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ARMIN OTTO LEUSCHNER
1868–1953

DINSMORE ALTER
Griffith Observatory

An account of my own first contacts with Professor Leuschner will be related here because it illustrates such an important aspect of his personality. It is merely one of the many stories which other astronomers could tell of what he did for them. Indeed, there are others that may illustrate even better the efforts he made to help those who studied under him.

In December 1913, I was a young professor at the University of Alabama, very anxious to finish the requirements for a Ph.D. degree, but, because I had a wife and daughter to consider, I could not afford to accept an ordinary fellowship. I wrote to Dr. Leuschner, to whom I was a stranger, asking about the possibility of a teaching position which would enable me to carry on my graduate studies. In reply, he offered me a fellowship but feared that a full-time instructorship would not be available. I explained my financial position in detail, and later that winter he offered me an instructorship. After my arrival in Berkeley I learned that he had combined two fellowships to make it possible for me to go there.

I had been away from formal study for several years, and, moreover, had received very poor instruction in mathematics while an undergraduate at a small college. During my first months at Berkeley I studied long hours because of this handicap. One afternoon Professor Leuschner asked me to take a walk

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with him. He inquired about my personal affairs and warned me not to study so hard, because he feared that it might injure my health. When it came time to write my thesis, it was natural that the subject should concern the orbits of asteroids. Professor Leuschner suggested Aethra, which had been lost. Throughout the long calculations he guided and encouraged me continually in every sort of way, and, during the preparation of the thesis for publication, he taught me more about English composition than I had learned in my classes at college. Professor Leuschner's family of pupils could relate many similar examples, of which my own is merely typical. Many a professor would have demanded that his own name appear as senior author on papers like those in which Professor Leuschner would permit only the barest word of thanks at the end of the last paragraph.

Professor Leuschner was born in Detroit on January 16, 1868. When he was four, his parents took him to Germany, where he remained until after his graduation from the Royal Wilhelms-Gymnasium at Cassel in 1886. In that year he returned to the United States and entered the University of Michigan with advanced standing, graduating in 1888. These two years were fortunate ones for him, because they brought him under the instructorship of Professor Watson. Upon graduation he came to the University of California where he entered as a graduate student at the Lick Observatory.

His work at Berkeley as a member of the faculty began in 1890 with his appointment as instructor in mathematics. Two years later he was promoted to assistant professor, and in 1894 his title was changed to Assistant Professor of Astronomy and Geodesy. During these first years he was active in research on a rather wide variety of astronomical subjects. The *Publications* of this Society show that he was a charter member. Indeed, he was the last living charter member of the Society. The first paper of his to appear in these *Publications* was the orbit of a comet which had been discovered by Barnard while the latter was at the Lick Observatory. The next issue contains a list of his observations of occultations of stars by the moon. A little later he published a paper on the relationship between exposure time and the blackening of a photographic film. Two months later he published

the orbit of the double star μ^2 Herculis. Other papers followed steadily.

Under a leave of absence from the University of California, he returned to Germany and received his Ph.D. degree from the University of Berlin in 1897. His thesis was on the subject which first made him famous, *"Beitrage zur Kometenbahnbestimmung."* I can remember, in those first years that I knew him, his telling me that they forbade him to do his thesis on that subject because there was nothing more to be done on orbit theory. His few years in the United States, however, must already have crystallized his character, for he disobeyed this strong advice and went ahead with his chosen subject, something almost unheard of in German universities of those days. When the thesis was finished, his professors admitted that it was one of the best they had seen.

Upon his return to the United States in 1898, he was promoted to Associate Professor. At that time he organized the Students' Observatory and became its first director. James E. Keeler was director of the Lick Observatory then. Keeler and Leuschner had the same ideas concerning the proper graduate instruction of those who wished to become astronomers. Each believed that the study should be carried on partly at the University and partly at the great research observatory. In this manner the maximum breadth was assured in the training. Dr. Keeler, in accordance with this policy, set up three fellowships in astronomy at the Lick Observatory. Each had a stipend of $600 a year, an amount which looked huge to the graduate student of those days. Each holder of the fellowship was required to spend one and a half years at the Lick Observatory and from two to three semesters enrolled in graduate courses at Berkeley. The necessity of a great deal of study in the minors of physics and mathematics was recognized and some students took as much course work in physics as they did in astronomy. This encouragement led to the development of the department which, over the years, may have averaged as the greatest of all teaching departments of astronomy.

Professor Leuschner's work in orbit theory and in both general and special perturbations attracted the attention of the Watson Committee. Professor James Craig Watson of the University

of Michigan, under whom Leuschner had studied, was the discoverer of 22 asteroids. In those days, before the use of photography, and especially before the development of the astrographic camera and the Schmidt telescope, the discovery of an asteroid was far more important than it is today. Lack of accurate enough orbits caused quite a number of the asteroids to be lost. It was necessary that not only should the preliminary orbit be computed but that the perturbations, especially those of Jupiter, should be accounted for, if predicted positions were to be accurate through long intervals of time. Professor Watson, in his will, endowed the asteroids which he had discovered, so that the perturbations would be computed and so that all would be followed. This fund was administered by a committee of the National Academy of Sciences. In 1901 the committee invited Professor Leuschner to take charge of the computations. The work occupied part of his time for the next half century. The calculations attracted many able graduate students in astronomy. It was possible to appoint them to part-time positions to assist in the very extensive calculations and in the setting up of the tables of general perturbations. This research, combined with the fact that orbit theory was Professor Leuschner's special interest, developed the Berkeley Astronomical Department along these lines far beyond any other school. In the record of the half century the name of one of his pupils who was closely associated with him on the Watson problems must be mentioned, that of Professor Sophia Levy McDonald of the University of California.

Growing from the Watson work was the more general problem of a research survey for all the minor planets, under the auspices of the National Research Council. This survey was directed by Professor Leuschner and Dr. H. Thiele, with Dr. Maude W. Makemson as senior assistant. The results were published in Volume XIX of the Lick Observatory *Publications*. This research began a new era in the study of the asteroids.

Professor Leuschner's work was not exclusively astronomical research and teaching. The University of California owes perhaps a greater debt to him than to any other faculty member. In 1910 he was one of the founders of the Association of American Universities. In 1913 he became dean of the Graduate School of

the University and, as such, planned the reorganization of the whole research program of the University. In 1917 and 1918 he served as an expert for the United States Shipping Board. It was at his suggestion and on the basis of plans formulated by him that the United States Shipping Board set up navigation schools for training deck officers of the United States Merchant Marine. He was in charge of the University of California training activities during World War I. In 1918 he became chairman of the scientific committee on occupational selection for the California State Council of Defense, and later that same year he was appointed major in the chemical warfare service of the Army of the United States.

Professor Leuschner, of course, received many honors during his lifetime. In 1916 he received the Watson Gold Medal of the National Academy of Sciences for his astronomical research. In 1924 he was made a knight of the Order of the North Star (Sweden). In 1936 he received the Bruce Gold Medal of the Astronomical Society of the Pacific. In 1937 he received the Rittenhouse Medal. In 1938 he was Halley Lecturer at the University of Oxford.

His society memberships are too many to mention. He served a term as president of the American Association of University Professors. He was executive secretary of the National Research Council and acting chairman of the division of sciences in 1919. He was chairman of the Committee on Comets and Minor Planets of the International Astronomical Union from 1919 to 1938.

In 1919 and 1920 he was one of the principal faculty members who, by conference with the regents of the University, secured for the faculty a much greater part in the government of the University, especially as applied to instruction, research, and selection of new members of the staff.

Professor Leuschner was married in 1896 to Ida Louise Denicke. Two of their three children survive them, Dr. Erida Leuschner Reichert and Richard Denicke Leuschner. There are more than five dozen of us who, having obtained our doctorates under his guidance, felt with his passing emotions as if our father had died.