

## Leuschner, Armin Otto

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*Born*    **Detroit, Michigan, USA, 16 January 1868**

*Died*    **Berkeley, California, USA, 22 April 1953**

Armin Leuschner headed the astronomy department of the University of California at Berkeley for four decades, building what was widely accepted as the top graduate program in the United States and educating a number of the leading astronomers of the 20th century.

Leuschner's widowed mother took him to Germany in his infancy. Thus, although born in *Detroit*, he *spoke* English with a strong German accent. At 18, Leuschner finished the gymnasium in Kassel and returned to the United States. Two years later, in 1888, he received his AB degree from the University of Michigan.

Leuschner then became the first graduate student at the new Lick Observatory, where director **Edward Holden** assigned him a photometry project. After a year, it was decided that he would alternate courses in mathematics and physics on the Berkeley campus of the University of California with research on Mount Hamilton.

Leuschner soon found that he liked the university and mathematics, and he did not like working under Holden, who was steadily arousing the enmity of the staff he had selected for the first mountaintop observatory. In 1890, Leuschner was appointed an instructor in mathematics at Berkeley, and a couple of years later an assistant professor. While still in the mathematics department, he took over the course in practical astronomy taught to civil engineers, and his title was changed to assistant professor of astronomy and geodesy.

Leuschner married Ida Louise Denicke, the daughter of influential University of California regent and wealthy San Francisco businessman Ernst A. Denicke, in 1896. They had three children. Leuschner spent the year 1896/1897 in Berlin, earning his Ph.D. with high honors for a thesis on determining the orbits of comets. He had found his field, and it did not require living on a mountaintop or working under the by-now-hated Holden. On his return to Berkeley, Leuschner was promoted to associate professor of astronomy and geodesy and director of the Students' Observatory.

After Holden was forced to resign his position in 1897, relations between the Berkeley and Lick Astronomical Departments of the University of California, as they were soon titled, improved greatly. Leuschner worked well with Lick directors **James Keeler** (who died after 2 years in office) and **William Campbell** (who held the title for 30 years, the last 7 while also president of the University of California).

Keeler established the Lick Fellowships to support graduate students who divided their time between studying mathematics, physics, and theoretical astronomy at Berkeley and doing research on Mount Hamilton under the Lick staff. While most of them did theses in astrophysics, they all learned a considerable amount of mathematics and theoretical astronomy at Berkeley. It is said that only one graduate student managed to obtain his Ph.D. without calculating an orbit.

From 1907, until his retirement in 1938, Leuschner was professor of astronomy and director of the Students' Observatory. It was renamed the Leuschner Observatory in 1951 and moved off-campus in the 1960s.

Although he published a few early papers involving observations, Leuschner was very much a theoretical astronomer. His main contribution to research was the "Leuschner method" of calculating the orbits of asteroids or comets as soon as three observations were available. It was the custom at Berkeley for students to race to compute the first orbits of newly discovered objects. Such computations might take days with pencils and six-digit tables of logarithms, for which Leuschner's method was optimized. Other methods became more advantageous once desk calculators became available, but Leuschner and his staff insisted on the use of his method even in cases where the older, Gaussian method was superior. One of the objects whose orbit was first computed at Berkeley was the newly discovered planet Pluto.

When **James Watson**, who had directed the observatories of the Universities of Michigan and Wisconsin, died in 1880, he left a substantial bequest to the National Academy of Sciences, most of it to support determination of the orbits of the 22 asteroids he had discovered. Leuschner served for many years as chairman of the board of trustees of the Watson Fund of the Academy, and used some of its income to support his Berkeley students. Much of his research effort was devoted to computing the orbits of Watson's minor planets, working with his former graduate students, Anna Estelle Glancy and Sophia Levy.

Two years before his retirement, in 1936, Leuschner presented to Berkeley provost Monroe Emanuel Deutsch a "summary of the present activities and standing of the men and women trained by the University for the profession of astronomy." He discussed 51 men and 12 women who had done graduate work in his department. The first two, **William Wright** and **Frederick Seares**, both Berkeley graduates, left in the 1890s without completing their Ph.D.s, but by 1936 Wright was the director of the Lick Observatory and Seares the assistant director of the Mount Wilson Observatory.

The remaining 61 completed their Ph.D.s at Berkeley (two of them in mathematics), and they included many more prominent astronomers, such as Dinsmore Alter, Priscilla Fairfield Bok, **Ralph Curtiss**, **Edward Fath**, Samuel Herrick, Jr., Hamilton Moore Jeffers, **Nicholas Mayall**, **Paul Merrill**, **Charlotte Moore** (later Sitterly), **Seth Nicholson**, **Frank Ross**, **Roscoe Sanford**, **Joel Stebbins**, **Peter van de Kamp**, and **Fred Whipple**. Leuschner proudly pointed out that nearly all were primarily engaged in research, many at the most prestigious observatories, and that 14 were or had been observatory directors.

Four more—Russell Tracy Crawford, Sturla Einarsson, William Ferdinand Meyer, and **Charles Shane**—had been hired by Leuschner as professors of astronomy at Berkeley. The only non-Berkeley Ph.D. who joined the department during Leuschner's time was **Robert Trumpler**, who transferred from the Lick Observatory. In addition, two of Leuschner's doctoral students, Sophia Hazel Levy (later McDonald) and Raymond Henri Scioberti, were on the mathematics faculty at Berkeley and were continuing astronomical research. Leuschner noted that his department was ranked the best in the country in more than one survey at that time.

Leuschner held many leadership posts in the University of California, including dean of the graduate school and chairman of the board of research. One of the founders of the American Association of University Professors, he served as its president from 1923 to 1925.

Leuschner's honors included the James Craig Watson Gold Medal of the National Academy of Sciences in 1916, the Catherine Wolfe Bruce Gold Medal of the Astronomical Society of the Pacific (ASP) in 1936, and the David Rittenhouse Medal of the Franklin Institute in 1937. He served as president of the ASP three times and at the time of his death was its last charter member.

Leuschner's papers are in the Bancroft Library, University of California, Berkeley. Much of his correspondence can be found in the Mary Lea Shane Archives of the Lick Observatory, University of California, Santa Cruz.

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### Keywords

Alter, Dinsmore; American Association of University Professors; asteroids, orbits; astronomers, graduate education; Astronomical Society of the Pacific; Bok, Priscilla Fairfield; **Campbell, William Wallace**; celestial mechanics; comets, orbits; Crawford, Russell Tracy; **Curtiss, Ralph Hamilton**; Einarsson, Sturla; **Fath, Edward Arthur**; Glancy, Anna Estelle; Herrick, Jr., Samuel; **Holden, Edward Singleton**; Jeffers, Hamilton Moore; **Keeler, James Edward**; Levy, Sophia Hazel; **Mayall, Nicholas Ulrich**; **Merrill, Paul Willard**; Meyer, William Ferdinand; **Moore, Charlotte Emma**; **Nicholson, Seth Barnes**; Observatory, Lick; Observatory, Students's; **Ross, Frank Elmore**; **Sanford, Roscoe Frank**; Scioberti, Raymond Henri; **Seares, Frederick Hanley**; Shane, Charles Donald; **Stebbins, Joel**; **Trumpler, Robert Julius**; University of California, Berkeley; **van de Kamp, Peter**; **Watson, James Craig**; **Whipple, Fred Lawrence**; **Wright, William Hammond**

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