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**Dr. L.S. Dederick Papers,
1908 – 1956, undated
(MSS-050)**

*Finding Aid Compiled by
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Last Updated: December 16, 2020

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Series 3: Ballistics Research and Publications, bulk 1931-1952, undated

Dr. L.S. Dederick Papers Biographical Sketch

Louis Serle (L.S.) Dederick was born in Chicago in 1883. He received his Ph.D. in Mathematics from Harvard University in 1909. From 1909 – 1917 he was a professor at Princeton University. From 1917 – 1924 he was professor at the U.S. Naval Academy in Annapolis, Maryland. In 1926 Dederick began working for the U.S. Army, Ordnance. During his time there he was the Associate Director of the Ballistic Research Laboratory at the Aberdeen Proving Grounds in Aberdeen, Maryland where he focused on ballistics research.

While Dederick worked as a mathematician at the Aberdeen Proving Grounds, he was involved with numerous projects. He worked in the fields of ballistics calculations, the development of computing methods for machines which included differential analyzers, the Bell Relay computer, oversaw the creation of the ENIAC computer (the world's first digital computer), as well as its successors the EDVAC computer and the ORDVAC computer. These computers were designed with the goal of making ballistics calculations more quickly and efficiently. Some of his work on these projects included project management, administrative work, and search for personnel to add to project teams. His immediate supervisors while working at Aberdeen included Col. Leslie E. Simon and Col. Alden P. Taber. Dederick retired from this position in May 1953.

After his retirement he was pulled into efforts of the House of Un-American Activities Committee (HUAC) in 1954 to give statements on behalf of some of the workers he supervised who were being questioned about possible connections to communism. Dederick passed away in 1972. He is buried in Princeton Cemetery, located in Princeton, NJ.

Scope and Content Note

This Collection consists mostly of documents from L.S. Dederick's time at Aberdeen Proving Ground in Aberdeen, Maryland. This includes his work with the Electronic Numerical Integrator And Computer, better known as the ENIAC, the world's first digital computer, as well as the Electronic Discrete Variable Automatic Computer, known as the EDVAC. The ENIAC, completed in 1945, aided in allowing the United States Army's Ballistic Research Laboratory to more easily perform ballistics calculations. It marks the beginning of the computer age.

The collection is broken down into three series. Material in all three series overlap in subject areas and types of content. Attempts were made to keep files together if it was thought that was how Dederick had them filed originally. The three series are: 1) Computers: The ENIAC and EDVAC 2) Administrative and Personal Material and 3) Ballistics Research and Publications. Series 2 has two subseries, Administrative Material and Personal Material.

There are many documents in the collection pertaining to ballistics calculations and administrative military documents from Dederick's work at the Aberdeen Proving Ground. The collection also contains publications written by Dederick from outside of his work at Aberdeen. The collection contains both mathematical and scientific publications from a variety of publishers in both English and German. The date range of the documents range from around

1908 to the mid-1950s, with the bulk of material being from 1928-1954. In series 2 documents can be found on individuals who worked for Dederick who were brought before the House of Un-American Activities Committee (HUAC) in 1954. Three people who worked with Dederick were brought before HUAC in 1954 and questioned for their potential connection to communists and communism. Included in their files are statements by the accused and by Dederick on their behalf, and answers to questions they were asked. Also in series 2 are documents pertaining to women who were hired as mathematicians for projects. The majority of the collection contains documents pertaining to ballistics and Dederick's notes on ballistics.

Box and Folder List

Series 1: Computers: The ENIAC and EDVAC, bulk 1938-1955

Box 1

Folder

1. Publications belonging to Dederick, 1908-1953
2. Ballistic computation documents, 1935-1949
3. "Why Machines are Needed," speech notes of Dederick and correspondence, 1938, undated
4. "Report on the Differential Analyzer at Aberdeen Proving Ground, Maryland," December 23, 1942
5. Record for Analyzer and Ballistic Research Laboratory Computing Branch. Computing note Volume No. 1 and 2, 1942-1943
6. "Method of Treating Ballistics in the Sea Coast Computers," April 5, 1943
7. "The ENIAC," 1946
8. ENIAC correspondence, including correspondence on problems with the computer such as stress, fire damage, and having it moved from Philadelphia to New York, 1946-1948
9. "Proposed Programming for the EDVAC" by Dr. Samuel Lubkin, January 1947
10. "Piecewise Polynomial Approximation for Large Scale Digital Calculations" by Joseph O. Harrison Jr., August 9, 1948
11. "Digital Computer Newsletter," 12 issues, April 1949 - October 1952
12. Ballistic Research Laboratories Report No. 705, "Programming Principles for the IBM Relay Calculators," by J. Lynch and C. E. Johnson, October 1949
13. Association for Computing Machinery, reports and papers from April 18-20, 1949 conference, Oakridge Tennessee, 1949
14. "The Circle Computer" description and commands, May 25, 1951
15. Information sent to Dederick from German company on "Mathematische Instrumente," 1951
16. Quarterly Progress Report No. 11, "Machine Methods of Computation and Numerical Analysis," March 15, 1954

Box 2

Folder

1. Quarterly Progress Report No. 13, "Machine Methods of Computation and Numerical Analysis," September 15, 1954
2. "Ordnance Computer Newsletter," from Ballistic Research Laboratories at Aberdeen Proving Ground, Maryland, 3 issues, 1954-1955

3. "Test of Dr. Bush's Differential Analyzer on Ballistic Work" by Dederick, undated
4. "Method of Using the Differential Analyzer with Particular Reference to Routine Work in Exterior Ballistics," possibly by Dederick, undated
5. Stibitz-Bell Telephone Laboratories Computer news clipping, undated
6. "Firing Tables" with annotations by Dederick, undated
7. Ballistic Computation textbook manuscript/draft, possibly by Dederick, undated
8. 3 pages of unknown text about the EDVAC, undated

Series 2: Administrative and Personal Material, 1908-1956, undated

Subseries 1: Administrative Material

Box 3

Folder

1. Administrative paperwork from Aberdeen, 1921, 1928, 1941
2. Administrative paperwork from Aberdeen, 1928-1952
3. Correspondence, 1928-1929
4. Correspondence, 1930
5. Correspondence, 1931-1932
6. Correspondence mentioning analyzer (used to compute data), 1932-1950
7. Administrative paperwork from Aberdeen, 1932-1953
8. Correspondence, 1934-1939
9. Administrative paperwork from Aberdeen with some corporate correspondence, 1935-1953
10. Administrative paperwork from Aberdeen, 1936-1937, 1951
11. War Preparedness Committee, "War Preparedness Among Mathematicians," by Marston Morse, September 1940
12. Correspondence, 1940
13. Correspondence on ballistic tests, 1940-1951
14. Employment applications to Dederick as project manager, 1941-1951
15. Correspondence (includes letter on hiring a group of women as mathematicians), 1941-1945
16. Administrative paperwork from Aberdeen, 1941-1956

Box 4

Folder

1. Administrative paperwork from Aberdeen, 1942-1954
2. Administrative paperwork from Aberdeen, 1942, 1952-1953
3. Administrative paperwork from Aberdeen (includes rank/power structure of employees), 1946-1949
4. Correspondence, 1946-1948
5. Ballistics Research Laboratories Personnel Qualified to Withdraw Classified Documents from Technical Information Section, May 25, 1948
6. Ballistics Research Laboratories Personnel Qualified to Withdraw Classified Documents from Technical Information Section, July 1, 1948
7. Ballistics Research Laboratories Personnel Qualified to Withdraw Classified Documents from Technical Information Section, December 5, 1949
8. Progress reports of projects, 1949, 1951

9. Administrative paperwork from Aberdeen, (contains documents of finned projectile), 1949-1952
10. Ballistics Research Laboratories Personnel Qualified to Withdraw Classified Documents from Technical Information Section, January 9, 1950
11. Ballistics Research Laboratories Personnel Qualified to Withdraw Classified Documents from Technical Information Section, March 3, 1950
12. Administrative paperwork from Aberdeen, 1950-1952
13. Ballistics Research Laboratories Personnel Qualified to Withdraw Classified Documents from Technical Information Section, November 5, 1951
14. Ballistics Research Laboratories Personnel Qualified to Withdraw Classified Documents from Technical Information Section, December 5, 1951
15. Ballistics Research Laboratories Personnel Qualified to Withdraw Classified Documents from Technical Information Section, January 5, 1952
16. Ballistics Research Laboratories Personnel Qualified to Withdraw Classified Documents from Technical Information Section, February 5, 1952
17. Measurements Analysis branch, 1952
18. Correspondence, 1952-54
19. Correspondence, Undated
20. Raytheon Manufacturing Company material, includes correspondence and more, 1953-1954
21. HUAC - Case of Richard Clippinger (includes statement by Dederick), 1954
22. HUAC - Case of Monroe Norden (includes statement by Dederick), 1954
23. HUAC - Case of Arthur Stein (includes statement by Dederick), 1954

Subseries 2: Personal Material

Box 5

Folder

1. Dederick's application for employment at Fort Belvoir, Virginia (contains some biographical related content), 1956
2. Non-Dederick Mathematical publications, 1911-1933
3. Non-Dederick Mathematical publications, 1938-1941
4. Non-Dederick Mathematical publications, 1943-1946
5. Non-Dederick Mathematical publications, 1947
6. Newspaper, Special Supplement N.O.T.S. Rocketeer Volume IV no.22, May 26, 1948
7. Ballistic Institute: "Linear Differential Equations, October 1950 – January 1951." Lecture notes prepared by M. Lotkin and B. Garfinkel, 1951
8. Non-Dederick Mathematical publications, 1951-1952
9. German publications including "Ergebnisse der Mathematik Die Grundlehren der Mathematischen Wissenschaften" (Results of Mathematics, The Fundamentals of Mathematical Science), undated
10. "Numerical Integration of Differential Equations," author unknown, undated
11. Unknown text, possibly "How to Fit a Least Square Uniform Interval," undated
12. Notes on "Lecture II of Professor Shohat, undated
13. Many pages of notes written by unknown person to Dederick about one of Dederick's books on ballistics, undated
14. Notes on chapter 2 of unknown writing, undated

15. Notes for "Subject: Change in Arguments of A.A. Firing Tables" To C. of O, undated
16. Dederick's binder containing his notes on coding, undated
17. Many pages of handwritten notes by Dederick, undated
18. United States Life Tables: 1910 Bureau of the Census, Washington Government Printing Office, 1916
19. Unknown research notes, undated

Box 6 (Publications by Dederick)

Folder

1. "Material for Minor Thesis on Gyroscope," handwritten draft by Dederick, Sept - Nov, 1908
2. "The Gyroscope," handwritten draft by L. S. Dederick. c. 1908
3. "Successive Derivatives of a Function of Several Functions," by L. S. Dederick (2 copies), September 1926
4. "Relation Between the Probable Error of a Single Shot and the Bracket of a Salvo or Series," by L. S. Dederick (2 copies), 1928
5. "The Mathematics of Exterior Ballistic Computations" by L. S. Dederick, November 1940
6. "Construction and Selection of Smoothing Formulas," by L. S. Dederick (5 copies, some containing notes), May 1953
7. "A Negative Contribution to the Law of Burning," by L. S. Dederick, undated
8. "Smokeless Powder and the Erosion of Firearms," by Dr. G. de Bruin (used as research material for, "A Negative Contribution to the Law of Burning," by L. S. Dederick), March 1931
9. "The Distribution of Range" By L. S. Dederick, undated

Series 3: Ballistics Research and Publications, bulk 1931-1952, undated

Box 7

Folder

1. "The High-Speed Flexible-Throat Supersonic Wind Tunnel" (Includes portrait of Dederick in publication and loose original photograph not used in publication of Dederick and Col. Simon while working on this project), 1948
2. "The Aberdeen Proving Ground Coordinate System," Laboratory Service Division Report No. 111, June 23, 1950
3. The American Mathematical Monthly, March 1916
4. Philosophical Transactions of The Royal Society of London: "The Aerodynamics of a Spinning Shell," by R. H. Fowler, E. G. Gallop, C. N. H. Lock and H. W. Richmond, F.R.S., 1920
5. Ballistics publications, 1931-1936
6. Papers on the properties of the range of brackets; Tippett – Pearson – "Student," 1932, undated
7. "Statistical Methods and Quality Their Contribution to Development and Use of Specifications," by Capt. Leslie E. Simon, March-April 1941
8. Ballistics publications, 1941-1949
9. "Firing Tables for Gun, 90-MM, M1 Firing Shell, HE, M71," 1942
10. "Tables of Trigonometric Functions to Five Significant Figures, and for Every Tenth of a Mil," Applied Mathematics Panel National Defense Research Committee, September 1943

11. "Bomb Ballistics" By L. S. Dederick, E. J. McShane, and F. V. Reno, October 2, 1943
12. "Cranz's Textbook of Ballistics," Vol. II Part 1 and Vol. II Part 2, "Interior Ballistics," A Translation, 1944

Box 8

Folder

1. Ballistics publications, 1950-1951
2. Ballistics publications, 1952
3. Ballistics publications, 1953-1954
4. "Path of Nose of Type 102 3.3" Shell." APG (Dimensions of diagram are 34.8" by 29.5"), September 16, 1921
5. Mathematical figures from unknown text, undated
6. Ballistics publications, undated
7. "Analysis of [?] Findings from Airplane," undated
8. "Formulas Used in Computation of Trajectories for Flexible Gun Mounted on Airplane in Horizontal Flight," undated
9. "Notes on Plane Waves of Finite Amplitude Shock and Detonation Waves," undated
10. "Drag and Drag Coefficient," (two copies, handwritten), undated
11. "Construction and Selection of Smoothing Formulas," (Handwritten), undated
12. Ballistic Research Laboratory Memorandum Report No. 71, "Analysis of Photographs of Sidewise Firings of Tracers," undated
13. "Certain Considerations in the Thermodynamics of Gases with Applications to Interior Ballistics," undated
14. 12" Mortar Wind Corrections, undated
15. "'Lilliputian' Logarithmic Tables for Finding the Logarithm of any Number to 25 Decimal Places," undated
16. "Probable error of a Small Number of Rounds" and other handwritten writings, including handwritten memo to Dederick, undated

Box 9

Folder

1. "The Computation of the Best Fitting Polynomial Curve by Dederick's Algorithm," undated
2. Drafts and publications on "Curve Fitting" and "Least Squared," undated
3. "The Effect of the Rotation of the Earth on the Motion of Shell and Bombs," includes drafts of research, 1952, undated
4. Experiments and Observation Methods, undated
5. Smoothing Formulas, undated
6. Firing Table Methods; includes many typed and handwritten papers by Dederick on the subject, undated
7. Firing Tables and Ballistics; includes many handwritten notes and typed papers on the subject, 1928-1941, undated
8. Ballistics calculations, 1937-1949, undated

Box 10

Folder

1. Ballistics calculations and correspondence, 1940-1942 undated

2. Ballistics calculations; includes correspondence and “Relative Merits of Various Formulas for the Numerical Integration of Differential Equations” by Dederick, 1941-1942, undated
3. Ballistics calculations, 1938-1950, undated
4. Ballistics calculations, 1942, undated
5. Ballistics calculations and correspondence, 1947, 1949, undated
6. Ballistics calculations, 1952, undated
7. Ballistics calculations, 1952, undated
8. Ballistics calculations, undated
9. Ballistics calculations, undated
10. Ballistics calculations, undated
11. Ballistics calculations, undated