 increased tolerance and biventricular hypertrophy, 930 left-to-right dilution curves in, 1055 inhalation test for, 877, 942 phonocardiography in, 968 potentiometric electrode for, 924 renal and pulmonary circulation in, 1017 small, visualization of, 1030 and ventricular septal defect, 944 right-to-left, ether test for, 1224-1226
Sicista, 435
Sino-atrial block, 977
Sino-atrial node. See Pacemaker
Sinus rhythm, and nodal tachycardia with block, 14
Slapak and Partilla leads in electrocardiography, 507
Sleep, and hibernation, 445
Smoking cigarette smoke condensate, effects of, 1096 and coronary heart disease, 921 and fatty acids in myocardial infarction, 970 vascular responses to, 698
Sodium blood, measurement by glass electrode, 1052 and calcium antagonism, 523 depletion, antihypertensive mechanisms of, 788-795 high body sodium, persistence of, 626-632 hyponatremia, genesis of, 191-202 intake of, and effects of hydrochlorothiazide, 879
Inate in hypertension, 311 in quinidine intoxication, 1269 metabolic balance in severe heart disease, 749 permeability increase during action potential, 501 radioactive, measuring myocardial blood renal wasting, and hyperaldosteronuria, 592-597 retention in heart failure, and inotropic agents, 493 serum, in hypertension, essential, 29-33 thiazide diuretics affecting levels, 1198 Somatotrophic hormone, cardiac glycogen after, 312
Space flight, effects of, 700
Specific tissue cell borders, and enzymes, 365 sheep, 349, 360, 361 steer, 361
Spectrophotometry, infrared, in coronary atheromas, 1108
Streptococci, Steroids, Spleen, Stress

**Spleen**
- absence of, cardiac disease with, 1004
- porto-spleno-inferocaval external jugular venous reflux, 1270

**Splenomegaly**, in postoperative syndrome, 1070

**Staircase phenomenon, 324**

**Staphylococcal infections**, and pulmonary infarcts, 701

**Starling's law, 324, 633-641**
- in heart of closed-chest dog, 1064

**Steer heart, impulse-conducting system in, 349-367**

**Stellate ganglion block, in pericardial pain, 607-612**

**Stenosis**
- aortic. See Aortic valve
- infundibular, 232, 250
- atrioventricular canal persistence with, 874
- mitral. See Mitral valve
- pulmonary artery
- bilateral, 875
- pulmonary hypertension with, 1275
- pulmonary valve. See Pulmonary valve

**Steroids**
- fecal, after mevalonic acid injections, 1083
- hydroxylation by adrenocortical microsomes, 809
- and hypodynamic heart, 531
- urinary excretion in coronary artery disease, 141

**Sterols, fecal, dietary cholesterol effecting, 1083**

**Stokes-Adams disease**, electric pacemakers in, 1078

**Streptococci**
- antistreptolysin-O titer determinations, 1430
- beta hemolytic
- direct plating and mail-in methods for, 978
- fluorescent-antibody technic in identification, 964
- incidence of, 971
- cell walls of, chemical composition of, 1043
- community control program, 988
- infections after rheumatic fever, 1429
- prolonged prophylaxis and rheumatic heart disease, 919

**Streptomycin, effects on serum cholesterol, 782, 733**

**Stress**
- emotional, and coronary heart disease, 1027
- and left ventricular volume, 1080
- mental, serum lipoproteins in, 900
- and valvular insufficiency, 936

**Stroke volume**
- and cardiac output, 1275
- exercise affecting, 1274
- nitroglycerine affecting, 1271
- position affecting, 1270, 1274

**Strophantin**
- and cardiac oxidative metabolism, 1267
- vascular reactivity after, 285

**SU 5864. See Guanethidine**

**Succinic dehydrogenase**, of conduction tissue, 464

**Sulfate**, incorporation into aorta, 957

**Sulphydryl, and myosin ATPase, 394**

**Supernormality**, and cardiac excitability, 516

**Superprecipitation, 487**

**Surgery, 1436**
- Acid Citrate Dextrose Formula B blood in, 1062
- in angina pectoris, syphilitic, 143
- and anticoagulant therapy, 134-135
- in aortic aneurysms, 290-302, 1054
- in aortic coarctation, 873
- in aortic insufficiency, 914
- in aortic stenosis, 982
- subvalvular, 739-742
- in aortic valve lesions, 900
- aortic valve prosthesis, 969, 994
- atrial appendages, use of, 958
- in atrial septal defect
- arrhythmia after, 1015
- risk quotient rate in, 903
- Blalock vs. Potts operation, 965
- in carotid artery occlusion, 1305-1310
- cardiac function after, 1010
- cardiopulmonary bypass in. See Bypass
- carotid artery ligation, 897
- conduction disorders after, 1436
- conduction system, identification of, 979
- coronary arteries, anomalous distribution of, 782-787
- embolization, postoperative, 263-266, 926
- graft failures, 1436. See also Grafts in heart block, 934
- heat exchanger for hypothermia, 1436
- in hemophilia, 1069
- iliac vein ligation in heart failure, 863
- in ischemic heart disease, 145-146
- mitral
- annuloplasty, changes after, 877
- commissurotomy. See Mitral valve in insufficiency, 969, 971
- prosthesis for, 946
- in stenosis, 901, 969, 1001, 1005
- open heart
- abnormal diuresis after, 904
- blood volume in, 879
- hemodilution perfusions for, 919
- in mitral valve disease, 963, 975, 1001
- in pericardial disease, 308, 1020, 1076
- pheochromocytoma excision, shock after, 995
- plastic sponge in arterial transplants, 936
- in popliteal aneurysms, 23-28
- in postinfarction myocardial aneurysms, 983
- postoperative mitral valvular disease, 952
- postoperative syndrome, 976, 994, 1070
- problems in deep hypothermia and prolonged circulatory arrest, 928
- in pulmonary artery anomaly, 662-668
- pulmonary function after, 1010
- in pulmonary valvular stenosis, 1041
- in pulmonary venous drainage anomaly, 862
- in renal artery occlusive disease, 1203-1300
- revascularization. See Revascularization risk in cardiac patient, 1042
- sympathectomy. See Sympathectomy in tetralogy of Fallot, 893, 1342-1346

Circulation, Volume XXIV, December 1961
| Tension and actin filament, 430 |
| in heart muscle, extracted, 484 |
| and heat maintenance, 451 |
| resting, and mechanical efficiency, 425 |
| Test, prothrombin time, 131-134 |
| Testicular fibrosis, and arteriosclerosis, 1367-1370 |

**Tetralogy of Fallot.** See Fallot tetralogy from ventricular septal defects, 955

**Tetramethylammonium chloride, and myosin ATPase, 394**

**THAM, in heart failure, 897**

**Thebesian drainage in left heart, 1000**

**Theophylline, and contractile force of heart, 694**

**Thermometer, invention of, 212, 548, 711**

**Thiamine, in atherosclerosis, 1243**

**Thiazides.** See also Benzothiadiazine, uric acid excretion after, 1045

**Third heart sound in mitral disease, 1033**

**Thrombectomy, in thrombophlebitis of leg, 950**

**Thromboangitis obliterans, prognosis of, 996**

**Thrombocytopenia**

in cyanotic congenital heart disease, 1013

heparin-induced, 1093

and pericarditis, 932

**Thrombocytic purpura, after aspirin, 615**

**Thromboelastogram**

after coumarin drugs, 893

after fibrinolytic therapy, 960

after heparin, 1206-1214

**Thromboembolism, 858-859**

pulmonary, hemodynamic alterations of, 1011

**Thrombolysis, heparin affecting, 1001**

**Thrombophlebitis, of leg, thrombectomy in, 950**

**Thromboplastin generation, plasma heparin affecting, 1091**

**Thrombosis**

coronary artery

differential diagnosis, 569

fibrinolytic therapy, 973

gangrene with, 147

origin of, 1287

prenatal, and urinary 17-ketosteroids, 902

in diabetes, 1093

diet in, 1100

experimental production, 858

fibrinolytic activity in venous segment, 859

left atrial

angiocardiology in, 963

in rheumatic heart disease, 1062

lipids in, source of, 902

monamine oxidase inhibitor, antithrombotic effects of, 1040

nialamide as antithrombotic drug, 1040

of popliteal aneurysm, 23

and pulmonary megakaryocytes, 1038

quantitation of thrombus growth, 1078

venous, fibrinolytic therapy, 859

**Thrombotest, Owren, 131**

**Thyroid**

analogs affecting serum triglycerides, 1084

atheromatous lesions in hyperthyroidism, 1096

cardiac output in hyperthyroidism, 916

circulatory adaption in hyperthyroidism, 975

---

Sweating test, after sympathetic nervous system

Syncytium

Systoles, ventricular

Syphilis, angina pectoris with, 143

---

[INDEX]

T

T.!Prop, and cholesterol biosynthesis, 1090

Tabes dorsalis, circulatory reflexes in, 77

Tachycardia

nodal, with block, 12-21

paroxysmal, acetylcholine in, 1269

refractory, termination of, 1078

ventricular

functional, 873

methoxamine in, 1077

and phosphorylase, 488

retrograde conduction in, 236-247

Tamponade

cardiac, 1087, 1074

pericardial, 700, 943

Tape-recorded heart sounds, 999

Taurine, cardiovascular activity of, 696

Telemetry, cardiopulmonary, 1032

Television study of cardiac calcifications, 1407-1408

Temperature

in arterial vascular disease, 908

in hibernation, 434, 436-438, 441

and hypothermia, 444

and nerve conduction, 443

hypothermia. See Hypothermia

reactive hypothermia in dye-dilution tests, 148

after sympathectomy, 1215-1219

Circulation, Volume XXIV, December 1961
Ventricular(s) affecting function, 1326-1336
arrhythmias, lidocaine in, 1270
asystole in heart block, 1031
bigeminy, 11, 1185
and cardiac lymph flow activity, 998
in children, normal, 1267
concealed automaticity after ouabain, 1061
conduction, local anesthetics affecting, 1011
coronary artery communication with, 171-177
crista supraventricularis, 223
ectopic beats, 1053
ejection dynamics, age and sex factors, 1068
electron microscopy of muscle fibers, 954
embryonic, pacemaker function in, 492
fibrillation
after coronary artery occlusion, 1859
flow relationships, indicator studies of, 1028
hypertrophy
anomalous venous drainage with, 669
aortic coarctation with, 756-757
biventricular, and increased shunt tolerance, 930
cardiac apex impulse palpation in, 960
coronary artery with, 308
electrocardiography in, 305
at high altitudes, 961
mitochondria in, 911
septal, differential diagnosis of, 1071
left
activation of epicardial surface, 1034
aneurysm, in Africans, 515
angiography in mitral stenosis, 1431
after cardiac arrest, 1274
coronary artery catheterization affecting, 1032
decompensation, pulmonary vessels in, 185-189
failure, and anaerobic myocardial metabolism, 1039
false paradoxic movement of, 889
fraction of end-diastolic volume ejected per beat, 934
in giant left atrium, 882
isometric contraction time, 942
and left atrial pressure, 633-641
muscular obstruction to outflow, 1126-1135
myopathy with septal defects, 889
pressure and volume in, 287-269, 980, 1080
puncture with angiography, 204-211
reduction in impedance affecting, 1078
muscle bundles of, 224
nerve terminations in muscle, 1267
overload, effects of, 1030
potassium-depolarized, contraction by electric current, 1048
pressure pulse, first derivative of, 941
right
bypass in tricuspid atresia, 928
elastic properties in hypertension, 1017
hypoplasia, isolated, 1388-1401
origin of great vessels from, 927
outflow tract of, 223-235, 964
pressure studies, 306
prosthesis for outflow tract, 964
hypertrophy, right bundle branch block with, 1264
two-chambered, 1058
septal defects, 228-332
acyanotic tetralogy from, 955
in adults, 946
aneurysm of membranous portion, 513
aortic coarctation with, 1356-1366
atrial septal defect with, 861
cineangiography in, 305
electrophysiologic variations in, 148
hemodynamic studies, 860
isolated, natural history of, 1372-1386
and left-to-right shunt, 944
left ventricular myopathy with, 889
left ventriculography in, 1000
natural course of, 968
phonocardiography in, 861, 968
pulmonary blood flow in, 623
and pulmonary hypertension, 890
and pulmonary vascular obstruction in children, 1067
spontaneous closure of, 874, 890
surgery in, in infancy, 34-40
unsuccessful closure of, 250-262
single, pathologic anatomy of, 1061
standstill, in rheumatoid arthritis, 1058
systole as venous pump, 966
tachycardia. See Tachycardia, ventricular
trabecula septomarginalis, 224
vagal stimulation and acetylcholine affecting, 925
volumes of both ventricles, 1018
weakening of contraction in ischemia, 968
Ventricular gradient
spatial, 910
in tetralogy of Fallot, 94-108
theory of, 1261
Ventriculo-atrial conduction, 236-247
Ventriculography, left
retrograde, 978
in ventricular septal defects, 1000
Ventriculotomy
left
and activation of ventricular epicardial surface, 1034
in aortic stenosis, diffuse subvalvular, 739-742
right, effects of, 575-576
site of, influence of, 968
Ventricular septal defect with
atrial septal defect with, 861
cineangiography in, 305
electrophysiologic variations in, 148
hemodynamic studies, 860
isolated, natural history of, 1372-1386
and left-to-right shunt, 944
left ventricular myopathy with, 889
left ventriculography in, 1000
natural course of, 968
phonocardiography in, 861, 968
pulmonary blood flow in, 623
and pulmonary hypertension, 890
and pulmonary vascular obstruction in children, 1067
spontaneous closure of, 874, 890
surgery in, in infancy, 34-40
unsuccessful closure of, 250-262
single, pathologic anatomy of, 1061
standstill, in rheumatoid arthritis, 1058
systole as venous pump, 966
tachycardia. See Tachycardia, ventricular
trabecula septomarginalis, 224
vagal stimulation and acetylcholine affecting, 925
volumes of both ventricles, 1018
weakening of contraction in ischemia, 968
Vesicles
of capillary endothelial cells, 370, 372, 376
of common bundle cells, 351
and pinocytosis, 386
Viscosity of blood, 1098
in peripheral circulation, 1069
Vitamin A, in atherosclerosis, 1242
Vitamin B6, in atherosclerosis, 1243
Vitamin B12, in atherosclerosis, 1244
Vitamin C, in atherosclerosis, 1241
Vitamin D, in atherosclerosis, 1242
Vitamin K, toxicity of, 686
Vitamin K1, and anticoagulants, 128, 129, 130, 136
Vitamins
and atherosclerosis, 1239-1246
and cardiac infarction, 286
W
Warfarin therapy, 128
in peripheral vascular disease, 1023
Water
heavy, ATPase and ITPlase, 296
intoxication, hyponatremia with, 191-202
movement across skin and bladder in heart disease, 1003
Water (Cont’d)
properties of, 598
retention in severe heart disease, 750
Wenckebach phenomenon, nodal tachycardia with, 15
Whiskey, and oral fat-tolerance curves, 1054
Wolff-Parkinson-White syndrome
atrioventricular communications in, 41-49 of long duration, 1264
Women
coronary heart disease in, 1173-1184
myocardial infarction in, 142
Woodchuck, entering hibernation, 436
Woodworth law, 461
Work by heart muscle, extracted, 484

INDEX

Workmen’s Compensation and heart disease, 274-280

Y
Yoga practitioners, “voluntary” cardiac control by, 1319-1325

Z
Z-band
of cells, specific-tissue, 352
and sarcolemma of bat, 344
and sarcomere contraction, 338
Z-line, 328, 401
Zymosan, reticuloendothelial cells after, 1088