Katharine Mather

<u>Publications</u>

- 1942. <u>Handbook for Concrete and Cement</u> (with C. E. Wuerpel and others), Central Concrete Laboratory, U.S. Army Engineer Division, North Atlantic, CE, Mount Vernon, N. Y., 370 pp.
- 1947. "Relation of Absorption and Sulfate Test Results on Concrete Sands," American Society for Testing and Materials Bulletin, No. 144, pp 26-31.
- 1949. <u>Handbook for Concrete and Cement</u> (Revised Edition) (with B. Mather and others), U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.
- 1949a. Disintegration of Concrete from Tuscaloosa Lock and Dam, U.S. Army Engineer Waterways Experiment Station, CE, Unnumbered TM, Vicksburg, Miss.
- 1950. "Leaching of Lime from Concrete," <u>Proceedings, American Concrete Institute</u> (LR 46-48), Vol 46, pp 473-475.
- 1950a. "Method of Petrographic Examination of Aggregates for Concrete" (with B. Mather), Proceedings, American Society for Testing and Materials, Vol 50, pp 1288-1313. Also in American Society for Testing and Materials 1950 Preprint, No. 76, 25 pp.
- 1951. "Petrographic Report," Appendix A of <u>Investigation of Heaving of Floor Slabs of Buildings, Fort Gulick, Panama Canal Zone</u>, WES Technical Memorandum No. 3-322, Vicksburg, Miss., 5 pages, 1 photograph.
- 1951a. Discussion of "Linear traverse technique for measurement of air in hardened concrete," by L. S. Brown and C. U. Pierson, <u>Proceedings, American Concrete Institute</u>, Vol 47, pp 124-2 to 124-5.
- 1952. <u>Results of Special Investigation of Concrete Cores from Five Dams</u> (with E. J. Callan et al), WES, Technical Memorandum, Vicksburg, Miss.
- 1952a. <u>Effect of Vibration on Air Content of Mass Concrete</u> (with E. A. Spuehler and T. B. Kennedy), WES Technical Memorandum No. 6-345, Vicksburg,
- 1952b. <u>Investigation of Ceramic Aggregate for Concrete</u> (with C. H. Willetts and T. B. Kennedy), WES Miscellaneous Paper No. 6-8, Vicksburg, Miss., 24 pp, 3 photographs.
- 1952c. "Measuring air in hardened concrete," <u>Proceedings, American Concrete Institute</u> (LR 49-5), Vol 49, pp 61-64.
- 1952d. "Applications of light microscopy in concrete research," <u>Symposium on Light Microscopy</u>, American Society for Testing and Materials Special Technical Publication No. 143, pp 51-70.
- 1953. <u>Laboratory Investigation of Certain Limestone Aggregates for Concrete</u> (with B. Mather, E. J. Callan, and N. B. Dodge), WES TM No. 6-371, 91 pp.

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1953a. "Correlation between laboratory accelerated freezing and thawing and weathering at Treat Island, Maine" (with Thomas B. Kennedy), <u>Proceedings</u>, <u>American Concrete Institute</u>, Title 50-9, Vol 50, pp 141-172. Also WES Bulletin, 1954. Authors' closure to discussion, ibid (December 1954), pp 172-15 to 172-20.

1954. "The petrography of aggregates for mass concrete" (with J. W. Silverman), Aggregates for Mass Concrete, WES Bulletin No. 39, pp 1-17.

1954a. "Crushed limestone aggregate for concrete," Mining Engineering, Vol 5, No. 10 (October 1953), pp 1022-1028 (AIME TP 3616H). Also in Transactions, AIME, Vol 196.

1954b. "Petrography of Mississippi gravels and sands," <u>Journal, Mississippi Academy of Science</u>, Vol V, p 146.

1955. "Potential applications of radioactivity to work of the CRD," <u>Potential Use of RadioIsotopes by Waterways Experiment Station</u>, WES MP No. 2-115, 11 pp.

1955a. Discussion of "Terminology of Limestone and Related Rocks: an interim report," by John Rodgers, <u>Journal of Sedimentary Petrology</u>, Vol 25, No. 4, pp 304-305, figure 1.

1955b. "Petrographic examination of hardened concrete," in <u>Significance of Properties and Tests of Concrete and Concrete Aggregates</u>, American Society for Testing and Materials Special Technical Publication No. 169, pp 68-80.

1956. <u>Cement-Aggregate Reaction: What is the Problem?</u>, WES MP No. 6-169, 7 pp (presented at AIME Annual Meeting, New York, N.Y., February 1956).

1956a. <u>Tests of Concrete Cores from Devil's Kitchen Dam, Illinois</u>, WES MP No. 6-165, 9 pp, 1 table, 6 plates.

1956b. <u>Study of Concrete Specimens Damaged by Electrolysis</u>, WES MP No. 6-188, 26 pp.

1956c. Discussion of "Studies relating to the testing of fly ash for use in concrete," by R. H. Brink and W. J. Halstead, <u>Proceedings</u>, <u>American Society for Testing and Materials</u>, Vol 56, p 1211.

1957. <u>Composition and Constitution of Five Samples of Glacial Till from the St. Lawrence Seaway</u>, WES MP, 29 pp, 9 tables, 1 plate.

1957a. <u>Comparison of Methods for Estimation of Tricalcium Aluminate Content of Portland Cement in Connection with the Evaluation of Potential Sulfate Resistance</u>, WES MP No. 6-201, 13 pp.

1957b. <u>Investigation of Deterioration of Concrete, Davis Air Force Base, Muskogee, Oklahoma</u>, WES MP No. 6-236, 21 pp, 3 tables, 3 photographs.

1958. <u>Petrographic Data on Seven Rock Samples Used in Pore-Structure Research</u>, WES MP No. 6-254, 19 pp, 1 table, 12 photographs, 1 figure.

1958a. <u>Investigation of Deterioration of Concrete, Davis Air Force Base, Muskogee, Oklahoma; Appendix A: Cement, Sulfate, and Alkali Content and Additional Petrographic Examination of Samples of Concrete Cores, WES MP No. 6-236, 8 pp, 1 table.</u>

1958b. "Cement-aggregate reaction: What is the problem?" Engineering Geology Case Histories, Vol 2, Geol. Soc. Amer. (New York, N.Y.), pp 17-19.

1958c. Composition of Samples of Glacial Till from Otter Brook Dam, New Hampshire, and North Hartland Dam Site, Vermont, WES MP No. 6-262, 18 pp, 4 tables.

1958d. The Butterflies of Mississippi (with B. Mather), Tulane Studies in Zoology, Vol 6, No. 2, New Orleans, La., pp 63-109, 6 figures.

1958e. <u>Investigation of the Potential Sulfate Resistance of Ten Portland Gements</u> (with A. D. Buck), WES MP No. 6-290, 27 pp, 9 tables.

1958f. Application of X-Ray Diffraction in Concrete Research (mimeographed), U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (Distributed at 1958 Corps of Engineers Division Laboratories Conference).

1958g. Discussion of "Petrographic examination of concrete aggregate to determine potential alkali reactivity," by R. C. Mielenz. In <u>The Alkali-Aggregate Reaction in Concrete</u>, Highway Research Board Research Report 18-C (NAS-NRC 616), pp 35-37.

1959. Investigation of Causes and Determination of Methods to Prevent Formation of Incrustations on Perforated Cast-Iron Collector Pipe, New Orleans District (with L. Pepper), WES MP 6-318, 12 pp.

1959a. <u>Tests of Dust and Concrete Cores from Runway, Dow Air Force Base, Bangor, Maine</u>, WES MP 6-326, 11 pp, 4 tables, 6 figures.

1959b. <u>Investigation of Reinforcing Bars from Splitter Wall, Texarkana Dam</u> (with W. O. Tynes), WES MP 6-351, 7 pp, 2 tables, 2 figures.

1959c. "The Butterflies of Mississippi, Supplement No. 1" (with B. Mather), <u>Journal, Lepidopterists' Society</u>, Vol 13, No. 2, pp 71-72.

1960. <u>Testing of Deep Hard Rock Cores - Chicago District</u> (with Bryant Mather) (mimeographed), U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss., 10 pp, 3 tables, 1 figure.

1960a. Review of <u>Alkali-Aggregate Reaction</u>, Highway Research Board Bulletin 171 (NAS-NRC 531), <u>Ceramic Abstracts</u>, <u>Journal</u>, <u>American Ceramic Scciety</u>, Vol 43, No. 4, p 82.

1960b. Review of <u>Chemical Reactions of Aggregates in Concrete</u>. <u>Identification of Deleteriously Reactive Aggregates and Recommended Practices for Their Use in Concrete</u>, Highway Research Board Special Report 31 (NAS-NRC 549), idem.

1960c. Review of <u>The Alkali-Aggregate Reaction in Concrete</u>, Highway Research Board Research Report 18-C (NAS-NRC 616), idem.

1960d. "Cooperative examination of cores from the McPherson Test Road" (with R. C. Mielenz), <u>Proceedings, Highway Research Board</u>, (NAS-NRC 773), Vol 39, pp 205-216.

1960e. Discussion of "An X-ray diffraction investigation of hydrated portland cement pastes," by D. L. Kantro and others, <u>Proceedings, American Society for Testing and Materials</u>, Vol 60, p 1035.

1961. Editor, <u>Journal, Mississippi Academy of Science</u>, Vol VI, 1956-1960, 455 pp. Also author of "Preface," p iii.

1961a. "Application of modern laboratory techniques to engineering petrography in concrete research" (with B. Mather), <u>Journal, Mississippi Academy of Science</u>, Vol VI, 1954-1960, pp 96-100.

1961b. "Mica and clay minerals in a sample of Selma chalk" (with A. D. Buck and W. I. Luke), <u>Journal, Mississippi Academy of Science</u>, Vol VI, 1954-1960, pp 272-273.

1961c. "Examination of a Mississippi portland cement by X-ray diffraction" (with C. F. Derrington and W. I. Luke), <u>Journal, Mississippi Academy of Science</u>, Vol VI, 1954-1960, p 321.

1961d. Inspections of Structures Containing Sand-Gravel Aggregates:
Discussion of Aggregates for Milford Dam, and of Project Plan for Research on
Sand-Gravel Aggregates, U.S. Army Engineer Waterways Experiment Station, CE,
Vicksburg, Miss., 17 pp, 9 photographs.

1962. Evaluation of Stone for Protection Work, WES MP 6-480, 10 pp, 4 tables.

1962a. <u>Project Dribble: Petrographic Examination of Cores</u> (with A. D. Buck), U.S. Army Engineer Waterways Experiment Station, GE, Vicksburg, Miss., 46 pp, 117 figures, 2 appendices.

1962b. Assistant editor, <u>Clays and Clay Minerals - Proceedings of the Ninth National Conference</u>, Pergamon Press, London, England, 614 pp.

1962c. Editor, <u>Journal, Mississippi Academy of Science</u>, Vol VII, 1961, 88 pp. Also author of "Preface," p iii.

1962d. Discussion of "Phase equilibria and constitution of portland cement clinker," by R. W. Nurse, in <u>Chemistry of Cement. Proceedings. Fourth International Symposium</u>, National Bureau of Standards Monograph 43, Vol 1, Government Printing Office, pp 34-35.

1962e. <u>Durability of Concrete Specimens Containing a Proprietary Nonairentraining Admixture</u> (with E. B. McCoy, W. I. Luke, and B. Mather), WES Technical Report, 47 pp (manuscript on file).

1962f. Editor, Journal, Mississippi Academy of Science, Vol VIII, 317 pp.

1962g. Shale Samples. Waco Dam. Texas (with A. D. Buck), WES MP 6-548, 18 pp.

- 1963. <u>High-Strength High-Density Concrete</u> (with A. L. Felts), WES Technical Report 6-635, Vicksburg, Miss., 65 pp.
- 1963a. Editor, Journal, Mississippi Academy of Science, Vol IX, 305 pp.
- 1963b. <u>Composition and Constitution of Ten Samples of Glacial Till, St. Lawrence Seaway Project</u> (with A. D. Buck), WES MP 6-573, 44 pp.
- 1963c. Aggregate Investigations, Milford Dam, Kansas, Examination of Cores from Concrete Structures (with W. I. Luke and Bryant Mather), WES TR 6-629, 79 pp.
- 1963d. Associate editor, <u>Clays and Clay Minerals</u>, Proceedings of 11th National Conference, Pergamon Press, Ltd. (London).
- 1963e. High-Strength, High-Density Concrete, WES TR 6-635, 65 pp.
- 1963f. Discussion of "High-Temperature Behavior of Aluminum Cement Concretes Containing Different Aggregates," by N. G. Zoldners, V. M. Malhotra, and H. S. Wilson; Proceedings, Amer. Soc. Testing Mats., Vol 63, p 993.
- 1964. Alkali-Silica and Alkali-Carbonate Reactivity of Some Aggregates from South Dakota, Kansas, and Missouri, WES MP 6-646, 81 pp (with A. D. Buck and W. I. Luke).
- 1964a. "Alkali-Silica and Alkali-Carbonate Reactivity of Some Aggregates from South Dakota, Kansas, and Missouri," with Alan D. Buck and Wilbur I. Luke, <u>Highway Res. Record</u> No. 45, pp 72-110, Highway Research Board, Washington, D.C.
- 1965. "High-Strength, High-Density Concrete," WES MP 6-698, 10 pp; also <u>Journal. Amer. Conc. Inst.. Proceedings</u>, Vol 62, No. 8, pp 951-962.
- 1965a. <u>Petrographic Examination of Samples from Buffalo Harbor, New York</u>, WES MP 6-695, 21 pp (with W. I. Luke).
- 1965b. Application of Petrography to Radiation Shielding Concrete, WES MP 6-719, 10 pp; also <u>Transactions</u>, The American Nuclear Society, Vol 8, No. 1, pp 177-178.
- 1965c. The Comanche Series and Associated Rocks in the Subsurface in Central and South Florida, USGS Professional Paper 447 (Contains results of petrographic studies of 100 rock samples examined by K. Mather, conducted for USGS).
- 1966. <u>Petrographic Examination of Hardened Concrete</u>, WES MP 6-739, 18 pp; also ASTM Special Technical Publication "Significance of Tests and Properties of Concrete," No. 169A, pp 125-143.
- 1967. <u>Brucite Formation in Garbonate Rock Prisms</u>, WES MP 6-867, 12 pp (with A. D. Buck).
- 1967a. <u>Clays and Clay Minerals Proceedings of the Fifteenth Conference</u> (Associate Editor), Pergamon Press (London), 490 pp.

1968. "The Petrograph, of Aggregates for Mass Concrete," Proceedings of the Tenth Annual Concrete Sonference, Utah State University, Logan, Utah, pp 50-67.

1968a. "Test Methods Used in Investigating Carbonate Rock Behavior," Proceedings of the 17th Annual Highway Geology Symposium, Iowa State University, pp 130-132.

1969. Thermal Stabilization of Soils, Report 2, Stabilization in Place, WES TR 6-706, Report 2, 28 pp (with B. D. Ainsworth).

1970. <u>Pust Control by Thermal Methods</u>, WES MP S-70-27, 20 pp (with B. D. Ainsworth).

1971. <u>Substitutions in Calcium Aluminates and Calcium Aluminoferrites</u>, WES MP C-71-3, 78 pp.

1972. "High Strength, High Density Concrete," American Concrete Institute Special Publication_SP-34, pp 1587-1596.

1972a. "Examination of Cement Pastes, Hydrated Phases, and Synthetic Products by X-Ray Diffraction," in <u>Evaluation of Methods of Identifying Phases of Cement Paste</u>; Transportation Research Circular No. 176, 1976, Transportation Res. Bd., pp 9-30; also WES MP C-72-5, 63 pp.

1973. <u>Laboratory Tests of Concrete Cores from the New Second Lock, Sault Ste. Marie, Michigan</u>, WES MP C-73-8, 42 pp (with A. D. Buck and C. R. Hallford).

1973a. Examination of Cores from Four Highway Bridges in Georgia, WES MP C-73-11, 38 pp (also Concrete Technology Information Analysis Center Report No. 12).

1973b. <u>Identification of Samples of Objects Recovered from Ocean Floor</u>, WES MP C-73-4, 17 pp (also Concrete Technology Information Analysis Genter Report No. 6).

1975. Discussion of "The Effect of Coment Properties and the Thermal Compatibility of Aggregates on the Strength of Accelerated Cured Concrete," by D. F. Orchard, R. Jones, and R. S. Al-Rawi; <u>Journal of Testing and Evaluation</u>, Vol 3, No. 1, pp. 79-80 (with B. Mather).

1975a. "Evaluation of Concrete in Structures," presented at <u>Symposium on Restoration of Historic Concrete Structures</u>, ACI, Boston, March 1975 (see 1985b).

1976. "X-Ray Diffraction Examination of the Phases in Expansive Cements," Proc. 25th Annual Denver Conference on Applications of X-Ray Analysis, Denver.

1977. "Identification of Gandidate Zero Maintenance Paving Materials," WES MP C-77-14, with G. C. Hoff, L. N. Godwin, K. L. Saucier, A. D. Buck, and T. B. Husbands, two volumes, $634~\rm pp.$

1978. A Look at Type K Shrinkage-Compensating Gement Production and Specifications, WES MP C-78-2 (CTIAC Report No. 29), with George C. Hoff.

1978a. Alkali-Silica Reaction Products from Several Concretes: Optical, Chemical, and X-Ray Diffraction Data; WES MP C-78-7 (CTIAC Report No. 31), with Alan D. Buck.

1978b. <u>Effects of Accelerated Curing on Hydration Products of Cement and Cement-Fly Ash Pastes</u>, with Jerry P. Burkes, Ging Sam Wong, and Ronald E. Reinhold, WES MP C-78-11.

1978c. "Alkali-Silica Reaction Products from Several Concretes: Optical, Chemical, and X-Ray Diffraction Data," <u>Proceedings of the Fourth International Conference on the Effects of Alkalies in Cement and Concrete</u>, Furdue University, CE-MAT-1-78, pp 73-85 (with Alan D. Buck).

1978d. "The Advantages of Free-Abrasive Machined Surfaces in the Study of Possible Alkali-Silica Reaction in Concrete," <u>ibid</u>, pp 281-284.

1978e. "Petrographic Examination" in Significance of Tests and Properties of Concrete and Concrete-Making Materials, ASTM <u>STP</u> 169-B, pp 132-145.

1979. "Tests and Evaluation of Portland and Blended Cements for Resistance to Sulfate Attack," in "Gement Standards Evolution and Trends," ASTM \underline{STP} 663, pp 74-86.

1979a. "Testing of 6-in.-Diameter Concrete Cores from Martin Dam, Alabama Power Company," with Donnie L. Ainsworth, Alan D. Buck, and Steven A. Ragan, WES MP SL-79-17 (CTIAC Report No. 38).

1979b. The 7.6-Angstrom Reaction Product in Smectite Clay-Lime Mixtures, with Alan D. Buck, WES MP SL-79-22 (CTIAC Report No. 41).

1980. Quality Assurance Manual, Waterways Experiment Station, 85 pp.

1980a. "A Look at Type K Shrinkage-Compensating Cement Production and Specifications" (with George C. Hoff), American Concrete Institute SP-64, pp 153-181.

1980b. "Concrete Weathering at Treat Island, Maine," in <u>Performance of Concrete in Marine Environment;</u> American Concrete Institute SP-65, pp 101-112.

1980c. Factors Affecting Sulfate Resistance of Mortars, WES MP SL-80-17 (CTIAC Report No. 44).

1981. "Condition of Concrete in Martin Dam After 50 Years of Service," Cement. Concrete, and Aggregates, ASTM, Vol 3, No. 1, pp 53-63.

1981a. "The History of Concrete Construction in the 20th Century," with Bryant Mather, <u>Concrete International</u>, ACI, Vol 3, No. 10, pp 19-27.

1981b. "Factors Affecting Sulfate Resistance of Mortars," <u>Proceedings</u> of the 7th International Congress on the Chemistry of Cement, Paris, "1980," Vol IV, pp 580-585.

1981c. <u>PSU/WES Interlaboratory Comparative Methodology Study of an Experimental Cementitious Repository Seal Material</u>, Report 1, Short-Term Results, with Della M. Roy and Michael W. Grutzeck, WES MP SL-81-2.

1981d. <u>PSU/WEN Interlaboratory Study of an Experimental Cementitious Repository Seal Material</u>, with D. M. Roy, M. W. Grutzeck, and A. D. Euck, ONWI-324, Materials Research Laboratory, The Pennsylvania State University, University Park, Pa, 147 pp.

1982. Discussion of the paper "Products Formed in an Aged Concrete," by W. F. Cole, C. J. Lancucki, and M. J. Sandy, with Alan D. Buck, <u>Cement and Concrete Research</u>, Vol 12, No. 1, pp 127-128.

1982a. <u>PSU/WES Interlaboratory Comparative Methodology Study of an Experimental Cementitious Repository Seal Material</u>, with Della M. Roy and Michael W. Grutzeck (PSU) and Alan D. Buck (WES), MP SL-81-2, Report 2, Final Results.

1982b. Grout Formulations for Nuclear Waste Isolation, with Alan D. Buck, MP SL-82-6.

1982c. <u>PSU/WES Interlaboratory Study of an Experimental Cementitious Repository Seal Material</u>, with D. M. Roy, M. W. Grutzeck, and A. D. Buck, Office of Nuclear Waste Isolation, Columbus, Ohio, ONWI-324, 154 pp.

1982d. "Current Research in Sulfate Resistance at the Waterways Experiment Station," in <u>George Verbeck Symposium on Sulfate Resistance of Concrete</u>, American Concrete Institute SP-77, pp 63-74.

1983. Discussion at 6th International Conference on Alkalies in Concrete: Rosearch and Practice, Copenhagen, Denmark.

1983a. Modification of Bell Canyon Test (BCT) 1-FF Grout, with Alan D. Buck, Jay E. Rhoderick, J. Pete Burkes, Ronald E. Reinhold, and John A. Boa, Jr., WES MP SL-83-18; Sandia National Lab Report No. SAND 83-7097.

1983b. Preface to "Handbook of Concrete Aggregates," by Ludmila Dolar-Mantuani, Noyes Publications, Park Ridge, N.J., 345 pp, pp vii to ix (with Bryant Mather).

1984. "Type V Cement and Fly Ash Improve Sulfate Resistance," <u>Concrete Construction</u>, Feb 1984, pp 243-244.

1984a. "Reactivity of Quartz at Normal Temperatures" (with Alan D. Buck), WES TR SL-84-12.

1985. Discussion of "Causes, Evaluation, and Repair of Cracks in Concrete," by ACI Committee 224, ACI Journal, Proceedings, Vol 82, No. 1, p 102.

1985a. "Cement Composition and Concrete Durability in Sca Water" (with Alan D. Buck and Bryant Mather), WES TR SL-84-21, "December 1984."

1985b. "Preservation Technology: Evaluating Concrete in Structures," Concrete International, Vol 7, No. 10, pp 33-41. 1985c. The Butterflies of Mississippi - Supplement No. 3, <u>Jour. Lepid. Soc.</u>, Vol 39, No. 2, pp 134-138. 1986. <u>Variations in Cementitious Media</u>, WES TR SL-86-10, 269 pp (with R. E. Reinhold, R. E. Richter, A. D. Buck, B. Mather, J. E. McDonald). 1986a. <u>Alkali-Silica Reaction in Concrete from Fontana Dam, North Carolina, Tennessee Valley Authority</u>, WES MP SL-86-9 (CTIAC Report No. 76), 33 pp (with Alan D. Buck).