

# Ferdinand Rudolph Hassler

- Born 7 October 1770, Aarau, Switzerland
- 1803-1805: worked with Johann Tralles on the topological survey of Switzerland
- 1805: emigrated to the United States of America
- February 14, 1807 to December 31, 1809: Acting Professor of Mathematics, USMA (the professorship was not created until the law of April 29, 1812)
- 1810-1813: Professor of Natural Philosophy and Mathematics, Union College, Schenectady, New York
- 1815-1817: Superintendent of the United States Coast Survey
- 1830-1843: Head of the United States Standards of Weights and Measures
- 1832-1843: Superintendent of the United States Coast Survey
- Died 20 November 1843 in Philadelphia, age 73

Ferdinand Rudolph Hassler was born in the town of Aarau, in the northern (German) part of Switzerland on 7 October 1770. At the age of sixteen he entered public administration in the town of Bern. There he studied jurisprudence at the University of Bern and began his practical education in land surveying. While in Bern, he came under the influence of Johann George Tralles, a promising young German mathematician. Tralles made a deep impression on Hassler, and he began to study mathematics and geodesy instead of law. Together Hassler and Tralle worked on the topographical survey of the Canton of Bern. In the summer of 1793, Hassler went to Paris and studied under the astronomers Lalande, Borda, Delambre, and Lavoisier.

In 1798, the French invaded Switzerland and Hassler returned to his native town of Aarau. He held several public offices over the next several years to include Attorney General of Switzerland. He also continued to work with Tralles on various geodetic surveys. In 1803, the French government assumed control of all geodetic surveys in Switzerland. Hassler was unable to work under French control and in 1805 he emigrated with his family to the United States.

Upon arriving in America he became associated with Professor Robert Patterson and Mr. John Vaughan. After seeing his mathematical books and surveying instruments, Professor Patterson recommended that Hassler supervise the establishment of the United States Coast Survey. In February of 1807, Congress passed the law authorizing the establishment of the coast survey. Meanwhile, President Thomas Jefferson had appointed Hassler as Acting Professor of Mathematics at the United States Military Academy.

While at the Academy Hassler began writing his *Elements of Analytic Trigonometry*, which was finally published in 1826. As Acting Professor of Mathematics, he introduced the teaching of descriptive geometry by Claude Crozet, and adopted Legendre's *Geometry* as a standard textbook. At the Academy, there was no formal prescribed course of studies. Hassler and his assistant, Lieutenant Alden Partridge, who would be Hassler's successor, continued teaching predominantly from Hutton's *Mathematics*. "Although a profound mathematician, he (Hassler) was not a successful teacher except for those with considerable aptitude for mathematics. His methods of instruction were original and his tendency was toward analytical mathematics. With no idea of discipline, he supplied valuable information to all of his students, but made

impressions on very few of them. While not a great teacher, there is no doubt but what the country and Military Academy are much indebted to him for the introduction and practical use of mathematics." In 1809, Professor Hassler was informed by William Eustis, the Secretary of War, that there was no law authorizing the employment of civilians at West Point. Because of this situation, Hassler officially resigned his position as Acting Professor on 14 February 1810.

On 20 March 1810, Professor Hassler accepted the position of Professor of Natural Philosophy and Mathematics at Union College in Schenectady, New York. Once again, Professor Hassler was not a very successful teacher. He only worked with those students who showed great promise and had difficulty working with students who were less apt in the sciences. While at Union College, Hassler was officially asked to start work on the United States Coast Survey. In 1811 he was sent by the Secretary of the Treasury to England to procure the necessary instruments required to perform the survey. He returned from England in 1815 and in 1816 a formal agreement was reached between the United States government and Professor Hassler appointing him the first Superintendent of the United States Coast Survey. The actual field labor on the coast survey started in the early months of 1817. After two years of work, Congress was displeased with the progress of the survey and Hassler was suspended.

After his suspension from the survey, Hassler was engaged in various occupations. He tried his hand at farming in northern New York. He travelled to Richmond, Virginia where he taught mathematics to the sons of wealthy and influential businessmen. It was during this time that he wrote and published most of his papers and books. He wrote a defense of his work on the coast survey and published it in the Philosophical Transactions of Philadelphia in 1825. This article attracted the interest of scientific men all over the world. Hassler received nothing but praise and support for his methods and techniques from some of the leading scientists of the period.

Two of Professor Hassler's books also received much attention. The first was his Elements of Analytical Trigonometry. In this book he introduced the definitions of the six trigonometric functions as ratios. He was the first to introduce this novel idea in the United States. The second book was his Elements of Arithmetik, Theoretical and Practical, which was published in 1826. In this book, Hassler presented arithmetical and geometrical series, annuities, and concrete multipliers. This arithmetic of 1826 was considered by some to be more advanced than most of the arithmetics of that period.

After spending twelve years in private work, Professor Hassler again assumed a public position. In 1830, President Andrew Jackson appointed Hassler the United States gauger. For the next two years he was responsible for regulating the standards of weights and measures throughout the United States.

The United States Coast Survey was reestablished in 1832. With the recommendation of the Secretary of the Navy, Professor Hassler was again appointed as Superintendent. Although sixty-two years old, he carried out his scientific endeavors on the survey with vigor and zeal. He continued with the survey and also continued to work with the weights and measures until his death on 20 November 1843.

Not only was Professor Hassler considered a mediocre teacher, he was often very self confident and independent. The following anecdote is characteristic of his personality. A newly appointed Secretary of the Treasury thought that he could signalize his administration more aptly than by reducing the large salary of Professor Hassler who was then the Superintendent of the United States Coast Survey. He sent for Mr. Hassler and said, "My dear sir, your salary is enormous; you receive \$6,000 per annum - an income, do you know, quite as large as that of the Secretary of State." "True", replied Hassler, "precisely as much as the Secretary of State and quite as much as the Chief of the Treasury; but do you know, Mr. Secretary, that the President can make a minister of State out of anybody; he can make one even out of you, sir; but if he can make a Hassler, I will resign my place."

### **Publications:**

Elements of Analytical Trigonometry, New York, 1826.

Elements of Arithmetik, Theoretical and Practical, 1826.

Elements of the Geometry of Plane and Solids, Richmond, 1828. Full text available by searching at <http://books.google.com> .

Logarithmic and Trigonometric Tables, 1830.

A Popular Exposition of the System of the Universe with Plates and Tables, 2 Volumes, 1830. Full text available by searching at <http://books.google.com> .

"Extract from a Paper on the Meteoric Stones", 1809.

"Papers on Various Subjects Concerned with the Survey of the Coast of the United States", 1825.

### **References:**

Annual Report of the Superintendent, USMA, 1896-1911, Washington: Government Printing Office, 1896, pages 40-41.

Cajori, Florian, Teaching of Mathematics in the United States, Washington: Government Printing Office, 1890.

Cajori, Florian, The Chequered Career of Ferdinand R. Hassler, New York: Arno Press, 1980. Full text available by searching at <http://books.google.com> .

Cullum's Register, Volume I, page 34.

"The Department of Mathematics," Pointer View, Volume 3, Number 12, 19 March 1948.

Dictionary of Scientific Biography, Volume VI, New York: Scribner, 1972, pages 165-166.

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