

M.E. BICKFORD

Curriculum Vitae

January, 2011

Personal: Born, August 30, 1932, Memphis, Tennessee; Married, 1954, to Elizabeth Ann Eckey of Cincinnati, Ohio. Children: Mark; Martha; John.

Education: Elementary school, Memphis, Tennessee; high school, Winona, Minnesota; B.A. (cum laude, 1954), Carleton College, Northfield, Minnesota; M.S. (1958), Ph.D. (1960), University of Illinois, Urbana, Illinois (geology with chemistry minor).

Academic Honors: *Carleton College:* B.A. cum laude; Phi Beta Kappa; Associate Member, Society of the Sigma Xi; four year scholarship. *University of Illinois:* Fellowships, three years; Phi Kappa Phi; Full member, Society of the Sigma Xi.

Military Service: U.S. Army, 1954-57; electronics technician on anti-aircraft missile system. Honorable Discharge in (temp) rank of Sergeant First Class.

Professional Employment: Assistant Professor of Geology, San Fernando Valley State College, Northridge, California (now California State University, Northridge), 1960-64; Assistant Research Geophysicist, Institute of Geophysics, University of California, Los Angeles, 1963-64 (on year's leave from San Fernando Valley State College); Assistant Professor, 1964, Associate Professor, 1967, Professor, 1972, University of Kansas, Lawrence, Kansas; Chairman and Jessie Page Heroy Professor, Syracuse University, Syracuse, New York, 1990-1993; Professor, 1993-1997; Professor Emeritus and Research Professor, 1997- present.

Professional Societies: Geological Society of America (Fellow); Mineralogical Society of America (Fellow); Geological Association of Canada (Fellow).

Selected Professional Activities, Service, and Awards:

1973 Member, Ad Hoc Committee on the Scientific Directions of the Society, Geological Society of America (Preston Cloud, Chairman).

1975-81 Member and Co-Leader, Working Group of the IUGS on the Precambrian (responsibility was Central Interior Province of North America).

1979 Key Speaker, Penrose Conference "Granite II", Near Surface Batholiths, Related Volcanism, Tectonism, Sedimentation, and Mineral Deposition; Fairmont Hot Springs, Montana.

1980 Key Speaker, Penrose Conference on Silicic Volcanism: Ash- flow tuffs, calderas, and hydrothermal systems; Pagosa Springs and Lake City, Colorado.

1981 Associate Editor, GEOLOGY (Pub. of Geol. Soc. America).

1982 Co-Convener (with I. Zietz, M. Reynolds, G. Eaton, and W.R. Van Schmus) of Workshop on Interpretation of Magnetic Anomaly Map of the Midcontinent, Kansas City, Mo., February, 1982.

1983 Decade of North American Geology (Geological Society of America): Precambrian Volume, co-editor and contributor, Transcontinental Proterozoic Provinces chapter.

1983 Visiting Scientist, Fall Semester, Precambrian Division of Geological Survey of Canada (Sabbatical leave).

1985 Co-Convener (with W.R. Van Schmus) of Workshop on Shallow Scientific Drilling in the Midcontinent Region.

1986 Invited Speaker, Rubey Colloquium VII, Metamorphism and Crustal Evolution of the Western Conterminous United States, University of California, Los Angeles.

1986 Invited Speaker, Penrose Conference on the Southern Oklahoma Aulacogen, Quartz Mountain State Park, Lone Wolf, Oklahoma.

1986 Participant, International Symposium on Geochemistry and Mineralisation of Proterozoic Volcanic Suites, Nottingham, U.K.

1987 University of Kansas Chancellor's Award for Excellence in Teaching

1987 Editor, GEOLOGY (publication of the Geological Society of America).

1988 Invited Keynote Speaker, Symposium on Middle Proterozoic Crustal Evolution of the North American and Baltic Shields, Geological Association of Canada Annual Meeting, St. John's, Newfoundland.

1988 Invited Keynote Speaker, 8th International Conference on Basement Tectonics, Butte, Montana.

1988 Member, Panel on Structure, Dynamics, and Evolution of the Lithosphere, Committee on the Solid-Earth Sciences, National Research Council.

1997 Syracuse University Chancellor's Citation for Academic Excellence

2005-2011 Science Editor for Books for Geological Society of America; member GSA Committee on Publications.

2008 Distinguished Service Award from Geological Society of America

2010 Alumni Achievement Award, Department of Geology, University of Illinois

Grants and Contracts:

1965 National Science Foundation: "Geochronological Research," \$45,000.

1967 National Science Foundation: "Geochronological Research," \$35,000.

1969 National Science Foundation: "Geochronological and Geochemical Research," \$34,800.

1969 Air Force Cambridge Research Laboratories: "Isotopic Age Determinations in a Critical Part of the Precambrian Terrane of the Adirondack Mountains, New York," \$16,500.

1970 University of Kansas: Purchase of Vacuum Spectrograph, \$4,200.

1970 National Science Foundation: Purchase of Vacuum Spectrograph, \$3,000

1971 University of Kansas: "Research in Isotope Geochemistry," \$1,000.

1972 University of Kansas: "Petrology and Geochemistry of Precambrian Basement Rocks from Kansas and Adjacent Parts of Missouri and Oklahoma," \$3,000.

1972 National Science Foundation: "Evolution of Late Precambrian Volcanic-Plutonic Terrane of the Mid-Continent Region of North America," \$43,400.

1974 University of Kansas: "Study of Petrographic Variations in Precambrian Rocks of the Midcontinent," \$3,000.

1975 Kansas Water Resources Board: "Measurement of Silver Concentration in Rainwater in Kansas as Affected by Cloud Seeding with Silver Iodide" (Co-Investigator with E.E. Angino), \$20,958.

1975 University of Kansas: "Chemical and Isotopic Variations in Rocks of the St. Francois Mountains Batholith," \$3,151.

1975 Kansas State Geological Survey: "Petrographic, Petrochemical and Geochronological Studies of the Precambrian Basement Rocks of Kansas," \$3,300.

1976 Kansas Water Resources Board: "Measurement of Silver Concentration in Rainwater in Kansas as Affected by Cloud Seeding with Silver Iodide" (Co-Investigator with E.E. Angino), six-month renewal of 1975 contract, \$12,000.

1976 Kansas Water Resources Board: "Measurement of Silver Concentration in Rainwater in Kansas as Affected by Cloud Seeding with Silver Iodide" (Co-Investigator with E.E. Angino), renewal of 1975 contract, October, 1976-June, 1978, \$23,000.

1976 National Science Foundation: "Precambrian Crustal Evolution in the Midcontinent Area: (1) The St. Francois Mountains Batholith of Southeastern Missouri, (2) Geochronological and Petrographic Studies of the Buried Crust," \$48,100.

1976 University of Kansas: "Magnetic Properties of Zircons," (Co-Investigator with W. Unruh, Department of Physics and Astronomy), \$3,000.

1976 Nuclear Regulatory Agency: "A Study of Regional Tectonics and Seismicity of Kansas" (Co-Investigator with Frank W. Wilson and others). This contract provided \$10,000 for my research during 1976 and about \$8,500 per year in the following four years.

1978 University of Kansas: "Rare Earths in Zircons: Relationship to Magnetic Properties" (Co-Investigator with W.P. Unruh, Department of Physics and Astronomy), \$4,615.

1978 National Science Foundation: "Collaborative Research on the Chronology of Emplacement, and Magma Genesis, Northeastern Part of the Idaho Batholith" (Co-Investigator with R.B. Chase, Western Michigan University, who was awarded a separate grant), \$51,500 (includes supplement of \$4,600 made in 1979).

1979 Los Alamos Scientific Laboratory: "An Effort to Recover Precambrian Rock Material by Deepening Two Boreholes in Kansas" (Co-Investigator with D.W. Steeples, Kansas Geological Survey), \$9,900.

1979 U.S. Department of Energy, Div. of Geothermal Energy: "Recovery and Analysis of Core from Two Deep Boreholes in Kansas" (Co-Investigator with D.W. Steeples, Kansas Geological Survey), \$20,000.

1980 National Science Foundation: "Publication of Geological Map of Portions of the St. Francois Mountains, Missouri," \$2,200.

1981 National Science Foundation: "Geochronological and Geochemical Studies of Proterozoic Volcanic Sequences and Plutonic Rocks in Central Colorado," \$102,600.

1981 Molycorp, Inc.: "Major and Trace Element Geochemistry of Proterozoic Volcanic Rocks in the St. Francois Mountains, Southeastern Missouri," \$8,000.

1982 National Science Foundation: "Geochronological and Geochemical Studies of Proterozoic Rocks of the Wet Mountains Region, Southern Colorado," \$66,262.

1983 National Science Foundation: "Geochronological and Geochemical Studies of Buried Precambrian Basement Rocks in the Continental Interior of North America" (Co-Investigator with W.R. Van Schmus), \$324,268 (36 months).

1984 National Science Foundation: "Kinematics and U-Pb Geochronology of Mylonitic Rocks from the Southern Priest River Complex, Northeastern Washington and Northern Idaho," \$55,639.

1984 National Science Foundation: "Geochronology of Early Proterozoic Orogenic Belts, Southern Churchill Province, Canadian Shield" (Co-Investigator with W.R. Van Schmus), \$269,000 (36 months).

1985 University of Kansas: "Chemical and Isotopic Studies of Proterozoic Volcanic and Plutonic Rocks, Gunnison Area, Colorado," \$6,464.

1986 National Science Foundation: "Acquisition of New Mass Spectrometer" (Co-Investigator with W.R. Van Schmus), \$175,000.

1986 National Science Foundation: "Mesozoic Magmatic History of the Northwestern Sierra Nevada" (Collaborative research with H.W. Day, University of California, Davis, who is separately funded), \$67,846.

1986 Deep Observation and Sampling of Earth's Continental Crust, Inc.: "Project UPPER CRUST" (Co-Investigator with W.R. Van Schmus), \$166,000.

1986 New York Geological Survey and Colgate: "Geochronology of Rocks in the Adirondack Mountains in New York," \$14,000.

1987 Deep Observation and Sampling of Earth's Continental Crust, Inc.: "Project UPPER CRUST" (Co-Investigator with W.R. Van Schmus), \$199,967.

1988 National Science Foundation: "Isotopic Constraints on the Crustal Evolution and Tectonic History of the Trans-Hudson Orogen, Saskatchewan," \$105,000.

1988 Deep Observation and Sampling of Earth's Continental Crust, Inc.: "Project UPPER CRUST" (Co-Investigator with W.R. Van Schmus), \$125,000.

1991 Wehren Engineering, Middletown, NY: "Geochemical Controls Over Heavy Metal Contamination in Ground Water Associated with the Fresh Kills Landfill": (Co-Investigator with D. I. Siegel) \$87,805

1991 National Science Foundation: "Collaborative Research: Evolution and Assembly of Archean and Lower Proterozoic Elements in the Trans-Hudson Orogen, Saskatchewan": (with K. Collerson, University of California, Santa Cruz), \$91,000.

1993 National Science Foundation: "Acquisition of an X-Ray Fluorescence Emission Spectrometer (XRF) and Ancillary Apparatus", \$83,500 (S.D. Samson, Co-Principal Investigator)

1994 National Science Foundation: "Collaborative Research: Timing and Correlation of Tectonic Events In Grenville-Age Province, Trans-Pecos, Texas" (Kent Nielson and Kristian Soegaard, University of Texas at Dallas, Collaborators.), \$59,000.

1995 National Science Foundation: "Distribution and Isotopic Character of Archean Basement within the Early Proterozoic Trans- Hudson Orogen, Saskatchewan: Implications for Tectonic Interpretation", \$75,000

1998, National Science Foundation: "The Paleoproterozoic of Central Colorado: Accreted Arcs or Rifted Older Crust", \$105,456.

1998, National Science Foundation: Collaborative Research: How An Orogen Became A Craton: Thermochronologic History of the Trans- Hudson Orogen, Canada, \$106,691.

1999, U.S.Geological Survey: Geochronological Investigations in the Marquette Range Supergroup, northern Michigan, \$25,767.

2001, National Science Foundation: Collaborative Research: Crystallization ages and Thermal Histories of Adirondack Anorthosites and Anatectites: Implications for Anorthosite Emplacement and Thermal Contributions to Regional High-Grade Metamorphism, \$129,925 (James Mclelland, Colgate University, and John Valley, University of Wisconsin, Co-Investigators; Valley separately funded for \$80,601).

2005: National Science Foundation: Upgrading the Syracuse University Earth Sciences JEOL 6300 SEM, \$128,333. S. D. Samson, Co-Investigator

University Service:

A. University of Kansas:

1968-69 Long-Range Planning Committee, College of Liberal Arts and Sciences.

1973-76 Committee on the Advancement of Instruction and Advising, College of Liberal Arts and Sciences (Chairman, 1974-75).

1974-75 Member of Physical Sciences Subcommittee, University Research Committee.

1974-75 Member, School of Religion Steering Committee, College of Liberal Arts and Sciences.

1975-77 Member, Ad Hoc Committee on Outreach Activities, College of Liberal Arts and Sciences.

1978-81 Phi Beta Kappa Selection Committee.

1979 Member, Graduate Council.

1981 Chairman, Standing Committee on Scholarly Activities of the Faculty, Graduate Council.

1981 Member, Ad Hoc Committee on Revision of By-Laws of College Assembly.

1984-87 Member, College Committee on Promotions and Tenure.

1985 Member, Committee to Review the Dean of the College of Liberal Arts and Sciences.

1986 Member, Committee on Distinguished Teaching Awards.

B. Syracuse University

1990 Member, Radiation Safety Committee (Chairman, 1996-99).

1990 Member, College Committee on Admissions (Chairman, 1995- 97).

1994 Member, University Committee on Assessment

1994 Member, Chancellor's Citation Selection Committee (Chairman, 1995-97)

2005 Seinfeld Fellows Selection Committee (Chairman)

Major Departmental Service

A. University of Kansas

1973-75 Associate Chairman, Department of Geology.

1972-75/

1981-85 Director of Graduate Admissions, Department of Geology.

1975-77 Chairman, Promotions and Tenure Committee, Department of Geology.

1974-75/

1978-81/

1985-87 Chairman, Graduate Studies Committee, Department of Geology.

1980-81 Academic Coordinator for Renovation of Lindley Hall (a \$2,000,000 renovation).

Syracuse University

1990-93 Jesse Page Heroy Professor and Chairman

1994-95 Coordinator of Earth Sciences Seminar Series

1994-97 Member of Graduate Studies Committee

Courses Taught:

University of Kansas: Introduction to Geology, Mineralogy, Introductory Petrology, Optical Mineralogy, Igneous and Metamorphic Petrology, Field Geology, Advanced Mineralogy and Petrography (Grad.), Igneous Petrology (Grad.), Metamorphic Petrology (Grad.), Graduate Seminars in Geochronology, Plate Tectonics, Isotope Geochemistry.

Syracuse University: Introduction to Geology, Seminar on Isotope Geochemistry, Igneous and Metamorphic Petrology, Precambrian Geology, Advanced Petrology, Analytical Methods, X-Ray Analysis; Techniques of Scanning Electron Microscopy and X-Ray Analysis

Theses Supervised:

1. Doctoral Dissertations:

University of Kansas:

1967 Brian B. Turner, Thesis: Configuration and Petrogenesis of a Geologically Critical Area in the Southeastern Adirondack Mountains, New York.

1970 Archie W. Berry, Thesis: Precambrian Volcanic Rocks Associated with the Taum Sauk Caldera, St. Francois Mountains, Missouri. (Dr. Berry is on the faculty of the University of Maine at Farmington and has been Chairman of the Department of Geology for about five years.)

1972 Douglas G. Mose, Thesis: Chronology of Precambrian Rock Units in the Center of the St. Francois Mountains, Missouri. (Dr. Mose is on the faculty of George Mason University, Fairfax, VA)

1973 J. Peter Mills, Thesis: Petrological Studies in the Sakami-Lake Greenstone Belt of Northwestern Quebec.

1978 J. Ronald Sides, Thesis: A Study of the Emplacement of a Shallow Granite Batholith: The St. Francois Mountains, Missouri.

1985 Robert D. Shuster, Thesis: Geochemical and Isotopic Evidence for the Petrogenesis of the Northeastern Idaho Batholith, Bitterroot Range, Montana and Idaho (Dr. Shuster is a member of the faculty of the University of Nebraska, Omaha).

1989 Jeffrey R. Chiarenzelli, Thesis: Petrogenesis and Tectonic Significance of the Guncoat and Nistowiak Gneisses, Glennie Lake Domain, Northern Saskatchewan. (Dr. Chiarenzelli is a member of the faculty of St. Lawrence University, Canton, NY).

1997 Susanne E. Orrell, Thesis: Crustal Evolution and Age of Thermotectonic Reworking in the Western Hinterland of the Trans-Hudson Orogen, Northwestern Saskatchewan. Dr. Orrell is Director of Advising for the Empire State University, NY.

Syracuse University

2004 Barbara M. Hill, Thesis: The Paleoproterozoic of Colorado: Accreted Arcs or Rifted Older Crust?

2. **Master`s Theses**

University of Kansas

1967 Stanley E. Church, Thesis: Nuclear Fission Track Ages of Minerals From Granitic Rocks from the Sawatch Range, Colorado.

1967 Barbara R. Thomas, Thesis: Composition and Cell Parameters of Authigenic Feldspars from the Manlius and Coeymans Formations of Eastern New York.

1968 Douglas G. Mose, Thesis: Precambrian Geochronology in the Unaweep Canyon, West-Central Colorado.

1969 A. LeRoy Odom, Thesis: Rb-Sr Geochronology of Precambrian Ignimbrites in the St. Francois Mountains, Southeastern Missouri.

1969 Thomas F. Cudzilo, Thesis: Reconnaissance Geochronology of Precambrian Rocks in the Central Uncompahgre Plateau, West- Central Colorado.

1971 Mohamed A. Ghuma, Thesis: Petrology of the Gabbro of Electra Lake, Needle Mountains, Southwestern Colorado.

1978 Paul L. Hulen, Thesis: Determination of the Source of Barite in the Chamberlain Creek Deposit of Arkansas: Sr Isotopic Evidence.

1978 Elizabeth M. Scully, Thesis: Silvermine Granite: A Differentiated Ring Pluton of the St. Francois Mountains Batholith, Southeastern Missouri.

1978 Robert D. Shuster, Thesis: Chemistry and Petrography of Caldera-Related Ash-Flows, St. Francois Mountains, Missouri.

1980 Elizabeth L. Blades-Zeller, Thesis: Rhyolitic Ash-Flow Tuffs and Intercalated Volcaniclastic Tuffaceous Sedimentary Rocks at Johnson Shutins, Reynolds County, Missouri.

1980 Robert L. Nusbaum, Thesis: A Precambrian Collapse Caldera Boundary in the St. Francois Mountains, Southeast Missouri.

1981 Bruce K. Nelson, Thesis: Uranium-Lead Isotopic Systematics in the Northeastern Border Zone of the Idaho Batholith, Bitterroot Range, Montana.

1982 Robert J. Tobin, Thesis: Petrology and Geochronology of a Proterozoic Annular Plutonic Complex Near Gunnison, Colorado.

1983 Papu D. Maniar, Thesis: Major and Trace Element Geochemistry of the Volcanic Complex of the St. Francois Mountains, Southeastern Missouri.

1983 John E. Gray, Thesis: Petrology and Geochemistry of the Eastern Portion of the Ingalls Complex, Central Washington Cascades.

1984 Gregory S. Bennett, Thesis: Geochemistry of Bimodal Volcanic and Volcaniclastic Metasedimentary Rocks, Cochetopa Canyon Area, Central Colorado.

1985 David O. Cummings, Thesis: Deformational and Metamorphic History of a Precambrian Terrane in Gunnison and Saguache Counties, Colorado.

1987 Michael T. Meyer, Geochronology and Geochemistry of the Wathaman Batholith, The Remnant of an Early Proterozoic Continental-Arc in the Trans-Hudson Orogen, Saskatchewan, Canada.

1989 Amare Astatke, Chemical and Isotopic Studies of Proterozoic Volcanic and Plutonic Rocks, Gunnison Area, Southwestern Colorado.

1990 Gregory L. Wortman, Time Relationships Among Deformation, Metamorphism, and Plutonism in the Early Proterozoic of Colorado.

Syracuse University

1994 Martin Acaster, Thesis: The Age and Magmatic Origin of Nashoba Block Volcanics and Related Intrusives: Constraints on the Evolution of Eastern North America.

1994 Jonathan McLelland, Thesis: Petrology, Geochemistry, and Geochronology of the Tumbledown Formation, Grenville-Aged Volcanic-Sedimentary Sequence of the Van Horn Area, West Texas: Implications for Understanding "Grenvillian" Orogenesis on the Southern Edge of Laurentia".

1998 William E. Steinhart, III, Thesis: Isotopic characterization of the La Ronge Domain: A critical element in the Trans-Hudson orogen, Saskatchewan, Canada.

2004 Matthew J. Heumann, Thesis: Age of anatexis in metapelites of the Adirondack Highlands and Lowlands.

PUBLICATIONS

Articles

Bickford, M.E., 1963, Petrology and structure of layered gabbro, Pleasant Bay, Maine: Jour. Geol., 71, p. 215-237.

Van Schmus, W.R., Wetherill, G.W., and Bickford, M.E., 1963, Rb-Sr age determinations of Nipissing diabase, north shore of Lake Huron, Ontario, Canada: Jour. Geophys. Res., 68, p. 5589-5593.

Bickford, M.E., and Wetherill, G.W., 1965, Compilation of Precambrian geochronological data for North America: In Geochronology of North America, Nuclear Sci. Ser. Rept. No. 41, Nat. Acad. Sci. - Nat. Res. Council Publ. 1276.

Wetherill, G.W. and Bickford, M.E., , 1965, Primary and metamorphic Rb-Sr chronology in central Colorado: Jour. Geophys. Res., 71, p. 4669-4689.

Dellwig, L.F., Bickford, M.E., Kirk, N., and Walters, R., 1965, Remote sensor studies of the Pisgah Crater area, California; a preliminary report: Tech. Mem. 61-68, Remote Sensing Laboratory, Center for Research in Engineering Science, University of Kansas, Lawrence, Kansas.

Bickford, M.E., Wetherill, G.W., Barker, Fred, and Lee-Hu, Chin-Nan, 1969, Precambrian Rb-Sr chronology in the Needle Mountains southwestern Colorado: Jour. Geophys. Res., 74, p. 1660-1676.

Anderson, J.E., Bickford, M.E., Odom, A.L., and Berry, A.W., Jr., 1969, Some age relations and structural features of the Precambrian volcanic terrane, St. Francois Mountains, southeastern Missouri: Geol. Soc. Amer. Bull., 80, p. 1815-1818.

Church, Stanley E. and Bickford, M.E., 1971, Spontaneous fission track studies of accessory apatite from granitic rocks of the Sawatch Range, Colorado: Geol. Soc. Amer. Bull., 82, p. 1727-1734.

Bickford, M.E. and Turner, Brian B., 1971, The age and probable anatexis origin of the Brant Lake Gneiss, southeastern Adirondack Mountains, New York: Geological Society of America Bulletin, 82, p. 2333-2343.

Bickford, M.E., Mose, D.G., Wetherill, G.W., and Franks, P.C., 1971, Metamorphism of Precambrian granite xenoliths in a mica periodotite at Rose Dome, Woodson County, Kansas: Part 1, Rb-Sr isotopic studies: Geol. Soc. Amer. Bull., 82, p. 2863-3868.

Franks, P.C. Bickford, M.E. and Wagner, H.C., 1971, Metamorphism of Precambrian granite xenoliths in a mica periodotite at Rose Dome, Woodson County, Kansas: Part II, Petrologic and mineralogic studies: Geol. Soc. Amer. Bull., , 82, p. 2869-2899.

Metzger, Wm.J. and Bickford, M.E., , 1972, Rb-Sr chronology and stratigraphic relationships of Silurian rocks, Mt. Desert Island, Maine: Geol. Soc. Amer. Bull., 83, p. 497-504.

Mose, D.G., and Bickford, M.E., 1972, Chronology of Precambrian volcanic units in the central St. Francois Mountains, Missouri: Section 1, 24th International Geological Congress, Montreal.

Berry, A.W., and Bickford, M.E., 1972, Precambrian volcanics associated with the Taum Sauk Caldera, St. Francois Mountains, Missouri, U.S.A.: Bull. Volc., 36-2, p. 308-318.

Bickford, M.E. and Cudzilo, T.F., 1975, U-Pb ages of zircons from Vernal Mesa-type quartz monzonite, west-central Colorado: Geol. Soc. Amer. Bull., 86, p. 1432-1434.

Bickford, M.E. and Mose, D.G., 1975, Geochronology of Precambrian rocks in the St. Francois Mountains, southeastern Missouri, Geol. Soc. America Special Paper 165, 48 pp.

Bickford, M.E. and Mose, D.G., 1975, Preview of Geochronology of Precambrian rocks in the St. Francois Mountains, southeastern Missouri: Geology, 3, p. 537-540.

Bickford, M.E., 1975, Precambrian geology and geochronology of the St. Francois Mountains, southeastern Missouri, in A field guide to the Precambrian geology of the St. Francois Mountains, Missouri, Gary R. Lowell, ed.: 2nd Ann. Field Conf., Big Rivers Area Geol. Soc., Southeast Missouri State Univ., Cape Girardeau.

Blades, Elizabeth L., Bickford, M.E., and Berry, A.W., Jr., 1975, Petrology and stratigraphy of volcanic and volcanoclastic rocks, Johnson Shut-ins, Reynolds Co., Missouri, in A Field Guide to the Precambrian geology of the St. Francois Mountains, Missouri, Gary R. Lowell, ed.: 2nd Ann. Field Conf., Big Rivers Area Geol. Soc., Southeast Missouri State Univ., Cape Girardeau.

Bickford, M.E., 1976, Geochronological studies in the St. Francois Mountains, Missouri, in Studies in Precambrian geology of Missouri, E.B. Kisvarsanyi, ed.: Contribution to Precambrian Geol. Number 61, Rept. Inv. Number 61, Missouri Dept. Nat. Res., Geol. Sur., Rolla, Missouri.

Blades, Elizabeth L. and Bickford, M.E., 1976 Rhyolitic ash-flow tuffs and intercalated volcanoclastic tuffaceous sedimentary rocks at Johnson Shut-ins, Reynolds County, Missouri, in Studies in Precambrian geology of Missouri, E.B. Kisvarsanyi, ed.: Contribution to Precambrian Geol. Number 61, Rept. Inv. Number 61, Missouri Dept. Nat. Res., Geol. Sur., Rolla, Missouri.

Chase, R.B., Bickford, M.E., and Tripp, S.E., 1978, Rb-Sr and U-Pb isotopic studies of the northeastern Idaho batholith and border zone: Geol. Soc. Amer. Bull., 89, p. 1325-1334.

Bickford, M.E., Silka, L.R., Shuster, R.E., Ragsdale, C.R., and Angino, E.E., 1978, Determination of sub-nanogram amounts of Ag in rainwater by stable isotope dilution: Anal. Chem 50, p. 469-471.

Bickford, M.E., Harrower, K.L., Nusbaum, R.L., Thomas, J.J., and Nelson, G.E., 1979, Preliminary geologic map of the Precambrian basement rocks of Kansas: Kansas Geol. Sur., Lawrence, Kan., Map M-9, with explanatory text, 9 pp.

Bickford, M.E. and Lewis, Richard D., 1979, U-Pb geochronology of exposed basement rocks in Oklahoma: Geol. Soc. Amer. Bull., Part I, 90, p. 540-544.

Pratt, Walden P., Anderson, R.E., Berry, A.W., Jr., Bickford, M.E., Kisvarsanyi, E.B., and Sides, J.R., 1979, Geologic map of exposed Precambrian rocks, Rolla 1 x 2° quadrangle, Missouri: U.S. Geol. Survey, Misc. Inv. Ser., Map I-1161, with accompanying text, 8 pp.

Bickford, M.E. and Van Schmus, W.R., 1979, Geochronology and radiogenic isotope research: Rev. Geophys. Space Phys., 17, p. 824-839.

Ross, C.R., and Bickford, M.E., 1980, The U-Pb age of zircons from the Elberton Granite, Piedmont of Georgia: in Geological, Geochemical, and Geophysical Studies of the Elberton Batholith, Eastern Georgia, J.C. Stormer, Jr., and J.A. Whitney, eds., Atlanta Georgia Dept. of Nat. Res. Guidebook, 19, p. 52-62.

Van Schmus, W.R. and Bickford, M.E., 1981, Proterozoic chronology and evolution of the midcontinent region, North America: in Precambrian Plate Tectonics, A. Kroner, ed., Elsevier Publishers, Amsterdam, p. 261-296.

Steeple, D.W. and Bickford, M.E., 1981, Piggyback drilling in Kansas: an example for the continental scientific drilling program: EOS, 62, p. 473-476.

Bickford, M.E., Harrower, K.L., Hoppe, W.J., Nelson, B.K., Nusbaum, R.L., and Thomas, J.J., 1981, Rb-Sr and U-Pb geochronology and distribution of rock types in the Precambrian basement of Missouri and Kansas: Geol. Soc. Amer. Bull., 92, p. 323-341.

Bickford, M.E., Chase, R.B., Nelson, B.K., Shuster, R.D., and Arruda, E.C., 1981, U-Pb studies of zircon cores and overgrowths, and monazite: implications for age and petrogenesis of the northeastern Idaho batholith: Jour. Geol., 89, p. 433-457.

Sides, J.R., Bickford, M.E., Shuster, R.D., and Nusbaum, R.L., 1981, Calderas in the Precambrian terrane of the St. Francois Mountains, southeastern Missouri: Jour. Geophys. Res. (Granite-Rhyolite issue), 86, p. 10349-10364.

Bickford, M.E., Sides, J.R., and Cullers, R.L., 1981, Chemical evolution of magmas in the Proterozoic terrane of the St. Francois Mountains, southeastern Missouri 1. Field, petrographic, and major element data: Jour. Geophys. Res. (Granite-Rhyolite issue), 86 p. 10365-10386.

Cullers, R.L., Koch, R.J., and Bickford, M.E., 1981, Chemical evolution of magmas in the Proterozoic terrane of the St. Francois Mountains, southeastern Missouri 2. trace element data: Jour. Geophys. Res. (Granite-Rhyolite issue), 86 p. 10388-10401.

Bickford, M.E. and Sides, J.R., 1983, Geologic map of exposed Precambrian rocks in the Wachita Mountain (Fredericktown NW-1/4) quadrangle, Missouri: Open File Map 83-161-MR (Contribution to Precambrian Geology No. 11), Missouri Dept. Nat. Res., Div. Geology and Land Sur., Rolla, Mo.

Chase, R.B., Bickford, M.E., and Arruda, E.C., 1983, Tectonic implications of a tertiary age of shearing within the "Mylonite Detachment Zone," Northeastern Idaho Batholith: Jour. Geol., 91, p. 462-470.

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