

APPENDIX I

FACULTY VITAE

STATE UNIVERSITY OF NEW YORK AT ALBANY
Department of Geological Sciences

CURRICULUM VITAE

PETER C. BENEDICT

Personal:

Born August 14, 1917.

Education:

Columbia University, B.S., 1948.
University of Zurich, Ph.D., 1952.

Professional Experience:

Research Engineer, The Crane Company, Chicago, 1953-1955.
Junior Research Geologist, Standard Oil of California, 1955-1958.
Associate Professor of Geology, State University of New York at Albany,
1959-present.

Courses Taught:

Planet Earth
Physical Geology
Historical Geology
Paleontology
General Science
Mineralogy
Environmental Geology

Departmental Service:

Affirmative Action Representative
Curator, Paleontological Collection
Student Advisor for Teacher Education Program

University and Community Service:

Lecturer - Mini College - College of General Studies
Senate, 2 terms
Students Affairs Council, 6 years
Student Conduct Committee, 6 years
Committee on Academic Standing, 2 years
Committee on International Studies, 2 years

CURRICULUM VITAE

KEVIN CHARLES ANTONY BURKE

Personal:

Born: November 13, 1929, London, England
Married, three children
Naturalized U.S. Citizen, January 1979

Education:

Goldsmid Scholar of University College, London, 1948 - 1951
DSIR Research Studentship, University College London, 1951 - 1953
B.Sc. Special Geology, Upper Second Class, 1951
Ph.D. University of London, 1953

Professional Experience:

1953- Lecturer in Geology, University of Gold Coast, Africa
1956 Consultant, Geological Survey of Ghana
 Summers, geologist, Geological Survey of Ireland

1956- Geologist and Senior Geologist, Atomic Energy Division,
1960- Geological Survey of Great Britain

1960- Secondment to the International Atomic Energy as
1961 Advisor on Nuclear Raw Materials to the Government of the
 Republic of Korea

1961- Senior lecturer and Head, Geology Department, University of
1965 West Indies, Kingston, Jamaica

1965- Professor of Geology, University of Ibadan, Nigeria
1971

1972- Visiting Professor of Geology, University of Toronto,
1973 Ontario, Canada

1973- Professor of Geology and Chairman, Department of Geological
1982 Sciences, State University of New York at Albany

- 1974- Consultant, Dobex International, Ltd.
1981
- 1975- Member, COCORP Interpretation Panel
1975- Associate Editor, Geology
1982
- 1976 Visiting Professor, California Institute of Technology (February)
1976- Tectonic Team Leader, Lunar Science Institute, Basaltic
1981 Volcanism Project
1977 Hill Family Visiting Professor, University of Minnesota
(May - June)
- 1978 Panelist National Academy - Continental Drilling Project
- 1979 Visiting Professor, University of Calgary, Canada (March-April)
- 1977 Associate Editor, Journal of Geophysical Research
1979
- 1979- Associate Editor, EOS (Transactions American Geophysical Union)
Associate Editor, Tectonophysics
- 1979- Consultant, Exxon Production Research Company
- 1980- Chairman, University Senate, State University of New York at
1981 Albany
- 1980- Member, Editorial Board Journal of Geology
- 1981- Consultant, Globex International Consulting Associates
- 1982- Professor, State University of New York at Albany
- 1982- Deputy Director Lunar and Planetary Institute
- 1982- American Association of Petroleum Geologists,
1983 Distinguished Lecturer.

Professional Societies:

Geological Society of America
 American Geophysical Union
 Nigerian Mining Geological and Metallurgical Society
 Geological Society of London
 Mineralogical Society of London
 Sigma Xi

Recent Research Funding:

1974 SUNY Awards Committee, \$1,590, Geology of Tibet
 1976 NSF, \$48,852, Cretaceous Caribbean Plate Boundary
 1976 NASA/GSFC, \$23,140, Global Tectonic Boundary Mapping
 1977 NSF, \$6,510, Caribbean Workshop
 1978 NSF, \$59,000, Caribbean Plate Boundary Problems
 1978 NASA/GSFC, \$35,000, Global Tectonic Boundary Mapping
 1979 NASA \$79,000, Neotectonics of the North Anatolian Transform
 1981 NASA \$34,000, Caribbean Neotectonics
 1981 LPI \$10,000, Revision of Rifts and Sutures of the World

Some Recent Invited Talks

- 1979 (July) Hawaii Hotspot Conference: Hotspot Distribution on Earth
 (September) US-Yugoslav Earthquake Conference: elevation of old mountains and subsidence of intra-plate basins
 (December) AGU, San Francisco: Thermal Evolution of the Earth.
- 1980 (January) - COPSTOC - Cornell
 (April) North Anatolian Fault Conference, Istanbul, Turkey
 (April) Yale University, Continental Collision
 (May) Chinese Academy of Sciences Tibet Conference: Continental Collision. Beijing
- 1981 Topography of Africa, Conference on African Geology, Open University, England, April 1981
 Early Earth, Lunar and Planetary Science Conference, March 1981
 Archean Plate Tectonics, American Geophysical Union Annual Meeting, Baltimore, MD., May 1981
 Evolution of Caribbean Plate, Caribbean Geol. Conf., Santo Domingo, August 1981
- 1982 1) Pan-African Orogeny: Varied Styles. February Conference on Arabia-Egyptian Pan African Correlation, Jeddah King Abdul-Aziz University.
 2) Rifts in Continental Escape Zones, Conference on Extensional Structures in convergent Environments Veszprem, Hungary, June

3) Varied Rifts, Varied Resources: COPSTOC, Cornell University,
May.

Publications:

1. 1955 McKie, D., and Burke, L., Geology of the Island of South Connemara: Geol. Mag., v. 92, p. 487-498
2. 1955 McCallien, W. J., and Burke, K., Note on the relative ages of certain Pre-Cambrian Formations in the Gold Coast: Jour. West Afr. Sci. Assoc., v. 1, p. 75
3. 1957 An Outline of the Structure of the Galway granite: Geol. Mag., v. 94, p. 452-464
4. 1957 McCallien, W. J. and Burke, K., Geology of the Coastal Region near Accra: Jour. West Afr. Sci. Assoc., v. 3, p. 79-90
5. 1959 Replacement veins in the Dahomeyan of Ghana: Geol. Mag., v. 96, p. 353-360
6. 1960 Bowie, S.H.U., Bisby, H., Burke, K., and Hales, F., Electronic instruments for detecting and assaying Beryllium ores: Trans. Inst. Min. and Met., v. 69, p. 345-359
7. 1960 Tongjum uranium deposit: Bull. Geol. Surv. Korea, v. 4, p. 152-155
8. 1960 Ore mineral zones related to granite in South Korea: Bull. Geol. Surv. Korea, v. 4, p. 141-151
9. 1961 Nuclear raw material prospecting in Korea: Intern'l Atomic Energy Agency Tech. Assistance Rept. No. 7
10. 1963 Dissolved gases in East African lakes: Nature, v. 198, p. 568-569
11. 1963 Chubb, L. J., and Burke, K., Age of the Jamaican granodiorite: Geol. Mag., v. 100, p. 524-532
12. 1963 Burke, K., and Robinson, E., Age of the gypsum in Jamaica: Caribbean Jour. Sci., v. 4, p. 237-242
13. 1963 Reply to H. Tazieff on Dissolved gases in East African lakes: Nature, v. 200, p. 1308
14. 1963 Age relations of the Connemara migmatites and the Galway granite: Geol. Mag., v. 100, p. 470-471
15. 1964 Metamorphosed dykes in the central inlier of Jamaica: Jour. Geol. soc. Jamaica, v. 6, p. 46-47
16. 1964 Review of mechanisms of hard tissue destruction, ed. R. F. Soggaes: Geol. Mag., v. 101, p. 287
17. 1964 Burke, K., Cunningham, M., Gallagher, M., and Hawkes, J., Beryl in the Rosses granite, N.W. Ireland: Econ. Geol., v. 59, p. 1539-1550.
18. 1965 Burke, K., and Robinson, E., Sedimentary structures in the Wagwater belt, Eastern Jamaica: Jour. Geol. Soc. Jamaica, v. 7, p. 1-10
19. 1966 Goreau, T., and Burke, K., Pleistocene and Holocene geology of the

- Kingston Harbor Shelf, Jamaica: *Marine Geology*, v. 4, p. 207-225
20. 1966 Review of a new geological map of Nigeria: *Jour. Mining and Geol. of the Nig. Min. Geol. and Met. Soc.*, v. 2, p. 32-34
 21. 1967 The Yallahs Basin, a sedimentary basin southeast of Kingston, Jamaica: *Marine Geology*, v. 5, p. 45-60
 22. 1967 Review of mineral resources of Africa. De Kun: *Jour. Mining and Geol. of the Nig. Min. Geol. and Met. Soc.*, v. 2, p. 70
 23. 1968 Drowned dwarf atolls south of Jamaica?: *Bull. Amer. Assoc. Petroleum Geologists*, v. 52, p. 348-350
 24. 1968 Burke, K., Robinson, E., and Coates, A. G., The geology of the Benbow inlier, Jamaica: *Trans. 4th Carib. Geol. Conf., Trinidad 1965*, p. 299-307
 25. 1969 Burke, K., and Freeth, S. J., A rapid method for the determination of size, shape, and sphericity of gravel fragments: *Jour. Sed. Pet.*, v. 39, p. 797-798
 26. 1969 Seismic areas of the Guinea Coast where Atlantic fracture zones reach Africa: *Nature*, v. 222, p. 655-657
 27. 1969 The Akwapim Fault, a recent fault in Ghana: *Jour. of Mining and Geol. of the Nig. Min. Geol. and Met. Soc.*, v. 4, p. 29-38
 28. 1969 Bradshaw, R., Leake, B. E., Burke, K., and Plant, A. G., The Oughterard Granite Co., Galway, Ireland: *Proc. Roy. Irish Academy*, v. 68B, p. 39-65
 29. 1969 Grant, N. K., Rex, D. C., Burke, K., and Freeth, S. J., The geological sequence and geochronology of old basement rocks from Ibadan, Nigeria: *Ann. Fac. Sci. Clermont Ferrand No. 41., Geol. et Min.*, v. 19, p. 84
 30. 1969 The structure of the Guinea Coast: *Jour. Mining and Geol. of the Nig. Min. Geol. and Met. Soc.*, v. 4, p. 115-116
 31. 1969 Burke, K., Durotoye, 'Bisi, Reingold, Judith, and Shaw, Thurstan, Late Pleistocene and Holocene deposits at Odo Ogun: *Jour. Min. and Geol. of the Nig. Min. Geol. and Met. Soc.*, v.4, p. 115
 32. 1969 Burke, K., Freeth, S. J., and Grant, N. K., Granite gneiss of two billion year age from Ibadan, Nigeria: *Jour. Mining and Geol. of the Nig. Min. Geol. and Met. Soc.*, v. 4, p. 117
 33. 1969 Burke, K., and Durotoye, 'Bisi, 'Variation Climatique due Quaternaire au s. o. du Nigeria': *VIIIe INQUA Paria, Resumes*, p. 7
 34. 1970 An Outline of the stratigraphy of the Quaternary superficial deposits of Ibadan, in *Stratigraphy, An Interdisciplinary Symposium: Occas. Publ. 19, Inst. Afr. Studies, U. Ibadan*, p. 45-46.
 35. 1970 Burke, K., and Durotoye, 'Bisi, Boulder slide at Imessi-Ile: *Center for Short Lived Phenomena, Smithsonian Institution, Event Report 781*
 36. 1970 Burke, K., and Durotoye, 'Bisi, Late Quaternary climatic variations in

- Southwestern Nigeria, evidence from pediments and pediment deposits:
Bull. d'Asequa, v. 25, p. 79-96
37. 1970 Burke, K., and Durotoye, 'Bisi, Boulder slide on an Inselberg in the Nigerian Rain Forest: Jour. Geol., v. 78, p. 733-735
 38. 1970 Burke, K., and Durotoye, 'Bisi, The Quaternary in Nigeria: a review: Bull. d'ASEQUA, v. 27, p. 70-98 (also in Bull. d'IFAN)
 39. 1971 Burke, K., Durotoye, 'Bisi, and Whiteman, Arthur, Dry period south of the Sahara 20,000 years ago: West Afr. Jour. Arch., v. 1, p. 1-8
 40. 1971 Late Quaternary subsidence in the Niger delta, sea level rise and isostatic adjustment to waterload (abstract): Jour. Min. Geol., Nigerian Min. Geol. Met. Soc., v. 6, p. 75
 41. 1971 Burke, K., and Dewey, J., The lost oceans of Africa (abstract): Jour. Min. Geol., Nigerian Min. Geol. Met. Soc., v. 6, p. 75
 42. 1971 Burke, K., and Whiteman, Arthur, The geological history of the Gulf of Guinea (abstract): Jour. Min. Geol., Nigerian Min. Geol. Met. Soc., v. 6, p. 75
 43. 1971 Recent faulting near the Volta dam: Nature, v. 231, p. 439-440
 44. 1971 Burke, K., Dessauvague, T.F.J., and Whiteman, A. J., The opening of the Gulf of Guinea and the geological history of the Benue Trough and the Niger delta: Nature Phys. Sci., v. 233, p. 51-55
 45. 1971 Dessauvague, T.F.J., and Burke, K., Geological map at 1:250,000 of Yola sheet Nigeria (1 sheet): Univ. Ibadan, Nigeria
 46. 1971 Longshore drift and submarine canyons in the development of the Niger delta: Abstract VIII, Int. Sedimentological Cong., Heidelberg
 47. 1971 Burke, K., and Durotoye, 'Bisi, Geomorphology and superficial deposits related to Late Quaternary climatic variation in Southwestern Nigeria: Zeits. f. Geomorphologie, v. 15, p. 430-444
 48. 1972 Southern Nigerian soils and geomorphology related to climatic change: West Afr. Jour. Arch., v. 2, p. 122-127
 49. 1972 Burke, K., and Whiteman, A. J., Uplift, rifting and the break-up of Africa (abstract): EOS Trans. Amer. Geophys. Union, v. 53, p. 517
 50. 1972 Burke, K., Grant, N. K., and Freeth, S. J., Granite gneiss from partial fusion of banded gneiss (abstract): Proc. Ibadan Conf. on African Geol., December 1970, p. 103-104
 51. 1972 Burke, K., Dessauvague, T.F.J., and Whiteman, A.J., Geological History of the Benue Trough: Proc. Ibadan Conf. on African Geol., December 1970, p. 187-206
 52. 1972 Ajakaiye, D. E., and Burke, K., Bouguer Gravity map of Nigeria at 1:2 million: compiled for the Nigerian Upper Mantle Project 1970
 53. 1972 Longshore drift, submarine canyons and submarine fans in development of the Niger delta: Bull. Amer. Assoc. Petroleum Geologists, v. 56,

p. 1975-1983

54. 1972 Burke, K., and Dewey, J. F., Orogeny in Africa: Proc. Ibadan Conf. on African Geol., December 1970, p. 583-608
55. 1972 Burke, K., and Wilson, J. T., Is the African plate stationary? Nature, v. 239, p. 387-390
56. 1972 Wilson, J. T., and Burke, K., Two types of mountain building: Nature, v. 239, p. 448-449
57. 1972 Dewey, J. F., and Burke, K., Permian, metastable and plate tectonic regimes in the Precambrian: Abstracts with Programs, Geol. Soc. American Ann. Mtg., v. 4, p. 462
58. 1972 Burke, K., and Durotoye, A. B., The Quaternary in Nigeria: Proc. Ibadan Conf. on African Geol. 1970, p. 325-348
59. 1973 Ajakaiye, D. E., and Burke, K., A Bouguer anomaly map of Nigeria: Tectonophysics, v. 16, p. 103-115
60. 1973 Burke, K., and Waterhouse, J. B., Saharan glaciation dated in North America: Nature, v. 241, p. 267
61. 1973 Burke, K., Kidd, W.S.F., and Wilson, J. T., Plumes and concentric plume traces of the Eurasian plate: Nature Phys. Sci., v. 241, p. 128-129
62. 1973 Burke, K., and Whiteman, A. J., Uplift, rifting and the breakup of Africa, in Proceedings NATO Conference on Continental Drift, v. 2, Newcastle, April 1972, Tarling, D. H., ed., p. 735-745
63. 1973 Dewey, J.F., and Burke, K., An outline of Precambrian plate development in Proceedings NATO Conference on Continental Drift, v. 2, Newcastle, April 1972, Tarling, D. H., ed., p. 1035-1046
64. 1973 Burke, K., and Dewey, J.F., Plume generated triple junctions: key indicators in applying plate tectonics to old rocks: Jour. Geol., v. 81, p. 406-433
65. 1973 Dewey, J.F., and Burke, K., Tibetan, Variscan and Precambrian basement reactivation: products of continental collision: Jour. Geol., v. 81, p. 683-692
66. 1973 Burke, K., Kidd, W.S.F., and Wilson, J.T., Relative and latitudinal motion of Atlantic hot spots: Nature, v. 245, p. 133-137
67. 1974 Hoffman, P., Dewey, J.F., and Burke, K., Aulacogens and their genetic relation to geosynclines, in Dott R.H., ed., Modern and Ancient Geosynclinal Sedimentation, SEPM publications, No. 19, p. 38-55
68. 1974 Dewey, J.F., and Burke, K., Two plates in Africa during the Cretaceous: Nature, v. 249, p. 313-316
69. 1974 Burke, K., and Dewey, J.F., Hot spots and continental breakup: implications for collisional orogeny: Geology, v. 2, p. 57-60
70. 1975 Burke, K., and Kidd, W.S.F., Earth, heat flow in: McGraw-Hill Yearbook of Science and Technology, p. 165-168

71. 1975 Atlantic evaporites formed by evaporation of water spilled from Pacific, Tethyan, and Southern oceans: *Geology*, v. 3, p. 613-616
72. 1975 Petroleum and global tectonics, in Fischer, A.G., and Judson, S., eds.: *Amer. Jour. Sci.*, v. 276, No. 3, p. 398-400-Review
73. 1976 Burke, K., Dewey, J.F., and Kidd, W.S.F., Dominance of horizontal movements, arcs and microcontinental collisions during the later Permian regime, in Windley, B.F., ed., *The Early History of the Earth*: John Wiley and Sons, p. 113-130
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76. 1976 Freeth, S.J., Grant, N.K. and Burke, K., The structure and sequence of geological events in the basement complex of the Ibadan area, western Nigeria: *Precambrian Research*, v. 3, p. 537-545.
77. 1976 Development of graben associated with the initial ruptures of the Atlantic Ocean: *Tectonophysics*, v. 36, p. 93-112.
78. 1976 The Chad Basin: an active intra-continental basin: *Tectonophysics*, v. 36, p. 197-206.
79. 1976 Neogene and Quaternary tectonics of Nigeria, in *Geol. of Nigeria*, ed., C.A. Kogbe, pp. 363-369, Elizabethan Publ. Company, Surulere Nigeria.
80. 1977 Burke, Kevin; Dewey, J.F. and Kidd, W.S.F., World distribution of sutures - the sites of former oceans: *Tectonophysics*, v. 40, p. 69-99.
81. 1977 Diverse geology of Atlantic-type continental margins and some possible implications for U.S. Offshore Atlantic: Ninth Annual Offshore Technology Conference, 1977 Proceedings, v. III, p. 77-84.
82. 1977 Aulacogens and continental breakup: *Ann. Rev. Earth Planet. Sci.*, v. 5, p. 371-396.
83. 1977 Burke, K. and Fox, P.J. (eds.), Caribbean Problems: a report on a workshop held to help identify important geological problems related to the evolution of the Caribbean: Albany, New York, April 20-23, 1977
84. 1977 Burke, K. and Molnar, Peter, Erik Norin Penrose Conference on Tibet: *Geology* v. 5, p. 461-463.
85. 1978 Sengor, A.M. Celal, Burke, Kevin and Dewey, John F., Rifts at high angles to orogenic belts: tests for their origin and the upper Rhine graben as an example: *Amer. Jour. Sci.*, v. 278. p. 24-40.
86. 1978 Burke, K. and Kidd, W.S.F., Were Archean continental geothermal gradients much steeper than those of today? *Nature*, v. 272 p. 240-241
87. 1978 Hayes, J.D., Burke, K. and Sclater, J. An integrated approach to Atlantic margin studies, in *Proc. Offshore Technology Conf. Dallas, Texas, May 8-11, 1978.*

- 87(a) 1978 Burke, K., and Sengor, A.M.C. Relative Timing of rifting and volcanism on earth and its tectonic implications. Geophys. Res. Letter 5, 419-21.
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89. 1978 Burke, K., Fox, P.J. and Sengor, A.M.C., Buoyant ocean floor and the evolution of the Caribbean. Jour. Geophys. Res., v. 83, p. 3949-3954.
90. 1978 Burke, K., Turcotte, D.L., Global sea-level changes and the thermal structure of the Earth: Earth Planet. Sci. Lett., v. 41, p. 341-346.
91. 1979 Burke, K., McGetchin, T.R., Thompson, G. and Young, R., Plateau uplift: mode and mechanism, EOS, v. 60, p. 64-67.
92. 1979 Burke, K. and Sengor, A.M.C., Comments on: Why I do not accept plate tectonics, EOS, v. 70, p. 207-211.
93. 1979 Burke, K., Thiessen, R. and Kidd, W.S.F., African hotspots and their relation to the underlying mantle, Geology, v. 7, p. 263-266.
94. 1979 Burke, K., The edges of the ocean: an introduction. In: Oceanus, v. 22, No. 3, Ocean/continent boundaries, p. 2-9.
95. 1979 Burke, K. and Sengor, A.M.C., Review of plate tectonics, Reviews of Geophysics and Space Physics, 17, p. 1018-1024.
96. 1980 Burke, K., Intracontinental rifts and aulacogens in Continental Tectonics National Academy, Geophysics Research Board, p. 42-49.
97. 1980 Burke, K. and Sawkins, F.J., Extensional tectonics and mid-Paleozoic massive sulfide occurrences in Europe, Geol. Rundsch. 69, 349-360.
98. 1980 Burke, K., and W.S.F. Kidd, Volcanism on Earth through time. In the continental crust and its mineral deposits, Geol. Assoc. Canada Spec. Paper 20, 503-522.
99. 1980 Burke, K., Grippi, J., and Sengor, A.M.C., Tectonic style of the northern boundary of the Caribbean, Jour. Geology, v. 88, p. 375-386.
100. 1980 White, G.W. and Burke, K., Outline of the tectonic evolution of the Gulf of Mexico and the Caribbean region. Houston Geological Society Bulletin, June 1980, p. 8-13.
101. 1981 Livacarli, R., Burke, K., and Sengor, A.M.C., Was the Laramide orogeny related to subduction of an oceanic plateau?, Nature 289, 276-278.
102. 1981 Burke, K. (with W.S.F. Kidd and D.L. Turcotte) Tectonics of basaltic volcanism, Chapter 6 in "Basaltic Volcanism," Lunar and Planetary Institute, Pergamon Press. pp. 804-898.
103. 1981 Burke, K., and J.F. Dewey, W.S.F. Kidd and A.M.C. Sengor, Continental collisions analogous to that forming the Qinghai-Xizang Plateau in Geological and Ecological Studies of the Qinghai-Xizang Plateau, Science Press Beijing, Gordon and Breach, New York, pp. 743-746.
104. 1982 Sengor, A.M.C., Kevin Burke and J.F. Dewey, Tectonics of the North Anatolian transform fault in: Multidisciplinary approach to Earthquake Prediction, ed. A. Mete Isikara and Andreas Vogel Friedr. Vieweg and Sohn, pp. 3-22

105. 1981 Burke, K., Two problems of intracontinental tectonics: relevation of old mountain belts and subsidence of intra-continental basins in Proceeding of Intl. Conf. on Intracontinental Earthquakes, Ohrid Yugoslavia 1979 ed. Jakim Petrowski and Clarence Allen Skopje 1981, pp. 157-164

In Press:

106. Rifts and Sutures of the World second edition Lunar and Planetary Institute, Burke and eight other authors.
107. Structure and Stratigraphy of the northern Wagwater Belt Jamaica with Paul Mann: Trans. 9th Carib. Geol. Conf. Santo Domingo
108. Submitted: with Susan Anderson Sutures of the Grenville terrain
Geol. Soc. America Special Paper on Proterozoic Conference Madison, Wisconsin 1980
109. Submitted Caribbean tectonics and relative plate motion, Geol. Soc. America
Special paper on Caribbean. ed. Hargraves and Bonini.

Vitae: John Warren DELANO
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Education:

<u>Institution</u>	<u>Dates</u>	<u>Degree</u>
Upsala College East Orange, N. J.	1965-1969	B.S.
Cornell University Ithaca, N. Y.	1969-1971	
State Univ. of New York Stony Brook, N. Y.	1971-1977	Ph.D.

Professional Experience:

Assistant Professor, SUNY @ Albany, 1982-present.
Post-Doctoral Research Associate, SUNY @ Stony Brook, 1980-1982.
Research Fellowship, Australian National University, 1977-1980.
Research Assistantship, SUNY @ Stony Brook, 1973-1976.
Teaching Assistant, SUNY @ Stony Brook, 1971-1973.
Teaching Assistant, Cornell University, 1969-1971.
Field Assistant, Minnesota Geological Survey, Summer of 1970.

Research Interests

Composition and structure of the lunar interior at depths > 300 km; physical/chemical mechanisms involved in the production of lunar basaltic liquids; liquidus-phase relations of basaltic compositions; chemical constraints on the origin of the Moon; experimental determinations of intrinsic oxygen fugacities in ultramafics derived from the Earth's upper mantle; compositional systematics in tektites and lunar impact glasses.

ABSTRACTS

1. Bonnichsen B., Delano J. W., and Forbes W. C. (1972) Late-stage titaniferous peridotite from Duluth Complex similar to Apollo 11 basalts in bulk composition (abstr.). EOS, 53, p. 535. Amer. Geophys. Union.
2. Bence A. E., Delano J. W., and Papike J. J. (1972) Apollo 15 (2-4 mm) coarse fines: A mineralogical and petrologic study (abstr.). EOS, 53, p. 551. Amer. Geophys. Union.
3. Cameron K. L., Delano J. W., Bence A. E., and Papike J. J. (1972) Petrology of the 2-4 mm sized soil fragments from Apollo 15. The Apollo 15 Lunar Samples (editors: J. W. Chamberlain and C. Watkins), pp. 1-4. The Lunar Science Institute, Houston.
4. Delano J. W. (1972) Petrologic examination of breccia 15465 and its implications as to the nature of the Apennine Front. The Apollo 15 Lunar Samples (editors: J. W. Chamberlain and C. Watkins), pp. 60-61. The Lunar Science Institute, Houston.
5. Bence A. E., Papike J. J., Sueno S., and Delano J. W. (1973) Pyroxene poikiloblastic rocks from Apollo 16 (abstr.). Lunar Science IV, pp. 60-62. The Lunar Science Institute, Houston.
6. Delano J. W., Bence A. E., Papike J. J., and Cameron K. (1973) Petrology of the 2-4 mm soil fraction from Apollo 16 (abstr.). Lunar Science IV, pp. 172-174. The Lunar Science Institute, Houston.
7. Delano J. W., Bence A. E., and Papike J. J. (1972) Apollo 16 coarse fines (2-4 mm): Interstation variations in lithologies (abstr.). G.S.A. Abstracts with Programs, 4, p. 485. Geol. Soc. Amer.
8. Papike J. J., Bence A. E., Cameron K., and Delano J. W. (1973) Petrology of the 2-4 mm soil fragments from Apollo 17 (abstr.). EOS, 54, pp. 601-603. Amer. Geophys. Union.
9. Bence A. E., Delano J. W., and Papike J. J. (1974) Nature of the highland massifs at Taurus-Littrow: An analysis of the 2-4 mm soil fraction (abstr.). Lunar Science V, pp. 51-53. The Lunar Science Institute, Houston.
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12. Delano J. W. (1976) Experimental petrology of a lunar "spinel" troctolite (abstr.). Lunar Science VII, pp. 193-195. The Lunar Science Institute, Houston.

13. Delano J. W. (1976) Experimental petrology of a refractory whole moon composition (abstr.). Lunar Science VII, pp. 190-192. The Lunar Science Institute, Houston.
14. Delano J. W. (1977) The highlands component in the Apollo 17 soils (abstr.). Lunar Science VIII, pp. 236-238. The Lunar Science Institute, Houston.
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28. Delano J. W. and Livi K. (1981) Mare volcanic glasses: A tale of two arrays (abstr.). Lunar Planet. Sci. XII, pp. 226-228. The Lunar and Planetary Institute, Houston.
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17. Arculus R. J. and Delano J. W. (1981) Intrinsic oxygen fugacity measurements: Techniques and results for spinels from upper mantle peridotites and megacryst assemblages. Geochim. Cosmochim. Acta, 45, pp. 899-913.
18. Delano J. W., Lindsley D. H., Ma M.-S., and Schmitt R. A. (1982) The Apollo 15 yellow impact glasses: Chemistry, petrology, and exotic origin. Proc. Lunar Planet. Sci. Conf. 13th (in press).
19. Chen H.-K., Delano J. W., and Lindsley D. H. (1982) Chemistry and phase relations of VLT volcanic glasses from Apollo 14 and Apollo 17. Proc. Lunar Planet. Sci. Conf. 13th (in press).
20. Delano J. W. and Lindsley D. H. (1982) Implications of the chemical variation among the Moldavite tektites. Geochim. Cosmochim. Acta (submitted).

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Education:

Oberlin College, Oberlin, Ohio, A.B. (Geology), 1965; Teaching Assistant, 1965-1966.
University of Texas at Austin, N.S.F. Traineeship, 1966-1968; N.S.F. Graduate
Fellowship, 1968-1970; Outstanding Student Award, Houston Geological Society,
1969; M.A. (Geology) 1969; Research Assistant, 1970-1971; Ph.D. (Geology;
minor in Mechanical Engineering), 1971

• Professional Experience:

Research Fellow in Geochemistry, Division of Geological and Planetary Sciences,
California Institute of Technology, 1971-1972
Visiting Instructor, Cornell University, Summer 1973 and 1974
Assistant Professor of Geology, State University of New York at Albany, 1973-1979
Assistant Chairman, Department of Geological Sciences, State University of New
York at Albany, 1975-1979
Associate Vice President for Academic Affairs, State University of New York at
Albany, 1979-1981
Acting Vice President for Academic Affairs, State University of New York at Albany
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Associate Professor of Geology, State University of New York at Albany, 1979-
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Courses Taught:

Fundamentals of Geology, Mineralogy I, Mineralogy II, Topics in Igneous Petrology
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Research Interests:

Petrology and tectonics of oceanic crust and subduction and collision zones.

Professional Societies:

Member, American Geophysical Union

Publications:

- 1966 J.L. Powell and S.E. DeLong, Isotopic composition of strontium in volcanic rocks from Oahu: Science, v. 153, p. 1239-1242
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- 1973 S.E. DeLong and D. McCullough, Compton-scattered tungsten x-rays as a measure of mass absorption coefficients in rocks: Amer. Mineral., v. 58, p. 1073-1075
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- J.M. Dyer, R.J. Arculus, and S.E. DeLong, Geochemistry of hornblende-bearing alkaline volcanic rocks from Kula, western Turkey: Geol. Soc. Amer. Abstr. with Prog., v. 13, p. 443-444

Grants and Contracts:

- 1974 S.E. DeLong, Mineralogy of high pressure xenoliths, Aleutian Islands, University Awards Committee, State University of New York, 1/1/74 - 12/31/75, \$754
- 1975 S.E. DeLong and P.J. Fox, Mineral chemistry of igneous rocks from the Oceanographer Fracture Zone, Mid-Atlantic Ridge, Submarine Geology and Geophysics Program, National Science Foundation, 12/1/75 - 11/30/76, \$22,400
- 1976 S.E. DeLong and R.N. Anderson, Geophysical and geological consequences of ridge subduction at continental margins, American Chemical Society - Petroleum Research Fund, 6/1/76 - 8/31/78, \$16,000
- J.F. Dewey (P.I.), S.E. DeLong, and P.J. Fox, Geometric and geological consequences of fracture zone/transform evolution, Geology Program, National Science Foundation, 9/1/76 - 8/31/77, \$19,900
- S.E. DeLong and P.J. Fox, Petrology and physical properties of gabbroic rocks from the Cayman Trough spreading center, Caribbean Sea, Submarine Geology and Geophysics Program, National Science Foundation, 10/1/76 - 9/30/77, \$30,600

- 1977 K. Burke (P.I.), S.E. DeLong, J.F. Dewey, and W.S.F. Kidd Global tectonic and plate boundary mapping, Geophysics Branch, Goddard Space Flight Center, National Aeronautics and Space Administration, 3/1/77 - 2/28/78, \$23,820
- J.F. Dewey (P.I.), S.E. DeLong, and P.J. Fox, as above, Supplemental request for summer field work, 5/1/77 - 8/31/77, \$16,600
- J.F. Dewey (P.I.), S.E. DeLong, and P.J. Fox, Geometric and geological consequences of fracture zone/transform evolution (renewal) Geology Program, National Science Foundation, 10/1/77 - 9/30/79, \$121,000
- S.E. DeLong and P.J. Fox, Investigation of the Cayman Trough: Geochemical, petrological and physical property analyses (renewal), Submarine Geology and Geophysics Program, National Science Foundation, 10/1/77 - 9/30/78, \$42,700
- 1978 K. Burke (P.I.), S.E. DeLong, J.F. Dewey, and W.S.F. Kidd, Global tectonic studies, Earth Resources Program, National Aeronautics and Space Administration, 5/15/78 - 5/14/79, \$34,964
- S.E. DeLong (P.I.), et. al., Solid-state detector and other microprobe-based equipment for geochemical research, Geochemistry Program, National Science Foundation, 7/1/78 - 6/30/79, \$19,700
- 1979 S.E. DeLong and T. Shibata, Petrology and geochemistry of igneous rock from the Oceanographer Fracture Zone, Mid-Atlantic Ridge, U.S. - Japan Cooperative Science Program, National Science Foundation, 4/1/79 - 3/31/80, no-cost request
- S.E. DeLong (P.I.), K.E. Davis, and P.J. Fox, Oxide mineralogy of ocean-floor gabbros: Implications for oceanic magnetic structure, Submarine Geology and Geophysics Program, National Science Foundation, 5/1/79 - 12/31/80, \$21,105
- S.E. DeLong (P.I.) and W.S.F. Kidd, Volcanic geochemistry in a collisional zone: Western Anatolia to the Bitlis Suture, Turkey, Geochemistry Program, National Science Foundation, 5/15/79 - 5/14/81, \$47,300
- P.J. Fox (P.I.), S.E. DeLong, and W.S.F. Kidd, A submersible investigation of structure and petrology of the fast-slipping Tamayo Transform, Submarine Geology and Geophysics Program, National Science Foundation, 8/1/79 - 7/31/81, \$134,000
- 1980 P.J. Fox (P.I.), S.E. DeLong, W.S.F. Kidd, and D.J. Fornari, The Oceanographer transform fault (35°N, 35°W): The structure and dynamics of a transform and ridge crest, Office of Naval Research, 1/1/80 - 12/31/82, \$146,202

Invited Participation in Conferences, Meetings, and Seminars:

- 1969 Participant, Geological Society of America Penrose Conference on "The Meaning of the New Global Tectonics for Magmatism, Sedimentation and Metamorphism in Orogenic Belts," W.R. Dickinson, Convener, Asilomar, California
- 1972 Participant, Hot-Spot Conference, P. Molnar, Convener, Institute of Geophysics and Planetary Physics, University of California at San Diego, La Jolla, California
- 1974 Speaker, "Mafic and Ultramafic Nodules, Aleutian Arc, and the Occurrence of Alkaline Rocks in Island Arcs," seminar, Lamont-Doherty Geological Observatory of Columbia University
- 1975 Speaker, as above, seminar, Department of Geological Sciences, Cornell University
- Speaker, "Subduction of the Kula Ridge at the Aleutian Trench," seminar, Lamont-Doherty Geological Observatory of Columbia University
- Cochairman, Session on Petrology III: Igneous, Annual Meeting of the Geological Society of America, Salt Lake City, Utah
- 1976 Speaker, "Discrimination among Trace Element Partial Melting Models," Conference on Andesites and Bimodal Suites, U.S. Geological Survey, Denver, Colorado
- Speaker, "Geological and Geophysical Consequences of Ridge Subduction," The First Ewing Symposium: Problems in the Evolution of Island Arcs, Deep Sea Trenches, and Back-Arc Basins, Lamont-Doherty Geological Observatory of Columbia University, Arden House, Harriman, New York
- Cochairman, Session on Oceanic Islands: Volcanic Rocks, Spring Annual Meeting of the American Geophysical Union, Washington, D.C.
- Speaker, "Geological Consequences of Ridge Subduction," seminar, Department of Geological Sciences, Rensselaer Polytechnic Institute
- 1977 Speaker, "Geological Consequences of Ridge Subduction," seminar, Phillips Petroleum Co., Bartlesville, Oklahoma
- Speaker, "Topographic and Geological Consequences of Ridge Subduction in Chile," seminar, Geophysics Branch, NASA Goddard Space Flight Center, Greenbelt, Maryland
- Speaker, "Vertical Motion in Island Arcs," seminar, Department of Earth and Planetary Sciences, Massachusetts Institute of Technology
- 1978 Speaker, "Evolution of Oceanic Fracture Zones," Conference on Transform Faults and Their Associated Continental Margins, B.F. Windley, Convener, Burlington House, Geological Society of London

- Instructor, "Geological Evolution of Oceanic Transform Faults and Subduction Zones," Short course, Cities Services Oil Co., Tulsa, Oklahoma
- Speaker, "Basalt-gabbro petrology from the Mid-Atlantic Ridge and the Ordovician of Newfoundland," seminar, Department of Geological Sciences, Rensselaer Polytechnic Institute
- Speaker, "What happens when a ridge is subducted?," seminar, Department of Geology, Middlebury College
- 1979 Speaker, "Ridge subduction in theory and practice," seminar, Graduate School of Oceanography, University of Rhode Island
- Invited paper, "Dehydration, asthenospheric convection and seismicity in subduction zones" (with R.N. Anderson, speaker, and W.M. Schwarz), Session on Thermal Structure and Evolution of the Earth, Fall Annual Meeting of the American Geophysical Union, San Francisco
- 1981 Speaker, "Cpx-Opx relations in Oceanographer F.Z. gabbros and basalts," AGU Chapman Conference on Generation of the Oceanic Lithosphere, Airlie House, Virginia

CURRICULUM VITAE

for

Timothy Mark Harrison

Born: November 2, 1952; Vancouver, Canada

Education: B.Sc. (Honors) Geological Sciences, University of British Columbia, 1977.

Ph.D. Research School of Earth Sciences, The Australian National University, 1980.

Employment: Research Scholar: Research School of Earth Sciences, 1978-1980.

Research Associate: Carnegie Institution of Washington, Department of Terrestrial Magnetism, 1981.

Assistant Professor: State University of New York at Albany, January 1, 1982 to present.

Member: American Geophysical Union

Research Interests:

These include: Application of the K-Ar, $^{40}\text{Ar}/^{39}\text{Ar}$ and fission track techniques to understanding the thermal evolution of terrestrial and extra-terrestrial materials; experimental measurement and geological application of diffusion laws for both radiogenic and stable isotopes; development of heat flow and diffusion theory to geological problems; and partitioning and kinetics of trace elements in mineral-melt systems.

Bibliography:

Harrison, T.M.; Armstrong, R.L. and Clarke, G.K.C., (1978). Thermal models and cooling histories from fission-track K-Ar, Rb-Sr and U-Pb mineral dates, northern Coast Plutonic Complex, B.C. U.S.G.S. Open File Report 78-701, 167-170.

Harrison, T.M.; Armstrong, R.L.; Naeser, C.W. and Harakal, J.E. (1979). Geochronology and thermal history of the Coast Plutonic Complex, near Prince Rupert, B.C. Can. J. Earth Sci. 16, 400-410.

Harrison, T.M. and Clarke, G.K.C. (1979). A model of the thermal effects of igneous intrusion and uplift as applied to Quottoon Pluton, B.C. Can. J. Earth Sci. 16, 411-420.

Harrison, T.M. and McDougall, I. (1980). Investigations of an intrusive contact northwest Nelson, N.Z. - I: Thermal, chronological and isotopic constraints on the region. Geochim. Cosmochim. Acta 44, 1985-2004.

Bibliography: (continued)

- Harrison, T.M. and McDougall, I. (1980). Investigations of an intrusive contact northwest Nelson, N.Z. - II: Diffusion of radiogenic and excess ^{40}Ar in hornblende from $^{40}\text{Ar}/^{39}\text{Ar}$ age spectra. *Geochim. Cosmochim. Acta.* 44, 2005-2020.
- Wang, S.S.; McDougall, I; Tetley, N. and Harrison, T.M. (1980). $^{40}\text{Ar}/^{39}\text{Ar}$ age and thermal history of the Kirin chondrite. *Earth Planet. Sci. Lett.* 49, 119-131.
- Harrison, T.M. and McDougall, I. (1981). Excess ^{40}Ar in metamorphic rocks from Broken Hill, New South Wales: Implications for $^{40}\text{Ar}/^{39}\text{Ar}$ age spectra and the thermal history of the region. *Earth Planet. Sci. Lett.* 55, 123-149.
- Harrison, T.M. and Wang, S.S. (1981). Further $^{40}\text{Ar}/^{39}\text{Ar}$ evidence for the multi-collisional heating of the Kirin chondrite. *Geochim. Cosmochim. Acta.* 45, 2513-2517.
- Harrison, T.M. (1981). Diffusion of ^{40}Ar in hornblende. *Contrib. Mineral. Petrol.* 78, 324-331.
- Harrison, T.M. and Hofmann, A.W. (1981). The partition of Pb between clinopyroxene and melt. *Carnegie Inst. Wash. Yearbook* 80, 492-493.
- Harrison, T.M. and McDougall, I. (1982). The thermal significance of microcline K-Ar ages revealed by the $^{40}\text{Ar}/^{39}\text{Ar}$ age spectrum method.. In press, *Geochim. Cosmochim Acta.*

STATE UNIVERSITY OF NEW YORK AT ALBANY
Department of Geological Sciences

CURRICULUM VITAE

WILLIAM S.F. KIDD

Personal:

Born: February 23, 1947, Shawford, Winchester, England; single

Education:

B.A. in Natural Sciences (Geology), Cambridge University, England,
June 1969

Ph.D., Cambridge University, England, November 1974

Professional Experience

Visiting Lecturer in Geology, Erindale College, University of Toronto,
1972-1973

Lecturer in Geology, Department of Geological Sciences, State University
of New York at Albany, 1974

Assistant Professor, Department of Geological Sciences, State University
of New York at Albany, 1975-1981

Associate Professor, Department of Geological Sciences, State University
of New York at Albany, 1981-

Professional Societies:

American Geophysical Union
Geological Society of America

Publications:

- 1971 (with J. M. Bird and J. F. Dewey) Appalachian-Caledonian ophiolites/Proto-Atlantic oceanic crust and mantle: Nature Phys. Sci., v. 231, p. 28-31
- 1973 (with K. C. Burke and J. T. Wilson) Plumes and concentric plume traces of the Eurasian plate: Nature Phys. Sci., v. 241, p. 128-129
- (with K. C. Burke and J. T. Wilson) Relative and latitudinal motion of Atlantic hot spots: Nature, v. 245, p. 133-137
- 1974 (with J. F. Dewey) Continental collisions in the Appalachian/Caledonian orogenic belt: style variations related to complete and incomplete suturing: Geology, v. 2, p. 543-546
- 1975 (with K. C. Burke) Earth - heat flow in; hot spots: article in McGraw-Hill Encyclopedia Yearbook for 1975, p. 165-168
- 1976 (with J. F. Dewey and K. Burke) Dominance of horizontal movements, arcs and microcontinental collisions during the later Permian regime, in The Early History of the Earth (B. F. Windley, ed.), John Wiley & Sons, p. 113-130
- (with K. C. Burke and J. F. Dewey) PreCambrian palaeomagnetic results compatible with contemporary operation of the Wilson Cycle: Tectonophysics, v. 33, p. 287-299
- 1977 (with K. C. Burke and J. F. Dewey) World distribution of sutures - the sites of former oceans, in The Past Distribution of Continents (M. W. McElhinny, ed.), Tectonophysics, v. 40, p. 69-99
- (with J. F. Dewey) Geometry of plate accretion: Geol. Soc. America Bull., v. 88, p. 960-968
- The Baie Verte Lineament, Newfoundland: ophiolite complex floor and mafic volcanic fill of a small Ordovician marginal basin, p. 407-418, in Island Arcs, Deep-Sea Trenches, and Back Arc Basins (M. Talwani and W. C. Pitman, eds.), Maurice Ewing Series, v. 1, Amer. Geophys. Union, Washington
- 1978 (with J. F. Dewey and J. M. Bird) The Mings Bight Ophiolite Complex, Newfoundland: Appalachian Oceanic Crust and Mantle: Canadian Journal of Earth Sciences v. 15, p. 781-804
- (with K. C. Burke) Were Archean continental geothermal gradients much steeper than now?: Nature 272, p. 24-241.
- 1979 (with K.C. Burke, L. Delano, J.F. Dewey, A. Edelstein, K.D. Nelson, A.M.C. Sengor and J. Stroup) Rifts and Sutures of the World. Contract Report NAS 5-24094. Geophysics Branch, ESA Division, Goddard Space Flight Center, Greenbelt, Maryland. 238 pp..

Publications (cont'd):

- 1979 (with R. Thiessen and K.C. Burke) African hotspots and their relation to the underlying mantle. Geology, 7, 263-266.
- (with A.M.C. Şengor) Post-collisional tectonics of the Turkish-Iranian plateau and a comparison with Tibet. Tectonophysics, 55, 361-376.
- (with K.D. Nelson) A lower Paleozoic trench-fill sequence, New World Island, Newfoundland: Discussion and reply. Geol. Soc. Amer. Bull., 90, 985-986.
- (with D.B. Rowley and L.L. Delano) Detailed stratigraphic and structural features of the Giddings Brook slice of the Taconic Allochthon in the Granville area. pp. 186-242, in Friedman, G.M. (ed.) Guidebook, 51st N.Y. State Geol. Assoc. Ann. Mtg. and N.E.I.G.S., 71st Mtg., ; Rensselaer Poly. Inst., Troy, NY.
- (with K.D. Nelson) The age of the Roberts Arm Group, north-central Newfoundland: Discussion. Can. J. Earth Sci., 16, 2068-2070.
- 1980 (with K.C. Burke) Volcanism on Earth through time. In D. Strangway (ed.) The continental crust of the Earth and its mineral deposits, Geol. Assoc. Canada. Spec. Publ. 20. pp. 503-522.
- 1981 (with K.C. Burke and D.L. Turcotte) Chapter 6 - Tectonics of Basaltic Volcanism, in W.M. Kaula (ed.) Basaltic Volcanism on the Terrestrial Planets, Pergamon, New York, pp. 801-898.
- (with D.B. Rowley) Stratigraphic relationships and detrital composition of the medial Ordovician flysch of western New England: implications for the tectonic evolution of the Taconic Orogeny. Jour. Geol., 89, 199-218.
- (with J.F. Casey) A parallochthonous group of sedimentary rocks unconformably overlying the Bay of Islands Ophiolite Complex, North Arm Mountain, Newfoundland. Canadian Jour. Earth Sci., 18, 1035-1050.
- 1982 (with D.B. Rowley) Stratigraphic relationships and detrital composition of the medial Ordovician flysch of western New England: Implications for the tectonic evolution of the Taconic Orogeny: A reply to discussion by Rodgers. Jour. Geol., 90, 223-226.
- : A reply to discussion by Geiser. Jour. Geol., 90, 230-233.
- (with W. Bosworth and D.B. Rowley) A structure section in eastern New York showing variation in style of deformation across the Taconic Allochthon: Discussion. Northeastern Geol., 4, 111-116.

Papers accepted:

(with J.F. Dewey and M.J. Kennedy) A geotraverse across the Appalachians of Northern Newfoundland. Geodynamics Series, Amer. Geophys. Union, Washington, D.C.

Papers Presented at Meetings:

- 1973 (with K. C. Burke and J. T. Wilson) The present plume population: EOS, Transactions, American Geophysical Union, v. 54, p. 238
- 1973 (with K. C. Burke and J. T. Wilson) Stationary Africa, moving Eurasia: EOS, Transactions, American Geophysical Union, v. 54, p. 470
- 1973 (with J. F. Dewey and P. J. Fox) Structure and generation of oceanic crust and mantle: Geological Society of America, Abstracts with Programs, v. 5, p. 597
- 1974 (with K. C. Burke and J. T. Wilson) Hot spots and the driving mechanism: EOS, Transactions, American Geophysical Union, v. 55, p. 439
- 1974 (with K. C. Burke and J. F. Dewey) The Tibetan Plateau: Its significance for tectonics and petrology: Geological Society of America, Abstracts with Programs, v. 6, p. 1027-1028
- 1975 Tectonic environment of Torridonian-Moine-Dalradian deposition: Geological Society of America, Abstracts with Programs, v. 7, p. 84-85
- 1975 (with K. C. Burke) Palaeoenvironmental studies of the Georgian Bay Formation at Erindale, Ontario: Equatorial shallow marine sedimentation on the cratonic margin of the Taconian exogeosyncline: Geological Society of America, Abstracts with Programs, v. 7, p. 35
- 1975 Widespread late Neogene and Quaternary calc-alkaline vulcanism on the Tibetan Plateau: EOS, Transactions, American Geophysical Union, v. 56, p. 453
- 1975 (with S. E. DeLong, K. C. Burke, and Y. Isachsen) Categories of anomalous topographic relief within plates: EOS, Transactions, American Geophysical Union, v. 56, p. 457
- 1976 (with J. F. Dewey and P. J. Fox) Geometry of plate accretion. EOS - Trans. Amer. Geophys. Union, v. 57, p. 331-332
- 1976 (with J. F. Dewey and P. J. Fox) Constitution of oceanic crust and upper mantle and some constraints on its generation. EOS - Trans. Amer. Geophys. Union, v. 57, p. 403
- 1976 (with J. F. Dewey and K. Burke) World distribution of sutures. 25th International Geol. Congress, Sydney, Australia
- 1977 (with J. F. Dewey and K. D. Nelson) Medial Ordovician Ridge Subduction in Central Newfoundland: Geol. Soc. America, Abstracts with Programs, v. 9, p. 283-284

Papers Presented at Meetings (cont'd):

- 1977 (with R. Thiessen and K. Burke) Are African-Plate topography and vulcanism simply related to underlying mantle structure?: EOS, Trans. Amer. Geophys. Union 58, p. 503
- 1978 (with J. F. Casey) Sediments overlying the Bay of Islands Ophiolite Complex, Newfoundland: Geol. Soc. America, Abstracts with Programs, v. 10, p. 50
- (with A.M.C. Sengor) Post-collisional tectonics of the Turkish-Iranian Plateau and a comparison with Tibet. EOS, Trans. Amer. Geophys. Union, 59, p. 323.
- 1979 (with J.F. Casey and S. Pulaski) Erosional unconformity above the Bay of Islands Ophiolite Complex and the para-allochthonous nature of overlying sedimentary rocks. Geol. Soc. America, Abstracts with Programs, v. 11, p. 6.
- (with L.L. Delano) Two "black-green" boundaries in the northern Taconic Allochthon. Geol. Soc. America, Abstracts with Programs, v.11, p. 19.
- Diversity of source and present structural setting of ophiolite rocks in the Baie Verte Lineament, Newfoundland. International Ophiolite Symposium, Cyprus; Abstracts, p. 94.
- (with K.C. Burke) Plate Tectonics on the early earth. Workshop on the Ancient Crusts of the Terrestrial Planets. Lunar and Planetary Institute, Houston.
- (with K.C. Burke) Volcanism on Earth through time. Symposium on the Crust of the Earth and its mineral deposits (Wilson Symposium) Univ. of Toronto. Abstracts.
- (with K.C. Burke and S.E. DeLong) Hot Spots, High Spots and other types of non-plate margin (anomalous) topography. Hawaii symposium on Intraplate Volcanism and submarine volcanism., Abstracts, p. 7.
- (with K.C. Burke) The distribution of hot spots and hypotheses for their origin. Hawaii symposium on Intraplate Volcanism and submarine volcanism, Abstracts, p. 36.
- (with K.C. Burke) Thermal history of the earth: one geologists' view. EOS, Trans. Amer. Geophys. Union, 60, p. 934.
- 1980 (with K.C. Burke) Record of plate boundary and non-plate boundary tectonics in the past. Invited paper, NASA Geodynamics Program review conference: Goddard Space Flight Center, Greenbelt, MD.
- (with K.C. Burke) Structural mapping in Tibet using LANDSAT imagery Lunar and Planetary Science Conference, 11th, Houston

1980

Geology of the Turkish-Iranian and Tibetan plateaux: the effects of young continental collision and the implications for older orogenic belts. Invited lecture, Logan Club, Geological Survey of Canada, Ottawa.

(with members of the Tamayo Scientific Team) Submarine landsliding at the eastern end of the Tamayo Transform Fault, Gulf of California. EOS, Trans. Amer. Geophys. Union 61, 359 (presented by W.S.F. Kidd).

(with F. Saroglu, Y. Güner and A.M.C. Şengör) Neotectonics of eastern Turkey: new evidence for crustal shortening and thickening in a collision zone (presented by W.S.F. Kidd) EOS, Trans. Amer. Geophys. Union 61, 360.

Terrestrial tectonics through time. EOS, Trans. Amer. Geophys. Union 61, 572. Invited paper.

(with members of the Tamayo Scientific Team) Tectonics of a ridge-transform intersection zone: Tamayo-East Pacific Rise, Gulf of California EOS, Trans. Amer. Geophys. Union 61, 574 (presented by W.S.F. Kidd)

(with K.C. Burke, J.F. Dewey and A.M.C. Şengör) The Alpine-Himalayan zone of continental collision and collision as a stage in continental evolution. Abstracts of proceedings of Symposium on Qinghai-Xizang (Tibet) Plateau, Peking 1980 p. 72-73.

(with R.H. Moody and B.D. Idleman) Trondhjemite formation along oceanic transforms. Geol. Soc. Amer. Abstracts with Programs, v. 12, p. 486.

(with members of the Tamayo Scientific Team) East Pacific Rise-Tamayo Transform Fault intersection. Geol. Soc. Amer. Abstracts with Programs, v. 12, p. 461-462 (presentation by W.S.F. Kidd and D.G. Gallo).

Large angular rotations of blocks along strike-slip zones as shallow decollement features, EOS Trans. Amer. Geophys. Union, 61, p. 1120 (with D.G. Gallo, H.S. Sloan and A.M.C. Sengor).

Neotectonics of eastern Anatolia, EOS, Trans. Amer. Geophys. Union 61, 1107-1108 (with J.F. Dewey, A.M.C. Sengor and F. Saroglu).

The Oceanographer Transform: morphotectonic character of a ridge-transform intersection, EOS, Trans. Amer. Geophys. Union, 61, 1105 (with P.J. Fox, K. Crane, D. Gallo, R.H. Moody, J.A. Karson).

The geology of the Oceanographer Transform: submersible and deep-towed camera investigations. EOS, Trans. Amer. Geophys. Union 61, 1105 (with P. J. Fox and others).

Papers Presented at Meetings (cont'd):

- 1981 Depositional history of the Taconic continental rise compared with equivalent sequences along the northern Appalachians. Geol. Soc. Amer. Abstracts with Programs, 13, 141. (with L.L. Delano and D.B. Rowley).
- Relationship between shelf and rise sedimentation of the early Palaeozoic continental margin of western New England. Geol. Soc. Amer. Abstracts with Programs 13, 173 (with D.B. Rowley).
- 1982 (with M. Aparisi) Poultney Formation - Early Ordovician contourite deposit on the Taconic continental rise. Geol. Soc. Amer. Abstracts with Programs 14, 2.
- (with B.D. Idleman) Field relations and regional significance of the volcanics of Woods Island, Bay of Islands, Newfoundland. Geol. Soc. Amer. Abstracts with Programs, 14, 30.
- (with J.B. Thompson, Jr., and others) Continent-Ocean Transition: Adirondacks to Georges Bank, Geodynamics Transect E-1. Geol. Soc. Amer. Abstracts with Programs 14, 631.

Field Work

1 month each year 1974-1982 teaching Field Mapping course - near Granville, NY (1974-1979); near Fairhaven, VT 1980-82 (Last week of May through third week of June).

1974: 7 weeks field work in Newfoundland - July 1-August 20; Mings Bight Ophiolite Complex, Triton Island, New World Island

1975: 1 week (Aug. 1-7) visiting student (J. Karson) Field season terminated by involvement in plane crash.

1976: 9 weeks (June 26-Aug. 25) in Newfoundland. Mapping in Baie Verte Lineament, Eastern Burlington Peninsula, Halls Bay area. Field trips provided for H. Williams. Field supervision of J. Karson, J. Casey, E. Rosencrantz, D. Nelson.

1977: 9 weeks (July 1-August 29) in Newfoundland. Mapping and sampling in Baie Verte Lineament, western Notre Dame Bay, North Arm Mountain. Field supervision of J. Karson, J. Casey, D. Nelson, A. Edelstein.

1978: 9 weeks (June 27-Aug. 26) in Newfoundland. Mapping and sampling of North Arm Mountain, eastern Notre Dame Bay. Field trip organized for SUNYA people in North Arm Mountain. Field supervision of Casey, Rosencrantz, Nelson, Idleman, Livaccari.

1979: 8 weeks (July 6-August 31) in Newfoundland. Mapping and sampling in eastern Notre Dame Bay. Field trip provided for Drs. S. McKerrow and A. Cox. Field supervision of B. Idleman and R. Livaccari.

1980: 3 weeks (Aug. 18-Sept. 4) in sampling traverse of East Anatolian high plateau (Turkey) in cooperation with the Turkish Geological Survey (M.T.A.) (with S.E. DeLong)

1981: 2 weeks (June 14-28) field work in Bay of Islands region, Newfoundland.

Grants Awarded:

- 1974 Council on Research, State University of New York at Albany
Title: Processes forming oceanic crust and upper mantle:
Geological field mapping of the Mings Bight Ophiolite
Complex, Newfoundland
Duration: May 1, 1974 - December 31, 1974
Amount: \$700
- 1975 State University of New York Research Foundation JAC/UAC
Title: Tectonic sequence in Palaeozoic island arc, Newfoundland
Duration: January 1, 1975 - December 31, 1976
Amount: \$1,585
- 1976 National Science Foundation (with J. F. Dewey)
Title: Structure and Petrofabrics of the Bay of Islands
Ophiolite Complex, Newfoundland
Duration: June 1, 1976 - October 31, 1978
Amount: \$60,500
- 1977 NASA Goddard Space Flight Center (with J. F. Dewey, K. Burke, and
S. E. DeLong)
Title: Global Tectonic Boundary Mapping
Duration: March 18, 1977 - March 17, 1978
Amount: \$23,140
- 1977 National Science Foundation
Title: Geological Development of an Arc-Trench Gap - Investiga-
tion of Ordovician Rocks of the Western Notre Dame Bay
Area, Newfoundland
Duration: December 1, 1977 - May 31, 1980
Amount: \$55,000
- 1978 NASA Goddard Space Flight Center (with K. Burke, J. F. Dewey and
S. E. DeLong)
Title: Global Tectonic Studies, Earth Research Program
Duration: May 15, 1978 - May 14, 1979
Amount: \$34,964
- 1979 National Science Foundation (with S.E. DeLong)
Title: Volcanic geochemistry in a collisional zone: Western
Anatolia to the Bitlis Suture, Turkey
Duration: May 15, 1979 to October 31, 1981
Amount: \$47,300
- 1979 National Science Foundation (with P.J. Fox and S.E. DeLong)
Title: A Submersible Investigation of Structure and Petrology
of the Fast-Slipping Tamayo Transform
Duration: August 1, 1979 to July 31, 1981
Amount: \$134,750

Grants Awarded (cont'd):

- 1980 Office of Naval Research (with P.J. Fox, S.E. DeLong and
 D.J. Fornari)
 Title: The Oceanographer Transform Fault (35°N, 35°W)
 The structure and dynamics of a transform and ridge
 crest.
 Duration: January 1, 1980 - December 31, 1983
 Amount: \$146,202
- 1982 National Science Foundation (with K. Davis)
 Title: Sedimentary Petrology and Mineral Chemistry of the
 Medial Ordovician flysch of Western New England:
 Implications for Arc/Continental margin collision
 during the Taconic Orogeny.
 Duration: 15th January 1982 - 30th June 1983

BIOGRAPHICAL INFORMATION

Winthrop D. Means

Born February 7, 1933

Married; three children

Education:

Harvard University, Cambridge, MA, A.B. in 1955, Magna cum laude,
Phi Beta Kappa.

Cambridge University, Cambridge, England, Fulbright Fellow in the
Department of Mineralogy and Petrology, 1955-1956.

University of California, Berkeley, California, Graduate Student 1956-
1960; N.S.F. Predoctoral Fellow 1958-1959, 1959-1960, Ph.D. 1960.

Professional Experience:

Undergraduate summer field work, United State Geological Survey, two
seasons, gravity surveying.

Teaching Assistant, Berkeley, 1956-1957, 1957-1958, mineralogy.

Lecturer, Geology Department, University of Otago, Dunedin, New Zealand,
1960-1964. Promoted to Senior Lecturer, February 1964.

N.A.T.O. Research Fellow, Department of Geophysics, Australian National
University, Canberra, Australia, May 1964 - February 1965.

Visiting Research Fellow, Department of Geophysics, Australian National
University, March - May 1965.

Associate Professor of Geology, State University of New York at Albany,
New York, September 1965 - September 1977.

Acting Chairman, Department of Geological Sciences, State University of
New York at Albany, June 1968 - September 1969.

Professor of Geology, State University of New York at Albany, September
1977 - present.

Chairman, Department of Geological Sciences, State University of New
York at Albany, January 1982-present.

Publications:

- 1962 - Structure and stratigraphy in the central Toiyabe Range, Nevada: University of California Pubs. Geol. Sci., v. 42 (2), p. 71-110.
- 1963 - Mesoscopic structures and multiple deformation in the Otago schist: N. Z. Jour., Geol. and Geophys., v. 6 (5), p. 801-816.
- 1964 - Comments on dynamic interpretation of faulting: N. Z. Jour. Geol. and Geophys., v. 6 (5), p. 757-768.
- (with J. Rogers) Orientation of pyrophyllite synthesized in slowly strained materials: Nature, v. 204 (4955), p. 244-246.
- 1966 - A macroscopic recumbent fold in schist near Alexandra, Central Otago: N. Z. Jour. Geol. and Geophys., v. 9 (3), p. 173-194.
- (with M. S. Paterson) Experiments on preferred orientation of platy minerals: Contr. Mineral. and Petrol., v. 13, p. 108-133.
- 1967 - Review of E.H.T. Whitten's Structural Geology of Folded Rocks: Geo-times, v. 12 (9), p. 36-38.
- 1968 - Incipient strain-slip cleavage in experimentally-deformed Martinsburg slate: Trans. Am. Geophys. Union, v. 49 (4), p. 655 (abstract only).
- Experimental folding of a synthetic schistose material: Trans. Am. Geophys. Union, v. 49 (4), p. 756 (abstract only).
- 1971 - (with P. F. Williams) Folding experiments on an artificial schist: Nature, v. 234 (48), p. 90-92.
- 1972 - (with P. F. Williams) Crenulation cleavage and faulting in an artificial salt-mica schist: Jour. Geol., v. 80, p. 569-591.
- 1973 - (with B. E. Hobbs and P. F. Williams) Folding and microfabric development in experimentally-deformed salt-mica specimens: Trans. Am. Geophys. Union, v. 54 (4), p. 457 (abstract only).
- Folding of wet salt-mica specimens at low strain rate: Trans. Am. Geophys. Union, v. 54 (4), p. 457 (abstract only).
- 1974 - (with P. F. Williams) Compositional differentiation in an experimentally-deformed salt-mica specimen: Geology, v. 2 (4), p. 15-16.
- Review of A.G.U. Geophysical Monograph 16 (The Griggs Volume): Economic Geology, 68 (8), p. 1349.
- 1975 - Natural and experimental microstructures in deformed micaceous sandstone. Bull. Geol. Soc. Amer., v. 86 (9), p. 1221-1229.
- 1976 - (with B. E. Hobbs and P. F. Williams) An Outline of Structural Geology. John Wiley, New York, 572 pp.
- Stress and Strain, Basic Concepts of Continuum Mechanics for Geologists. Springer-Verlag, New York, 339 pp.

- 1977 - Experimental contributions to the study of foliations in rocks: a review of research since 1960. Tectonophysics, 39 (1-3), 329-354.
- A deformation experiment in transmitted light. Earth and Plan. Sci. Letters, 35, 169-179.
- Contributor of plates AM 23-25 and EX 5, 6 in Atlas of Rock Cleavage, M.B. Bayly, et al. (eds.), University of Tasmania.
- 1978 - (with P.F. Williams and B.E. Hobbs) Development of axial plane slaty cleavage and schistosity in experimental and natural materials. Tectonophysics, 42, 139-159.
- 1980 - High temperature simple-shearing fabrics: a new experimental approach. Jour. Struct. Geol., 2 (1/2), 197-202.
- (with R.L. Thiessen) Classification of fold interference patterns: a re-examination. Jour. Struct. Geol., 2 (3), 311-316.
- (with B.E. Hobbs, G.S. Lister, and P.F. Williams) Vorticity and non-coaxiality in progressive deformations. Jour. Struct. Geol., 2 (3), 371-378.
- 1981 - Review of the Origin of the Southern Alps (R.I. Walcott and M.M. Creswell (eds.)). Bull. 18, Roy. Soc. New Zealand. EOS.
- The concept of steady-state foliation, Tectonophysics, 78, 179-199.
- (with Z.G. Xia) Deformation of crystalline materials in thin section. Geology, 9, 538-543.
- 1982 - (with H.G. Dong) Some unexpected effects of recrystallization on the microstructure of materials deformed at high temperature. Mitt. Geol. Inst. der E.T.H., Neue Folge 239a, 205-207.
- Several Plates in Atlas of Deformational and Metamorphic Rock Fabrics, Borradaile, Bayly and Powell (eds.), Springer-Verlag.
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- in press - Application of the Mohr circle construction to problems of inhomogeneous deformation. Jour. Struct. Geol.
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- in press - Lineation. (a short review article) in Encyclopedia of Structural Geology and Tectonics, K. Seyfert (ed.).
- in press - Incremental deformation and fabric development in a KCl/mica mixture. Jour. Struct. Geol.
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submitted - (with H.G. Dong) Plates with text for Atlas of Fault Rocks,
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submitted - (with B.E. Hobbs and P.F. Williams) Incremental deformation
and fabric development in a KCl/mica mixture. Jour. Struct.
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Editorial Boards:

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Personal:

Born December 11, 1929, married, two children

Education:

Union College, Schenectady, 1951, B.S. in chemistry, Post graduate work
1951-53, B.S., Geology major
Pennsylvania State University, 1956-61: M.S. in Geology 1958; Ph.D. in
Geology, Geochemistry, January 1961.
Title of Ph.D. dissertation: "A Study of the Distribution of Trace
Elements in Igneous Rocks, Northwestern and Central Arizona"

Military Service:

U.S.N.R., 1951-1956; active duty 1953-1955

Professional Experience:

Teaching Associate, Department of Geology and Geochemistry, Pennsylvania
State University, 1955-1957
Research Associate, Department of Geology and Geochemistry, Pennsylvania
State University, 1959-1961
Geochemist, State of California, Division of Mines and Geology, San
Francisco, 1961-1966, summer of 1967.
Associate Professor of Geology, State University of New York at Albany,
1966-present
Chairman, Department of Geological Sciences, 1972-1973

Courses Taught:

Fundamentals of Geology, Igneous Petrography and Petrology, Economic
Geology, Geochemistry, Igneous Petrology I (graduate), Geochemistry I
(graduate), Phase Equilibria (graduate)

Research Interests:

Geochemistry and petrology of igneous and metamorphic rocks; Neotectonics
and mineral water chemistry of northeastern New York

Professional Societies:

Fellow, Geological Society of America
Member, American Geophysical Union

Publications:

- 1963 G.W. Putman and C.W. Burnham, Trace elements in igneous rocks, Northwestern and Central Arizona: *Geochemica et Cosmochimica Acta*, v. 27, pp. 53-106.
- M.C. Stinson and G.W. Putman, Geochemical prospecting: California Division of Mines and Geology Mineral Information Service, v. 16, pp. 1-6.
- 1965 G.W. Putman and J. T. Alfors, Depth of intrusion and age of the Rocky Hill stock, Tulare County, California: *Geol. Soc. America Bull.*, v. 76, pp. 357-364.
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- 1979 G.W. Putman, J.R. Young and J.R. Dunn, The Origin of the Mineral Waters of Saratoga: Possible Thermal processes and their bearing on regional neotectonics (Abst.) *Transactions, Am. Geophys. Union*, Vol. 60, p. 397.
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- Putman, G.W. and Sullivan, J.W. Granitic pegmatites as estimators of crustal pressures - a test in the eastern Adirondacks, New York: *Geology*, v. 7, p. 549-553.

Professional Consulting and Contract Participation:

- 1978 New York State Office of General Services, South Mall Construction, Albany, New York.
- 1978 Contract of New York State Energy Research Development Agency (NYSERDA) to Dunn Geoscience Corporation, Latham, New York; preliminary investigation of Saratoga mineral waters.
- 1979 Joint contract of NYSERDA and U.S. Department of Energy to Dunn Geoscience Corporation, Latham, NY; continuance of investigation of the characteristics and thermal potential of carbonated waters of the greater Saratoga vicinity.
- 1981 Weston Geophysical observatory subcontract under Nuclear Regulatory Commission contract; study of possible post-glacial faulting in eastern New York