George R. Stibitz

CURRICULUM VITAE

PERSONAL DATA:

Born: York, Pennsylvania; April 30, 1904
Married
Citizenship: U.S.A.

EDUCATION:

Ph.B., Denison University, 1926
M.S., Union College, 1927
Ph.D., Cornell University, 1930

EMPLOYMENT:

Research Mathematician, Bell Telephone Laboratories, 1930-41
Technical Aide (Fire Control) Division 7, National Defense Research
    Council of the Office of Scientific Research and Development, 1941-
    1945
Consultant in Applied Mathematics, 1945-1964
Research Associate in Physiology, DMS, 1964-1966
Research Associate in Physiology with the rank of Professor Emeritus,
    1970-1974.
Professor of Physiology, Emeritus, 1974-

COMMITTEES:

National Research Council, Committee on Large Scale Computers, 1945
National Research Council, Committee on Tables and Aids to Computers,
    1946
Institute of Radio Engineering, Vice-Chairman, Committee on Electronic
    Computers, 1949
Institute Math Statistics, Committee on Computing Aids, 1950
Joint Army and Navy Research and Development Board Working Group on
    Fire Control, 1948

HONORS:

Harry Goode Award of the American Federation of Information Processing
    Societies, 1965
Sc. D. (Hon.) Denison University, 1976
Emanuel Pione Award Inst. Electrical and Electronic Engineers, 1977
SCD (Hon) Keene State College, 1978
National Academy of Engineering, March 1, 1981
National Inventors Hall of Fame, February 13, 1985
Computer Pioneer, Electrical and Electronic Engineers, 1982
Sc.D. Dartmouth, June 8, 1986

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<div align="center">PROJECTS</div>

Invented Bell Telephone Laboratories Relay Computer Circuits, 1938, 1940, 42, 43.

Designed major circuits and supervised design of Complex Number Relay Computer, 1939-40 for Bell Telephone Lab.

Designed major circuits and supervised design of relay interpolator for National Defense Council, 1942 (Now at Naval Research Lab.)

Supervised design of Relay Ballistic Computer for NDRC 1943-44. Original model now at Fort Bliss, Texas, and copy at NRL (Mk 22 Error Computer).

Consulted in design of large relay computers, now at National Advisory Committee for Aeronautics (Langley Field) and Aberdeen Proving Ground, 1944, sometimes called "Stibitz Computers"

Invented and supervised design and construction of Tape Dynamic Tester Model I for NDRC, 1940, Fort Bliss.

Invented major components and devised theoretical methods for determining stability and performance of Tape Dynamic Tester Model II. Copies now at NRL, and Navy Inspection, General Electric Co., Pittsfield, Mass. 1944-45.

Proposed method and circuits for large Secret Army Device.

Devised automatic recording equipment for degaussing measurements. Built by Western Electric 1941.

Proposed and investigated "Stibitz" stereo-tracer method used by both Army and Navy for certain tracer tests, 1943.

Invented and supervised construction of "Data Recorder" for printing synchro data in digit form on tape, for NDRC, 1944. Three units built by Western Electric.

Invented Film Slide Rule for triangulation in fire control tests, 1943-45. Several units built for NDRC.

Invented and developed Function Units, sparetime 1944-45 intensively 1946-date. Some units in use by Navy.

Invented electronic computer for commercial application, 1947.

Invented relay multiplying circuit. Sold to large business machines firm, 1947.

Invented electrical device for finding complex roots of polynomials, 1938.

Designed multiplying and integrating circuits for nitrogen washout computer, 1963.

Devised pump for augmenting flow in intact superficial blood vessels, 1962.

Proposed and analyzed feedback fail-safe injection system for muscle-relaxant drugs in anesthelized patients, c. 1958.

Designed multi-compartment analog for calculating flow of anesthetic under arbitrary programs on anesthesia, 1962.

Designed, analyzed and built "thermal bridge" for direct reading null-type measurement of blood flow in extremeties, 1963.

Proposed optical simulator for calculation of radiation dosage in a plane section, 1964.

Outlined computer program for isodose calculations in radioactive implants, 1964.

Devised method of calculating stresses in urethra wall from urethragram, 1963.

Advised project on ballisto cardiograph data analysis, 1962.

Calculation of diffusion through slits in capillary walls, with R. Gosselin, 1975.

Calculated effect of open-closed capillary sphincter on rate of clearance from tissue.

Simulation of passive electrical properties of membrane of heart cells.

Design of Constant-pressure Plethysmograph.

Calculations of Wall drag by computer solution of difference equations.

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PUBLICATIONS

Stibitz, G. R.: Vibrations of a non-planar membrane. Phys. Rev.
    36:513-523, 1930.

Stibitz, G. R.: An application of number theory to gear ratios. Am. Math.
    Mon. 45:22-31, 1938

Stibitz, G. R.: Potentials in curved surfaces. Phil. Mag., Ser. 7, 25:
    783-785, 1938

Stibitz, G. R.: Relay computers. National Defense Research Council: Applied
    Math. Panel. Memo 171.1R, 1945.

Stibitz, G. R.: A talk on relay computers. National Defense Research
    Council: Applied Math. Panel. Memo 171,1M, 1945.

Stibitz, G. R.: The organization of large scale computers. Annals of the
    Computation Laboratory, Harvard University, 16:91-100, 1946.

Stibitz, G. R.: Should automatic computers be large or small? Mathl.
    Tabl. Natn. Res. Coun., Wash., 2:362-364, 1046-1947.

Stibitz, G. R.: Relay Computers. Prepared for the National Defense Research
    Committee, February, 1945. Review. Mathl. Tabl. Natl. Res. Coun.,
    Washing. 2:364-365, 1947.

Stibitz, G. R.: Film slide rule. Mathl. Tabl. Natn. Res. Coun., Wash.
    2:325, 1946-1947.

Stibitz, G. R.: Mathematical Instruments. In Encyclopaedia Britannica,
    1947.

Stibitz, G. R.: A new class of computing aids. Mathl. Tabl. Natn. Res.
    Coun., Wash. 3:217-222, 1948.

Stibitz, G. R.: Electric root finder. Mathl. Tabl. Natn. Res. Coun. Wash.
    3:328-329, 1948.

Stibitz, G. R.: Progress report on Edvac computer. Math. Tabl. Natn. Res.
    Coun., Wash. 3:379-380, 1949.

Stibitz, G. R. and N. L. Walbridge: Meteorological data computing techniques.
    Signal Corps Contract No. W36-039, SC 38194, May 20, 1949.

Stibitz, G. R.: A note: "is" and "might be" in computers. Mathl. Tabl.
    Natn. Res. Coun., Wash. 4-5:168-169, 1950-1951.

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Stibitz, G. R. and Larrivee, J.A.: Mathematics and Computers. New York:
    McGraw-Hill, 1957.

Stibitz, G. R.: A mathematical model of the urethra. Bull. Math. Biophys.
    27:407, 1965.

Stibitz, G. R.: Mathematics in Medicine and the Life Sciences. Chicago,
    Year-Book Publishers, 1966.

Stibitz, G. R.: Substance uptake in variable systems with special refer-
    ence to the use of the Fick Equation. Respiration Physiology, 2:118,
    1967.

Stibitz, G. R.: Medicine and the Computer. Health News, 43:4, 1966.

Stibitz, G. R.: The Dartmouth Computer and Medicine. DMS Quarterly, Winter,
    1966.

Stibitz, G. R.: Model of uretha under uniform circumferential tension.
    Bull, Math. Biophys. 29:175, 1967.

Stibitz, G. R.: Bistable mathematical and mechanical models related to the
    urethra. Bull. Math. Biophys. 29:57, 1967.

Stibitz, G. R.: The relay computers at Bell Labs. Datamation, April, 1967,
    p. 35.

Stibitz, G. R.: F. W. Lane, Jr. and R. K. Shaw. A computer technique for
    intracavitary radium dosimetry. Am. J. Roentgenology, Rad. Ther. &
    Nuclear Med. C:870, 1967.

Stibitz, G. R. and D. Rytand: On the path of the excitation wave in atrial
    flutter. Circulation, 37:75, 1968.

Stibitz, G. R.: Random gate computer for in-line biomedical applications.
    Med. Res. Eng. Second Quarter, 1968, p. 36-38.

Prior, R. and G. R. Stibitz: A mathematical model of the passive properties
    of bladder muscle. Mathematical Bioscience 3:19, 1968.

Marin-Padilla, M. and G. R. Stibitz: Distribution of the apical dendritic
    spines of the layer V pyramidal cells of the hamster neocortex. Brain
    Research 11:580, 1968.

Stibitz, G. R.: A model and computer program for biological networks. J.
    Theoret. Biol. 19:116, 1968.

Stibitz, G. R.: Calculating diffusion in biological systems by random walks
    with special reference to gaseous diffusion in the lung. Resp. Physiol.
    7:230-262, 1969.

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Stibitz, G. R.: Computer-aided stereotach. Computers and Biomedical
    Research. 2:199-206, 1969.

Stibitz, G. R., F. V. McCann and R. E. Prior: A model for the actin-myosin
    bridge in striated muscle. Mathematical Biosciences. 4:23-31, 1969.

Gosselin, R. E. and G. R. Stibitz: Rates of solute absorption from tissue
    depots: Theoretical considerations. Pflügers Arch. 318:85-98, 1970.

McCann, F. V., G. R. Stibitz and J. Huguenin: Impedance measurement in
    cardiac cells of an insect [Abstract]. Fed. Proc. 31:1035, 1972.

Stibitz, G. R.: Model of diffusion in the respiratory unit. Respir. Physiol.
    18:249-257, 1973.

McCann, F. V., G. R. Stibitz and J. Hugenin: Studies of impedance in cardiac
    tissue using sucrose gap and computer techniques. I. The influence of
    sucrose and oil as insulating media. Biophysical Journal. 13:1183-1199,
    1973.

Stibitz, G. R., F. V. McCann and M. Hughes: A recording computer interface
    for analogue signals. Med. & Biol. Eng. Nov.:762-765, 1973.

Stibitz, G. R., F. V. McCann, J. M. Bourne and D. Hornig: Computer-aided
    bridge for impedance measurements in biological tissue. Med. And Biol.
    Eng. Jan.:100-104, 1974.

Stibitz, G. R. and M. Marin-Padilla: Three-dimensional reconstruction of the
    basket cell of the human motor cortex. Brain Res. (in press).

Stibitz, G. R., and F. V. McCann: Studies of impedance in cardiac tissue
    using sucrose gap and computer techniques. II. Circuit simulation of
    passive electrical properties and cell-to-cell transmission. Biophys.
    14:75-78, 1974.

Stibitz, George R.: History of mathematics, from the 15th edition of the
    Encyclopedia Britannica, 1974, pg. 639-672.

Marin-Padilla, Miguel and George R. Stibitz: Three-dimensional reconstruc-
    tion of the basket cell of the human motor cortex. Brain Res. 70:511-
    514, 1974.

Mudge, Gilbert H., Patricio Silva and George R. Stibitz: Renal excretion by
    non-ionic diffusion. Symposium on Renal Metabolism. Medical Clinics of
    No. America 59:681-698, 1975.

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Publications (continued)

Stibitz, G. R. and F. V. McCann: Indirect measurement of intracellular
    conductivity. Transactions on Biomed. Eng. 24:300, 1977.

McCann, F. V. and G. R. Stibitz: Indirect determination of microelectrode
    geometry. Transactions on Biomed. Eng. 24:297, 1977.

Gosselin, R. E., and G. R. Stibitz: Diffusive conductive of slits between
    endothelial cells in muscle capillaries. Microvascular Research
    14:363-382, 1977.

McCann, F. V. and G. R. Stibitz: Transmural impedance measurements in an
insect myocardium. Comp. Biochem. Physiol. 61A:671-677, 1978.

Mudge, G. H., Stibitz, G. R., Robinson, M. S., and Gemborys, M. W.
    Competition for binding to multiple sites of human serum albumin for
    cholecystographic agents and sulfobromophthalein. Drug Metabolism and
    Disposition 6:440-451, 1978.

Stibitz, G. R. Early Computers. In: A History of Computing in the
    Twentieth Century. New York: Academic Press, 1980. pp. 479-483.

Stibitz, G. R. Automatic computing machinery. Annals of History of
    Computing 4(2):140-142, 1982.

LaPorte, D., and Stibitz, G. R. Eloge: E. G. Andrews, 1898-1980. Annals of
    the History of Computing 4(1):4-19, 1982.

McCann, F. V., Stibitz, G. R., Woehlck, H. and Guyre, P. M. Single channel
    currents in patches of plasma membrane from human macrophages. Soc.
    Neurosci. 10:16, 1984.

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Publications (continued)

Reviews:

Stibitz, G. R.: Review of: V. Bush and S. H. Caldwell, "A new type of
   differential analyzer," J. Franklin Inst. 240:255-326, 1945, in
   Mathl. Tabl. Natn. Res. Coun., Wash. 2:89-91, 1946-1947.

Stibitz, G. R.: Review of: "Description of a relay calculator," Annals
   of the Computation Laboratory, Harvard University, Volume 14, 1949,
   in Mathl. Tabl. Natn. Res. Coun., Wash., 4:46-48, 1950.

Stibitz, G. R.: Review of D. R. Hartree: "Calculating Instruments and
   Machines", 1949, in Mathl. Tabl. Natn. Res. Coun., Wash., 4:114, 1950.