CIRCULATION
AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

EDITOR-IN-CHIEF
Howard B. Burchell, Minneapolis, Minn.

ASSISTANT EDITOR
M. Katharine Smith, Minneapolis, Minn.

ASSOCIATE EDITORS
Patricia A. Ongley, Rochester, Minn.
Henry Blackburn, Minneapolis, Minn.

EDITORIAL BOARD

RAY C. ANDERSON, Minneapolis, Minn.
ROBERT W. BERLINER, Bethesda, Md.
C. GUNNAR BLOMVIST, Dallas, Texas
STUART BONDURANT, Albany, N. Y.
DANIEL A. BRODY, Memphis, Tenn.
ROBERT A. BRUCE, Seattle, Wash.
MICHAEL E. DEBAKEY, Houston, Texas
VICTOR G. DEWOLFE, Cleveland, Ohio
LEWIS DEXTER, Boston, Mass.
JOSEPH T. DOYLE, Albany, N. Y.
JAMES W. DUHANE, Rochester, Minn.
JESSE E. EDWARDS, St. Paul, Minn.
LUDWIG W. EICHNA, Brooklyn, N. Y.
FREDERICK H. EPSTEIN, Ann Arbor, Mich.
ALVAN R. FEINSTEIN, New Haven, Conn.
ALFRED P. FISHER, Chicago, Ill.
DONALD S. FREDICKSON, Bethesda, Md.
EDWARD D. FREIS, Washington, D. C.
ROBERT H. FURMAN, Oklahoma City, Okla.
DAVID G. GREENE, Buffalo, N. Y.
HANS H. HECHT, Chicago, Ill.
ROBERT A. HELM, Cincinnati, Ohio
JOHN B. HICKAM, Indianapolis, Ind.
J. WILLIS HURST, Atlanta, Ga.
THOMAS N. JAMES, Birmingham, Ala.
LEWIS E. JANUARY, Iowa City, Iowa
THOMAS KILLIP, New York, N. Y.
JOHN W. KIRKIN, Birmingham, Ala.
MARCUS O. KJELSBerg, Minneapolis, Minn.
SIMON KOLETSKY, Cleveland, Ohio
EDWARD C. LAMBERT, Buffalo, N. Y.

RICHARD LANGENDORF, Chicago, Ill.
MAURICE LEB, Chicago, Ill.
HOWARD P. LEWIS, Portland, Ore.
VICTOR A. MCKUSICK, Baltimore, Md.
DAN G. MCNAMARA, Houston, Texas
GORDON K. MOE, Utica, N. Y.
ALEXANDER S. NADAS, Boston, Mass.
DAVID F. ODYKE, Jersey City, N. J.
CHARLES A. OWEN, Jr., Rochester, Minn.
OGLESBY PAUL, Chicago, Ill.
HUBERT V. PIPBERGER, Washington, D. C.
RAYMOND D. PRUITT, Rochester, Minn.
T. JOSEPH REEVES, Birmingham, Ala.
JOHN ROSS, Jr., La Jolla, Calif.
RICHARD S. ROSS, Baltimore, Md.
ABRAHAM M. RUDOLPH, San Francisco, Calif.
DAVID C. SABISTON, Jr., Durham, N. C.
JON T. SHEPHERD, Rochester, Minn.
MINDEL C. SHEPS, Chapel Hill, N. C.
RALPH E. SMITH, Rochester, Minn.
EDMUND H. SONNENBLICK, Boston, Mass.
MADISON S. SPACH, Durham, N. C.
JEREMIAH STAHLER, Chicago, Ill.
H. J. C. SWAN, Los Angeles, Calif.
JACK L. TITUS, Rochester, Minn.
JON D. TURNER, Houston, Texas
LODEWYK H. S. VAN MIEROP, Gainesville, Fla.
JAMES V. WARREN, Columbus, Ohio
STANFORD WESSLER, St. Louis, Mo.
PAUL M. ZOLL, Boston, Mass.

CONSULTING EDITOR: Herrman L. Blumgart, Boston, Mass.

PUBLICATIONS COMMITTEE, AMERICAN HEART ASSOCIATION

CRAWFORD W. ADAMS
Nashville, Tenn.

CHARLES A. R. CONNOR
New York, N. Y.

ROBERT H. FURMAN
Oklahoma City, Okla.

J. WILLIS HURST
Atlanta, Ga.

EUGENE BRAUNWALD, Chairman
La Jolla, Calif.

SIMS GAYNOR
Sun City Center, Fla.

MILTON C. PAIGE, Jr.
BOSTON, Mass.

GORDON K. MOE
Utica, N. Y.

HOWARD B. BURCHELL
Minneapolis, Minn.

CARLETON R. TREADWELL
Washington, D. C.

WALTER M. KIRKENDALL
Iowa City, Iowa

W. JAPE TAYLOR
Gainesville, Fla.

JULIUS H. COMROE, Jr.
San Francisco, Calif.

ii
Minuscule Review


In the Harveian oration of 1968 Dr. Bedford traces the development in the knowledge of the anatomy and function of the coronary circulation, the arresting title a "Third Circulation" being lifted directly from Harvey's words, which clearly pointed out the blood flow that must be occurring from the coronary arteries to the cardiac veins. Amongst the early investigators of the coronary circulation special mention seems deserved by Lower (1669); as a tercentenary acknowledgment, who demonstrated and pointed out the advantages to the animal, of anastomoses between the coronary arteries—a controversial problem over the centuries. Dr. Bedford further highlights this topic with references to the subsequent workers in the field. Paragraphs follow on "Coronary Physiology" focusing on the effects of systole on coronary flow, without, as pointed out by the author himself, any discussion of recent physiological investigations. The discourse continues with sections on the assessment of the contributions of Jenner, Parry, and Burns on the nature of angina pectoris and an analysis of the reasons underlying "Delays in Recognition" (and acceptance) of coronary disease as the cause of angina. The subsequent section entitled "A Great Landmark" outlines the clinical recognition of acute myocardial infarction, and herein, a golden anniversary may be noted—of Herrick's second paper (1918) which "at last struck home and set in motion a widespread investigation of all aspects of coronary disease" including the exploitation of the electrocardiograph in the diagnosis of myocardial infarction (in which field, Bedford working with Parkinson played a significant role). In the section on "Incidence of Coronary Disease" (prevalence?), Bedford expresses the viewpoint that the increased encounters the doctor has with coronary disease could be adequately explained by the increase in the middle-aged and elderly population, together with improved diagnostic methods and acumen. He rejects the idea of "a modern epidemic of coronary disease," but admits being "not competent to assess mortality statistics." The paper ends with paragraphs on "Treatment" and "Surgical Treatment" and a general summarizing "Conclusion."

This scholarly essay by Dr. Bedford concisely outlining the development of knowledge of the "third circulation" and the challenges existing for future investigators was a delight to read and should become a standard reference. It reflects Dr. Bedford's long interest in medical history and his extensive experience in the care of patients ravaged by coronary disease.

H.B.B.
Minuscule Review

Harris, W. S., and Goodman, R. M.: Hyperreactivity to atropine in Down’s syndrome.

In 1957 McKusick asked the question “what is the basis for the not infrequently fatal idiosyncrasy of mongoloid idiots to agents of the atropine group” but did not attempt an answer. It has apparently been long known that these patients have an abnormally great mydriasis to atropine instilled into the conjunctiva. Harris and Goodman have attempted to quantitate the difference in reactivity to atropine by measuring the cardioacceleratory effects after graded repetitive intravenous doses. The graphs that they have constructed clearly discriminate cases of Down’s syndrome and other types of mental deficiency from normals. No explanation for the hyperreactivity is offered but the authors conclude that “this increased sensitivity, a pharmacogenetic abnormality, may result from the imbalance imposed by the extra chromosome 21 in Down’s syndrome.”

H.B.B.

**Viewpoints of a Biologist and a Chemist**

This account illustrates the point that the biological outlook, in particular the realisation that living organisms form a whole in which each component plays a useful part, was essential in clarifying the problem of the intermediary stages of biological oxidations. If there is a difference in the outlook of the biologist on the one hand, and that of the chemist and physicist on the other, it is the urge of the biologist to look upon every property of living material as part of a complex system and to enquire into the functional significance of this property. Time and again this has proved a most fruitful working hypothesis—and it is no more than a working hypothesis. To do this effectively, he must be a widely trained "compleat" biologist. At the same time he must know a good deal of the basic sciences. Scientists who are reasonably compleat in biology and the various branches of the physical sciences are bound to become exceedingly rare with the increasing size of the subjects. So, in the future, the most effective research in biology is likely to arise from the efforts of teams which include compleat biologists, compleat chemists, compleat physicists and compleat mathematicians.—**Hans Adolf Krebs:** The Biologist's and the Chemist's Approach to Biochemical Problems. In *Reflections on Biologic Research*, edited by Giulio Gabbiani, St. Louis, Warren H. Green, Inc., 1967, p. 127.
PERMANENT PERVENOUS PACEMAKERS

9. Lagergren, H., Dahlgren, S., and Nordens- 
tam, H.: Cardiovascular tissue response to 
intracardiac pacemaking. Acta Chir Scand 
10. Parsonnet, V., Zucker, I. R., Kannerstein, M. 
L., Gilbert, L., and Alvares, J. F.: Fate of 
permanent intracardiac electrodes. J Surg Res 
11. Prozan, G. B., Shipley, R. E., Madding, G. F., 
and Kennedy, P. A.: Pulmonary thromboembolism in the presence of an endocardiac 
12. Chardack, W. M., Gage, A. A., Federico, A. J., 
Schimert, G., and Greatbatch, W.: Five 
years' clinical experience with an implantable 
pacemaker: An appraisal. Surgery 58: 915, 
1965.
13. Lagergren, H., et al.: Three hundred five cases 
of permanent intravenous pacemaker treatment 
for Adams-Stokes syndrome. Surgery 59: 494, 
1966.
14. Morse, D. P., Nichols, H. T., Blanco, G., 
Adam, A., and Monheit, R.: Comparative 
study of pacemakers. Dis Chest 51: 74, 
1967.
15. Biltch, M., Cosby, R. S., and Cafferkey, E. 
A.: Ventricular fibrillation and competitive 

Announcement of An Operation

The following day at noon, the students came in, hurrying up the great stair. At the 
first landing-place, on a small, well-known blackboard, was a bit of paper fastened by 
wafers, and many remains of old wafers beside it. On the paper were the words: "An 
operation today. J. B. Clerk."

Up ran the youths, eager to secure good places; in they crowded, full of interest and 
talk. "What's the case?" "Which side is it?"

Don't think them heartless; they are neither better nor worse than you or I; they get 
over their professional horrors, and into their proper work,—and in them pity, as an 
emotion, ending in itself or at best in tears and a long-drawn breath, lessens, while pity 
as a motive is quickened, and gains power and purpose. It is well for poor human na-
ture that it is so.—JOHN BROWN (1810-1882): Rab and His Friends. New York, Dodge 

Circulation, Volume XXXIX, April 1969
**Minuscule Review**


Within the population of airline pilots there is an increasing number in their senior years. The certification for flying duty of those with established or suspected coronary disease has been, and will continue to be, a controversial issue. Pertinent to this controversy is the progress report on an international study prepared by Dr. Buley of the International Civil Aviation Organization. This report concludes that it was reasonably certain that five cardiac deaths were the direct cause of aircraft crashes, and these resulted in a total of 147 fatalities. There were 12 pilot deaths which did not result in an accident. The most flagrant abuse of privilege can be inferred from the account of the instance in which the president of an airline, aged 59, with known diabetes and angina pectoris, on a charter flight, crashed on an approach to landing, resulting in 83 fatalities. It is to be noted that the co-pilot, who had apparently been flying the aircraft, also was found to have coronary disease.

Relative to the thousands of flying hours accumulating over the 7-year period covered by the study, the incidents are so sparse that the antagonist to rigid adherence to disqualification of pilots with coronary disease will have basis for argument. On the other hand, the protagonist will have found substance in the report to fortify his hard stand in maintaining that pilots with coronary disease should not be certified and to underscore his opinion that a member of the flight crew in the event of sudden illness may potentially have either loss of judgment or physical incapacitation.

H.B.B.
Rhetoric

Being Serious Without Being Stuffy

Put that way, all three styles I have been examining are, as I have said, dangerous. Exceedingly common as they are in modern American life, they suggest three ways in which Americans upstage one another. One can talk Tough, beating the hairy chest, and make a spectacle of one's ostentatious simplicity. See how true and humble I am, more true and humble than you are. (And sometimes, furthermore, I really Know!) Or one can talk Sweet, leaping into the lap of one's listener, however unwanted there. See how nice I am to you, you boob. Or one can talk Stuffy, laying down the law as if one were Moses and all the world were a wandering tribe looking for the Word. In each case the rhetoric, all too often, creates a character who is ill-mannered, to say no worse of him. He has lost forbearance and restraint, a regard for the feelings of his listeners. The result is that in our time we are fairly surrounded by voices that are not much fun to be with. . . .

The excesses are understandable. In the very act of addressing someone we acknowledge a wish to push him around, and in our zeal to push a little harder, it is no wonder our voices begin to sound strident. It is with style that we try to behave like a decent person, one who ruefully concedes his drive for power while remaining aware of his reader's well-chosen resistance. Thus style is our way of becoming a person worth listening to, worth knowing.

A moral justification for the study of rhetoric lies right here. We improve ourselves by improving the words we write. We make our performance less monstrous, by acting like human beings. Just what comprises a satisfactory human performance is every man's complicated decision. But at least, by looking at rhetoric, we may begin to know more about who it is we are making believe we are. And then, perhaps, we can do something about it.—WALKER GIBSON: Tough, Sweet & Stuffy. Bloomington, Indiana University Press, 1966, pp. 109, 110.

Types of Critics

The capacity of public somnolence to retard change illuminates the role of the critic. In the early years of this century Abraham Flexner touched off a revolution in medical education by placing before the public a brilliant exposé of existing medical schools. Critics who call attention to an area that requires renewal are very much a part of the innovative process. (Of course, all critics are not heralds of the new. Some are elegant connoisseurs of that which has arrived, and when they approve of something it is likely to be long past its creative period. Like Hermes conducting the souls of the dead to Hades, they usher ideas and art forms into the mausoleums of "the accepted.")—John W. Gardner: Self-Renewal: The Individual and the Innovative Society. New York, Harper & Row, Publishers, 1963 and 1964, p. 30.
Minuscule Review


Over a period of many years cardiologists have ventured to record in their clinical notes splitting of the second sound, in patients ultimately proven to have a truncus arteriosus and thereby have been exposed to scorn. There have been few phonocardiographic studies and thus the report of Dr. Victoria and associates demonstrating two components of the second sound in the considerable number of patients with a proven truncus arteriosus is of interest and value. The recorded splitting is a narrow one. Whether it is related to vagaries of cusp closure or aortic wall components will remain for future investigators to determine. The published phonocardiograms support their conclusion that "the second sound and its component parts in persistent truncus arteriosus cannot be used as a reliable indicator to differentiate it from other large left-to-right shunts." The importance of the systolic click is discussed and if it is a vascular sound, the tantalizing question is whether the second component of the split could also be a vascular phenomenon.

H.B.B.
amount of gas dissolved. Furthermore, the amount of Freon delivered to the pulmonary capillary blood is difficult to control. Therefore, no attempt has been made to make this test quantitative. The described technic has the advantage of using standard catheters as small as no. 5 French and a nonradioactive nonexplosive gas. The main advantage of the technic is believed to be its unsurpassed sensitivity.

Spontaneous Closure of a Ventricular Septal Defect

Certain features of congenital heart disease at once command attention. In the first place there is a fixed anatomical lesion with structural alterations in the heart that cannot be removed. Consequently the course of the patient is largely moulded by the factor of adaptation, and the interplay of various mechanical forces in order to assure an adequate circulation despite the handicap of a gross anatomical abnormality. Exceptionally, some lesion such as an isolated interventricular septal defect, which may be of considerable importance when the heart is small, may become, as the heart enlarges with normal growth, unimportant relative to the size of the heart as a whole, and its physical signs may disappear.—JAMES W. BROWN: *Congenital Heart Disease*. London, John Bale Medical Publications Ltd., 1939, p. 1.