Bibliography

Aaron, J.M., 1963, Geology of the Rincon Quadrangle, a Preliminary Report: Washington, D.C., U.S. Geological Survey.

Abbad y Lasierra, Iñigo, 1866, Historia geográfica civil y natural de la isla de San Juan Bautista de Puerto-Rico. 508 p., nueva edición por José Julián de Acosta y Calbo. Puerto Rico, Librería de Acosta, 1866. Original published in Madrid in 1788; 1866 edition contains added notes by Acosta. Topography on p. 211-254; gold, silver and other minerals, p. 466-470.

Abruna, Fernando and Smith, R.M., 1953, Clay mineral types and related soil properties in Puerto Rico: Soil Science, v. 75, no. 6, p. 411-420.

Ackerman, D.H., 1970, 1970 Mining: Industrial Puerto Rico, v. 7, p. 10-17; 64-66.

Adams, J.A.S., 1964, Nondestructive gamma-spectrometry of serpentinite cores from Mayaguez, Puerto Rico, in Burke, C.A., ed., A study of serpentinite: National Academy of Science, National Research Council Publication no. 1188, p. 145-148.

Aguayo, C.G., 1962, Notas sobre moluscos antillanos, III: Caribbean Journal of Science, v. 2, no. 3, p. 108-110.

Aguilar, G., 1965, Summary of exploration activities in Puerto Rico: Bear Creek Mining Company Private Report on file at the Department of Natural Resources, Puerto Rico: Loja, Bear Creek Mining Company.

Allen, J.A., 1916, An extinct octodont from the island of Porto Rico, West Indies: New York Academy of Science Annual, v. 27, p. 17-22; abstract, v. 26, p. 438-439.

Almy, C.C., Jr., 1960, Parguera limestone, Upper Cretaceous Mayagüez group, southwestern Puerto Rico: Caribbean Geological Conference, 4th, [Transactions], p. 229-233.

1961, Status of geological i	research in the Carib	bbean: University of	Puerto Rico,
Institute of Caribbean Studies, no.	5, 20 p.		

_____1962, Status of geological research in the Caribbean: University of Puerto Rico, Institute of Caribbean Studies, no. 6, 29 p; no. 7, 39 p.

_____1965a, Parguera limestone, Upper Cretaceous Mayaguez group, southwest Puerto Rico [abst]: Houston Geological Society Bulletin, v. 8, no. 3, p. 16-17, Dissertation abstracts, v. 26, no. 6, p. 3241.

_____1965b, Parguera limestone, Upper Cretaceous Mayaguez group, southwest Puerto Rico: Ph.D thesis, Rice University, Houston, TX, 203 p.

1969, Sedimentation, tectonism in the Upper Cretaceous Puerto Rico portion of the Caribbean Island arc: Transactions - Gulf Association of Geological Science, v. XIX, p. 269-279.

Almy, C.C., Jr. and Carrión-Torres, Carlos, 1963, Shallow-water stony corals of Puerto Rico: Caribbean Journal of Science, v. 3, no. 2-3, p. 133-162.

Alonso, R.M., Jr., 1964, Earth resistivity survey for the Tortuguero nuclear plant project: Puerto Rico Department of Public Works, Geological Investigations Bulletin 5, 5 p.

_____1966, Construction-material resources of the Manatí quadrangle, Puerto Rico: Puerto Rico Department of Public Works, Geological Investigations Bulletin 10, 49 p.

Ambrose, T.N., 1961, Kewance Interamerican Prospecting Permits on the island of Puerto Rico: Kewance Private Report on file at the Department of Natural Resources, San Juan, PR.

American Society for Testing and Materials, 1986, Annual Book of ASTM Standards, Gaseous Fuels, Coal and Coke: v. 05.05, American Society for Testing and Materials, Philadelphia, PA, 565 p.

_____1988, Annual Book of ASTM Standards, Gaseous Fuels, Coal and Coke: v. 05.05, American Society for Testing and Materials, Philadelphia, PA, 444 p.

Anders, R.B., 1971, Electrical analog model study of water in the Yabucoa Valley, Puerto Rico: Phase-1, collecting preliminary data and assembling available data: U.S. Geological Survey.

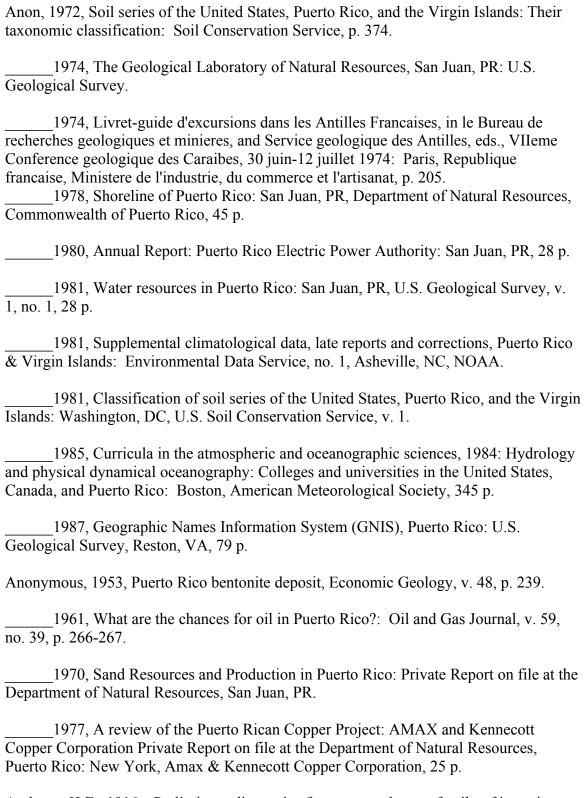
1971, Electrical analog model study of water in the Yabucoa Valley, Puerto Rico: Phase-1, collecting preliminary data and assembling available data: San Juan, PR, U.S. Geological Survey, 47 p.

Anderson, R.N., 1991, Geophysical logs from the Toa Baja scientific drillhole, Puerto Rico: (Paper 91GL00392) Geophysical Research Letters, v. 18, no. 3, p. 497.

Anderson, R.N., and Larue, D.K., 1991, Wellbore heat flow from the Toa Baja scientific drillhole, Puerto Rico: (Paper 91GL00391) Geophysical Research Letters, v. 18, no. 3, p. 537.

Andrejko, M.F., Fiene, F., and Cohen, A.D., 1983, Comparison of ashing techniques for determination of the inorganic content of peats, in Jarrett, P.M., ed., Testing of peats and organic soils, American Society for Testing and Materials, ASTM STP 820, p. 5-20.

Angino, E.E., 1967, Distribution of iron in recent carbonate sediments: Kansas Geological Survey Bulletin 187, pt. 1, p. 3-5.



Anthony, H.E., 1916a, Preliminary diagnosis of an apparently new family of insectivores: American Musuem of Natural History Bulletin, v. 35, p. 725-728.

1916b, Preliminary report of fossil mammals from Porto Rico; with descriptions
of a new genus of ground sloth and two new genera of hystricomorph rodents: New York
Academy of Science Annual, v. 27, p. 193-203.
1917a, New fossil rodents from Porto Rico, with additional notes on
Elasmodontomys obliquus Anthony and Heteropsomys insulans Anthony: American
Museum of Natural History Bulletin, v. 37, p. 183-189.
1917b, Two new fossil bats from Porto Rico: American Museum of Natural
History Bulletin, v. 37, p. 565-568.
404 5 7 7 7 4 A A A A A A A A A A A A A A A A
1917c, Fossil mammals from Porto Rico [abs.]: Geological Society of America
Bulletin, v. 28, p. 209-210.
1010 TI : 1
1918, The indegenous land mammals of Porto Rico, living and extinct: American
Museum of Natural History, Memoirs v. 2, pt. 2, p. 331-435.
1925, Mammals of Porto Rico, living and extinct: New York Academy of
Science, Science Survey of Porto Rico and the Virgin Islands, v. 9, pt. 1, pt. 1-96; pt. 2, p.
97-241 1926

Argart, S., and Donnelly, T.W., 1987, The chemical discrimination of clastic sedimentary components: Journal of Sedimentary Petrology, v. 57, p. 813-823.

Armstrong, L.C., 1962, Investigations of Manganese and Bentonite, Aguada Area, Puerto Rico: Longyear Private Report on file at the Department of Natural Resources, San Juan, PR.

Arnow, Ted, 1961, Water-bearing properties of the rocks in the Arecibo-Barceloneta area, Puerto Rico: U.S. Geological Survey Professional Paper 424-C, p. C201-C202.

Arnow, Ted, and Crooks, J.W., 1960, Public water supplies in Puerto Rico: Puerto Rico Water Resources Bulletin 2, 34 p.

Arnow, Ted, and Bogart, D.B., 1960, Water problems of Puerto Rico and a program of water-resources investigations: Second Caribbean Geological Conference (Puerto Rico, Jan. 1959) Transactions, p. 120-129.

Asencio, E., Jr., 1980, Western Puerto Rico seismicity: U.S. Geological Survey Open-File Report 80-192, Reston, VA. Originally presented as author's thesis M.Sc., Colorado School of Mines, 135 p.

Avé Lallemant, H.G., 1991, Structural analysis of cores and cuttings from the Toa Baja (Puerto Rico) borehole: (Paper 91GL00410) Geophysical Research Letters, v. 18, no. 3, p. 557.

Averitt, P., 1975, Coal resources of the United States, January 1, 1974: U.S. Geological Survey Bulletin 1412, Washington, D.C., p. 131.

Barabas, A.H., 1971, K-Ar dating of igneous events and porphyry copper mineralization in west central Puerto Rico [abs.]: Economic Geology, v. 66, p. 977.

_____1976, Hydrothermal alteration and mineralization at the Calo Abajo porphyry copper prospect, Puerto Rico [abs.]: Geological Society of America, Abstracts with Programs, v. 8, p. 765-766.

_____1977, Petrologic and geochemical investigations of porphyry copper mineralization in west central Puerto Rico: Unpublished Ph.D thesis, Yale University, 466 p.

_____1982, Potassium-Argon dating of magmatic events and hydrothermal activity associated with porphyry copper mineralization in west central Puerto Rico: Economic Geology, v. 77, p. 109-126.

Barabas, A.H., and Quinn, E., 1980, Alteration, mineralization and fluid inclusions in the Helecho porphyry copper prospect, west central Puerto Rico [abs.]: Caribbean Geology Conference, 9th, Santo Domingo, Dominican Republic [Abstracts], p. 2-3.

Barnes, H.H., and Bogart, D.B., 1961, Floods of September 6, 1960, in eastern Puerto Rico: U.S. Geological Survey Circular 451, 13 p.

Beach, D.K., 1975, Sedimentation on the western Isla Caja de Muertos insular shelf, Puerto Rico: University of Puerto Rico, Mayagüez, Masters thesis.

Beach, D.K., and Trumbull, J., 1981, Marine geologic map of the Puerto Rico insular shelf, Isla Caja de Muertos area: U.S. Geological Survey Miscellaneous Investigations Map I-1265, scale 1:40,000.

Beach, D.K., and Trumbull, J.V.A., 1980, Marine geologic map of the Puerto Rico insular shelf Isla Caha de Muertos area: U.S. Geological Survey Open-File Report 80-366, Reston, VA, 21 p.

Beinroth, F.H., 1969, An outline of the geology of Puerto Rico: Puerto Rico Agricultural Experiment Station Bulletin 213, p. 25.

Bennett, G.D., 1976, Electrical analog simulation of the aquifers along the south coast of Puerto Rico: U.S. Geological Survey Open-File Report 76, Reston, VA, 101 p.

Bergey, W.D., 1960, Report on the Airborne Magnetometer Survey, Central Concession, Commonwealth of Puerto Rico: A. D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.

Bergey, W.R., 1957, Report on Aeromagnetic Survey of Caguas Concession, Juncos Area, Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1957, Report on Aeromagentic Survey of Caguas Concession, Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1958, Report on the mineral deposits of the Luquillo Area, Caguas Concession: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1958, Geology of part of the Gurabo Area, Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1958, Report on the mineral deposits of Gurabo Area, Caguas Concession: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1958, Summary report on the mining possibilities of the Central Concession, Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1960, Report on the La Mine Project, Caguas Copper Concession: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1960, Preliminary Report, Gold - Silver - Copper veins of the Cerro Avispa area, Commonwealth of Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1960, Geology of the Central Concessions, Commonwealth of Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1963, Report on the Borinquen Anomaly Area, Cayey Concession: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1963, Proposal for the exploration of mining concessions in the Commonwealth of Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1966, Geochemical prospecting for copper in Puerto Rico: Third Caribbean Geological Conference (Jamaica, April 1962) Transactions, Jamaica Geological Survey Publication 95, p. 113-119.
1967, Guaynabo (La Muda) final report on permit area, Commonwealth of Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.
1967, La Mina Project, Sierra de Liquillo: A.D. Fraser Private Report on file at

the Department of Natural Resources, San Juan, PR.

Bergey, W.R., and Hawley, R.G., 1958, Report on the Las Torres Area, Caguas Concession, Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.

Berkey, C.P., 1915, Geological reconnaissance of Puerto Rico: Academy of Sciences Annual, v. 26, p. 1-70; scale 1:570,000. 1916, Report of the Puerto Rico Committee; Geology: New York Academy of Science Annual, v. 26, p. 457-458. 1919, Introduction to the geology of Porto Rico: New York Academy of Science, Science Survey of Porto Rico and the Virgin Islands, v. 1, pt. 1, p. 11-29. 1915, Geological reconnaissance of Porto Rico: New York Academy of Science Annual, v. 26, p. 1-70; abstract, Geological Society of America Bulletin, v. 26, p. 113-114. Translated into Spanish with title "Reconocimiento geológico de Puerto Rico" and published in Rev. Obras Públicas de Puerto Rico, año 2, no. 24, p. 685-687, 1925; año 3, no. 25, p. 695-698, no. 26, p. 715-718, no. 27, p. 752-756, no. 28, p. 796-800, no. 29, p. 820-824, 1926. Bermúdez, P.J., and Seiglie, G.A., 1967, A new genus and species of foraminifer from the early Miocene of Puerto Rico: Tulane Studies in Geology, v. 5, no. 3, p. 177-179. Berryhill, H.L., Jr., 1959, Pattern of regional transcurrent faulting in Puerto Rico [abs.]: Geological Society of America Bulletin, v. 70, no. 12, pt. 2, p. 1569. 1960, Geology of the Central Aguirre quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-318, scale 1:20,000. 1961, Ash-flow deposits, Ciales quadrangle, Puerto Rico, and their significance: U.S. Geological Survey Professional Paper 424-B, p. B224-B226. 1965, Geology of the Ciales quadrangle, Puerto Rico: U.S. Geological Survey Bulletin 1184, 116 p; with map, scale 1:20,000. 1966, Lithology and tectonic implications of Upper Cretaceous clastic volcanic rocks, northeast Puerto Rico: Third Caribbean Geological Conference, (Jamaica, April 1962) Transactions, p. 34-40. Jamaica Geological Survey Publication 95.

_____1960b, Stratigraphy, sedimentation and structure of Late Cretaceous rocks in

sedimentation and tectogenesis of rocks of Late Cretaceous age in eastern Puerto Rico:

Berryhill, H.L., Jr., Briggs, R.P., and Glover, Lynn, III, 1960a, Stratigraphy,

Transaction 2a, Mayaguez, Caribbean Geologic Conference, 1959, p. 82.

eastern Puerto Rico--Preliminary report: American Association of Petroleum Geologists Bulletin, v. 44, no. 2, p. 137-155; abstract with slightly different titles, Geological Society of America Bulletin, v. 69, no. 12, pt. 2, p. 1534, 1958; Caribbean Geological Conference, 2nd, Transactions, p. 82, 1960, with discussion in the latter.

Berryhill, H.L., Jr., and Glover, Lynn, III, 1960, Geology of the Cayey quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-319, scale 1:20,000.

Birch, F.S., 1964, Velocity of compressional waves in serpentinite from Mayaguez, Puerto Rico, in Burk, C.A., ed, A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 132-133.

_____1986, Isostatic, thermal and flexural models of the subsidence of the north coast of Puerto Rico: Geology, v. 14, p. 427.

Birot, P., 1966, Observations sur le relief de deux petits batholites de granodiorite à Porto Rico et à la Jamaïque: Koninklïjk Nederlandsch Aardrikskundig Genootschap Tijdschrift, ser. 2, v. 83, no. 3, p. 220-226.

Blume, Helmut, 1966, Problemas de la topografía karstica en las Indias Occidentales: International Geological Union, Conference Regional Latinoamericana, t. 3, p. 255-265.

Boccheciamp, R.A., 1977, Soil survey of the Humacao area of eastern Puerto Rico: Washington, D.C., Dept. of Agriculture, 103 p.

Bogart, D.B., Arnow, Ted, and Crooks, J.W., 1960, Water problems of Puerto Rico and a program of water-resources investigations: Puerto Rico Water Resources Bulletin 1, 40 p.

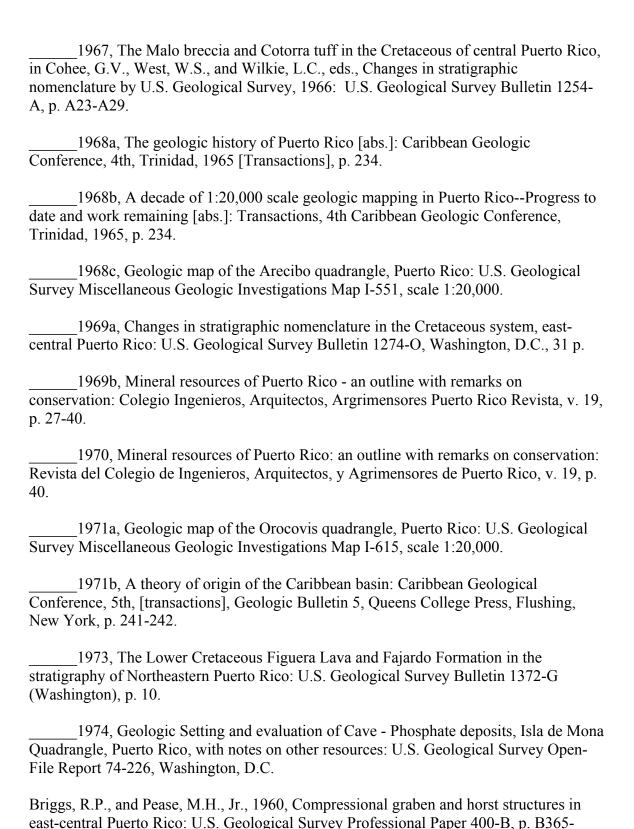
_____1964, Water resources of Puerto Rico--A progress report: Puerto Rico Water Resources Bulletin 4, 120 p. Includes U.S. Geological Survey Map HA-197, Hydrogeologic map of Puerto Rico and adjacent islands by Reginald P. Briggs and John P. Akers.

Bonnet, J.A., 1939, The nature of lateritization as revealed by chemical, physical and mineralogical studies of lateritic soil profiles from Puerto Rico: Soil Science, v. 48, no. 1, p. 25-40.

_____1947, Geología del valle de Lajas: Revista de Agricultura de Puerto Rico, v. 38, no. 1, p. 35-38.

Bonneton, Jean-R., 1983, Aux Antilles Francaises: Reunion extraordinaire de la Societe geologique de France, Martinique Grande-Terre et Basse-Terre de Guadeloupe, Saint-Martin, 17 janvier - 23 janvier 1983, in Les Antilles Francaises, geologie generale, compte rendu sommaire de seances, 7 of Bulletin de la societe geologique de France: Paris, Societe geologique de France, v. 25 no. 6, p. 797-1054.

Bouysse, P. et al., 1983, Bathymetrie detaillee (SEABEAM) et anomalies magnetiques dans les Antilles françaises: Interpretation morphostructurale de la vallee et de l'escarpment de ladesirade et des cotes occidentales de basse-terre de Guadeloupe et de Martinique (campagne Arcnate 2-Thermosite n.o. Jean-Charcot, December, 1980), 63 of Documents du B.R.G.M: Orleans, France, Bureau de recherches geologiques et minieres, 78 p. 1985, Geologie de la ride d'Aves et des pentes sous-marines du nord des Petites Antilles et esquisse bathymetrique a 1:1,000,000 de l'Est-Caraibe, 93 of Documents du B.R.G.M: Orleans, France, Bureau de recherches geologique et Minieres, Service geologiques national, 146 p. Bowin, C., 1972, Puerto Rico Trench negative gravity anomaly belt: Geological Society of American Memoir 132, p. 1-339. Bowin, C.O., Nalwalk, A.J., and Hersey, J.B., 1966, Serpentinized peridotite from the north wall of the Puerto Rico Trench: Geological Society of America Bulletin, v. 77, no. 3, p. 257-270. Abstract Carl O. Bowin and Andrew J. Nalwalk, America Geophysical Union Transactions, v. 44, p. 120, 1963. Bradley, R.A., 1971, The geology of the Rio Vivi porphyry copper deposits, Puerto Rico [abs.]: Economic Geology, v. 66, p. 977. Briden, J.C. et al., 1979, K-Ar geochronology and paleomagnetism of volcanic rocks in the Lesser Antilles island arc: Philosophical transactions of the Royal Society of London, v. 291, p. 485-528. Briggs, R.P., 1960, Laterization in east-central Puerto Rico: Second Caribbean Geologic Conference, Mayaguez, (January 1959) Transactions, p. 103-119. 1961a, Geology of Kewanee Interamerican Oil Company test well number 4CPR, northern Puerto Rico, in Oil and gas possibilities of northern Puerto Rico: San Juan, Puerto Rico Mining Commission, p. 1-23. 1961b, Recent shoreline changes and sedimentation at Puerto Acrecibo and vicinity, Puerto Rico: Shore and Beach, v. 29, no. 1, p. 27-37. 1964, Provisional geologic map of Puerto Rico and adjacent islands: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-392, scale 1:240,000. 1965, Geologic map of the Barceloneta quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-421, scale 1:20,000. 1966, The blanket sands of Northern Puerto Rico: Caribbean Geological Conference, 3rd, Jamaica, April 1962 [Transactions], Jamaica Geological Survey Publication 95, p. 60-69.



B366.

- _____1968, Large- and small-scale wrench faulting in an island-arc segment, Puerto Rico [abs.]: Geological Society of America Special Paper 115, p. 24.
- Briggs, R.P., and Gordon, W.A., 1961, Oil and gas possibilities of northern Puerto Rico: San Juan, PR, Puerto Rico Mining Commission, 40 p.
- Briggs, R.P., and Gelabert, P.A., 1962, Preliminary report on the geology of the Barranquitas quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-336, scale 1:20,000.
- Briggs, R.P., and Akers, J.P., 1965, Hydrogeologic map of Puerto Rico and adjacent islands: U.S. Geological Survey Hydrologic Investigations Atlas Map HA-197, scale 1:240,000.
- Briggs, P.R., Mattson, P.H., and Glover, Lynn, III, 1965, Copper impoverishment during successive igneous events in Puerto Rico--A clue to the origin of copper ore [abs.]: Congreso Latinoamericano Química, 9th, San Juan, Puerto Rico, Resúmenes Trabajos, p. 31-32.
- Briggs, R.P., and Seiders, V.M., 1972, Geologic map of the Isla de Mona quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-718, scale 1:20,000.
- Briggs, R.P., and Aguilar-Cortes, E., 1980, Geologic map of the Fajardo and Cayo Icacos quadrangles, Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Map I-1153, scale 1:20,000.
- Britton, N.L., 1924a, The Scientific Survey of Porto Rico and the Virgin Islands: Revista de Agricultura de Puerto Rico, v. 12, no. 2, p. 109-110. Lists contents of New York Academy of Sciences reports, v. 1-5.
- _____1924b, Las arenas de las planicies de la costa norte de Puerto Rico: Revista de Agricultura de Puerto Rico, v. 12, no. 3, p. 157-158.
- _____1926, Estudio científico de Puerto Rico y las Islas Virgenes. Historia: Revista de Obras Públicas de Puerto Rico, año 3, no. 31, p. 887-891.
- 1930, History of the Survey: New York Academy of Sciences, Science Survey of Porto Rico and the Virgin Islands, v. 1, pt. 1, p. 1-10. Reprinted in Revista de Obras Públicas de Puerto Rico, año 7, no. 9, p. 242-245.
- 1931, Recent scientific observations in Puerto Rico: New York Botanical Garden Journal, v. 32, p. 185-193.
- Broedel, C.H., 1961, Preliminary geologic map showing iron and copper prospects in the Juncos quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic

Investigations Map I-326, scale 1:20,000.

Bromery, R.W., and Griscom, Andrew, 1964, A gravity survey in the Mayagüez area of southwest Puerto Rico, in Burk, C.A., ed., A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 61-74;

_____1964, Gravity studies of serpentinite anticlines near the AMSOC test hole, southwest Puerto Rico, [abs.]: Geological Society of America Special Paper 76, p. 22-23.

Bromley, P.H., 1962, Cost estimates of Cerro Avispa property, Lockwood, Kessler, and Bartlett Consulting Engineers: A.D. Fraser Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, PR.

Brown, S., Lugo, A.E., and Liegel, B., 1980, The role of tropical forests on the world carbon cycle: A symposium held at the Institute of tropical forestry in Rio Piedras, Puerto Rico on March 19, 1980, 800350 of Carbon dioxide effects research and assessment program: Washington, D.C., U.S. Department of Energy, Office of Environment, 156 p.; Contract no. EV-78-S-05-6047.

Bunce, E.T., 1966, The Puerto Rico Trench, in Poole, W.H., ed., Continental margins and island arcs--A symposium: Canada Geological Survey Paper 66-15, p. 165-175.

_____1967, Recent seismic studies of the Outer Ridge north of Puerto Rico [abs.]: American Geophysical Union Transaction, v. 48, p. 127.

Bunce, E.T., and Fahlquist, D.A., 1962, Geophysical investigation of the Puerto Rico Trench and Outer Ridge: Journal of Geophysical Research, v. 67, no. 10, p. 3955-3972.

Bunce, E.T., and Hersey, J. B., 1963, Continuous seismic profiles of the Outer Ridge and Nares Basin north of Puerto Rico: Geological Society of America Bulletin, v. 77, no. 8, p. 803-811.

Burk, C.A., 1964, The AMSOC core hole in serpentinite near Mayagüez, Puerto Rico, National Academy of Science, National Research Council Publication 1188, p. 1-6.

Burk, C.A. (ed.), 1969, A study of serpentinite, the AMSOC core hole near Mayagüez, Puerto Rico: National Academy of Science, National Research Council Publication 1188, 175 p., Washington, DC.

Bush, D.M., 1977, Equilibrium sedimentation: North insular shelf of Puerto Rico: Duke University, Durham, NC, Master's thesis.

Bush, D.M., Pilkey, O.H., Jr., and Rodriguez, R.W., 1986, Impact of river mouth migration on continental margin sedimentation [abs.]: American Association of Petroleum Geologists Bulletin 70, no. 5, p. 570.

Bush, D.M. and Rodriguez, R.W., 1987, Sealwel rise, net sediment accumulation and seismic stratigraphy on an allochthonous shelf, northern Puerto Rico [abs.]: Abstracts - Society of Economic Paleontologists and Mineralogists Annual Midyear meeting, SEPM 4, 1987, p. 11.

Bush, D.M., Hyman, L., and Priddy, R., 1988, Heavy mineral resource potential: Rio de la Plata, Puerto Rico: Duke University report.

Butterlin, J.A., 1951, A propos de la position structurale de l'arc des Petites Antilles: Soc. Geol. France B., ser. 6, t. 1, fasc. 1-3, p. 127-132; discussion by Raoul C. Mitchell, t. 2, fasc. 1-3, p. 71-75, 1952; reply by author entitled "Les formations tertiaires de Porto Rico et la structure des Antilles, t. 3, fasc. 1-3, p. 241-245, 1953.

Butterlin, J., 1977, Geologie structurale de la region des Caraibes: Mexique, Amerique Centrale, Antilles, cordillere Caraibe: Paris, Masson, 259 p.

Cadilla, J.F., 1958, Geology of the Carolina clay deposit, Puerto Rico: Puerto Rico Economic Development Administration, Department of Industrial Research Bulletin 6, 31 p. including map, scale 1:10,000.

31 p. including map, scale 1:10,000.
1959, Limestone and marble resources of Puerto Rico: Puerto Rico Economic Development Administration, Department of Industrial Research Bulletin 3, 62 p.
1960a, Geology of the Carolina clay deposits in Puerto Rico: Second Caribbean Geological Conference Transaction, p. 147-149.
1960b, A clay for a lightweight aggregate: Puerto Rico Economic Development Administration, Department of Industrial Research, Technical Report, 70 p., including map, scale 1:20,000.
1962a, A study of Puerto Rico gypsum: [Puerto Rico Economic Development Administration Technical Report edition].

_____1962b, Cerro Candelero, Yabucoa; an economic geology study: Puerto Rico Economic Development Administration, Department of Industrial Research, Technical Report, 31 p., June 30.

_____1962c, Informe sobre la existencia de guano animal in la parte sur de Puerto Rico: Administracion de Fomento Economica de Puerto Rico, Laboratorio Industrail Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, Fomento.

_____1963a, Geology of the Humacao titaniferous iron deposit: Puerto Rico Economic Development Administration Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, Fomento.

_____1963b, Geology of the Humacao titaniferous iron deposit: Caribbean Journal of

Science, v. 3, no. 4, p. 243-247.

______1965a, Cobre en Puerto Rico; consideraciones geológicas y químicas [abs.]:
Congreso Latinoamerican Química, 9th, San Juan, Puerto Rico, Resúmenes Trabajos, p. 33-34.

______1965b, Un estudio sobre arcillas de Puerto Rico, consideraciones químicas y mineralógicas [abs]: Congreso Latinoamericano Química, 9th, San Juan, Puerto Rico, Resúmenes Trabajos, p. 32.

______1966, Industrial and mineral development in Puerto Rico: Third Caribbean Geological Conference (Jamaica, April 1962) Transaction, Jamaica Geological Survey

Cadilla, J.F., Vazquez, L., Amaro, U., and Padro, R., 1957, Chemical characteristics of some carbonate rocks of southwestern Puerto Rico: Puerto Rico Economic Development Administration, Department of Industrial Research Bulletin 4, 9 p.

Publication 95, p. 120-121.

Cadilla, J.F., and Vazquez, L., 1961, Guano in Mona Island, Puerto Rico: Puerto Rico Economic Development Administration Industrial Laboratory Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, Economic Development Administration.

Caldwell, E.T., 1941, Larger Foraminifera from the Tertiary of Puerto Rico [abs.]: Geological Society of America Bulletin, v. 52, no. 12, pt. 2, p. 1961-1962.

Campbell, R.H., Herd, D.G., and Alonso, R.M., 1985, Preliminary response activities and recommendations of the USGS hazard research team to the Puerto Rico landslide disaster of October 7, 1985: U.S. Geological Survey Open-File Report 85-719, Reston, VA, 13 p.

Capacete, J.L., 1968, Soil Deposits of the San Juan Bay Area: Academic de Artes y Ciencias de Puerto Rico, v. 4, no. 2.

Cardona, W.A., 1982, Final report for economic geology on silver and gold deposits; with a special section on the Puerto Rican occurrence of such metals: University of Puerto Rico, Mayagüez, BS thesis.

_____1984, El Yunque mineral prospects, Eastern Puerto Rico: Caribbean Journal of Science, v. 20, no. 1, p. 79-87.

Carr, M.E.S., and Dutton, C.E., 1959, Iron-ore resources of the United States, including Alaska and Puerto Rico, 1955: U.S. Geological Survey Bulletin 1082-C, Washington, D.C., 134 p.

Carver, D.L., Turner, L.M., and Tarr, A.C., 1976, Puerto Rico seismological data report, August 16, 1974-June 30,1975: U.S. Geological Survey Open-File Report No. 76-369,

Reston, VA, 41 p.

Case, J.E., 1981, Resource appraisal of Dominica, Lesser Antilles: U.S. Geological Survey Open-File Report No. 81-1157, Menlo Park, CA, 9 p.

Chen, J.C., 1967, Petrological and geochemical studies of Utuado pluton, Puerto Rico: Unpublished Ph.D. dissertation, Rice University, 134 p.

Chase, R.L., and Hersey, J.B., 1965, Geology of the north slope of the Puerto Rico Trench: Deep-Sea Research, v. 15, no. 3, p. 297-317.

Chase, R.L., Bunce, E.T., Knott, S.T., and Wooding, III, F.B., 1968, Partly filled submarine valleys of the Outer Ridge north of Puerto Rico [abs.]: Geological Society of America Special Paper 101, p. 37-38.

Chateauneuf, J-J., Farjanel, G., Laggoun-Defarge, F., Pezeril, G., and Bikwemu, D., 1991, Petrological and physico-chemical properties of some African peats in relation to their suitability for carbonization: Society of Geology of France Bulletin, v. 162, no. 2, p. 423-435.

Chen, Ju-chin, 1967, Petrological and chemical studies of Utuado pluton, Puerto Rico [abs.]: Dissertation abstract, Section B, Science and Engineering, v. 28, no. 5, p. 1987B.

Chen, J.C., 1969, Petrological and chemical studies of Utuado pluton, Puerto Rico: Acta. Geologic Taiwanica Science Report, National Taiwan University 13, p. 21-41.

Cho, M., 1991, Zeolite to prehnite-pumpellylte facies metamorphism in the Toa Baja drill hole, Puerto Rico: (Paper 91GL00409) Geophysical Research Letters, v. 18, no. 3, p. 525.

Chubb, L.J., 1960, The Antillean Cretaceous geosyncline: Second Caribbean Geological Conference (Puerto Rico, January 1959) Transaction, p. 17-26.

Cintron, G., Velazco-Dominguez, A.T., Webb, R.M., and Nichols, M., 1984, Technical data base for the development of public policy regarding the exploitation of submarine sand deposits in Puerto Rico: Puerto Rico Coastal Zone Management Program, Task 12.1.

Cleve, P.T., 1871, On the geology of the north-eastern West India islands: Kongliga Svenska Vetenskaps-Akademiens Handlingar Bd. 9, no. 12, 48 p.

Coastal Dynamics, 1986, I. Coastal erosion and protection evaluation, Condado - Ocean Park to Isla Verde: Department of Natural Resources Technical Publication.

Colon-Dieppa, E., and Gonzales, J.R., 1981, Ground-water levels in alluvium on the south coast of Puerto Rico, Feb. 1979: U.S. Geological Survey, Water Resources

Division Open-File Report 81-0641.

Colon-Ramos, H.M., 1981, Ground-water levels and chloride concentrations in alluvial aquifers on the south coast of Puerto Rico: February 1980.

Colón-Torres, R., 1941, Soils of Puerto Rico classified by geological formations, series, types and phases, with productivity rating of each based on inherent qualities of the land, area, percent of total area: Puerto Rico Agriculture Experimental Station, Mimeographed Report no. 19, 20 p. Resume of useful informatin and data, in handy form, from U.S. Department of Agriculture Soil Survey Report, series 1936, published 1942.

Colony, R.J., 1935, The magnetite deposit near Humacao, Puerto Rico: American Institute of Mining and Metallurgical Engineers Transactions, v. 115, p. 515-527.

Colony, R.J., and Meyerhoff, H.A., 1928, The copper prospect at Barrio Pasto, Porto Rico: Economic Geology, v. 23, p. 515-527.

1929, Investigación de los yacimientós de cobre en el Barrio Pasto, Puerto Rico: Rivista de Obras Públicas de Puerto Rico, año 6, no. 67, p. 177-179 and no. 68, p. 207-211.

1935, The magnetite deposits near Humacao, Puerto Rico: American Institute of Mining and Metallurgical Engineers Transactions, v. 115, p. 247-272; AIME Technical Publication 587, 28 p.; abs., Mining & Metallurgy, v. 16, p. 114, 1935; AIME Yearbook, p. 61-62, 1936. Excerpted in Revista de Obras Públicas de Puerto Rico, año 12, no. 4, p. 903-906, no. 6, p. 966, 969, no. 7, p. 989, 1935.

Committee on Mineral Resources of Puerto Rico, 1933, Revista de Obras Públicas de Puerto Rico, año 10, no. 1, 16 p.

_____1934, Report of the Committee for 1934, San Juan, 34 p.

Conolly, J.R., and Ewing, Maurice, 1966, Modern graded beds and turbidity currents-case history [abs.]: American Association of Petroleum Geologists Bulletin, v. 50, no. 3, pt. 1, p. 608-609.

1967, Sedimentation in the Puerto Rico Trench: Journal of Sedimentary Petrology, v. 37, no. 1, p. 44-59.

Cookson, J.M., and Bergey, W.R., 1961, Preliminary report on Cacao area, Guayama Concession, Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.

Cordoba, Eraso H., 1970, Caracterización química y mineralógica relacionada a la génesis del suelo nipe de Puerto Rico: Unpublished M.S. thesis, Mayagüez, Puerto Rico, UPR, 1970 (550.1097295 Gpge T.R.).

- Cordova, R.G., 1920, Mineral resources of the island of Puerto Rico: Government of Puerto Rico, Department of Agriculture and Labor Bulletin No. 10: San Juan, Department of Agriculture...
- Coryell, H.N., and Ohlsen, Violet, 1929, Fossil corals of Porto Rico, with descriptions also of a few recent species: New York Academy of Science, Science Survey of Porto Rico and the Virgin Islands, v. 3, pt. 3, p. 167-236.
- Cox, Allan, Doell, R.R., and Thompson, George, 1964, Magnetic properties of serpentinite from Mayagüez, Puerto Rico, in Burk, C.A., ed., A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 49-60.
- Cox, D.P., 1972, Puerto Rican porphyry copper deposits, petrology and alteration [abs.]: Sixth Caribbean Geologic Conference, p. 139-140: Isla de Margarta, Venezuela.
- _____1973, Porphyry copper deposits in Puerto Rico and their relation to arc-trench tectonics: U.S. Geological Survey Open-File Report 1860, p. 9; map.
- 1985, Geology of the Tanama and Helecho porphyry copper deposits and vicinity, Puerto Rico: U.S. Geological Survey Professional Paper 1327, Washington, D.C., scale 1:40,000.
- Cox, D.P., and Briggs, R.P., 1973, Metallogenic map of Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-721, scale 1:240,000.
- Cox, D.P., Larsen, R.R., and Tripp, R.B., 1973, Hydrothermal alteration in Puerto Rican porphyry copper deposits: Economic Geology, v. 68, p. 1329-1334.
- Cox, D.P., Marvin, M'Gonigle, J.W., McIntyre, D.H., and Rogers, C.L., 1977, Potassium-Argon Geochronology of some metamorphic, igneous, and hydrothermal events in Puerto Rico and the Virgin Islands: Journal of Research of the U.S. Geological Survey, v. 5, no. 6, p. 689-703.
- Cox, D.P., Perez, I., and Nash, J.T., 1975, Geology, geochemistry, and fluid-inclusion petrography of the Sapo Alegre Porphyry Copper prospect and its metavolcanic wallrocks, West-Central Puerto Rico: Journal of Research of the U.S. Geological Survey, v. 3, no. 3, p. 313-327.
- Cox, D.P., and Wiggins, L.B., 1975, Amphibole-quartz-magnetite assemblages in hydrothermal alteration zones in the Tanama porphyry copper deposit, Puerto Rico [abs.]: Program and abstract, Fall meeting, Society of Economic Geologists, Economic Geology 70, p. 1319.
- Cox, D.P., Gonzales, I.P., and Nash, J.T., 1975, Geology, geochemistry and fluid-inclusion petrography of the Sapo Alegre porphyry copper prospect and its metavolcanic

wallrocks, west central Puerto Rico: Journal of Research, U.S. Geological Survey, v. 3, p. 313-327.

Crago, W.H., and Roberts, H.M., 1945, Puerto Rico Iron Deposits: Roberts & Crago Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, PR.

Cram, C.M., 1972, Estudio priliminar de Geologic Economic del yacmiento Niquelifero del Barrio Guanajibo de cabo Rojo, Puerto Rico: Comision de Mineria Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, Mining Commission.

Crampton, H.E., 1916, Porto Rico: American Musuem Journal, v. 16, p. 59-70.

Cummings, S.R., Jr., Atwood, D.K., and Parker, J.M., 1979, Inorganic nutrients and dissolved oxygen variation determined from historical data at three proposed ocean thermal energy conversion (OTEC) sites: Puerto Rico, St. Croix, and northern Gulf of Mexico, NOAA technical memorandum ERL AOML, no. 36: Miami, Atlantic Oceanographic and Meteorological Laboratories, 67 p.

Curet, A.F., 1986, Geologic map of the Mayagüez and Rosario quadrangles, Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1657, scale 1:20,000.

Dachnowski-Stokes, A.P., and Roberts, R.C., 1934, Saline peat profiles of Puerto Rico: Washington Academy of Science Journal, v. 24, no. 4, p. 175-182.

Dart, R.L., 1980, Suggestions on the analysis of 16-mm seismic data from local networks: U.S. Geological Survey Open-File Report 80-990, Menlo Park, CA, 26 p.

Dart, R.L., and others, 1979, Puerto Rico seismic program seismological data summary, July 1, 1975-December 31, 1977: U.S. Geological Survey Open-File Report 79-870, Denver, CO, 138 p.

Dart, R.L., Tarr, A.C., Carver, D.L., and Wharton, M.K., 1980, Puerto Rico seismic network data report of earthquakes located by the programs HYPO71 and HYPOELLIPSE, July 1, 1975-December 31, 1977: Reston, VA, U.S. Geological Survey Circular 821, 43 p.

Dart, R. L., and Tarr, A.C., 1981, Seismicity and regional stress in Puerto Rico [abs.]: Earthquake Notes, v. 52, no. 1, p. 66.

Deer, D.U., 1955, Engineering properties of the Pleistocene and recent sediments of the San Juan Bay area, Puerto Rico [abs.]: Dissertation Abstracts, v. 15, no. 5, p. 781-782.

de Guillerna, César, 1880, Memoria del reconocimiento del interior de la Isla de la Culebra: Sociedad Geográfica Madrid Boletín, tome 8, p. 23-47.

Dehlinger, P., and Antoine, J.W., 1962, Seismic refraction profiles on the outer ridge north of Puerto Rico: College Station, Texas A & M, 14 p.

Denning, W.H., 1955, Preliminary results of geophysical exploration for gas and oil on the south coast of Puerto Rico: Puerto Rico Economic Development Administration, Division of Mineralogy and Geology, Bulletin 2, 17 p.

Dennis, L.S., and Gunn, C.L., Jr., 1964, Acromagnetic survey of the Mayagüez area, Puerto Rico, in Burk, C.A., ed., A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 30-38.

Diaz de Pereyo, H., 1969, Petrological studies of the San Lorenzo batholith, Puerto Rico: Honor thesis B.A., Vassar College, New York.

Diaz, J.R., 1974, Coastal salinity reconnaissance and monitoring system, south coast of Puerto Rico: A progress report: U.S. Geological Survey Open-File Report 74, Ft. Buchanan, P.R., 28 p.

_____1979, Seawater intrusion, south coast of Puerto Rico, 1966-77: U.S. Geological Survey Open-File Report 79-1334, San Juan, PR, 19 p.

Diaz, J.R., and Jordan, D.G., 1985, Water resources of the Rio Grande de Añasco lower valley, Puerto Rico: U.S. Geological Survey Water Resources Investigations Report, 48 p.

Diment, W.H., 1964, Thermal conductivity of serpentinite from Mayagüez, Puerto Rico, and other localities, in Burk, C.A. ed., 1964, A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 92-106.

Diment, W.H., and Weaver, J.D., 1960, Terrestrial heat flow near Laras, Puerto Rico: Private Report on file at the Department of Natural Resources, Puerto Rico: Laras, Diment.

Dinwiddie, William, 1899, Puerto Rico, its conditions and possibilities, 294 p.

Doerr, A. H., and Hoy, D.R., Karst landscapes of Cuba, Puerto Rico, and Jamaica: Science Monthly, v. 85, no. 4, p. 178-187.

Domenech, M.V., 1899, Porto Rico, her mineral resources; their value and extent and the reasons why they are not more developed: Mines and Minerals, v. 19, p. 529-532. Reprinted in Revista de Obras Públicas de Puerto Rico, año 11, no. 5, p. 625-629, 1934.

Donnelly, T.W., 1964, Evolution of eastern Greater Antillean island arc: American Association of Petroleum Geologists Bulletin, v. 48, no. 5, p. 680-696.

Donnelly, T.W., Beets, D.J., Carr, M.J., Jackson, T.A., Klaver, G., Lewis, J.F., Lidiak, E.,

Maury, R.C., Schellekens, J.H., Smith, A.L., Wadge, ., and Westercamp, D., 1990, History and geology of Caribbean Igneous rock series, in;Dengo, G. and Case, J. (eds.), Geology of the Caribbean, Decade of N. American Geology, vol. H., Geological Society of America, p. 339-374.

Douglas, R.C., 1961, Orbitolinas from Caribbean islands: Journal of Paleontology, v. 35, no. 3, p. 475-479.

Dury, G.H., 1965, Theoretical implications of underfit streams: U.S. Geological Survey Professional Paper 452-C, p. C1-C43.

Dutton, C.E., 1954, The iron deposits of North America, Cuba and Puerto Rico: U.S. Geological Survey Open-File Report 54-250, p. 44.

_____1955, Iron ore deposits of North America and the West Indies, in Survey of world iron ore resources; occurrence, appraisal, and use: United Nations, Department of Economic and Social Affairs, New York, p. 179-208.

Eckel, E.C., 1935, Preliminary report on the mineral development of Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 12, no. 4, p. 895, 898-900.

EEZ-Scan85 Scientific Staff, 1987, Atlas of the U.S. Exclusive Economic Zone, Eastern Caribbean: U.S. Geological Survey Investigations Map I-1864B.

Ehlmann, A.J., 1968, Clay mineralogy of weathered products of river sediments, Puerto Rico: Journal of Sedimentary Petrology, v. 38, no. 3, p. 885-894.

Ellins, K.K., Roman-Mas, A.J., and Lee, R., 1986, Estimating ground water influx to a portion of the Rio Grande de Manatí River basin in Puerto Rico, through measurement of radon 222 [abs.], in Quinoues, F., and others, eds., 3rd Caribbean Islands Water Resources Congress, San Juan, P.R., Water Resources Association, p. 27.

1990, Using 222Rn to examine goundwater/surface discharge interaction in the Rio Grande de Mantí, Puerto Rico: Journal of Hydrology, v. 115, no. 1-4, p. 319-341.

Ellis, S.R., and Gomez-Gomez, F., 1976, Hydrologic characteristics of lagoons at San Juan, Puerto Rico, during a January 1974 tidal cycle: U.S. Geological Survey Water Resources Investigations No. 38-75, Ft. Buchanan, PR, 45 p.

Ericson, D.B., Ewing, Maurice, Wollin, Goesta, and Heezen, B.C., 1961, Atlantic deepsea sediment cores: Geological Society of America Bulletin, v. 72, no. 1, p. 193-285.

Erickson, J.P., Pindell, J.L., and Larue, D.K., 1991, Fault zone deformational constraints on paleogene tectonic evolution in southern Puerto Rico: (Paper 91GL00411) Geophysical Research Letters, v. 18, no. 3, p. 569.

Eulate, Antonio, 1880, Memoria del reconocimiento de la costa en la Isla de la Culebra: Sociedad Geográfica Madrid Boletín, t. 8, p. 48-57.

Ewing, J.I., and Ewing, Maurice, 1962, Reflection profiling in and around the Puerto Rico Trench: Journal of Geophysical Research, v. 67, no., 12, p. 4729-4739.

Ewing, Maurice, and Worzel, J.L., 1954, Gravity anomalies and structure of the West Indies, Part 1: Geological Society of America Bulletin, v. 62, no. 2, p. 165-173.

Ewing, Maurice, and Heenen, B.C., 1955, Puerto Rico Trench topographic and geophysical data, in Poldervaart, Arie, ed., Crust of the Earth--A symposium: Geological Society of America Special Paper 62, p. 255-267.

Feray, D.E., 1965, The role of tectonic and environmental factors in the origin and distribution of sediments--Recent sediments of Puerto Rico and Pennsylvanian sediments of northcentral Texax (summary): South Texas Geological Society Bulletin, v. 5, no. 5, p. 10-15; Shale Shaker, v. 15, no. 7, p. 130-132.

Fernandez, L.O., 1976, Sedimentation processes and potential sand reserves of the Cabo Rijo shelf, southwestern Puerto Rico: North Carolina State University, Raleigh, NC, Master's thesis.

Fettke, C.R., 1924a, Magnetite deposits of eastern Porto Rico: American Institute of Mining and Metallurgical Engineers Transactions, v. 70, p. 1024-1042; abstract, Mining and Metallurgy, v. 5, p. 195-196..

_____1924b, The geology of the Humacao District, Porto Rico: New York Academy of Science, Scientific Survey of Porto Rico and Virgin Islands, v. 2, pt. 2, p. 117-197.

Fettke, C.R., and Hubbard, Bela, 1920, The limonite deposits of Mayagüez Mesa, Porto Rico: American Institute of Mining and Metallurgical Engineers Transactions, v. 61, p. 97-112.

Fields, F.K., 1971, Floods in the Yabucoa area, Puerto Rico: U.S. Geological Survey, Hydrology Investigation Atlas HH-382.

Fink, L.K., and Harrison, C.G.A., 1971, Paleomagnetic investigations of selected lava units in Puerto Rico [abs.]: Transaction, Sixth Caribbean Geologic Conference, abstract supplement, p. 5.

1972, Paleomagnetic investigations of selected lava units in Puerto Rico: Sixth Caribbean Geologic Conference, Margarita, Venezuela, Memorias V, 379.

Fiske, A.K., 1899, The West Indies; a history of the islands of the West Indian archipelago, together with an account of their physical characteristics, natural resources, and present condition. New York, G.P. Putnam's Sons, 414 p.

Fiske, R.S., 1969, Recognition and significance of pumice in marine pyroclastic rocks: Geological Society of America Bulletin, v. 80, p. 1-8.

Flint, D., 1965, Freeport Exploration Company Puerto Rico Copper Exploration, May 29, 1964 through December 4, 1964, Final Report: Freeport Exploration Company Private Report on file at the Department of Natural Resources, Puerto Rico: Reno, Freeport Exploration Company.

Focke, J.W., 1978, Geologische aspecten van kwartairekoraal-en algenriffen op Curacao, Bonaire, Aruba en Bermuda: Pijnacker, Netherlands, Dutch Efficiency Bureau, 103 p.

Foreman, H.P., 1966, Two Cretaceous radiolarian genera: Micropaleontology, v. 12, no. 3, p. 355-358.

Frazier, J.E., and Meyerhoff, H.A., 1945, Glass sand and a glass industry in Puerto Rico [abs]: Economic Geology, v. 40, no. 1, p. 83-84.

Friedel, R.A., and Nalwalk, A.J., 1968, Characterization of carbonaceous material from the Puerto Rico Trench of the Atlantic Ocean: Nature, v. 217, no. 5126, p. 345-347.

Frondel, Clifford, 1943, Mineralogy of the calcium phosphates in insular phosphate rock: American Mineralogist, v. 28, no. 4, p. 215-232.

Frost, C.D., and Schellekens, J.H., 1991, Rb-Sr and Sm-Nd isotopic characterization of Eocene volcanic and volcaniclastic rocks from Puerto Rico: (Paper 91GL00400) Geophysical Research Letters, v. 18, no. 3, p. 545.

Frost, C.D., Schellekens, J.H., and Smith, A.L., 1998, Nd, Sr, and Pb isotopic characterization of Cretaceous and Paleogene volcanic and plutonic island arc rocks fron Puerto Rico, in E. Lidiak and D.K. Larue (eds.), Geochemistry and Tectonics of the Northeastern Caribbean, Geological Society of America Special Paper, vol. 322.

Frost, S.H.and others, 1983, Oligocene reef tract development, southwestern Puerto Rico: Sedimenta, v. 9, University of Miami, Miami, Florida, 144 p.

Galloway, J.J., and Heminway, C.E., 1941, The Tertiary Foraminifera of Porto Rico: New York Academy of Science, Science Survey of Porto Rico and the Virgin Islands, v. 3, pt. 4, p. 275-491.

Gannett, H., 1901, A gazetteer of Porto Rico: U.S. Geological Survey Bulletin 183, p. 51.

Gandía-Córdova, Ramón, 1918, Earthquakes: Porto Rico Department of Agriculture and Labor, Bulletin 6, ll p.

_____1920, Recursos minerales de la isla de Puerto Rico; datos geológicos: Revista de

- Agricultura de Puerto Rico, v. 5, no. 4, p. 23-28. 1923, Las montañas de Puerto Rico: Revista de Agricultura de Puerto Rico, v. 10, no. 1, p. 5-9. 1924, Materiales de construcción: Revista de Obras Públicas de Puerto Rico, año 1, no. 1, 3 p. (unnumbered); no. 2, p. 95-96; no. 3, p. 131-133. 1926, Recursos minerales de la isla de Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 3, no. 26, p. 721-725; no. 27, p. 762-767; no. 28, p. 805-807. 1927, Geología de Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 2, no. 19, p. 557-565, illus.; no. 23, p. 651-652, 1925; año 4, no. 41, p. 1230-1231, map, 1927. 1928a, Las montañas de Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 4, no. 47, p. 1430-1437, illus., no. 48, p. 1464-1466, illus., 1927; año 5, no. 49, p. 1488-1492, illus., no. 50 (?), no. 52, p. 1534-1536, illus., no. 52, p. 1574-1578, illus., no. 54, p. 1650-1652. 1928b, Datos históricos acerca de estudio de la geología de Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 5, no. 49, p. 1485-1487. 1934a, Informe que acompaña al mapa de Puerto Rico en el cual se indican los recursos naturales de la isla: Revista de Obras Públicas de Puerto Rico, año 11, no. 2, p. 573-576, map. 1934b, Recursos minerales de la isla de Puerto Rico; el grafito: Revista de Obras Públicas de Puerto Rico, año 11, no. 8, p. 691-692. 1935, En Puerto Rico no puede haber hulla ni turba: Revista de Obras Públicas de Puerto Rico, año 12, no. 11, p. 1111-1112. 1946, Los temblores de tierra del 11 de octubre de 1918, in Revista del Colegio de Ingenieros de Puerto Rico, año 7, no. 4, p. 80-83. Garcia, R.A., Geochemical investigation of southwest Puerto Rico: University of Texas, El Paso, BS thesis.
- Garrison, L.E., Martin, R.G.J., Berryhill, H.L.J., Buell, M.W., Ensminger, H.R., and Perry, R.K., 1972, Preliminary tectonic map of the eastern Greater Antilles region: U.S. Geological Survey Miscellaneous Investigations Map I-732.

Garrison, L.E., 1969, Structural geology of the Muertos insular shelf, Puerto Rico: U.S.

Geological Survey Open-File Report 69-1270, p. 8.

Gaztambide de Urrutia, Socorro, 1950, Primary soil forming processes as influenced by the composition of parent material and environmental conditions: Journal of Agriculture of the University of Puerto Rico, v. 34, no. 3, p. 271-285.

Geddes, W.H., and Dennis, L.S., 1964, Preliminary report on a special aeromagnetic survey of the Puerto Rico Trench, in Burk, C.A. ed., A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 25-29.

Gelabert, P.A., 1964a, Construction-material resources of the San Juan quadrangle, Puerto Rico: San Juan, Puerto Rico Department of Public Works, Geologic Investigations Bulletin, no. 6, 59 p., map, scale 1:30,000.

_____1964b, Engineering geology of Highway Number 2 between Aguadilla and Mayagüez, Puerto Rico: Puerto Rico Department of Public Works, Geologic Investigations Bulletin, no. 8, 14 p.

Gelabert, P.A., Alonso, R.M., Jr., and Perry, A.O., 1964, Geology of the tunnel and reservoir sites for the Guanajibo River development project: Puerto Rico Department of Public Works, Geologic Investigations Bulletin, no. 4, 18 p.

Gelabert, P.A., and Alonso, R.M., Jr., 1965, Preliminary report on the sand resources of northeastern Puerto Rico: Puerto Rico Department of Public Works, Geologic Investigations Bulletin, no. 9, 48 p.

Gelabert, P.A., and Blest, Eduardo, 1967, Materiales de construcción para la represa del Río Portugués: Puerto Rico Department of Public Works, Geologic Investigations Bulletin, no. 11, 21 p.

Geological Society of Puerto Rico, 1968, Guide to two-day preconference field trip in Puerto Rico, June 29-30, 19 p.

Gemez-Gomez, F., 1984, Water resources of the lower Rio Grande de Manati valley, Puerto Rico: U.S. Geological Survey, scale 1:50,000.

Gerard, A., and others, 1981, Etude geophysique preliminaire a une evaluation du potentiel geothermique des Antilles francaises (Martinique-Guadeloupe), 27 of documents du B.R.G.M: Orleans, France, Bureau de recherches geologiques et minieres, Service geologique national, 40 p.

Gerstenhauer, Armin, 1964, Nord-Puerto Rico: Erdkunde, Bd 18, H. 2, Beilage 1 (map, scale 1:20,000), la (illustrations), 1b (text in German, Spanish, and English), June 1964. The three parts are Sheet 3, 3a, and 3b of the International Atlas of Karst Phenomena, and are included in the Report on the Symposium of the Karst Commission of the International Geographical Union held in Stuttgart, July 28-31, 1963.

Gerughty, and Miller, 1972, Summary of well data: Sun Oil Company, Yabucoa, Puerto

Rico Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, Sun Oil.

Gile, P.L., and Carrero, J.O., 1918, Bat guanos of Porto Rico and their fertilizer value: Porto Rico Agriculture Experimental Station Bulletin 25, 66 p.

Giusti, E.V., 1978, Hydrogeology of the karst of Puerto Rico: U.S. Geological Survey Professional Paper 1012, Washington, D.C., 68 p.

Giusti, E.V., and López, M.A., 1967, Climate and streamflow of Puerto Rico: Caribbean Journal of Science, v. 7, no. 3-4, p. 87-93.

_____1968, Coastal fresh water impoundment and sea villages: Revista del Colegio de Ingenieros, Arquitectos y Agrimensores de Puerto Rico, v. 18, no. 3, p. 28-33.

Giusti, E.V., and Bennett, G.D., 1976, Water resources of the north coast Limestone area, Puerto Rico: Water-Resources Investigations 42-75, Ft. Buchanan, PR, U.S. Geological Survey, 42 p.

Glover, Lynn, III, 1957a, Occurrence of free oil in limestone concretions in Puerto Rico: American Association of Petroleum Geologists Bulletin, v. 40, no. 3, p. 565-566.

_____1957b, Occurrence of free oil in limestone concretions in Puerto Rico: American Association of Petroleum Geologists, Bulletin, v. 41, scale 1:1,725,000.

1961a, Preliminary report on the geology of the Coamo quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-335, scale 1:20,000.

_____1961b, Preliminary geologic map of the Salinas quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-337, scale 1:20,000.

1967a, Cuyón Formation of east-central Puerto Rico, in Cohee, G.V., West, W.S., and Wilkie, L.C., eds., Changes in stratigraphic nomenclature by the U.S. Geological Survey, 1966: U.S. Geological Survey Bulletin 1254-A, p. A18-19.

_____1967b, The Jacaguas Group in central-southern Puerto Rico, in Changes in stratigraphic nomenclature by the U.S. Geological Survey, 1966: U.S. Geological Survey Bulletin 1254-A, p. A29-A39.

_____1967c, Geology of the Coamo area, Puerto Rico, with comments on Greater Antilles volcanic island arc-trench phenomena: U.S. Geological Survey Open-File Report 67-903, p. 329.

_____1968, Geology of the Coamo area, Puerto Rico, with comments on Greater Antillean volcanic arc-trench phenomena [abs.]: Dissertation Abstracts, Section B,

Science & Engineering, v. 28, no. 9, p. 3751B.

_____1971, Geology of the Coamo area, Puerto Rico, and its relation to the volcanic arc-trench association: U.S. Geological Survey Professional Paper 636, Washington, D.C.

1982, Preliminary geologic map of the Patillas and Guayama quadrangles, Puerto Rico: U.S.Geologic Survey Open-File Map 82-1097, scale 1:20,000.

1983, Preliminary geologic map of Patillas and Guayama quadrangle, Puerto Rico: U.S. Geological Survey Open-File Report 82-1097, Reston, VA, scale 1:20,000.

Glover, Lynn, III, and Mattson, P.H., 1960, Successive thrust and transcurrent faulting during the Tertiary in south-central Puerto Rico: U.S. Geological Survey Professional Paper 400-B, Washington, D.C., scale 1:40,000.

1967, The Jacaguas group in central-southern Puerto Rico, in Cohee, G.V., West, W.S., and Wilkie, L.C., eds., Changes in stratigraphic nomenclature by U.S. Geological Survey, 1966: U.S. Geological Survey Bulletin 1254A, p A29-A39.

_____1973, Geologic map of the Rio Descalabrado Q, Puerto Rico: U.S. Geological Survey I-735.

Glover, Lynn, III, Pease, M.H., and Arnow, T., 1977, Surficial geologic map of the Playa de Ponce and Santa Isabel quadrangles, Puerto Rico: U.S. Geological Survey Miscellaneous Field Studies Map MF-886, scale 1:20,000.

Gold, E., 1988, A new law of the sea for the Caribbean: An examination of marine law and policy issues in the Lesser Antilles: New York, Springer-Verlag, 276 p.

Gomez-Gomez, F., 1983, Water resources of the lower Rio Grande de Mantí Valley, Puerto Rico: U.S. Geological Survey Water Resources Investigations Report 83-4199.

Gomez-Gomez, F., and Gorman, S., 1982, Reconnaissance of ground-water quality throughout Puerto Rico, Sept-Oct. 1981: U.S. Geological Survey Water Resources Division Open-File Report 82-0331.

Gomez-Gomez, F., Quinones, F., and Ellis, S.R., 1983, Hydrologic characteristics of lagoonsat San Juan, Puerto Rico, during an October 1974 tidal cycle: U.S. Geological Survey Water Resources Investigations Open-File Report 82-349, San Juan, PR, 34 p.

Gomez-Gomez, F., and Torres-Sierra, H., 1988, Hydrology and effects of development on the water-table aquifer in the Vega Alta quadrangle, Puerto Rico: U.S. Geological Survey Water Resources Investigations Report 87-4105, San Juan, PR, 54 p.

Gonzalez, L.A., 1991, Carbon and oxygen stable isotopes in the Toa Baja Well, Puerto Rico: Implications for burial diagenesis and hydrocarbon generation: (Paper

91GL00396) Geophysical Research Letters, v. 18, no. 3, p. 533.

Gonzalez, L.A., and Ruiz, H.M., 1991, Diagenesis of Middle Tertiary carbonates in the Toa Baja Well, Puerto Rico: (paper 91GL00397) Geophysical Research Letters, v. 18, no. 3, p. 513.

Goodman, E.D., 1980, Aspects of marine and non-marine sand dispersal and provenance - northern Puerto Rico - Fourier grain shape analysis: University of South Carolina, Columbia, SC, Master's thesis.

Gordon, W.A., 1960, The age of the Middle Tertiary rocks of northwestern Puerto Rico: 2nd Caribbean Geological Conference (Puerto Rico, January 1959) Transactions, p. 87-90.

_____1961a, Distribution of Foraminifera in the Middle Tertiary San Sebastián-Isabela section, Puerto Rico: Caribbean Journal of Science, v. 1, no. 2, p. 48-58.

_____1961b, Foraminifera from the 4CPR oil test well near Arecibo, Puerto Rico, in Oil and gas possibilities of northern Puerto Rico, Puerto Rico Mining Commission, San Juan, p. 27-40.

_____1961c, Miocene Foraminifera from the Lajas Valley, southwest Puerto Rico: Journal of Paleontology, v. 35, no. 3, p. 610-619.

_____1961d, Planktonic Foraminifera and the correlation of the Middle Tertiary rocks of Puerto Rico: Micropaleontology, v. 7, no. 4, p. 451-460.

_____1963, Middle Tertiary echinoids of Puerto Rico, Journal of Paleontology, v. 37, no. 3, p. 628-642.

_____1966, Two crab species from the Middle Tertiary of Puerto Rico: 3rd Caribbean Geological Conference (Jamaica, April 1962) Transactions, p. 184-187. Jamaica Geological Survey Publication 95.

Graham, Alan, 1967, Studies in neotropical paleobotany--Preliminary analysis of fossil microfloras from Mexico, Panama, and Puerto Rico [abs.]: American Journal of Botany, v. 54, no. 5, pt. 2, p. 653.

Graves, R.P., 1989, Water resources of the Humacao-Naguabo area, eastern Puerto Rico: U.S. Geological Survey Water Resources Investigations Report 87-4088, San Juan, PR, 69 p.

Gresham, J.R., 1932, Memorandum for Committee on Mineral Resources of Pto. Rico: Revista de Obras Públicas de Puerto Rico, año 9, no. 2, p. 42.

Griscom, Andrew, 1964, Magnetic properties and aeromagnetic interpretation of

serpentinite from southwest Puerto Rico, in Burk, C.A., ed., A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 39-48. 1972, Complete Bouguer gravity map of eastern Puerto Rico and principal facts for gravity stations: U.S. Geological Survey Open-File Report 72-1772. Griscom, Andrew, and Geddes, W.H., 1966, Island-arc structure interpreted from aeromagnetic data near Puerto Rico and the Virgin Islands: Geological Society of America Bulletin 77, no. 2, p. 153-162. Grossling, B.F., 1981, World coal resources: 2d ed., Financial Times Business Information, Ltd., London, England, 166 p. Grossman, I.G., 1961, Ground-water conditions in the lower Tallaboa Valley, Puerto Rico: U.S. Geological Survey Professional Paper 424-C, p. C202-C203. 1962, Stratigraphy and hydrology of the Juana Díaz formation in the Yauco area, Puerto Rico: U.S. Geological Survey Professional Paper 450-D, p. D62-D63. 1963, Geology of the Guanica-Guayanilla Bay area, southwestern Puerto Rico: U.S. Geological Survey Professional Paper 475-B, p. B114-B116. 1966, Fluctuations of ground-water levels in Puerto Rico resulting from earthquakes (1959-1961): 3rd Caribbean Geological Conference (Jamaica, April 1962) Transactions, p. 104-106. Jamaica Geological Survey Publication 95. 1968, Geology and hydrology of the Tallaboa-Guayanilla-Yauco area, southwestern Puerto Rico [abs.]: Transactions, 4th Caribbean Geologic Conference, 1965, Trinidad, p. 234. Grossman, I.G., Bogart, D.B., Crooks, J.W., and Diaz, J.R., 1972, Water resources of the Tallaboa Valley, Puerto Rico: U.S. Geological Survey Water Resources Bulletin 7, scale 1:26,000. Grove, K.A., 1977, Sedimentation in Anasco Bay and river estuary: Western Puerto Rico: University of Puerto Rico, Mayaguez, Master's thesis. 1983, Marine geologic map of the Puerto Rico insular shelf, northwestern area: Rio Grande de Anasco to Rio Camuy: U.S. Geological Survey Miscellaneous Investigations Map I-1418, scale 1:40,000.

Grove, K.A., and Trumbull, J.V.A., 1978, Surficial geologic maps and data on three potential offshore sand sources on the insular shelf of Puerto Rico: U.S. Geological Survey Miscellaneous Field Studies Map MF-1017, scale 1:40,000.

Guilcher, André, 1961, Le "beach-rock" ou grés de plage: Annales Géographie, v. 70, no.

378, p. 113-125.

Guillou, R.B., and Glass, J.J., 1957, A reconnaissance study of the beach sands of Puerto Rico: U.S. Geological Survey Bulletin 1042-I, p. 273-305, scale 1:316,000.

Gurnee, R.H., 1958, The caves of Puerto Rico: Deuxième Congrès International de Spéléologie, Actes du Congrès, tome 1, sec. 1, p. 361-368. Congress in Italy, October 5-12, 1958.

Gurnee, R.H., Thrailkill, J.V., and Nicholas, G., 1966, Discovery at the Río Camuy; limestone erosion by ground water can produce caves of impressive size: Explorers Journal, v. 44, no. 1, p. 51-65.

Gutierrez, A., 1964, Preliminary report on the geological reconnaissance on Concession III, Santa Isabel Project, Lares, Puerto Rico: Bear Creek Mining Company Private Report on file at the Department of Natural Resources, Puerto Rico: Salt Lake City, Bear Creek Mining Company.

Guzman-Rios, S., 1983, Reconnaissance of the principal springs of Puerto Rico, 1982-83: U.S. Geological Survey Open-File Report 83-683, San Juan, PR, 1 p.

_____1988, Hydrology and water quality of the principal springs in Puerto Rico: U.S. Geological Survey Water Resources Investigations Report 85-4269, San Juan, PR, 30 p.

Habib, D., 1971, Palynology of the San Sebastian coal (Oligocene) of Puerto Rico [abs.]: Caribbean Geological Conference, 5th, [Transactions], Queens College, Department of Geology Bulletin, no. 5, p. 141.

Hamilton, S.H., 1909, Notes on some ore deposits of Porto Rico: Engineering Mining Journal, v. 88, p. 518-519.

Handin, John, 1964, Strength at high confining pressure and temperature of serpentinite from Mayagüez, Puerto Rico, in Burk, C.A., ed., A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 126-131.

Hardy, Frederick, 1959, Senile soils, in Wilgus, A.C., ed., The Caribbean, natural resources, chapter 2, p. 14-43.

Harper, M.F., 1936, Problems in the origin of manganese: Revista de Obras Públicas de Puerto Rico, año 13, no. 8, p. 1383-1385; no. 10, p. 1436-1440; no. 11, p. 1462-1466, no. 12, p. 1488-1494.

Harry, H.W., and Cumbie, B.G., 1956a, The relation of physiography to the types of freshwater environments and the presence of Australorbis glabratus in Puerto Rico: American Journal of Tropical Medicine and Hygiene, v. 5, no. 4, p. 742-756.

_____1956b, Stream gradient as a criterion of lotic habitats suitable for Australorbis glabratus in Puerto Rico: American Journal of Tropical Medicine and Hygiene, v. 5, n0. 5, p. 921-928.

Hashimoti, Mitsui, 1966, On the prehnite-pumpellyite metagreywacke facies: Geological Society of Japan Journal, v. 72, no. 5, p. 253-265.

Hawley, R.G., 1958, Report on the Rio Hondo Area, Central Concession, Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, PR.

Haydon, R.N., 1960, The Geology Club of Puerto Rico: 2nd Caribbean Geological Conference (Puerto Rico, January 1959) Transactions, p. 150-152.

_____1968, Cómo se formó Puerto Rico: Instituto de Cultura Puertorriqueña, serie Libros del Pueblo, no. 7, 43 p.

Haydon, R.N., and Turner, M.D., 1959, Road log and guide for a geologic field trip through central and western Puerto Rico: Geology Club Bulletin 1, 89 p. Reprinted as 2nd Caribbean Geological Conference (Puerto Rico, January 1959) Field Trip Logs, January 1959.

Hayes, J., 1985, Reconnaissance study of the maturation and source rock potential of Puerto Rico: M.S. thesis, Stanford University.

Hayes, J., Larue, D.U., Joyce, J., and Schellekens, J.H., 1986, Reconnaissance study of the maturation and source rock potential of oceanic arc involved in a collision: Journal of Marine and Petroleum Geology.

Hays, W.W., and Gori, P.L., 1985, Proceedings of conference XXX: A workshop on "reducing potential losses from earthquake hazards in Puerto Rico", May 30-31, 1985, Dorado, Puerto Rico: U.S. Geological Survey Open-File Report 85-731, Reston, VA, v. 1.

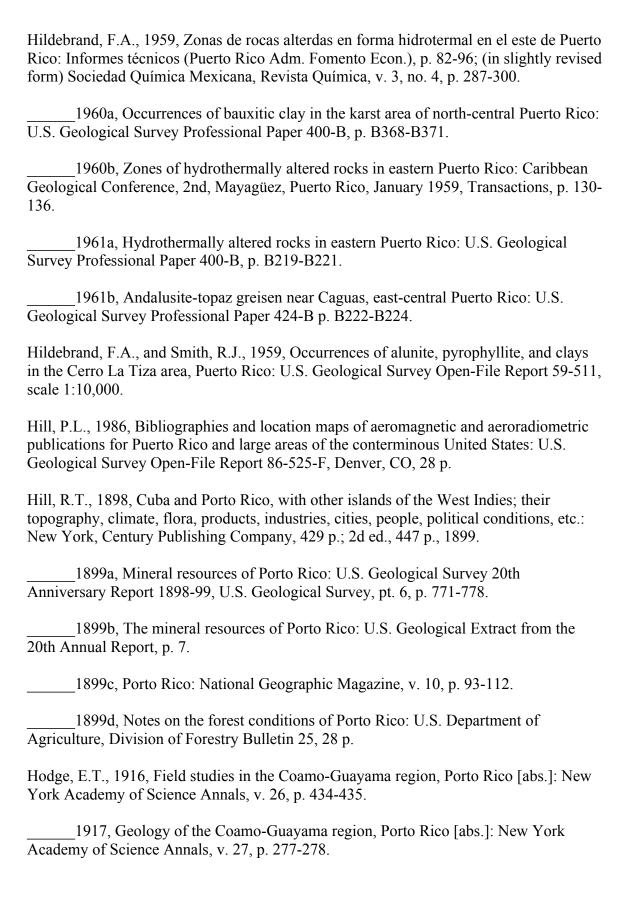
Heatwole, Harold, and MacKenzie, Faustino, 1967, Herpetogeography of Puerto Rico: Evolution, v. 21, no. 3., p. 429-438.

Heidenreich, W.L., and Reynolds, B.M., 1959, Nickel-cobalt-iron-bearing deposits in Puerto Rico: U.S. Bureau of Mines, Report Investigations 5532, 68 p.

Hepp, M.A., Jennings, S., McKelvey, G.E., and Morales, A., 1985, Geology and mineralization of the Minillas precious metals prospects, Puerto Rico - 1985 Progress report: Spokane, Cominco American Incorporated; Private report.

Hepp, M.A., and McKelvey, G.E., 1985, Geology and mineralization of the Barranquitas precious metals prospects, Puerto Rico - 1985 Progress Report: Spokane, Cominco

American Incorporated; Private report.
1985, Geology and mineralization of the Cerro Avispa and Rio Jajome precious metals prospects, Puerto Rico - 1985 progress report: Spokane, Cominco American Incorporated; Private report.
1985, Geology and mineral potential of the Sierra Bermeja area, Puerto Rico - 1985 Progress report: Spokane, Cominco American Incorporated; Private report.
Hersey, J.B., 1962a, Findings made during the June 1961 cruise of Chain to the Puerto Rico Trench and Caryn sea mount: Journal of Geophysical Research, v. 67, no. 3, p. 1109-1116.
1962b, The Puerto Rico Trench, a geophysical laboratory: Oceanus, v. 8, no. 3, p. 14-21.
1963, Seismic profiling and geological exploration in the deep sea [abs.]: American Geophysical Union Transactions, v. 44, no. 1, p. 61-62.
Herweijer, J.P., 1979, Slope form analysis in Pleistocene landforms: Leeward Islands of the Netherlands Antilles, 1 no. 11 of GUA papers of geology: Amsterdam, Rijksuniversiteit, Geografisch Instituut, 134 p.; Ser. B, no. 70.
Hess, H.H., 1964, The oceanic crust, the upper mantle and the Mayagüez serpentinized peridotite, in Burk, C.A., ed, A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 169-175.
Hess, H.H., and Otálora, Guillermo, 1964, Mineralogical and chemical composition of the Mayagüez serpentinite cores, in Burk C.A., ed., A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 152-168.
Hickenlooper, I.J., 1967, Floods at Barceloneta and Manatí, P.R. (jwith text): U.S. Geological Survey, Hydrologic Investigations Map HA-262, scale 1:20,000.
1968a, Floods at Arecibo, Puerto Rico (with text): U.S. Geological Survey, Hydrologic Investigations Map HA-271, scale 1:20,000.
1968b, Floods in the Mayagüez area of Puerto Rico (with text): U.S. Geological Survey, Hydrologic Investigations Map HA-288, scale 1:20,000.
1968c, Floods in the area of Vega Alta and Vega Baja, Puerto Rico (with text): U.S. Geological Survey, Hydrologic Investigations Map HA-289, scale 1:20,000.
Hickenlooper, I.J., and López, M.A., 1967, Floods in the Ponce area, Puerto Rico (with text): U.S. Geological Survey, Hydrologic Investigations Map HA-261.



1920, The geology of the Coamo-Guayama district, Puerto Rico: New York Academy of Science Survey of Puerto Rico and Virgin Islands, v. 1, pt. 2, p. 111-228, with map. Excerpted and translated into Spanish and published as the series, Geología del Distrito Coamo-Guayama, in Revista de Obras Públicas de Puerto Rico, año 5, no. 49, p. 1479-1485, illus. no. 52, p. 1527-1531, illus., no. 52, 1565-1567, illus., no. 54, p. 1631-1634, no. 55, p. 1647-1651, illus., no. 56, p. 1673-1677, illus., no. 57, p. 1726-1729, no. 59, p. 1771-1773, no. 60, p. 1805-1810, 1928; año 6, no. 61, p. 1-5, no. 62, p. 27-32, no. 63, p. 64-68.
Hollick, Arthur, 1926a, Paleobotanical exploration in Porto Rico: New York Botanical Garden Journal, May, v. 27, no. 317, p. 102-104.
1926b, Fossil walnuts and lignite from Porto Rico: New York Botanical Garden Journal, October, v. 27, no. 322, p. 223-227.
1928, Paleobotany of Porto Rico: New York Academy of Science, Science Survey of Porto Rico and the Virgin Islands, v. 7, pt. 3, p. 177-393.
Holmes, C.W., and Trumbull, J.V.A., 1978, Summary of resource investigations in the Caribbean Sea: U.S. Geological Survey, 8 p.
Hooker, M., 1968, List of references on the geology of Puerto Rico, 1866 - 1967: U.S. Geological Survey Open File Report 68-1081, p. 45.
1969, Bibliography and index of the geology of Puerto Rico and vicinity, 1866-1968: Geologic Society of Puerto Rico, San Juan, PR, .
1973, References on the geology of Puerto Rico supplementary to the bibliography and index of the geology of Puerto Rico and vicinity, 1866-1968: U.S. Geological Survey Open-File Report 73-1824, Washington, D.C.
Houtz, R.E., and Ewing, J.I., 1965, Comments on letter by W.A. Knox, "A deep-ocean sedimentary velocity function": Journal of Geophysical Research, v. 70, no. 20, p. 5330.
Howell, B.F., New Upper Cretaceous sponge from Puerto Rico: Journal of Paleontology, v. 40, no. 1, p. 207-209.
Hubbard, Bela, 1920a, The Tertiary formations of Porto Rico: Science, v. 51, p. 395-396.
1920b, The Tertiary formations of Porto Rico [abs.]: Geological Society of America Bulletin, v. 31, no. 1, p. 135.
1920c, Tertiary Mollusca from the Lares district, Porto Rico: New York Academy of Science, Science Survey of Porto Rico and the Virgin Islands, v. 3, pt. 2, p. 79-164.
1923, The geology of the Lares District, Puerto Rico: New York Academy of

Science, Science Survey of Porto Rico and Virgin Islands, v. 2, pt. 1, p. 1-115, with map, scale 1:62,500. Excerpted and published in Revista de Obras Públicas de Puerto Rico, año 10, no. 10, p. 500-504, no. 11, p. 518-522, no. 12, p. 542-546, 1933; año 11, no. 1, p. 559-562, no. 2, p. 580-584, no. 3, p. 601-604, no. 4, p. 618-622, no. 5, p. 640-645, no. 6, p. 652-654, 1934.

Hubbard, Bela, 1923, The geology of the Lares District, Porto Rico: New York Academy of Sciences, Scientific Survey of Porto Rico and Virgin Islands, v. 2, pt. 1, p. 1-115.

Hübener, Th., 1898, Die Inseln Mona und Monito: Globus, Bd. 74, no. 23, p. 368-372, December 17, 1898.

Hunt, J.L., 1976, Sedimentation of Loiza Reservoir, Puerto Rico: U.S. Dept. of Agriculture, Soil Conservation Service Report 153, Washington, D.C., 19 p.

Hurley, P.M., Fairbairn, H.W., and Pinson, W.H., Jr., 1964, Rb-Sr relationships in serpentinite from Mayagüez, Puerto Rico, and dunite from St. Paul's Rocks--a progress report: National Academy of Science, National Research Council Publication 1188, p. 149-151.

Ireland, P., 1982, Isotopic data pertaining to the age of the Puerto Rican karst [abs.]: Journal of the Geological Society of London, v. 139, pt. 5, p. 657.

Jackson, C.F., 1934, Informe sobre depósitos minerales en Puerto Rico: Revista de Obras Públicas de Puerto Rico: año 11, no. 6, p. 655-667. A memorandum to the Director, U.S. Bureau of Mines, with results of reconnaissance field work, Nov. 21 to Dec. 14, 1933, by C.W. Wright, F.W. Lee, J.H. Swartz, and C.F. Jackson, Spanish version.

Jacob, K.H., and McCann, W.R., 1982, Strong ground motions in two seismic gaps, Shumagin Islands, Alaska and the northern Lesser Antilles, Caribbean: Earthquake Hazards Reduction Program, U.S. Geological Survey Open-File Report 82-139, Menlo Park, CA, 21 p.

Jeffries, C.D., 1950, The constituent minerals of soils, their determination and some observations on their occurrence in the soils of Puerto Rico: Soil Science in the Caribbean (Report of the Soils Conference, Puerto Rico, March 30-April 8, 1950), Caribbean Commission Central Secretariat, p. 203, Trinidad.

Jeffries, C.D., Bonnet, J.A., and Abruña, Fernando, 1952, Mineral characteristics of some soils of Puerto Rico: Soil Science Society of America Proceedings, v. 16, no. 3, p. 310-311.

1953, The constituent minerals of some soils of Puerto Rico: University of Puerto Rico, Journal of Agriculture, v. 37, no. 2, p. 114-139.

Jibson, R.W., 1986, Evaluation of landslide hazards resulting from the 5-8 October 1985,

p.; A report submitted to the Federal Emergency Management Agency in fulfillment of a mission assignment to evaluate landslide hazards related to disaster FEMA-746-DR-PR. 1986a, The Puerto Rico landslide disaster of October 1985: AEG Newsletter, v. 29(4), p. 17-20. 1986b, Landslides resulting from the Oct. 5-8, 1985, storm in Puerto Rico [abs.]: 29th Annual Meeting, Association of Engineering Geology, p. 52-53. 1987a, Debris flows triggered by a tropical storm in Puerto Rico [abs.]: Abstract and Progr., GSA, Southeast sector 36th Annual Meeting, v. 19, no. 2, p. 91. 1987b, Debris flows triggered by tropical storm in Puerto Rico, in Schultz, A.P., and Southworth, C.S., eds., Landslides in eastern North America, U.S. Geological Survey Circular 1008, p. 9-10. 1989, The Mameyes, Puerto Rico, landslide disaster: Landslide News, 3 Jun 1989, p. 12-14. Johnson, K.G., 1981a, Flood of September 16, 1975, in the Yauw Valley, Puerto Rico: U.S. Geological Survey Open-File Report 81-0331, 13 p. 1981b, Flood of September 16, 1975, at Utuado, Puerto Rico: U.S. Geological Survey Open-File Report 81-0413, 18 p. Johnson, K.G., and Gonnalez, R., 1981, Flood of September 16, 1975 in the Guanica area, Puerto Rico: U.S. Geological Survey Water Resources Division Open-File Report 81-0480, 14 p. Johnson, P.L., and Atwood, D.M., 1969, Areal sensing and photographic study of the El Verde rain forest, Puerto Rico, Research Report 250: Hanover, N.H., United States Army Cold Regions Research and Engineering Laboratory, 21 p. Jolly, W.T., 1970, Petrological studies of the Robles Formation, south-central Puerto Rico: Ph.D. thesis, State University at Binghamton, New York, 150 p. 1970, Zeolite and prehnite-pumpellyite facies in south-central Puerto Rico: Contri. to Mineral. Petrol., v. 27, p. 204-224. 1971, Posassium-rich igneous rocks from Puerto Rico: Geological Society of America Bulletin, v. 82, p. 399-408.

storm in Puerto Rico: U.S. Geological Survey Open-File Report 86-26, Reston, VA, 40

Jolly, W.T., Lidiak, E.G., Schellekens, J.H., and Santos, H., 1998, Volcanism, Tectonics, and stratigraphic correlation in Puerto Rico, in E. Lidiak and D.K. Larue (eds.), Geochemistry and Tectonics of the Northeastern Caribbean, Geological Society of

America Special Paper, vol. 322.

Jones, C.T., 1964, Significant nickpoint levels of seven rivers draining western Puerto Rico: Caribbean Journal of Science, v. 4, no. 1, p. 255-260.

Jordan, D.J., 1970, Water and copper-mine tailings in karst terrane of Rio Tanama basin, Puerto Rico: U.S. Department of Interior, U.S. Geological Survey.

Kauffman, E.G., 1965, The upper Cretaceous Inoceramus of Puerto Rico: Caribbean Geological Conference, 4th, Trinidad, p. 207-218.

Kaye, C.A., 1951, Some paleosols of Puerto Rico: Soil Science, v. 71, no. 5, p. 329-336.

1953, A xonotlite occurrence in Puerto Rico: American Mineralogist, v. 38, no. 9-10, p. 860-862.

1956, Lower Tertiary of Puerto Rico: American Association of Petroleum Geologists Bulletin, v. 40, no. 1, p. 108-121, with map. Discussion by R.C. Mitchell, v. 40. no. 12, p. 2970-2973.

_____1957a, Notes on the structural geology of Puerto Rico: Geological Society of America Bulletin, v. 68, no. 1, p. 103-117, with map, scale 1:31,200.

1957b, The effect of solvent motion on limestone solution: Journal of Geology, v. 65, p. 35-46.

_____1958, Antonio Lucchetti Dam, Puerto Rico: Geological Society of America, Engineering Geology Case Histories No. 2, p. 9-11, with map, scale 1:4,500.

1959a, Coastal geology of Puerto Rico, U.S. Geological Survey Professional Paper 317, 178 p.

_____1959b, Geology of the San Juan metropolitan area, Puerto Rico: U.S. Geological Survey Professional Paper 317-A, p. 1-48, with map.

1959c, Geology of the San Juan metropolitan area, Puerto Rico: U.S. Geological Survey Professional Paper 317-A, with map, scale 1:30,000.

_____1959d Shoreline features and quaternary shoreline changes, Puerto Rico: A study of shore forms resulting from deposition and solution of calcium carbonate in tropical seas and from oceanographic and geologic differences between the island's several coasts: U.S. Geological Survey Professional Paper 317-B, Washington, D.C., 140 p.

_____1959e, Shoreline features and Quaternary shoreline changes, Puerto Rico: U.S. Geological Survey Professional Paper 317-B, p. 49-140, with maps.

1959f, Geology of Isla Mona, Puerto Rico, and notes on age of Mona Passage: U.S. Geological Survey Professional Paper 317-C, p. 141-178, with map, scale 1:31,000.

Kaye, C.A., and Dunlap, J.C., 1960, Geology of the tunnels of the Caonillas and Conillas Extension projects, Puerto Rico Water Resources Authority, Utuado area, Puerto Rico: Caribbean Geological Conference, 2nd, Mayagüez, P.R., January 1959, Transactions, p. 91-95.

Kelly, W.E., 1974, Observations of the electrical conductivity of the tropical soils of western Puerto Rico, discussion: Geological Society of America Bulletin, v. 85, p. 835.

Keolbl, A.F., 1957, Summary Report for Concession number 2 in Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.

Kerdraon, Y., Mascle, A., and Vila, J.M., 1985, Vue d'ensemble suc l'evolution tectonique de Porto-Rico a la lumiére de reconnaissances nouvelles et d'ume revision partielle du bloc sud-ouest (preprint): Symposium, Géodynamique des Caraibes, Paris 5-8 Febr. 1985, 11 p.

Kesler, S.E., Barten, J.M., Jones, L.M., and Walker, R.L., 1973, Eocene porphyry copper province, Greater Antilles [abs.]: Geological Society of America Abstract with Programs, p. 207.

Kesler, S.E., Jones, L.M., and Walker, R.L., 1975, Intrusive rocks associated with porphyry copper mineralization in island arc areas: Economic Geology, v. 70, p. 515-526.

Kesler, S.E., and Sutter, J.F., 1979, Compositional evolution of intrusive rocks in the eastern Greater Antilles Island Arc: Geology, v. 7, p. 197-200.

Khudoley, K.M., and Meyerhoff, A.A., 1974, Middle Cretaceous nappe structures in Puerto Rican ophiolites and their relation to the tectonic history of the Greater Antilles, Discussion: Geological Society of America Bulletin, v. 85, p. 1945-1948.

Killeen, P.L., Carr, M.S., and Flint, D.E., 1952, Iron deposits of Puerto Rico, Chapter 2 in Iron deposits in the territories and overseas possessions of the United States and on certain islands under its jurisdiction: 19th International Geological Congress, Symposium sur les gisements de fer du monde, t. 1, p. 423-426.

Kipple, F.P., 1968, Water records of Puerto Rico, 1958-1963: U.S. Geological Survey in cooperation with the Commonwealth of Puerto Rico, 353 p.

Klein, C., 1901, Uber den Brushit von der Insel Mona (zwischen Haiti und Portorico): Akad. Wiss. Berlin, Sitzungsberichte, Jg. 1901, p. 720-725.

Knoerr, A.W., 1952, Minnesota mining men open up rich Puerto Rico iron mine: Engineering Mining Journal, v. 153, no. 8, p. 74-79.

Kobluk, D.R., and Lysenko, M.A., 1984, Carbonate rocks and coral reefs, Bonaire, Netherlands Antilles: field trip 13, May 17-23, 1984 in Proceedings of a joint annual meeting, London, Ontario: Geological Association of Canada and the Mineralogical Association of Canada, 67 p.; contribution by W. Mielczarek.

Koelbl, A.F., 1957, Report on the examination of the "Carmen Mine" area, Guayama Concession, Puerto Rico: A.D. Fraser Private Report on file at the Department of Natural Resources, San Juan, PR.

Krauss, R.W., and Gallow, R.A., 1960, The role of algae in the formation of beach rock in certain islands of the Caribbean: Caribbean Beach Studies, Technical Report 11, pt. E, 49 p., March 20.

Krushensky, R.D., 1971, Hornblende-plagioclase porphyry intrusives in the northeast quarter of the Ponce quadrangle, Puerto Rico: U.S. Geological Survey Open-File Report 71-1613, p. 2.

- _____1972, Geologic map of the Ponce quadrangle, Puerto Rico: U.S. Geological Survey Open-File Report 72-1679, p. 36.
- 1978, Unconformity between Cretaceous and Eocene rocks in central-western Puerto Rico--A concept rejected: Proceedings 8th Caribbean Geological Conference, Willemstad, Curacao 1977, Geologie en Mijnbouw, v. 57, p. 227-232.
- _____1979, Geologic map of the Yauco and Punta Verraco quadrangles, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-1147, scale 1:20,000.

Krushensky, R.D., and Curet, A.F., 1984, Geologic map of the Monte Guilarte quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1556, scale 1:20,000.

Krushensky, R.D., and Monroe, W.H., 1975, Geologic map of the Ponce quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-863, scale 1:20,000.

- _____1977, Geology of the Penuelas and Punta Cuchara quadrangles, Puerto Rico: U.S. Geological Survey Open-File Report 77-173, Reston, VA, 59 p.
- _____1977, Geologic map of the Yauco and Punta Verraco quadrangles, Puerto Rico: U.S. Geological Survey Open-File Report Map 77-178.
- 1978, Geologic map of the Penuelas and Punta Cuchara quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1042, scale 1:20,000.

1979, Geologic map of the Yauco and Punta Verraco quadrangles, Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1147, scale 1:20,000. Lagaay, R.A., 1969, Geophysical investigations of the Netherlands Leeward Antilles, Deel 25 no. 2 of Afd. Natuurkunde; Eerste reeks: Amsterdam, North-Holland Pub. Co., 86 p. Lampaya, J., A, 1967, Evalucion de los muestras obtenidas por Compton Development Company, Central Concession, el los terrenos del Yungue: Fomento Private Report on file at the Department of Natural Resources, San Juan, PR. 1968, Estudio de los depositos de arena en la finca llamada "Regadera" de la autoridad de tierros de Puerto Rico: Administración de Forento economica departamento de investigaciones industracles Private Report on file at the Department of Natural Resources, San Juan, PR: Fomento. 1984, Evaluacion minero - metalurgica de Minillas I: Consultant Engineers and Associates Private Reports I & II on file at the Department of Natural Resources, San Juan, PR. Landis, E.R., Thomas, R.E., Khan, R.A., Shaf, A. A., and Bragg, L.J., in press, Coal quality, Sonda east area, Sindh Province, Pakistan, pt. II, U.S. Geological Survey Project Report (IR) PK-100. Lapham, D.M., 1964, Spinel-orthopyrocene compositions and their bearing on the origin of the serpentinite near Mayagüez, Puerto Rico, in Burk, C.A., ed., A study of serpentinite: National Academy of Science, National Research Publication 1188, p. 134-144. Larsen, M.C., and Simon, A., 1990, Landslide processes in saprolitic soils of a tropical rain forest, Puerto Rico, in Larue, D.K., and Draper, G., eds., Caribbean Geological Conference, 12th, St. Croix, Virgin Islands, 1989 [Transactions], p. 217. Larue, D.K., 1990, Toa Baja drilling project, Puerto Rico: EOS, p. 233-234. 1991, The Toa Baja drilling project Puerto Rico: Scientific drilling into a nonvolcanic island are massif: (Paper 91GL00406) Geophysical Research Letters, v. 18, no. 3, p. 489. 1991, The Toa Baja drilling project and current studies in Puerto Rican geology: Introduction and summary: (Paper 91GL00405) Geophysical Research Letters, v. 18, no. 3, p. 493.

Larue, D.K., and Ryan, H.F., 1990, Extensional tectonism in the Mona Passage, Puerto Rico and Hispaniola: A preliminary study, in Larue, D.K., and Draper, G., eds., Caribbean Geological Conference, 12th, St. Croix, Virgin Islands, 1989 [Transactions[, p.

- Larue, D.K., Joyce, J., and Ryan, H.F., 1990, Neotectonics of the Puerto Rico Trench: Extensional tectonism and forearc subsidence. in Larue, D.K., and Draper, G., eds., Caribbean Geological Conference, 12th, St. Croix, Virgin Islands, 1989 [Transactions], p. 231.
- Larue, D.K., and Berrong, B., 1991, Cross section through the Toa Baja drillsite: Evidence for northward change in Late Eocene deformation intensity: (Paper 91GL00404) Geophysical Research Letters, v. 18, no. 3, p. 561.
- Larue, D.K., Anderson, R.N., Goldberg, D., and Moos, D., 1991, Origin of reflectors in seismic line 2, Toa Baja, small gas horizons associated with enhanced reflector amplitudes, and recognizing leaky and sealing faults using gas chromatography data: (Paper 91GL00395) Geophysical Research Letters, v. 18, no. 3, p. 541.
- Larue, D.K., Smith, A.L., and Schellekens, J.H., 1991, Oceanic island arc stratigraphy in the Caribbean region: don't take it for granite, in: R. Cas and K. Busby-Spera (eds.), Volcaniclastic Sedimentation: Sedimentary Geology, vol. 74, p. 289-308.
- Learned, R.E., 1982, Some aspects of geochemical exploration for porphyry copper deposits in Puerto Rico, in Laning and others, eds., Hidden wealth: Mineral exploration techniques in tropical forest areas. Proceedings of symposium on mineral exploration techniques in tropical forest areas, Nov. 14-23, 1977, Caracas, Venezuela.
- Learned, R.E., and Boissen, R., 1973, Gold--a useful pathfinder element in the search for porphyry copper deposits in Puerto Rico: Geochemical Exploration, 1972: International Geochemistry Exploration Symposium, 4th, London, England, p. 93-103.
- Learned, R.E., Chao, T.T., and Sanzalone, R.F., 1981, The partitioning of copper among selected phases of geologic media of two porphyry copper districts, Puerto Rico: Journal of Geochemical Exploration, v. 15, p. 563-581.
- _____1985, A comparative study of stream water and stream sediments on geochemical exploration media in the Rio Tanama porphyry copper district, Puerto Rico: Journal of Geochemical Exploration, v. 24, no. 2, p. 46-54.
- Learned, R.E., Grove, G.R., and Boissen, R., 1973, A geochemical reconnaissance of the Island of Vieques, Puerto Rico: U.S. Geological Survey Open-File Report 73-1866, p. 78.
- Learned, R.E., Kickey, T.H., and Perez de Gonzalez, I., 1981, A geochemical reconnaissance of the Utauado Batholith and vicinity, Puerto Rico: U.S. Geological Survey Open-File Report 81-1131.
- Le Borgne, E., and Le Mouel, J.L., 1976, Observations magnetiques: le leve aeromagnetique des Antilles françaises, 26 of Observations magnetiques: Paris, Institut

de physique du, globe, Universite de Paris VI, 25 p.

Lee, V.J.B., and Mattsen, P.H., 1976, Metamorphosed oceanic crust in early volcanic products in Puerto Rican basement rock association: Caribbean Geological Conference, 7th, Guadeloupe, 1974, p. 265-270.

Lehmann, Herbert, 1954, Der tropische Kegelkarst auf den Grossen Antillen, pt. 3 of Das Karstphänomen in den verschiedenen Klimazonen: Erdkunde, Bd. 8, H. 2, p. 130-139.

1955, Der tropische Kegelkarst in Westindien: Deutscher Geographentag Verh., Bd. 29, p. 126-131. Discussion by F. Jaeger, p. 274.

Lewis, L.A., 1966a, The adjustment of some hydraulic variables at discharges less than one cfs: Professional Geographer, v. 18, no. 4, p. 230-234.

_____1966b, The relations of hydrology and geomorphology in a humid tropical steam basin--the Río Grande de Manatí, Puerto Rico [abs.]: Dissertation Abstracts, v. 26, no. 12, pt. 1, p. 7255.

Lidiak, E.G., 1963, Petrology of the andesitic, spilitic and keratophyric lavas, north-central Puerto Rico: Ph.D. thesis, Rice University, Houston, Texas.

1964, Petrology of andesitic, spilitic, and keratophyric flow rock, north-central Puerto Rico: Geological Society of America Bulletin, v. 76,. no. 1, p. 57-87. Abstract, Dissertation Abstracts, v. 24, no. 8, p. 3290.

1965, Petrology of the andesitic, spilitic and keratophyric flow rock, north-central Puerto Rico: Geological Society of America Bulletin, v. 76, p. 57-88.

1972, Spatial and temporal variations of potassium in the volcanic rocks of Puerto Rico: Caribbean Geological Conference, 6th, Margarita, Venezuela, Memoirs, p. 203-208.

_____1990, Depth of emplacement of granitoid plutonic rocks in the eastern Greater Antilles Island arc, in Larue, D.K., and Draper, G., eds., Caribbean Geological Conference, 12th, St. Croix, Virgin Islands, 1989 [Transactions], p. 259.

Lincoln, R.B., III, 1981, Heavy mineral distribution in fluvial and marine environments: North coast, Puerto Rico: Duke University, Master's thesis, 102 p.

Lithgow, C., McCann, W.A., and Joyce, J., 1987, Extentional tectonics at the eastern edge of the Puerto Rico platelet: EOS, v. 68, no. 44, p. 1483.

Lobeck, A.K., 1919, Five land features of Porto Rico; a story of cause and effect: Natural History (Journal of American Museum), v. 19, no. 6, p. 523-540.

______1922, The physiography of Puerto Rico: New York Academy of Science, Scientific Survey of Porto Rico and the Virgin Islands, v. 1, pt. 4, p. 301-379. Excerpted and translated into Spanish with title "Geografía física de Puerto Rico" and published in Revista Obras Públicas de Puerto Rico, año 3, no. 32, p. 923-929, illus., no. 33, p. 960-965, illus., no. 34, p. 995-999, illus., no. 35, p. 1023-1027, illus., no. 36, p. 1051-1056, illus., 1926; año 4, no. 37, p. 1081-1087, illus., no. 38, p. 1117-1124, illus., no. 39, p. 1157-1163, illus., no. 40, p. 1195-1198, illus.

Lopez, F.S., 1965, Informe sobre el estudio de la arena silicea del area de Vega Baja: Internal Memorandum, Department of Natural Resources, San Juan, PR.

Lopez, M.A., 1962, Floods at Bayamon and Cataño, Puerto Rico (with text): U.S. Geological Survey, Hydrology Investigations Atlas, Map HA-77, scale 1:20,000.

_____1964, Floods at Toa Alta, Toa Baja, and Dorado, Puerto Rico (with text): U.S. Geological Survey, Hydrology Investigations Atlas, Map HA-128, scale 1:20,000.

_____1967, Floods at Humacao, Puerto Rico (with text): U.S. Geological Survey, Hydrology Investigations Atlas, Map HA-265, scale 1:20,000.

Low, Bela, 1929, The mineral deposits of Porto Rico: Engineering Mining Journal, v. 128, no. 1, p. 5-7. Reprinted in Revista de Obras Públicas de Puerto Rico, año 6, no. 69, p. 243-245.

Lowman, F.G., Quiñones, L., Miró, M., Oliver de Padovani, I., Ramón de Vega, V., and Bielen, H.J., 1965a, Investigations of trace element distribution in marine waters and sediments, in Inter-American symposium on the peaceful application of nuclear energy, 5th, Valparaiso, Chile, March 9-13, 1964, p. 241-259, Pan American Union, Washington.

_____1965b, Trace elements in marine sediments [abs.]: Congreso Latinoamericano Química, 9th, San Juan, Puerto Rico, Resúmenes Trabajos, p. 36.

Ludden, R.B., 1961a, Report on Geologic Reconnaissance in the Cabo Rojo and San German - Sabana Grande permit area, Puerto Rico: Phelps Dodge Private Report on file at the Department of Natural Resources, Puerto Rico: Douglas, AZ, Phelps Dodge Corporation.

_____1961b, Report on Geological and Geochemical Reconnaissance in the Cayey and Guayama Permti Area, Puerto Rico: Phelps Dodge Private Report on file at the Department of Natural Resources, Puerto Rico: Douglas, AZ, Phelps Dodge Corporation.

_____1961c, Report on Geologic reconnaissance in the Cabo Rojo - Lajas Permit area, Puerto Rico: Phelps Dodge Private Report on file at the Department of Natural Resources, Puerto Rico: Douglas, AZ, Phelps Dodge Corporation.

Lugo-Lopez, M.A., Bonnet, J.A., and Garcia, J., 1953, The soils of the island of Vieques, Bulletin 108: Puerto Rico University Agricultural Experimental Station; scale 1:8,000.

Lugo-Lopez, M.A., and others, 1959, Nature and properties of major soils of Lajas Valley, Bulletin 149: Rio Piedras, PR, University of Puerto Rico, 60 p.

Luskin, Bernard, Heezen, B.C., Ewing, Maurice, and Landisman, Mark, 1954, Precision measurement of ocean depth: Deep-Sea Research, v. 1, no. 3, p. 131-140.

Lutjen, G.P., 1971, The curious case of the Puerto Rican copper mines: Engineering Mining Journal, v. 172, p. 74-84.

MacKallor, J.A., 1965, Natural gamma aeroradioactivity map of Puerto Rico: U.S. Geological Survey, Geophysical Investigations Map GP-525, scale 1:240,000.

_____1966, Aeroradioactivity survey and geology of Puerto Rico (ARMS-1): U.S. Atomic Energy Commission Civil Effects Study CEX-61.7.2, 24 p.

McCann, W., 1984, On the earthquake hazards of Puerto Rico and the Virgin Islands, in Gori, P.O., and Hays, W.W., eds., A workshop on earthquake hazards in the Virgin Islands region: p. 23-42.

McCann, W.R., 1985, On the earthquake hazards of Puerto Rico and the Virgin Islands: Seismology Society of America Bulletin 75, no. 1, p. 251-262.

McCann, W.R., Joyce, J., and Lithgow, C., 1987, The Puerto Rico platelet at the northern edge of the Caribbean Plate [abs.]: EOS, v. 68, no. 44, p. 1483.

McClymonds, N.E., 1967, Water resources of the Guánica area, Puerto Rico; a preliminary appraisal 1963: Puerto Rico Water Resources Authority Bulletin 6, 43 p.

McClymonds, N.E., and Ward, P.E., 1966, Hydrologic characteristics of the alluvial fan near Salinas, Puerto Rico: U.S. Geological Survey Professional Paper 550-C, p. C231-C234.

McGuinness, C.L., 1946, Records of wells in Puerto Rico: Puerto Rico Aqueduct and Sewer Service, San Juan, Puerto Rico, 267p, with map.

_____1947, Geology and ground water resources of Puerto Rico: Economic Geology, v. 42, no. 6, p. 563-571; abstract, no. 4, p. 409.

_____1948, Ground water resources of Puerto Rico: Puerto Rico Aqueduct and Sewer Service, San Juan, Puerto Rico, 613 p.

McIntyre, D.H., 1971, Geologic map of the Central La Plata quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-660, scale 1:20,000.

1972, Geology of the Maricao quadrangle, Puerto Rico: A preliminary report, Washington, D.C., U.S. Geological Survey, 31 p.
1973, Geologic map of the Maricao quadrangle, Puerto Rico: U.S. Geological Survey Open-File Report 73-1821, p. 36.
1974, Concepcion and Palama Formations, western Puerto Rico: U.S. Geological Survey Bulletin 1394-D, Washington, D.C., 9 p.
1975, Geologic map of the Maricao quadrangle, western Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-918, scale 1:20,000.
McIntyre, D.H., and Briggs, R.P., 1968, Effects of the high seas of December 3-5, 1967, on shores and beaches in the San Juan area, Puerto Rico: Revista del Colegio de Ingenieros, Arquitectos y Agrimensores de Puerto Rico, v. 18, no. 2, p. 51-56.
McIntyre, D.H., Aaron, J.M., and Tobish, O.T., 1970, Cretaceous and Lower Tertiary stratigraphy of northwestern Puerto Rico: U.S. Geological Survey Bulletin 1294-D, 16 p.
McIntyre, D.H., and Aaron, J.M., 1972, Possible subaerial outcropping of thorium A, northwestern Puerto Rico [abs.]: VI Conference of Geology Caribbean - Margarita, Vennezuela, Memoir, p. 132.
McKelvey, G.E., 1987, 1986 Progress report, Barranquitas Precious Metals prospects, Puerto Rico: Spokane, Cominco American Incorporated; Private report.
1987, 1986 Progress report, Cerro Avispa precious metals prospects, Puerto Rico: Spokane, Cominco American Incorporated; Private report.
1987, 1986 Progress report, Minillas property, Puerto Rico: Spokane, Cominco American Incorporated; Private report.
1987, 1986 Progress report, Sierra Bermeja area, Puerto Rico: Spokane, Cominco American Incorporated; Private report.
1988, 1987 Annual Report, Exploration Activities, Barrinquatis, Puerto Rico: Spokane, Cominco American Resources; Private report.
1988, 1987 Annual report, Exploration activities, Cerro Avispa, Puerto Rico: Spokane, Cominco American Resources Inc.; Private report.
1988, 1987 Annual report, Exploration activities, Minillas, Puerto Rico: Spokane, Cominco American Resources; Private Report.
1988, 1987 Annual report, exploration activities, Sierra Bermeja, Puerto Rico: Spokane, Cominco American Resources, Inc.

Maley, T.S., Sieber, F.D., and Johnson, G.L., 1974, Topography and structure of the western Puerto Rico Trench: Geological Society of America Bulletin, v. 85, no. 4, p. 513-518.

Maltezou, F., and Anderson, R.N., 1991, Milankovitch cycles in electrical resistivity logs from the Toa Baja scientific drillhole, Puerto Rico: (Paper 91GL00393) Geophysical Research Letters, v. 18, no. 3, p. 517.

Martínez Alvarez, A., 1935, Datos históricos y científicas relacionados con la geofísica de las Grandes y Pequeñas Antillas: Revista de Obras Públicas de Puerto Rico, año 12, no. 6, p. 955-961.

Masson, D.G., and Scanlon, K.M., 1991, The neotectonic setting of Puerto Rico: Geological Society of America Bulletin, v. 103, p. 144-154.

Matthew, W.D., 1916, New Sirenian from the Tertiary of Porto Rico, West Indies: New York Academy of Science Annals, v. 27, p. 23-29; abstract, v. 26, p. 439.

Mattson, P.H., 1957, Two geochemical copper anomalies in Southwestern Puerto Rico: Princeton University, Princeton, NJ.

1959, Rosario to Parguera and return, in Haydon, R.N., and Turner, M.D., eds., Road log and guide for a geologic field trip through central and western Puerto Rico: Section 4, Caribbean Geological Conference, 2nd, Mayagüez, with map, scale 1:190,000.

_____1960a, Geology of the Mayagüez area, Puerto Rico: Geological Society of America Bulletin, v. 71, p. 319-361, with map, scale 1:31,680.

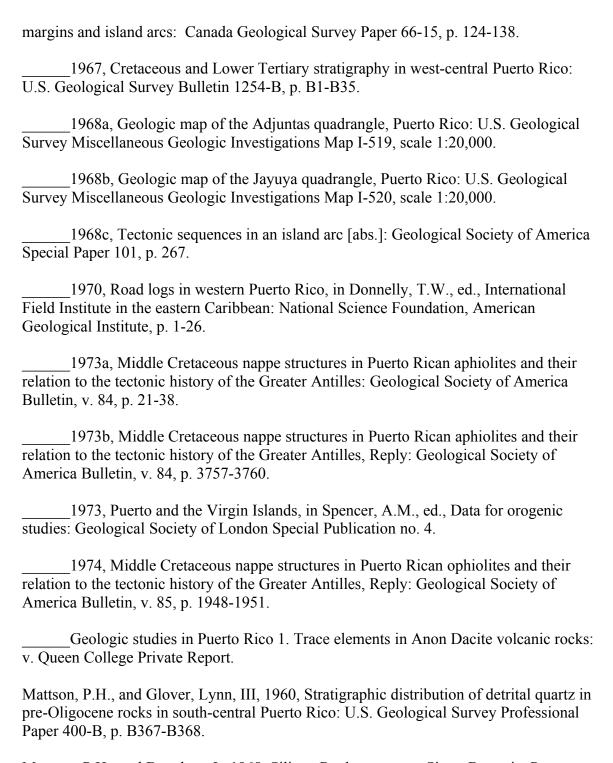
_____1960b, Notes on the stratigraphy and structure of southwestern Puerto Rico: Caribbean Geological Conference, 2nd, Puerto Rico, January 1959 [Transactions], p. 99-102.

_____1962, Theses in geological sciences in the Caribbean: Caribbean Journal of Science, v. 2, no. 2, p. 97-102.

1964, Petrography and structure of serpentinite from Mayagüez, Puerto Rico, in Burk, C.A., ed., A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 7-24.

1966a, Unconformity between Cretaceous and Eocene rocks in central Puerto Rico: Caribbean Geological Conference, 3rd, Jamaica, April 1962 [Transactions], Jamaica Geological Survey Publication 95, p. 49-53.

_____1966b, Geological characteristics of Puerto Rico, in Poole, W.H., ed., Continental



Mattson, P.H., and Donahue, J., 1968, Silica - Rock resources, Sierra Bermeja, Puerto Rico: Economic Development Administration Private Report on file at the Department Natural Resources, San Juan, PR: Fomento.

Mattson, P.H., and Schwartz, D.P., 1971, Control of intensity of deformation in Puerto Rico by mobile serpentinized peridotite basement: Geological Society of America

Memoir 130, p. 97-106.

Mattson, P.H., and Pessagno, E.A., Jr., 1974, Tectonic significance of Late Jurassic-Early Cretaceous radiolarian chert from Puerto Rican ophiolite [abs.]: Geological Society of America Abstracts with Programs, v. 6, no. 7, p. 859.

1979, Jurassic and Early Cretaceous radiolarian in Puerto Rican ophiolite-Tectonic implications: Geology, v. 7, p. 440-444.

Maury, C.J., 1919, On the correlation of Porto Rican Tertiary formations with other Antillean and mainland horizons: American Journal of Science, v. 48, no. 4, p. 209-215.

1920, Tertiary Mollusca from Porto Rico and their zonal relations: New York Academy of Science, Science Survey of Porto Rico and the Virgin Islands, v. 3, pt. 1, p. 1-77.

_____1929, Porto Rican and Dominican stratigraphy: Science, v. 70, December 20, p. 609.

_____1930, Correlation of Antillean fossil floras: Science, v. 72, September 5, no. 1862, p. 253-254.

Merrin, Seymour, 1958, Beachrock [abs.]: Caribbean Geological Conference, 1st, Antigua, December 1955 [Report], p. 37.

Meyerhoff, A.A., Krieg, E.W., Cloos, J.D., and Taner, Irfan, 1983, Petroleum potential of Puerto Rico: Oil and Gas Journal, v. 81, no. 51, December 19, 1983, p. 113.

Meyerhoff, H.A., 1926-1927, The physiography of the Virgin Islands, Culebra, and Vieques: New York Academy of Science, Science Survey of Porto Rico and the Virgin Islands, v. 4, pt. 1, p. 71-141; pt. 2, p. 145-219.

1927, Tertiary physiographic development of Porto Rico and the Virgin Islands: Geological Society of America Bulletin, v. 38, no. 4, p. 557-575; abstract, v. 38, p. 141-142; Pan-American Geologist, v. 47, no. 2, p. 150.

1930, The pre-Oligocene stratigraphy of Porto Rico: Science, v. 71, March 21, 1930, p. 322-323

______1931, The geology of the Fajardo District, Porto Rico: New York Academy of Science, Scientific Survey of Porto Rico and the Virgin Islands, v. 2, pt. 3, p. 201-360, with map. Excerpted and translated into Spanish and published as the series, Geología del Distrito de Fajardo, Puerto Rico, in Revista de Obras Pùblicas de Puerto Rico, año 9, no. 5, p. 96-101, no. 6, p. 123-126, no. 7, p. 147-151, no. 8, p. 185-189, no. 9, p. 197-200, no. 11, p. 249-251, no. 12, p. 278-280, 1932; año 10, no. 1, p. 287-291.

1932, The pre-Oligocene stratigraphy of Porto Rico: Science, v. 75, March 25, 1932, p. 342-343. 1933, Geology of Puerto Rico: University of Puerto Rico Monograph Series B, no. 1, 306 p., with map, scale 1:120,000. Excerpted and translated into Spanish and published as the series, Geología de Puerto Rico, in Revista de Obras Públicas de Puerto Rico, año 12, no. 6, p. 952-955, no. 7, p. 990-994, no. 8, p. 1008-1015, illus., no. 9, p. 1047-1057, illus., no. 10, p. 1071-1081, illus., no. 11, p. 1104-1106, no. 12, p. 1134-1138, with map, 1935; año 13, no. 2, p. 1196-1201, no. 3, p. 1224-1226, no. 4, p. 1259-1261, no. 5, p. 1299-1300, no. 6, p. 1311-1313, no. 7, p. 1354-1355, 1936. 1933, Manganese in Puerto Rico: Revista Obras Públicas de Puerto Rico: año 10, no. 9, p. 489-491. 1934, Iron in Puerto Rico: Revista de Obras Públicas de Puerto Rico: año 11, no. 3, p. 595-596; no. 5, p. 635-636; no. 8, p. 704-710. 1935, Report of the Committee on Mineral Resources of Puerto Rico: Revista de Obras Públicas de Puerto Rico: año 12, no. 3, p. 867-875; no. 4, p. 889-894. 1938, The texture of karst topography in Cuba and Puerto Rico: Journal of Geomorphology, v. 1, no. 4, p. 279-295. Abstract, Geological Society of America Proceedings 1937, p. 324. 1941, Mineral resources of the Greater Antilles: Mining and Metallurgy, v. 22, no. 413, p. 265-269. 1950, Some observations on the weathering of rocks in Puerto Rico: Soil Science in the Caribbean (Report of the Soils Conference, Puerto Rico, March 30-April 8, 1950), Caribbean Commission Central Secretariat, Trinidad, p. 204-206. 1954, Antillean tectonics: New York Academy of Science Transactions, ser. 2, v. 16, no. 3, p. 149-155. Reprinted in Boletín Informativo (Asoc. Venezolana de Geología, Minería y Petróleo), v. 8, no. 2, p. 41-46, 1965. Meyerhoff, H.A., and Frazier, J.E., 1945, Glass sand and a glass industry in Puerto Rico: Mining Technology, v. 9, no. 6, 9 p.; American Institute of Mining and Metallurgical Engineers Technical Publication no. 1939, 9 p. 1946, Glass sand and a glass industry in Puerto Rico: American Institution of

Meyerhoff, H.A., and Smith, L.F., 1931, The geology of the Fajardo district, Porto Rico: New York Academy of Science, Scientific Survey of Porto Rico and the Virgin Islands, v. 2, pt. 3, p. 201-360; about El Yunyu, p. 316.

Mining and Metallurgical Engineers Technical Publication no. 1939, scale 1:1,600,000.

M'Gonigle, J.W., 1976, Preliminary geologic map of the Humacao quadrangle, Puerto Rico: U.S. Geological Survey Open-File Report 76-126, Reston, VA, 23 p. 1977a, Preliminary geologic map of the Naguabo and part of the Punta Puerca quadrangles, Puerto Rico: U.S. Geological Survey Open-File Report Map 77-564. 1977b, The Rio Abajo, Pitahaya, and Daguao Formations in eastern Puerto Rico: U.S. Geological Survey Bulletin 1435-B, Washington, D.C. 1978a, Geologic map of the Humacao quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1070, scale 1:20,000. 1978b, Geologic map of the Humacao quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-1070, scale 1:20,000; supersedes Open-File Report 76-126. 1979, Geologic map of the Naguabo and part of the Punta Puerca quadrangles, Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1099, scale 1:20,000. Miller, W.R., Ficklin, W.H., and Learned, R.E., 1982, Hydrogeochemical prospecting for porphyry copper deposits in the tropical-marine climate of Puerto Rico: Journal of Geochemical Exploration, v. 16, p. 217-233. Millikan, F.R., Donahue, D.J., Carson, H.B., Ackerman, D., and Towers, J., 1974, AMAX - Kennecott legislative testimony, Puerto Rico: Private report. Ministry of Trade and Industry, 1981, New and renewable sources of energy: Report on Energy Use of Peat, prepared for United Nations Conference, Finland. Mitchell, C., 1971, Isles of the Caribbees [Rev. and enl. ed.]: Washington, D.C., National Geographic Society, 215 p. Mitchell, G.J., 1918, Evidence of recent changes of level in Porto Rico, as shown by studies in the Ponce district [abs.]: Geological Society of America Bulletin, v. 29, p. 138-141. 1922, Geology of the Ponce district, Porto Rico: New York Academy of Science, Scientific Survey of Puerto Rico and the Virgin Islands, v. 1, pt. 3, p. 229-300; map, scale 1:62,500. Excerpted and translated into Spanish and published as the series, Geología del Distrito Ponce, in Revista de Obras Públicas de Puerto Rico, año 6, no. 64, p. 85-89, map; no. 65, p. 111-119, illus., no. 67, p. 167-171, no. 68, p. 199-203, illus., no. 69, p. 238-242, illus., no. 70, p. 258-262, illus., no. 71, p. 304-308, no. 72, p. 324-328, 1929, año 7,

Mitchell-Thome, R.C., 1954, A survey of the geology of Puerto Rico: Puerto Rico

no. 1, p. 7-9, 1930.

University, Agricultural Experimental Station Technical Paper 13, 167 p.

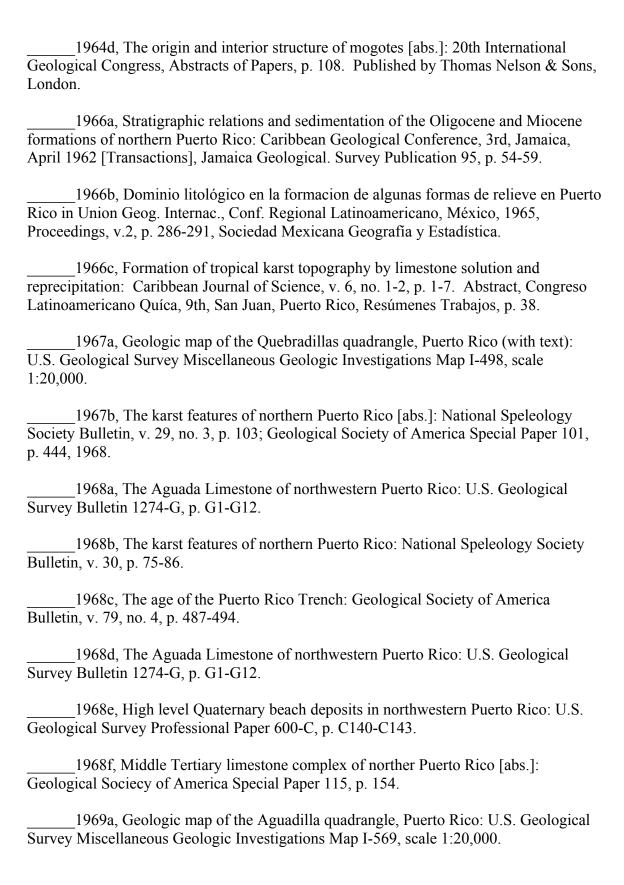
Mitchell-Thome, R.C., 1960, Lithologic features of the younger Tertiaries of Puerto Rico: Caribbean Geological Conference, 2nd, Mayagüez, 1954 [Transactions], p. 138-142.

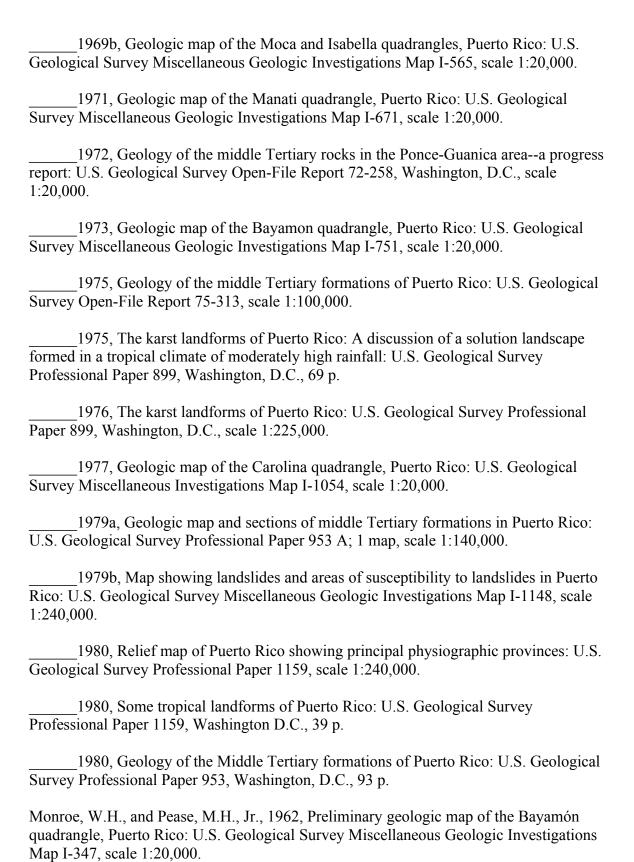
Mitchell, R.C., 1951, Of time and an isle: Revista Colegial (University of Puerto Rico, College of Agriculture and Mechanic Arts), ano 2, no. 1, December 1951-January 1952, p. 19-21.

- 1952a, Nouvelles observations á propos de la position structurale de l'arc des Petites Antilles: Society of Geology of France Bulletin, ser. 6, t. 2, fasc. 1-3, p. 71-75.
- 1952b, Tertiary boulders in the Cretaceous of Puerto Rico: Science, v. 116, no. 3016, October 17, 1952, p. 418-420.
- _____1953, New data regarding the dioritic rocks of the West Indies: Geologie en Mijnbouw, Jg. 15, p. 285-295.
- _____1954a, A survey of the geology of Puerto Rico: University of Puerto Rico Agricultural Experimental Station Technical Paper 13, 167 p., with map.
- 1954b, Submarine landslips off the coasts of Puerto Rico and Barbados, West Indies: Nature, v. 173, no. 4394, January 16, 1954, p. 119-121.
- 1954c, Un mot sur le fossé de Porto-Rico: Cahiers Géologiques, no. 25, July 1954, p. 220-221.
- _____1954d, Le Tertiaire de Porto-Rico et le développement tertiaire des Grandes Antilles: Society of Geology of France Bulletin, ser. 6, t. 4, fasc. 4-6, p. 213-224.
- _____1955, Reseña geológica de Puerto Rico: Estudios Geológicos, Inst. Inv. Geol. Lucas Mallada, no. 26, p. 203-216, with map.
- _____1955b, The ages of the serpentinized peridotites of the West Indies: Koninklijke Nederlandse Akademie van Wetenschappen [Proceedings], ser. B, v. 58, no. 3, p. 1412, map.
- _____1956, Paleogene of Puerto Rico: American Association of Petroleum Geologists Bulletin, v. 40, no. 12, p. 2970-2973.
- 1957, Die geologische Bedeutung von Schwereuntersuchungen auf Puerto Rico: Neues Jahrbuch Geol. Paläont. Monatshefte, Jg. 1947, H. 5, p. 206-215, with map, June 1957. English summary.
- _____1960, Lithologic features of the younger Tertiaries of Puerto Rico: Caribbean Geological Conference, 2nd, Puerto Rico, January 1959 [Transactions], p. 138-142.

comparado con el guano del Perú: Sociedad Geográfica Madrid Boletín, t. 7, p. 235-238. Moneymaker, B.C., 1947a, Geology of the Dos Bocas Dam, Puerto Rico [abs.]: Geological Society of America Bulletin, v. 58, no. 12, pt. 2, p. 1210. 1947b, Geology of Garzas Dam, Puerto Rico [abs.]: Geological Society of America Bulletin, v. 58, no. 12, pt. 2, p. 1210-1211. 1947c, Geology of the Garzas power tunnel, Puerto Rico [abs.]: Geological Society of America Bulletin, v. 58, no. 12, pt. 2, p. 1211. Monroe, W.H., 1956, spectrographic analyses of lateritic soil from the Mayaguez area, Puerto Rico: U.S. Geological Survey Open-File Report 56-382, p. 3. 1958, The oil and gas possibilities of the Quebrada Arenas anticline, Puerto Rico: U.S. Geological Survey Open-File Report 58-447, p. 500. 1960, Sinkholes and towers in the karst area of north-central Puerto Rico: U.S. Geological Survey Professional Paper 400-B, p. B356-B360, with map. 1962, Geology of the Manatí quadrangle, Puerto Rico (with text): U.S. Geological Survey Miscellaneous Geologic Investigations Map I-334, scale 1:20,000. 1963a, Geology of the Vega Alta quadrangle, Puerto Rico (with text): U.S. Geological Survey Geologic Quadrangle Map GQ-191, scale 1:20,000. 1963b, Geology of the Camuy quadrangle, Puerto Rico (with text): U.S. Geological Survey Geologic Ouadrangle Map GO-197, scale 1:20,000. 1963c, Geomorphology and sedimentation of north-central Puerto Rico during the Oligocene and Miocene [abs.]: Geological Society of America Special Paper 73, p. 207. 1963d, Geologic map of Camuy, Puerto Rico: U.S. Geological Survey Geologic Quadrangle Map GQ-197, scale 1:20,000. 1964a, Large retrogressive landslides in north-central Puerto Rico: U.S. Geological Survey Professional Paper 501-B, p. B 123-B 125, with maps. 1964b, The zanjón, a solution feature of karst topography in Puerto Rico: U.S. Geological Survey Professional Paper 501-B, p. B126-B129. 1964c, Lithologic control and karst topography [abs.]: 20th International Geological Congress, Abstracts of Papers, p. 107-108. Published by Thomas Nelson & Sons, London.

Monclova, J.V., 1879, Análisis cualitativo y cuantitativo del guano de la Isla de la Mona,





Montgomery, H.M., Pessagno, E.A., Jr., Lewis, J.F., and Schellekens, J.H., 1994, Paleographic history of Jurassic terranes in Puerto Rico and Hispaniola: Tectonics, vol. 13, p. 725-732.

Montgomery, H., Robinson, E., Saunders, J., and Van den Bold, W., 1991, Paleontology of the Toa Baja #1 Well, Puerto Rico: (Paper 91GL00402) Geophysical Research Letters, v. 18, no. 3, p. 509.

Moos, D., and Morin, R.H., Observations of wellbore failure in the Toa Baja Well-Implications for the state of stress in the north coast Tertiary basin, Puerto Rico: (Paper 91GL00408) Geophysical Research Letters, v. 18, no. 3, p. 505.

Morgan, W.J., 1965, Gravity anomalies and convection currents--Pt. 2, The Puerto Rico Trench and the Mid-Atlantic Rise: Journal of Geophysical Research, v. 70, no. 24, p. 6189-6204. Comments by Manik Talwani, and others, 1966, Journal of Geophysical Research, v. 71, no. 14, p. 3602-3606, and reply by Morgan, p. 3607-3608.

Morelock, J., Winget, E.A., and Goenaga, C., in press, Geologic maps of the Puerto Rico insular shelf, Parguera to Guanica: U.S. Geological Survey Miscellaneous Investigations Map I-___, scale 1:40,000.

Morris, A.E.L., Meyerhoff, A.A., Taner, I., Bueno-Salazar, R., and Young, G.A., 1990, Energy resources of the Caribbean, in Dengo, G., and Case, J.E., eds., The Caribbean region: Geological Society of America, Boulder, Colorado, The Geology of North America, p. 483-506.

Moussa, M.T., and Seiglie, G.A., 1970, Revision of mid-Tertiary stratigraphy of southwestern Puerto Rico: American Association of Petroleum Geologists Bulletin, v. 54, no. 10, pt. I.

Moussa, M.T., Seiglie, G.A., Meyerhoff, A.A., and Taner, J., 1987, The Quebradillas limestone (Miocene-Pliocene), northern Puerto Rico, and tectonics of the northeastern Caribbean margin: Geological Society of America Bulletin, v. 99, p. 427-439.

Murphy, L.S., 1916, Forests of Porto Rico; past, present and future and their physical and economic environment: U.S. Department of Agriculture Bulletin 354, 99 p. Pages 2-7 on physiography and drainage.

Murphy, V.J., and Holt, R.J., 1960, Engineering seismology applications in deep weathered rock areas: Congreso Panamericano Mecánica Suelos y Cementaciones, 1st, Mexico City, 1959, Memoirs v. 2, p. 889-901.

Myreen, B., 1982, PDF--a new peat technology: Energy Digest, December 2, 1982, p. 14-18.

Nalwalk, A.J., 1967, Geology of the north wall of the Puerto Rico Trench [abs.]:

1996B. Nelson, A.E., 1966, Some volcanic rocks of the Corozal quadrangle, Puerto Rico: Caribbean Geological Conference, 3rd, Jamaica, April 1962 [Transactions], Jamaica Geological Survey Publication 95, p. 41-48. 1966, Cretaceous and Tertiary rocks in the Corozal quadrangle, northern Puerto Rico: U.S. Geological Survey Bulletin 1244-C, C1-C20. 1966, Significant changes in volcanism during the Cretaceous in north-central Puerto Rico: U.S. Geological Survey Professional Paper 550-D, p. D172-D177, with 1967, Geologic map of the Corozal quadrangle, Puerto Rico (with text): U.S. Geological Survey Miscellaneous Geologic Investigations Map I-473, scale 1:20,000. 1967, Geologic map of the Utuado quadrangle, Puerto Rico (with text): U.S. Geological Survey Miscellaneous Geologic Investigations Map I-480, scale 1:20,000. 1968, Intrusive rocks of north-central Puerto Rico: U.S. Geological Survey Professional Paper 600-B, p. B16-B20. 1968, Trends of Cretaceous volcanism in north central Puerto Rico: Caribbean Geological Conference, 4th, Trinidad, 1965 [Transactions], p. 235-242. Nelson, A.E., and Monroe, W.H., 1966, Geology of the Florida quadrangle, Puerto Rico: U.S. Geological Survey Bulletin 1221-C, p. C1-C22, with map, scale 1:20,000. 1966, Geology of the Florida quadrangle, Puerto Rico: U.S. Geological Survey Bulletin 1221-C, p. C1-C22, with map. Nelson, A.E., and Tobisch, O.T., 1967, The Matilde and Milagros Formations of early Tertiary age in northwest Puerto Rico, in Cohee, G.V., West, W.S., and Wilkie, L.C., eds., Changes in stratigraphic nomenclature by U.S. Geological Survey, 1966: U.S. Geological Bulletin 1254-A, p. A19-A23. 1968, Geologic map of the Bayaney quadrangle, Puerto Rico (with text): U.S. Geological Survey Miscellaneous Geologic Investigations Map I-525, scale 1:20,000.

Dissertation Abstracts, Section B, Science and Engineering, v. 28, no. 5, p. 1995B-

Nevares, Rafael, and Dunlap, J.C., 1951, Datos de ingeniería y geología alrededor de la sedimentación de embalses en Puerto Rico: Revista Agriculture Puerto Rico, v. 42, no. 1-

Neumann, Frank, 1940, The Vieques, Puerto Rico, seismographic record of the destructive earthquake of 1918 as a clue to local crustal structure [abs.]: American

Geophysical Union Transactions, v. 21, pt. 1, p. 232.

2, p. 169-189.

Newman, P.C., 1945, Economic Brief on the establishment of an Iron and Steel industry in Puerto Rico: Consultant to Puerto Rico Development Company. Private Report on file at the Department of Natural Resources, San Juan, PR.

Nichols, M., and Cerco, C., 1983, Costal dunes for protection and sand resources: Department of Natural Resources Technical Publication.

Nitze, H.B.C., 1899, Some of the mineral resources of Porto Rico: U.S. Geological Survey, Extract, Twentieth Anniversary Report 1898-99, pt. 6, p. 779-787.

Noble, W.D., 1924, Los mármoles de Puerto Rico y el Capitolio: Revista de Obras Públicas de Puerto Rico, año 1, no. 2, p. 57.

_____1927, Algunos datos sobre posibilidades de petróleo en Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 4, no. 42, p. 1272-1274.

____1928a, La geofisica en la exploración de los minerales: Revista de Obras Públicas de Puerto Rico, año 5, no. 51, p. 1531-1534.

1928b, Geofísica de los minerales: Revista de Obras Públicas de Puerto Rico, año 5, no. 55, p. 1651-1653.

____1930, Promising manganese outcrop in Adjuntas, Porto Rico: Revista de Obras Públicas de Puerto Rico, año 7, no. 6, p. 142.

_____1932, Investigations of mineral resources of Porto Rico: Mining Commission Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, Mining Commission.

1934a, Comité de recursos minerales de Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 11, no. 4, p. 605-606.

1934b, Report on placer gold investigation of the district of Corozal and Naranjito: Revista de Obras Públicas de Puerto Rico, año 11, no. 8, p. 692-696.

_____1934c, Report of the investigation made by W.D. Noble: Revista de Obras Públicas de Puerto Rico, año 11, no. 23, p. 787-790. Two reports for the periods July 16-27 and August 1-31.

1935, El precioso metal oro en Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 12, no. 3, p. 875-877.

Noll, J.J., 1953, The silting of Caonillas reservoir, Puerto Rico: U.S. Department of AGriculture, Soil Conservation Service, SCS-TP-119, 22p, October 1953.

Northrop, John, 1954, Bathymetry of the Puerto Rico Trench: American Geophysical Union Transactions, v. 35, no. 2, p. 221-225.

Northrop, John, and Ransone, Morris, 1962, Some seismic profiles near the western end of the Puerto Rico Trench: Journal of General Physiology, v. 45, no. 4, pt. 2, supplemental, p. 243-251.

Norton, D., 1974, Chemical mass transfer in the Rio Tanama system, west-central Puerto Rico: Geochemica Cosmetica Acta, v. 38, p. 267-277.

Norton, M.F., 1958, Mineralogy of the Puerto Rico Trench, an environmental study [abs.]: Dissertation Abstracts, v. 19, no. 2, p. 299, August 1958.

Núñez Zuloaga, Indalecio, 1879, Memoria descriptiva de la Mona, en el freu que media entre Puerto-Rico y Santo Domingo: Sociedad Geográfica Madrid Boletín, t. 7, p. 226-235, with map, scale 1:58,000.

_____1880, Memoria descriptiva de las islas del pasaje en lo más occidental del Archipiélago de la Vírgenes: Sociedad Geográfica Madrid Boletín, t. 8, p. 7-22, with map.

Oceanic Exploration Co., 1977, Environmental impact statement for subsurface mineral exploration program, Barranquitas area, Puerto Rico: Oceanic Exploration Company Private Report on file at the Department of Natural Resources, San Juan, PR. Officer, C.B., Jr., Ewing, J.I., Edwards, R.S., and Johnson, H.R., 1957, Geophysical investigations in the eastern Caribbean; Venezuelan basin, Antilles island arc, and Puerto Rico Trench: Geological Society of America Bulletin, v. 68, no. 3, p. 359-378.

O'Kelly, F.S., 1978, Report on exploration activities within the Los Cacaos concession area for the period April-October, 1977: O'Kelly Private Report on file at the Department of Natural Resources, San Juan, PR.

Olivieri, J.M., 1956, Beach erosion problems at the northern coast of Puerto Rico: Shore and Beach, v. 24, no. 2, p. 9-11.

Oman, C.L., and Meissner, C.R., Jr., 1987, Chemical analysis of Gulf Coast lignite samples with significant comparisons and interpretations of results, in Finkelman, R.B., Casagrande, D.J., and Benson, S.A., eds., Gulf Coast lignite geology, Environmental and Coal Associates, Reston, VA, p. 211-223.

Otálora, Guillermo, 1960, Geology of the Barranquitas quadrangle, Puerto Rico: Economic Development Admin., Commonwealth of Puerto Rico and Department of Geology, Princeton University, p. 1-152.

1961, Geology of the Barranquitas quadrangle, Puerto Rico [abs.]: Disserta	ation
--	-------

Abstracts, v. 22, no. 5, p. 1583.
1964, Zeolites and related minerals in Cretaceous rocks of east-central Puerto Rico: American Journal of Science, v. 262, no. 6, p. 726-734, with map.
Paillet, F.L., and Goldberg, D., 1991, Acoustic televiewer log images of natural fractures and bedding planes in the Toa Baja borehole, Puerto Rico: (Paper 91GL00407) Geophysical Research Letters, v. 18, no. 3, p. 501.
Pease, M.H., Jr., 1960, Structural control of hydrothermal alteration in some volcanic rocks in Puerto Rico: U.S. Geological Survey Professional Paper 400-B, p. B360-B363, with map.
1966, Some characteristics of copper mineralization in Puerto Rico: Caribbean Geological Conference, 3rd, Kingston, April 1962 [Transactions], Jamaica Geological Survey Publication 95, p. 107-112.
1968a, Geologic map of the Aguas Buenas quadrangle, Puerto Rico (with text): U.S. Geological Survey Miscellaneous Geologic Investigations Map I-479, scale 1:20,000.
1968b, Geologic map of the Naranjito quadrangle, Puerto Rico (with text): U.S. Geological Survey Miscellaneous Geologic Investigations Map I-508, scale 1:20,000.
1968c, Cretaceous and Lower Tertiary stratigraphy of the Naranjito and Aguas Buenas quadrangles and adjacent areas, Puerto Rico: U.S. Geological Survey Bulletin 1253, 57 p., with map.
1976, The source of hydrothermal solutions at Puerto Maunabo and its bearing on the base-metal-potassium feldspar association in Puerto Rico: Journal of Research of the U.S. Geological Survey, v. 4, no. 1, p. 61-66.
Pease, M.H., and and Briggs, R.P., 1960, Geology of the Comerío quadrangle, Puerto Rico (with text): U.S. Geological Survey Miscellaneous Geologic Investigations Map I-320, scale 1:20,000.
1972, Geologic map of the Rio Grande quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-733, scale 1:20,000.
Pease, M.H., Jr., and Monroe, W.H., 1975, Geologic map of the San Juan quadrangle, Puerto Rico: U.S. Geological Survey Open-File Report Map 75-252, scale 1:20,000.
1977, Geologic map of the San Juan quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1010, scale 1:20,000.
Perfit, M.R., Heezen, B.C., Rawson, M.R., and Donnelly, T.W., 1980, Chemistry, origin,

March 1980, p. 125-156. Perry, A.O., 1962, Report on the manganese deposit near Aguada, Puerto Rico: Unpublished report (Nat. Res.), 6 p. 1963, Construction-material resources of the Vega Alta quadrangle, Puerto Rico: Puerto Rico Department of Public Works, Geological Investigations Bulletin no. 2, 23 p. 1964, Construction-material resources of the Juncos quadrangle, Puerto Rico: Puerto Rico Department of Public Works, Geologic Investigations Bulletin no. 7, 29 p., with map, scale 1:30,000. 1965, Inforem sobre el estudio de la area del area de Vega Baja: Internal Memorandum, Department of Natural Resources, Puerto Rico: San Juan, Department of Natural Resources. Perry, A.O., and Gelabert, P.A., 1963, Construction-material resources of the Carolina Quadrangle, Puerto Rico: Puerto Rico Department of Public Works, Geologic Investigations Bulletin no. 1, 39 p. Pessagno, E.A., Jr., 1960a, Geology of the Ponce-Coamo area, Puerto Rico: Puerto Rico Economic Development Administration Industrial Laboratory and Princeton University, Department of Geology, 147 p. 1960b, Stratigraphy and micropaleontology of the Cretaceous and lower Tertiary of Puerto Rico: Micropaleontology, v. 6, no. 1, p. 87-110. 1960c, Preliminary note on the geology of the Ponce-Coamo area of Puerto Rico: Caribbean Geologic Conference, 2nd, Mayagüez, January 1959 [Transactions], p. 83-86. 1961a, The micropaleontology and biostratigraphy of the middle Eocene Jacaguaz group, Puerto Rico: Micropaleontology, v. 7, no. 3, p. 351-358. 1961b, Geology of the Ponce-Coamo area, Puerto Rico [abs.]: Dissertation Abstracts, v. 22, no. 2, p. 541. 1962, The Upper Cretaceous stratigraphy and micropaleontology of the Ponce-Coamo area, south central Puerto Rico: Micropaleontology, v. 8, no. 3, p. 349-368. 1963a, Planktonic Foraminifera from the Juana Díaz formation, Puerto Rico: Micropaleontology v. 9, no. 1, p. 53-60. 1963b, Upper Cretaceous Radiolaria from Puerto Rico: Micropalentology, v. 9, no. 2, p. 197-214.

and significance of metamorphic rocks from the Puerto Rican Trench: Geology, v. 34,

______1963c, Late Cretaceous Radiolaria from Puerto Rico [abs.]: Geological Soceity of America Special Paper 73, p. 215.

______1966, Upper Cretaceous Radiolaria from Puerto Rico: Caribbean Geological Conference, 3rd, Jamaica, April 1962 [Transactions], Jamaica Geological Survey Publication 95, p. 160-166.

Phillips, C.H., 1965, Reconnaissance of part of prospecting permit no. 3 (Matrullas Area), Santa Isabel Project, Puerto Rico: Bear Creek Mining Company Private Report on file at the Department of Natural Resources, Puerto Rico: Salt Lake City, Bear Creek Mining Company.

Phillips, J.D., 1968, Magnetic properties of oceanic basalts from the Mid-Atlantic Ridge, Barracuda Rise, and Puerto Rico Trench [abs.]: Geological Society of America Special Paper 101, p. 163-164.

Pico, Rafael, 1950, The geographic regions of Puerto Rico: University of Puerto Rico Press, Río Piedras, 256 p.

_____1974, The geography of Puerto Rico [1st ed.]: Chicago, Aldine Pub. Co., 439 p.

Pico, Rafael, Figuerado, A.F.C., and de Santiago, Z.B., 1954, Geografía de Puerto Rico; Part 1: Geografía fisica, Editorial Universitaria, Río Piedras, 243 p.

Pico, Rafael, López, Leticia, and Berrios, Hector, 1964, Cartography in Puerto Rico: Privately printed, 20 p.

Pilkey, O.H., Bush, D.M., and Rodriguez, R.W., 1987, Bottom sediment types of the northern insular shelf of Puerto Rico: Punta Penon to Punta Salinas: U.S. Geological Survey Miscellaneous Investigations Map I-1861, scale 1:40,000.

1988, Carbonate terigenous sedimentation on the North Puerto Rico Shelf, in Doyle, L.J., and others, eds., Carbonate-clastic hausitious: Developments in Sedimentology, v. 42, p. 231-250.

Pilkey, O.H., and Lincoln, R.B., 1984, Insular shelf heavy mineral partitioning in northern Puerto Rico: Marine Mining, v. 4, p. 403-414.

Pregill, G.K., 1981, Late Pleistocene Herpetofaunas from Puerto Rico: Miscellaneous Publication 71, Lawrence, The University of Kansas, 72 p.

Prentice, V.L., 1965, Background study of Puerto Rico Briefing Report for use in aerial sensing studies of tropical areas: Special Report 71, Hannover, N.H., U.S. Army, 76 p.

Puerto Rico Bureau of Mines, 1941, Report of the Bureau of Mines on the Mineral Resources of Puerto Rico: An appendix to the annual report of the Bureau of Mines for

the fiscal years 1939-1941, Bureau of Supplies, Printing, and Transportation, San Juan, 40 p.

Puerto Rico Water Resources Authority, 1972, Aguirre power plant complex environmental report, April 1972, WRA E.S. -8 of report: San Juan, PR, The Authority, 198 p.

Puri, H.S., and Collier, Albert, 1967, Role of microorganisms in formation of limestones, in Symposium on the geological history of the Gulf of Mexico, Antillean-Caribbean region: Gulf Coast Association of Geological Societies Transactions, v. 17, p. 355-367. Abstract American Association of Petroleum Geologists Bulletin, v. 51, no. 10, p. 2168-2169.

Pushkar, Paul, 1968, Strontium isotope ratios in volcanic rocks of three island arc areas: Journal of Geophysical Research, v. 73, no. 8, p. 2701-2714.

Quinn, A., 1972, A study of an area of the insular shelf of southwestern Puerto Rico: A buttressed proove and spur formation: Long Island University, Master's thesis.

Quinones-Aponte, Vincente, 1986, Simulation of ground-water flow in the Rio Yauco alluvial valley, Yauco, Puerto Rico: U.S. Geological Survey Water-Resources Investigations Report 85-4179.

Quinones-Aponte, Vincente, and Carrasquillo, R.A., 1986, Use of borehole neutron logs to estimate moisture content in the unsaturated zone of an alluvial aquifer, in Quinones, F., and others, eds., Caribbean Islands Water Resources Congress, 3rd, p. 57-60.

Quinones-Aponte, Vincente, Whitesides, D.V., and Zack, Allen, 1989, Single-well injection and recovery of freshwater from an aquifer containing saline water at Arecibo, Puerto Rico: U.S. Geological Survey Water Resources Investigations 88-4037, San Juan, PR, 19 p.

Quinones, Ferdinand, Colon-Dieppa, Elay, and Juarbe, Max, 1984, Flow duration at streamflow gaging stations in Puerto Rico: U.S. Geological Survey Open-File Report 84-127, San Juan, PR, 93 p.

Quinones, Ferdinand, and Sanchez, A.V., 1985, International Symposium on tropical hydrology and 2nd Caribbean islands water resources congress: Proceedings of a symposium held in San Juan, Puerto Rico, May 5-8, 1985: American Water Resources Association Technical Publication TPS-85-1, Bethesda, MD, 176 p.

Quinones, Ferdinand, and Rivera, Elba, 1985, Publications of the U.S. Geological Survey, Water Resources Division for Puerto Rico and the U.S. Virgin Islands, 1946-1985: U.S. Geological Survey Open-File Report 85-414, 21 p.

Quinones, Ferdinand, and Johnson, K.G., 1987, The floods of May 17-18, 1985 and

October 6-7, 1985 in Puerto Rico: U.S. Geological Survey Open-File Report 87-123, San Juan, PR, 22 p.

Quinones, Ferdinand, Green, B., and Santiago, L., 1989, Sedimentation survey of Lago Loiza, Puerto Rico, July 1985: U.S. Geological Survey Water Resources Investigations Report 87-4019, 17 p.

Quinones, Ferdinand, Melendez, Frank, and Bonnet, Carlos, 1989, Sedimentation survey of Lago Dos Bocas, Puerto Rico, June 1985: U.S. Geological Survey Open-File Report 86-241, Denver, CO, 14 p.

Quinones-Marquez, Ferdinand, 1978, Selected chemical properties of rainfall in the Rio Piedras basin, Puerto Rico: U.S. Geological Survey Open-File Report 78-159, San Juan, PR, 14 p.

_____1980, Limnology of Lago Loiza, Puerto Rico: U.S. Geological Survey Water Resources Investigations 79-97, San Juan, PR, 113 p.

Quinones-Marquez, Ferdinand, Gomez-Gomez, F., and Zack, A.L., 1985, Puerto Rico; groundwater resources, in National water summary 1984; hydrologic events, selected water-quality trends, and groundwater resources, p. 367-372.

Quinones-Marquez, Ferdinand, and Alicea-Ortiz, José, 1985, Agua subterranea en Puerto Rico: U.S. Geological Survey Open-File Report 85-642, San Juan, PR, 6 p.

Quinones-Marquez, Ferdinand, and Pena-Cruz, Gilberto, 1985, Programs and activities of the U.S. Geological Survey, Water Resources Division, Caribbean District, San Juan, Puerto Rico, 1984-1985: U.S. Geological Survey Open-File Resport 85-556, 43 p.

Quinones-Marquez, Ferdinand, and Fuste, L.A., 1978, Limnology of Laguna Tortuguero, Puerto Rico: U.S. Geological Survey Water Resources Investigations 77-122, Ft. Buchanan, PR, 84 p.

Quinones-Marquez, Ferdinand, Vasquez, P., and Pena-Cortes, R., 1978, Chemical, physical, biochemical, and bacteriological characteristics at selected stream sites in Puerto Rico, 1976-77: U.S. Geological Survey Open-File Report 78-445, San Juan, PR.

Rabell Cabrero, Narciso, 1924, Notas sobre algunos escuálidos fósiles de Puerto Rico: Revista Agric. Puerto Rico, v. 12, no. 6, p. 377-384.

Ramírez Torrez, Osvaldo, Caballer de Pérez, Celeste, and Cabrera, Rosaida, 1965, Estudio de los depósitos de laterita y serpentina descompuesta de Mayagüez como fuente de minerales [abs.]: Congreso Latinoamerican Química, 9th, San Juan, PR, p. 37.

Ray, H.C., 1935, Los recursos minerales de Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 12, no. 12, p. 1132.

- 1936a, Los minerales de Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 13, no. 1, p. 1160-1163. 1936b, Los minerales pétreos de Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 13, no. 4, p. 1262-1264. 1936c, Las rocas de Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 13, no. 6, p. 1314-1317. 1936d, Report on the gold ore prospect on the concession of the Colonial Exploration Company: Revista de Obras Públicas de Puerto Rico, año 13, no. 8, p. 1376-1380. 1941a, Minerals of Porto Rico: Rocks and Minerals, v. 16, no. 10, p. 355-359, October 1941. 1941b, Gold deposits of Porto Rico: Rocks and Minerals, v. 16, no. 11, p. 404-405, November 1941. Reid, J.A., Plumley, P.W., Schellekens, J.H., and Larue, D.K., 1988, Paleomagnetic evidence of significant counter-clockwise rotation of Puerto Rico since the Late Oligocene: EOS Transactions A.G.U., 69, p. 1157 Reid, J.A., Plumley, P.W., and Schellekens, J.H., 1991, Paleomagnetic evidence for Late Miocene counterclockwise rotation of north coast carbonate sequence, Puerto Rico: (Paper 91GL00401) Geophysical Research Letters, v. 18, no. 3, p. 565-568. Reid, H.F., and Taber, Stephen, 1919, The Porto Rico earthquakes of October-November 1918: Seismology Society of America Bulletin, v. 9, no. 4, p. 95-127. 1919b, The Porto Rico earthquake of 1918, with descriptions of earlier egrthquakes: U.S. House of Representatives, 66th Congress, Document no. 269, 74 p., with maps. Includes catalog of Porto Rico and Virgin Islands earthquakes for 1772-1918, not given in the article published in the Seismology Society of America Bulletin in 1919 which is otherwise essentially the same information. 1919c, Recent earthquakes of Porto Rico [abs.]: Geological Society of America Bulletin, v. 30, no. 1, p. 83-84.
- Renz, O., and Verspyck, G.W., 1962, The occurrence of gneissic amphibolite in southwest Puerto Rico: Geologie en Mijnbouw, v. 41, p. 315-320.

Publication of Geological Science, v. 36, no. 1, p. 1-145, July 24, 1959.

Reinhart, R.H., 1959, A review of the Sirenia and Desmostylia: University of California

Reynolds, T. E., Koopman, K.F., and Williams, E.E., 1953, A cave faunule from western Puerto Rico, with a discussion of the genus Isolobodon: Breviora, no. 12, 8 p., April 23, 1953.

Reynoso, R., 1961, Preliminary report on Quebrada de la Mina Jayuya Quadrangle, Puerto Rico: Bear Creek Mining Company Private Report on file at the Department of Natural Resources, Puerto Rico: Loja, Bear Creek Mining Company.

_____1965, Geologic description of the Tanama-North Tanama ore deposits: Bear Creek Mining Company Private Report on file at the Department of Natural Resources, Puerto Rico: Loja, Bear Creek Mining Company.

Rickher, J.G., and others, 1970a, Water records of Puerto Rico 1964-1967: U.S. Geological Survey in cooperation with Commonwealth of Puerto Rico, v. 1, 269 p.

_____1970b, Water records of Puerto Rico 1964-1967: U.S. Geological Survey in cooperation with Commonwealth of Puerto Rico, v. 2, 308 p.

Roberts, R.C., and others, 1942, Soil survey of Puerto Rico: U.S. Department of Agriculture, Soil Survey Report, series 1936, no. 8, 503 p.

Robertson, E.C., 1964, Strengths and elastic moduli of serpentinite from Mayagüez, Puerto Rico, in Burk, C.A., ed., A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 118-125.

Robison, T.M., and Anders, R.B., 1972, Electrical analog model study of the alluvial aquifer in the Yabucoa Valley, Puerto Rico: Phase 2, the planning, construction, and use of the model: U.S. Geological Survey, 22 p.

Robson, G.R., 1964, An earthquake catalogue for the eastern Caribbean, 1530-1960: Seismology Society of America Bulletin, v. 54, no. 2, p. 785-832.

Rodriguez, R.W., 1979, Origin, evolution, and morphology of the shoal Escollo de Arenas sand and gravel deposit, Vieques, Puerto Rico, and its potential as a sand resource: University of North Carolina, Raleigh, NC, Master's thesis, 71 p.

_____1984, Submerged sand resources of Puerto Rico, in Clarke, S.H., ed., Highlights in marine research: U.S. Geological Survey, p. 57-63.

Rodriguez, R.W., and Trias, J.L., 1989, Maps showing characteristics of the Escollo de Arenas sand and gravel deposit, Vieques Island, Puerto Rico: U.S. Geological Survey Miscellaneous Field Studies Map MF-2108, scale 1:10000; several maps.

Rodriguez, R.W., Trumbull, J.V.A., and Dillon, W.P., 1977, Marine geologic map of the Isla de Mona area, Puerto Rico: U.S. Geologic Survey Miscellaneous Investigations Map I-1063, scale 1:40,000.

Rodriguez, R.W., Webb, R.M., Bush, D.M., and Scanlon, K.M., (in prep), Marine geologic map of the north insular shelf of Puerto Rico: Rio Bayamon to Rio Grande de Loiza: U.S. Geological Survey Miscellaneous Investigations Map I-____, scale 1:40,000.

_____(in press), Marine geologic map of the north insular shelf of Puerto Rico: Rio Bayamon to Rio Grande de Loiza: U.S. Geological Survey Miscellaneous Investigations Map I-____, scale 1:40,000.

Rogers, C.L., 1977, Geologic map of the Punta Guayanes quadrangle, southeastern Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-998, scale 1:20,000.

1979, Geologic map of the Caguas quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1152, scale 1:20,000.

Rogers, C.L., Cram, C.M., Pease, M.H., and Tischler, M.S., 1979, Geologic map of the Yabucoa and Punta Tuna quadrangles, Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1086, scale 1:20,000.

Rogers, C.L., and others, 1977, Geologic map of the Yabucoa and Punta Tuna quadrangles, Puerto Rico: U.S. Geological Survey Open-File Report Map 77-651.

_____1979, Geologic map of the Yabucoa and Punta Tuna quadrangles, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-1086, scale 1:20,000.

Rogers, J.J.W., and Donnelly, T.W., 1966, Radiometric evidence for the origin of eugeosynclinal materials: Tulane Studies in Geology, v. 4, no. 3, p. 133-138, June 11, 1966.

Roman, A.J., 1986, Role of blanket deposits on the hydrology and water chemistry of the limestone water table aquifer within the north coast limestone of Puerto Rico through interpretation of geochemical data [abs.], in Quinones, F., and others, eds., 3rd Caribbean Islands Water Resources Congress, San Juan, PR, Water Resources Association, p. 33.

Roman-Mas, A.J., 1988, Water required, water used, and potential water scources for rice irrigation, north coast of Puerto Rico: U.S. Geological Survey, Water Resources Investigation Report 86-4334, 35 p.

Roman-Mas, A.J., and Lee, R.W., 1987, Geochemical evolution of waters within the north coast limestone aquifers of Puerto Rico: A conceptualization based on a flow path in the Barceloneta area: U.S. Geological Survey Water Resources Investigations Report 86-4080, 28 p.

Roman-Mas, A.J., and Ramos-Gines, O., 1987a, Compilation of water quality data for the

north coast limestone aquifers, Puerto Rico, 1951 to 1987: U.S. Geological Survey Open-File Report 87-533, San Juan, PR, 133 p.

_____1987b, Elevation of the water-table surface for the alluvial aquifer and hydrologic conditions in the Santa Isabel-Juana Diaz area, Puerto Rico, March 1986: U.S. Geological Survey Water Resources Investigations Report Map 87-4123, scale 1:20,000; two sheets.

Russell, R.J., 1958, Preliminary notes on Caribbean beach rock: Caribbean Beach Studies Technical Report 11, pt. A, 9 p., November 1, 1958. Reprinted in Caribbean Geological Conference, 2nd, Puerto Rico, January 1959 [Transactions], p. 43-49.

1959, Caribbean beach rock observations: Zeit. Geomorphologie, B. 3, H. 3, p. 227-236; Caribbean Beach Studies Technical Report 11, pt. D.

Ruffner, J.A., and Bair, F.E., 1978, Climates of the States: National Oceanic and Atmospheric Administration narrative summaries, tables, and maps for each state, with current tables of normals, 1941-1970, and means and extremes to 1975, overview of state climatologist programs: Detroit, Gale Research Co., v. 2.

Rutten, L.M.R., 1939, The age of the quartzdioritic and granodioritic rocks of the West Indies: Geologie en Mijnbouw, Jg. 1, no. 5, p. 128-133.

Sachs, K.N., Jr., 1959, Puerto Rican upper Oligocene larger Foraminifera: Bulletin of American Paleontology, v. 39, no. 183, p. 399-416, July 31, 1959.

_____1964, Multilocular embryonts in Lepidocyclina (Eulepidina) undosa Cusham from Puerto Rico: Micropaleontology, v. 10, no. 3, p. 323-329.

1966, Variability of certain Tertiary larger Foraminifera: Caribbean Geological Conference, 3rd, Jamaica, April 1962 [Transactions], p. 176-177; Jamaica Geological Survey Publication 95.

Sachs, K.N., Jr., and Gordon, W.A., 1962, Stratigraphic distribution of middle Tertiary larger Foraminifera from southern Puerto Rico: Bulletin of American Paleontology, v. 44, no. 199, p. 5-24.

Santos, H., and Kauffman, E.G., 1989, Regional structural and volcanic events within the Cotui limestone-Sabana Grande contact interval (Lati Comparison) southwest Puerto Rico [abs.]: Abstracts, Caribbean Geological Conference, 12th, p. 149.

Savit, C.H., Knox, W.A., Blue, D.M., and Paitson, L., 1964, Reflection and velocity profiles and the Outer Ridge, Puerto Rico: Journal of Geophysical Research, v. 69, no. 4, p. 701-719.

Scanlon, K.M., 1986, Magnetic and Bathymetric data from R/V FARNELLA cruise FRNL 85-4 in the Puerto Rico and U.S. Virgin Islands exclusive economic zone: U.S.

Geological Survey Open-File Report 86-399, Reston, VA, 2 p.

Scanlon, K.M., Masson, D.G., and Rodriguez, R.W., 1986, Submarine channels on the insular slopes of Puerto Rico and the U.S. Virgin Islands [abs.]: Abstracts - Society of Economic Paleontologists and Mineralogists, Annual Midyear Meeting in SEPM, Annual Midyear Meeting Abstracts, 1986, v. 3, p. 99.

Scanlon, K.M., Masson, D.G., Edgar, N.Y., Parson, L.M., Rodriguez, R.W., Dillon, W.P., Hill, G.W., and Halley, R.B., 1986, GLORIA sidescan sonar surveys in Caribbean, Puerto Rico, U.S. Virgin Islands exclusive zone and Cayman Trough: American Association of Petroleum Geologists Annual Convention SEPM, EMD, DPA, Technical Program and Abstracts, v. 70, no. 5.

Schellekens, J.H., 1982a, A preliminary description of the metallogeny of the central-eastern Volcanic-Plutonic province of Puerto Rico: Symposium de Recursos Naturales, 8th, San Juan, 1981 [Transactions], p. 162-170.

_____1982b, Metallogenic provinces of Puerto Rico [abs.]: 2nd Simposio de Ciencias, Ponce, Puerto Rico, p. 1.

_____1983a, Metallogenesis of Puerto Rico [abs.]: Program and Abstract, Caribbean Geological Conference, 10th, Cartagena, Colombia, p. 63.

_____1987, Metallogenesis of Puerto Rico: Caribbean Geological Conference, 10th, Cartagena, Colombia [Transactions], p. 435-444.

1991, Late Jurassic to Eocene geochemical evolution of volcanic rocks in Puerto Rico: (Paper 91GL00410) Geophysical Research Letters, v. 18, no. 3, p. 553.

_____1991, Tenth Annual Symposium on Caribbean Geology: Tectonics and Mineral Deposits of the Caribbean", EPISODES, vol. 14(2), p.143-144.

1998, Geochemical Evolution and Tectonic History of Puerto Rico, in E. Lidiak, and D.K. Larue, editors: Geochemistry and Tectonics of the Northeastern Carribbean, Geological Society of America Special Paper v. 322.

Schellekens, J.H., Smith, A.L., and Joyce, J., 1983, Geological studies in western Puerto Rico and the Mona Passage--A new look at an old problem [abs.]: Program and Abstracts, Caribbean Geological Conference, 10th, Cartagena, Colombia, p. 62-63.

Schellekens, J.H., Smith, A.L., and Joyce, J., 1987, Geological studies in western Puerto Rico--A new look at an old problem: Caribbean Geological Conference 10th, [Transactions], Cartagena, Colombia, 1983.,p.222-228.

Schellekens, J.H., and Smith, A.L., 1986, Trace element and rare earth element evidence for the origin of the Bermeja complex [abs.]: Program and Abstracts, Caribbean

Geological Conference, 11th, Barbados.

Schellekens, J.H., Joyce, J., and Smith, A.L., 1986, Origin and evolution of the Bermija ophiolite complex, Puerto Rico [abs.]: EOS, v. 67, no. 44, p. 1232.

Schellekens, J.H., Montgomery, H., Joyce, J., and Smith, A.L., 1989a, Petrology and paleontology of the Bermeja Complex, Puerto Rico: Questions about the origin of the basal terranes of the Northern Caribbean: Geological Society of America, Annual Meeting.

_____1989b, Late Jurassic to Late Cretaceous development of island arc crust in southwestern Puerto Rico [abs.]: Abstracts, Caribbean Geological Conference, 12th, St. Croix, Virgin Islands, p. 153.

_____1990, Late Jurassic to Late Cretaceous development of island arc crust in southwestern Puerto Rico, in Larue, D.K., and Draper, G., eds., Caribbean Geological Conference, 12th, St. Croix, 1989 [Transactions], p. 268-281.

Schneidermann, N., Pilkey, O.H., and Saunders, C., 1976, Sedimentation on the Puerto Rico insular shelf: Journal of Sedimentary Petrology, v. 46, p. 167-173.

Schuchert, C., 1935, Historical geology of the Antillean-Caribbean Region: New York, John Wiley & Sons; scale 1:1,200,000.

Seiders, V.M., 1971, Geologic map of the El Yunque quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-658, scale 1:20,000.

_____1971, Cretaceous and lower Tertiary stratigraphy of the Gurabo and El Yunque quadrangles, Puerto Rico: U.S. Geological Survey Bulletin 1294-F, scale 1:80,000.

1971, Geologic map of the Gurabo quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-657.

Seiders, V.M., Briggs, R.P., and Glover, L., III, 1972, Geology of Isla Descheo, Puerto Rico, with notes on the great southern Puerto Rico fault zone and quaternary stillstands of the sea: U.S. Geological Survey Professional Paper 739, Washington, D.C., scale 1:9,500.

Seiglie, G.A., Foraminiferal assemblages as indicators of high organic carbon content in sediments and of polluted waters: American Association of Petroleum Geologists Bulletin, v. 52, no. 11, p. 2231-2241.

Seiglie, G.A., and Bermúdez, P.J., 1969a, Informe preliminar sobre los foramine feros del terciario del surde Puerto Rico, Parte 1: Caribbean Journal of Science, v. 9, p. 67-80.

_____1969b, Note on some foraminifers of the genus Puophan and description of a new genus: Tulane Studies in Geology Pal., v. 7, no. 4, p. 193-203

- Seiglie, G.A., Panella, G., and Smith, A.L., 1979, Siderite spherulites of San Sebastion Formation (Oligocene) northern Puerto Rico: American Association of Petroleum Geologists, v. 63, no. 3, p. 370-375.
- Seiglie, G.A., and Mousssa, M.T., 1984, Late Oligocene-Pliocene transgressive regressive styles of sedimentation in Northwestern Puerto Rico: American Association of Petroleum Geologists, Memoir, v. 36.
- Seiglie, G.A., and Moussa, M.T., and Meyerhoff, H.M., 1980, Oligocene to Pliocene formations of northwestern Pueto Rico [abs.]: Caribbean Geological Conference, 9th, Dominican Republic.
- Semmes, D.R., 1916, Field work in the San Juan district, Porto Rico [abs.]: New York Academy of Science Annals, v. 26, p. 433-434.
- _____1917, Geology of the San Juan district, Porto Rico [abs.]: New York Academy of Science Annals, v. 27, p. 279-280.
- _____1919, The geology of the San Juan district, Porto Rico: New York Academy of Science, Scientific Survey of Porto Rico and the Virgin Islands, v. 1, pt 1, p. 33-110, with map, scale 1:62,500. Excerpted and translated into Spanish and published with title "Geología de distrito de San Juan" in Revista de Obras Públicas de Puerto Rico, año 4, no. 41, p. 1232-1237, illus.; no. 42, p. 1265-1269, illus.; no. 43, p. 1297-1302, illus; no. 44, p. 1327-1331, illus.; no. 45, p. 1354-1359, illus.; no. 46, p. 1385-1391, illus.; no. 47, p. 1417-1422, illus.
- Shepard, C.U., 1882, On two new minerals, monetite and monite, with a notice of pyroclasite: American Journal of Science, no. 3, v. 23, p. 400-0405.
- Shideler, G.L., 1980, Composition of surficial sediments on the insular shelf, southwestern Puerto Rico: U.S. Geological Survey Miscellaneous Field Studies Map MF-1258.
- Shurbet, G.L., and Ewing, Maurice, 1956a, Gravity reconnaissance survey of Puerto Rico: Geological Society of America Bulletin, v. 67, no. 4, p. 511-534.
- Shurbet, G.L., and Worzel, J.L., 1956b, Gravity observations at sea in USS Diablo: B. Géodesisque, no. 42, p. 51-60, December 1, 1956.
- 1947, Gravity anomalies and structure of the West Indies, Pt. 3: Geological Society of America Bulletin, v. 68, no. 2, p. 263-266.
- Silva-Tulla, F., 1986, The October 1985 landslide at Barrio Mameyes, Ponce, Puerto Rico: Washington, D.C., National Academy Press, 14 p.

Sivarajasingham, Sivasupramaniam, 1962, Weathering and soil formation on ultrabasic and basic rocks under humid tropical conditions [abs.]: Dissertation Abstracts, v. 22, no. 8, p. 2813-1814.

Slodowski, T.R., 1956, Geology of the Yauco area, Puerto Rico: Economic Development Administration, Commonwealth of Puerto Rico and Department of Geology, Princeton University, p. 1-130.

_____1958, Geology of the Yauco area, Puerto Rico [abs.]: Dissertation Abstracts, v. 18, no. 1, p. 200-201.

Smith, A.G., Sohl, N.F., and Yochelson, E.L., 1968, New Upper Cretaceous Amphineura (Mollusca): U.S. Geological Survey Professional Paper 593-G, p. G1-G9.

Smith, A.L., Severin, K., and Larue, D.K., 1991, Stratigraphy, geochemistry and mineralogy of Eocene rocks from the Toa Baja drillhole: (Paper 91GL00399) Geophysical Research Letters, v. 18, no. 3, p. 521.

Smith, A.L., Schellekens, J.H., and Muriel-Diaz, A.L., 1998, Batholith emplacement in the northeastern Ceribbean: markers of tectonic change, in: E. Lidiak and D.K. Larue (eds.), Geochemistry and Tectonics of the Northeastern Caribbean, Geological Society of America Special Paper, vol. 322.

Smith, B.M., 1991, Geologic implications of the oxygen isotope profile of the Toa Baja drill hole, Puerto Rico: (Paper 91GL00390) Geophysical Research Letters, v. 18, no. 3, p. 549.

Smith, C.H., 1954, On the occurrence and origin of xonotlite: American Mineralogist, v. 39, p. 531-532.

Smith, R.J., and Guillou, R.B., 1953, Bentonite deposit, Aguada, Barrio Malpaso, Puerto Rico: U.S. Geological Survey Open-File Report 53-173, p. 2.

Smith, R.J., and Hildebrand, F.A., 1953, Occurrence of alunite and pyrophyllite in Puerto Rico [abs.]: Geological Society of America Bulletin, v. 64, no 12, pt. 2, p. 1476; American Mineralogist, v. 39, no. 3-4, p. 344, 1954.

Sohl, N.F., and Kollman, H.A., 1985, Cretaceous Acteanellid Gastropods from the Western Hemisphere: U.S. Geological Survey Professional Paper 1302, 104 p.

Solomiac, H., 1971, Report on the Caguas-Naranjito Concession, Puerto Rico: Parnasse Company Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, Parnesse Company.

_____1972, 1972 Annual Operations Report, Puerto Rico: Parnesse Company Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, PR.

Sommer, S.E., Angino, E.E., and Hood, D.W., 1964, Mineralogy and geochemistry of recent sediments, Vieques Passage, Puerto Rico, Technical Report 64-12T: College Station, TX, Texas A & M University, Dept. of Oceanography and Meteorology, 59 p.

Soriano, Mario, and Gelabert, P.A., 1964, Construction-material resources of the Bayamón quadrangle, Puerto Rico: Puerto Rico Department of Public Works, Geological Investigations Bulletin 3, 29 p., with maps.

Speed, R.C., Westbrook, G.K., and others, 1984, Lesser Antilles are and adjacent terranes: Regional Atlas 10, Woods Hole, MA, Marine Science International, 31 p.

Stanley, W.P., 1961, Activity Report: Caribbean Bentonite Corporation Private Report on file at the Department of Natural Resources, San Juan, PR.

Stout, P.M., 1979, Calcium carbonate sedimentation on the northeast insular shelf of Puerto Rico: Duke University, Durham, NC, Master's thesis.

Sykes, L.R., and Ewing, Maurice, 1965, The seismicity of the Caribbean region: Journal of Geophysical Research, v. 70, no. 20, p. 5065-5074.

Taggart, B.E., and Joyce, J., 1990, Radiometrically dated marine terraces on northwestern Puerto Rico, in Larue, D.K., and Draper, G., eds., Caribbean Geological Conference, 12th, St. Croix, 1989 [Transactions], p. 248.

Talwani, Manik, Sutton, G. H., and Worzel, J.L., 1959, A crustal section across the Puerto Rico Trench: Journal of Geophysical Research, v. 64, no. 10, p. 1545-1555; abstract, no. 8, p. 1126.

Tarr, A.C., and King, K.W., 1976, Puerto Rico seismic program: U.S. Geological Survey Open-File Report 76-49, Reston, VA, 23 p.

Tejada, José, 1880, Ampliación a las noticias de la Isla de la Mona: Sociedad Geográfica Madrid Boletín, t. 9, no. 1 & 2, p. 81-93.

Thomas, C.R., Bergquist, H.R., and Zapp, A.D., 1945, Report on oil possibilities of Puerto Rico: U.S. Geological Survey, Washington, D.C., 48 p.

Thornburn, T.H., and Deere, D.U., 1955, Engineering problems associated with weathered limestone [abs.]: Geological Society of American Bulletin, v. 66, no. 12, pt. 2, p. 1626; Economic Geology, v. 50, no. 7, p. 794-795.

Thorp, E.M., 1931, Description of deep-sea bottom samples from the western North Atlantic and the Caribbean Sea: Scripps Institution of Oceanography Bulletin, Technical Series, v. 3, no. 1, p. 1-31, with map; abstract, National Research Council Reprint and Circular Series no. 98, p. 10-11.

Thorp, James, and Smith, L.R., 1933, Concerning the origin of the white quartz sands of northern Puerto Rico: Puerto Rico Department of Agriculture Journal, v. 17, no. 2, p. 157-170.

Thorp, James, 1934, The asymmetry of the "Pepino" hills of Puerto Rico in relation to the trade winds: Journal of Geology, v. 42, no. 5, p. 537-545.

Thrailkill, J.V., 1964, Preliminary geologic report, Río Camuy area, in Discovery at Río Camuy, a report of the Río Camuy Expedition to Puerto Rico, February 8-16, 1964, p. 8-23.

_____1965, Karst and cave development in the Río Camuy area, Puerto Rico [abs.]: International Congress of Speleology, 4th, Yougoslavia 1965, Ljubljana, Summary of Lectures, p. 60.

_____1967, Geology of the Río Camuy cave area, Puerto Rico: National Speleology Society Bulletin, v. 29, no. 2, p. 35-37.

Tobisch, O.T., 1968a, Gneissic amphibolite at Las Palmas, Puerto Rico, and its significance in the early history of the Greater Antilles island arc: Geological Society of America Bulletin, v. 79, no. 5, p. 557-574.

_____1968b, Structural and metamorphic studies in gneissic amphibolite from part of the basal complex of Puerto Rico [abs.]: Geological Society of America Special Paper 101, p. 221-222.

Tobisch, O.T., and and Turner, M.D., 1971, Geologic map of the San Sebastian quadrangle, Puerto Rico: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-661, scale 1:20,000.

Todd, Ruth, and Low, Doris, 1964, Cenomanian (Cretaceous) Foraminifera from the Puerto Rico Trench: Deep-Sea Research, v. 11, no. 3, p. 395-414.

1976, Smaller foraminifera from deep wells on Puerto Rico and St. Croix: U.S. Geological Survey Professional Paper 863, Washington, D.C., 32 p.

Tomblin, J.M., and Robson, G.R., 1977, A catalog of felt earthquakes for Jamaica, with references to other islands of the Greater Antilles, 1564-1971: Special publication 2, Kingston, Jamaica, Jamaica Mines & Geology, 243 p.

Toro, I., and Brown, J., 1974, Geoquimica del Tramo-Cayey-Salinas de la Autopista San Juan a Ponce: [Department of Natural Resources Private Report ed.].

Torres-Gonzalez, A., 1981, Hydrology of the Río Camuy caves system, Puerto Rico [abs.]: Proceedings of International Congress of Speleology, no. 8, p. 475-479.

Torres-Gonzalez, A., 1982, Geohydrologic descriptions of selected solid-waste disposal sites in Puerto Rico.

_____1985a, Use of surface-geophysical techniques for ground-water exploration in the Canovanas-Rio Grande area, Puerto Rico: U.S. Geological Survey Water Resources Investigations Report 3-4266, Reston, VA, 29 p.

_____1985b, Simulation of groundwater-flow in the water table aquifer near Barceloneta, Puerto Rico: U.S. Geological Survey Water Resources Investigations Report 84-4113, 39 p.

Torres-Gonzales, A., and Quinones-Marquez, F., 1983, Carbon tetrachloride spill in the shallow limestone aquifer, Barceloneta, Puerto Rico [abs.]: Ground Water, v. 21, no. 4, August 1983, p. 519.

Torres-Gonzalez, S., 1989, Reconnaissance of the ground-water resources of Vieques Island, Puerto Rico: U.S. Geological Survey Water Resources Investigations 86-4100, Denver, CO, 37 p.

Torres-Sierra, H., and Aviles, A., 1985, Estimated water use in Puerto Rico, 1980-1982: U.S. Geological Survey Open-File Report 85-0557, 77p.

_____1986, Estimated water use in Puerto Rico, 1980-1982: U.S. Geological Survey Open-File Report 85-557, San Juan, PR, 77 p.

Trias, J.L., in press, Marine geologic map of the Puerto Rico insular shelf, Guanica to Ponce area: U.S. Geological Survey Miscellaneous Investigation Map I-___, scale 1:40,000.

Tribble, J.S., 1991, Clay mineral and zeolite diagenesis in the Toa Baja Well, Puerto Rico: (Paper 91GL00403) Geophysical Research Letters, v. 18, no. 3, p. 529.

Troester, J.W., 1988, Geological Survey ground-water studies in Puerto Rico: U.S. Geological Survey Open-File Report 88-0162, 2 p.

Trop, E.H., 1968, Mining conditions are ready: The San Juan Star, v. 9, p. 1 & 16.

Trumbull, J., 1977, The utility of SKYLAB photo-interpreted earth resources data in studies of marine geology and coastal processes in Puerto Rico and the Virgin Islands: U.S. Geological Survey Open-File Report 78-579, San Juan, PR, 2.

Trumbull, J., and Trias, J.L., 1982, Maps showing characteristics of the Cabo Rojo West offshore sand deposit, southwestern Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Map 1393, scale 1:20,000; prepared in cooperation with the Commonwealth of Puerto Rico, Department of Natural Resources.

Trumbull, J.V.A., 1981, Oceanographic data off Puerto Rico and the Virgin Islands: Publication 360 ed.: Berkley, Lawrence Berkley Laboratory.

Turekian, K.K., and Wedepohl, K.H., 1960, Distribution of the elements in some major units of the earth's crust: Geological Society of America Bulletin, v. 72, no. 2, p. 175-192.

Turner, M.D., 1955a, Mineralogy and Geology Section: La Rueda, v. 2, no. 2, p. 24-26, February 1955; El Crisol (Bimestrario del Colegio de Químicos de Puerto Rico), v. 9, no. 1, p. 11-14, January-February 1955.

1955b Puerto Rico Division of Mineralogy and Geology: State Geologists Journal, v. 7, no. 2, p. 17-19, October 1955.

_____1956, Some geologic aspects of the beaches and beach erosion in Puerto Rico: Shore and Beach, v. 24, no. 2, p. 4-8.

_____1956, Geology of the San Sebastián area, Puerto Rico [abs.]: International Geological Congress, 20th, Mexico, Resúmenes de los Trabajos Presentados, p. 301-302; Caribbean Geological Conference, 1st, Antigua, December, 1955 [Report], p. 25, 1958.

_____1960, Geology and the development of the mineral industry in Puerto Rico [abs.]: Caribbean Geological Conference, 2nd, Puerto Rico, January 1959 [Transactions], p. 81.

_____1972, Tectonic development of Puerto Rico and adjacent areas: Caribbean Geological Conference, 6th, Margarita, Venezuela [Transactions], p. 300.

Ueng, C.W.L., and Larue, D.K., 1988, North Coast Tertiary Basin, Puerto Rico: Studies of source rock potential and maturation: Submitted to the Puerto Rican Electric Power Authority, October 1, 1988.

U.S. Army, Chief of Engineers, 1937, Letter from Chief of Engineers transmitting report of the Board of Engineers for Rivers and Harbors on review of reports heretofore submitted on Arecibo Harbor, Puerto Rico: U.S. Congress, 75th, 1st session, House Document No. 43, 28 p., with map.

_____1962, San Juan, Puerto Rico, beach erosion control study: U.S. Congress, 87th, 2d session, House Document No. 575, 90 p.

U.S. Bureau of Mines, 1936, The mineral resources of Puerto Rico: U.S. Bureau of Mines private report on file at the Department of Natural Resources, Puerto Rico: Washington D.C., U.S. Bureau of Mines.

_____1941, Report on the Mineral resources of Puerto Rico: An appendix to the Annual Report of the Bureau of Mines for the Fiscal Years 1939-1941.

_____1967, Methods of analyzing and testing coal and coke: U.S. Bureau of Mines Bulletin 638, p. 85.

U.S. Minerals Management Service, 1982, Geology and mineral potential of the Caribbean National Forest: Minerals Management Service, p. 1-8.

Van Fossen, M.C., Channell, J.E.T., and Schellekens, J.H., 1989, Paleomagnetic evidence for Tertiary anticlockwise rotation in Southwestern Puerto Rico: Geophysical Research Letters, vol. 16(8), p.819-822.

Van Voorhis, G.D., and Davis, T.S., 1964, Magnetic anomalies north of Puerto Ricotrend removal with orthogonal polynomials: Journal of Geophysical Research, v. 69, p. 5363-5371.

van den Bold, W.A., 1965, Middle Tertiary Ostracoda from northwestern Puerto Rico: Micropaleontology, v. 11, no. 4, p. 381-414.

_____1966, Ostracoda from the Antigua Formation (Oligocene, Lesser Antilles): Journal of Paleontology, v. 40, no. 5, p. 1233-1236.

Van Fossen, M.C., Channel, J.E.T., and Schellekens, J.H., 1985, Paleomagnetism of Late Cretaceous and Eocene rocks from southwest Puerto Rico: Geological Society of America Progressive Abstracts, Orlando, Florida.

Van Fossen, M.C., Channel, J.E.T., and Schellekens, J.H., 1989, Paleomagnetic evidence for Tertiary anticlockwise rotation in Southwestern puerto Rico: Geophysical Research Letters, vol. 16(8), p. 819-822.

van Overbeek, J., and Crist, R.E., 1946, The role of a tropical green alga in beach sand formation: American Journal of Botany, v. 34, no. 6, p. 299-300; abstract, v. 33, no. 3, p. 225, 1946.

Vaquero, M.L., 1965, Reconociemiento geologico, area Yauco - Penuelas, Concession IV: Bear Creek Mining Company Private Report on file at the Department of Natural Resources, Puerto Rico: Salt Lake City, Bear Creek Mining Company.

Vázquez, Leovigildo, 1955, Preliminary report on silica sands of Puerto Rico: Puerto Rico Division of Mineralogy and Geology, unnumbered, 16 p.

1958a, Preliminary report on Silica Sand of Puerto Rico: Department of Natural
Resources Private Report on file at the Department of Natural Resources, Puerto Rico:
San Juan, Department of Natural Resources.

_____1958b, Silica sands of Puerto Rico [abs.]: Caribbean Geological Conference, 1st, Antigua, December 1955 [Report], p. 42.

1960a, Geology and ore deposits of the Keystone iron mine near Juncos, Puerto Rico: Puerto Rico Economic Development Administration, Department of Industrial Research, Bulletin 7, 29 p., illustrations included with geologic map, 1960. Version almost identical but with less quantitative data in Caribbean Geological Conference, 2nd, Puerto Rico, January 1959 [Transactions], p. 143-146.
1960b, Geology and ore deposits of the Keystone iron mine near Juncos, Puerto Rico: Caribbean Geological Conference, 2nd, Mayagüez, 1959 [Transactions], p. 143-146.
1964, The Barceloneta and Mercedita Black Beach Sand Deposits: Economic Development Administration Industrial Laboratory Bulletin 10 on file at the Department of Natural Resources, Puerto Rico: San Juan, Fomento, v. 10.
1967, The Barceloneta and Mercedita black beach sand deposits: Puerto Rico Economic Development Administration, Mineralogy and Geology Section, Bulletin 10.
Vazquez, Leovigildo, Méndez, Oscar, and Padró, Rafael, 1957, Preliminary report on calcitic dolomite of Northern Puerto Rico: Puerto Rico Economic Development Administration, Department of Industrial Research, Bulletin 5, 6 p.
Vazquez, L., and Owens, J.P., 1958, Geology and ore deposits of the Keystone iron mine near Juncos, Puerto Rico [abs.]: Commonwealth of Puerto Rico, Economic Development Administration, Department of Industrial Research, Mineralogy and Geology Section, Bulletin 3.
Vilella, M.O., 1950, Minerals de Puerto Rico: Estado Libre Asociado de Puerto Rico, department de Obras Publicas, San Juan, Puerto Rico Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, Department of State.
Volckmann, R.P., 1977a, Geologic map of the San German quadrangle, Puerto Rico: U.S Geological Survey Open-File Report 77-182.
1977b, Geologic map of the Parguera quadrangle, Puerto Rico: U.S. Geological Survey Open-File Report 77-183.
1984a, Geologic map of the Cabo Rojo and Parguera quadrangles, southwest Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1557, scale 1:20,000.
1984b, Geologic map of the Puerto Real quadrangle, southwest Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1559, scale 1:20,000.
1984c, Geologic map of the San German quadrangle, southwest Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1558.

1984d, Upper Cretaceous stratigraphy of southwest Puerto Rico: A revision, in Stratigraphic notes, 1983: U.S. Geological Survey Contributions to Stratigraphy Bulletin 1537-A, Alexandria, VA, p. 83. Wadsworth, F.H., 1951, Forest management in the Luquillo Mountains: Caribbean Forester, v. 12, no. 3, p. 93-114, July 1951; Spanish version, Ordenación forestal en las Montañas de Luquillo, p. 115-132. Geology, soil and water on p. 94-100, 116-121; minerals on p. 110, 129-130. 1954, Nuestra isla del tesoro (Isla de Mona): Puerto Rico Dept. Instrucción Pública, ser.3, no. 24, 59 p. Walker, J.W., Hulse, W. H., and Eckart, D.W., 1973, Observations of the electrical conductivity of tropical soils of western Puerto Rico: Geological Society of America Bulletin, v. 84, p. 1743-1752. 1974, Observations of the electrical conductivity of tropical soils of western Puerto Rico: Reply: Geological Society of America Bulletin, v. 85, p. 836. Ward, P.E., and Truxes, L.S., 1964, Water wells in Puerto Rico: Puerto Rico Water Resources Authority, Water Resources Bulletin 3, 249 p. Weaver, J.D., 1958, Utuado pluton, Puerto Rico: Geological Society of America Bulletin, v. 69, no. 9, p. 1125-1141, with map, scale 1:90,000. 1959, Status of geological research in the Caribbean: University of Puerto Rico, Institute of Caribbean Studies, no. 1, 19 p., September 1959; no. 2, 13 p., March 1960; no. 3, 11 p., September 1960; no. 4, 17 p., March 1961. 1960, Note on higher-level erosion surfaces of Puerto Rico: Caribbean Geological Conference, 2nd, Puerto Rico, January 1959 [Transactions], p. 96-98. 1961a, Institute of Caribbean Studies field excursion to Isla Mona (5-7 November, 1960): Caribbean Journal of Science, v. 1, no. 1, p. 30-32. 1961b, Erosion surfaces in the Caribbean and their significance: Nature, v. 190, no. 4782, p. 1186-1187. 1962, The nature of the 'Nipe Clay' on Las Mesas, western Puerto Rico: Zeitschinft für Geomorphologie, v. 6, no. 2, p. 218-232. 1963, Status of geological research in the Caribbean: University of Puerto Rico, Institute of Caribbean Science, no. 8, 42 p., March 1963; no. 9, 28 p., September 1963; no. 10, 33 p., March 1964; suppl. 11 p., September 1964; no. 11, 27 p., September 1965; no. 12, 19 p., September 1966; no. 13, 26 p., December 1967.

______1964, Guidebook for field trip in Puerto Rico, 22-24 November 1964: University of Puerto Rico, Mayagüez, 40 p.

______1966a, Higher level erosion surfaces in the Caribbean: Caribbean Geological Conference, 3rd, Jamaica, April 1962 [Transactions], p. 10-12; Jamaica Geological Survey Publication 95.

______1966, Some remarks on the origin of the "Nipe Clay" in Puerto Rico: Caribbean Geological Conference, 3rd, Jamaica, April 1962 [Transactions], p. 70; Jamaica Geological Survey Publication 95.

______1968, Terraces in western Puerto Rico: Caribbean Geological Conference, 4th, Trinidad, 1965 [Transactions], p. 243-245.

Weaver, J.N. editor/compiler), 1992, Mineral Resource Assessment of Puerto Rico, Field

Weaver, J.N. editor/compiler), 1992, Mineral Resource Assessment of Puerto Rico, Field trip leaders: A. Alonzo, J.H. Schellekens, G.E. McKelvey, D.P. Cox: U.S. Geological Survey Open-File Report 92-567, 43p.

Wegrzyn, M., Perez, J.A., and Andrews, A.S., 1983, Rainstorm related terrain failures in Puerto Rico: Final technical report to U.S. Department of the Interior: Mayagüez, PR, Research Center, College of Engineering, University of Puerto Rico, 142 p.

1984, Rainstorm related terrain failures in Puerto Rico: Final technical report: Mayagüez, PR, Water Resources Research Institute, School of Engineering, University of Puerto Rico, 126 p.

Weiland, T.J., 1988, Petrology of volcanic rocks in Lower Cretaceous formations of Northeastern Puerto Rico: University of North Carolina at Chapel Hill, Ph.d thesis.

Welsh, J.E., 1965, Tanama--Helech Mining District, Puerto Rico: Bear Creek Mining Company, Private Report on file at the Department of Natural Resources, Puerto Rico: Salt Lake City, Bear Creek Mining Company.

Westercamp, D., and Tomblin, J.F., 1980, Le volcanisme recent et les eruptions historique dans la partie centrale de l'arc insulaire des Petites Antilles, in Guide-book/Congres geologique international: Guide book 26e CG-G 28 of the 26e Congres geologique: Paris, 26e Congres geologique international, p. 293-321; excursion 119 A.

Westercamp, D., and others, 1985, Geologie de l'archipel des Grenadines, Petites Antilles merdionales: Documents de B.R.G.M 92, Orleans, France, Service Geologique National, B.R.G.M., 198 p.

Wetmore, Alexander, 1919, Description of a whippoorwill from Porto Rico: Biology Society of Washington Proceedings, v. 32, p. 235-237.

1920, Five new species of birds from cave deposits in Porto Rico: Biology Society of Washington Proceedings, v. 33, p. 77-82, December 30, 1920. 1922. Bird remains from the caves of Porto Rico: American Museum of Natural History Bulletin, v. 46, p. 297-333. 1923, An additional record for the extinct Porto Rican quail dove: The Auk, v. 40, p. 324. 1937, Ancient records of birds from the island of St. Croix, with observations on extinct and living birds of Puerto Rico: University of Puerto Rico, Journal of Agriculture, v. 21, no. 1, p. 5-16. 1938, Bird remains from the West Indies: The Auk, v. 55, p. 51-55. Weyl, Richard, 1965, Die paläogeographische Entwicklung des mittelamerikanischwestindischen Raumes: Geol. Rundschau, v. 54, no. 2, p. 1213-1240. Translated into English by Max A. Furrer with title "The paleogeographic development of the Central American-West Indian region" and published in Boletín Informativo (Asoc. Venezolana de Geología, Minería y Petróleo) v. 9, no. 4, p. 99-120. 1966, Geologie der Antillen: Beiträge zur Regionalen Geologie der Erde, Bd. 4, 410 p., with maps. Chapter 5, p. 143-171, Puerto Rico and adjacent islands of Viegues, Culebra and Mona. White, D.M., Edwards, L.D., and DuBose, D.A., 1983, Trace Elements in Texas lignites: Texas Energy and Natural Resources Advisory Council, Energy Development Fund, Project no. 80-L-7-10C, Report TENARAC/EDF-094, 45 p. Withington, C.F., and Jaster, M.C., 1960, Selected annotated bibliography of gypsum and anhydrite in the United States and Puerto Rico: U.S. Geological Survey Bulletin 1105. 126 p. William, R.S., Jr., 1965, Geomorphology of a portion of the northern coastal plain of Puerto Rico: University Park, PA, Pennsylvania State University, unpublished Ph.D. dissertation, 191 p. Williams, E.E., and Koopman, K.F., 1951, A new fossil rodent from Puerto Rico: American Museum Novitates, no. 1515, 9 p., June 4, 1951. Williams, R.S., Jr., 1966, Geomorphology of a portion of the northern coastal plain of Puerto Rico [abs.]: Dissertation Abstracts, v. 26, no. 8, p. 4581-4582. 1968, Geomorphology of Río de la Plata area, Puerto Rico [abs.]: Geological Society of America Special Paper 115, p. 302.

Williams, S.J., 1986, Sand and gravel deposits within the United States Exclusive Economic Zone: Resource assessment and uses: 1986 Offshore Technology Conference, p. 377-384.

Wilson, H.M., 1899, Water resources of Puerto Rico: U.S. Geological Survey, Water Supply Paper 32, 48 p., with maps.

_____1900, Porto Rico; its topography and aspects: American Geological Society Bulletin 32, p. 220-238.

Wilson, J.C., 1966, Magnetite, sulfides, and aeromagnetic anomalies in the Tanama-Helecho area, Puerto Rico: Salt Lake City, KCC; Private report on file at the Department of Natural Resources, San Juan, PR.

1966, Chemical and mineralogical zoing at Helecho, Puerto Rico: Kennecott Exploration Services, Geological Research Division Private Report on file at the Department of Natural Resources, Puerto Rico: Salt Lake City, Kennecott.

Wilson, J.C., and Reynoso, R., 1967, Erosion surfaces and enrichment in the Tanama-Helecho Area, Puerto Rico: Kenecott Exploration Services, Geologic Research Division Private Report on file at the Department of Natural Resources, Puerto Rico: Salt Lake City, Kennecott.

Wood, E.D., 1975, Winds for Puerto Rico with summaries: Ponce 1971-1974, Puerto Rico Nuclear Center Report PRNC 192: Mayagüez, University of Puerto Rico for U.S. Energy Research and Development Administration; No. E-(40-1)-1833.

Wood, G.H., Jr., Kehn, T.M., Carter, M.D., and Culbertson, W.C., 1983, Coal resources classification system of the U.S. Geological Survey: U.S. Geological Survey Circular 891, 65 p.

Woodard, T.H., and Heidel, S.G., 1964, Inventory of published and unpublished chemical analyses of surface waters in the continental United States and Puerto Rico, 1961: U.S. Geological Survey Water-Supply Paper 1786, Washington, D.C., 490 p.

Woodring, W.P., 1923, Tertiary mollusks of the genus Orthaulax from the Republic of Haiti, Porto Rico and Cuba: U.S. Natural Museum Proceedings, v. 64, art. 1, 12 p.

Woods, C.A., 1980, Collecting fossil mammals in the Greater Antilles: An immense journey: The Plaster jacket, v. 34, Gainesville, FL, Florida Paleontological Society, 13 p.

World Bank, 1984, Fuel peat in developing countries: Bord na Mona-Irish Peat Development Authority, Dublin, Ireland, 136 p.

Worzel, J.L., and Ewing, Maurice, 1954, Gravity anomalies and structure of the west

- Indies, Pt. 2: Geological Society of America Bulletin, v. 65, no. 2, p. 195-199.
- 1954, Gravity investigations around Puerto Rico [abs.]: B. Géodesique, no. 31, p. 82-83, March 1, 1954.
- Wright, C.W., 1934, A brief report of gold placer and manganese deposits for the Committee on Mineral Resources of Puerto Rico: Revista Obras Publicas Puerto Rico, v. Ano 11, p. 741-744.
- Wright, G.A., 1934, A brief report of gold placer and manganese deposits for the Committee on Mineral Resources of Puerto Rico: Revista de Obras Públicas de Puerto Rico, año 11, no. 10, p. 741-744.
- Wuenschel, P.C., and Hamilton, G.R., 1964, Interpretation of gravity anomalies on the west coast of South America and in the Caribbean and the Puerto Rico trench: Two types of deep ocean trenches: Rijkscommissie voor Geodesie, v. 2, p. 28.
- Young, K., 1971, Ammonites from Puerto Rico and St. Thomas [abs.]: Caribbean Geological Conference, 6th, Margarita, Venezuela, Program and Abstracts, p. 17-18.
- Young, R.N., 1953, A karst topography of Puerto Rico [abs.]: Indiana Academy of Science Proceedings, v. 62, p. 225.
- Young, R.S., 1981, Final Report, Exclusive Exploration Permit M-1-80: North American Exploration Private Report on file at the Department of Natural Resources, Puerto Rico: San Juan, North American Exploration.
- Zablocki, C.J., 1964, Electrical properties of serpentinite from Mayaquez, Puerto Rico, in Burk, C.A., ed., A study of serpentinite: National Academy of Science, National Research Council Publication 1188, p. 107-117.
- Zack, A., 1986, Effects of sand removal on the shallow aquifer in the vicinity of the Camuy Mangrove Forest, Puerto Rico, in Quinones, F., and others, eds., Third Caribbean Island Water Resources Congress, San Juan, Puerto Rico Water Resource Association, p. 41-48.
- Zack, A.L., 1988, A well system to recover usable water from a freshwater-saltwater aquifer in Puerto Rico: Water Supply Papers, U.S. Geological Survey, W2328, 15 p.
- Zack, A.L., Rodriques-Alonso, T., and Roman-Mas, A., 1987, Puerto Rico ground-water quality: U.S. geological Survey Open-File Report 87-0749, Reston, VA, 8 p.
- Zapp, A.D., Bergquist, H.R., and Thomas, C.R., 1948, Tertiary geology of the coastal plains of Puerto Rico: U.S. Geological Survey Oil and Gas Preliminary Map 85, scale 1:62,500. Summary in Petróleo Interamericano, v. 7, no. 1, p. 52-54, January 1949.