When Joseph Thomas Gier was appointed associate professor of electrical engineering at U. C. Berkeley in 1952, he became the first tenured Black professor in the entire University of California educational system and the first tenured Black faculty member in a STEM field—and the second in any field—at a top-ranked, predominantly white university in the country (the first was W. Allison Davis, a professor of education at the University of Chicago who earned tenure in 1947).1

**IF YOU THOUGHT DAVID BLACKWELL WAS FIRST**

Although the University now celebrates David Blackwell as the first Black ladder-rank professor at Berkeley—he had a dorm named in his honor in August 2018—they still acknowledged that Gier was the first until at least 2003 when he was the subject of a quiz question printed in the General Catalog.2 It is likely that Blackwell’s oral history,3 which was also published in 2003, played a role in the confusion. In the Interview History at the beginning of the document, Nadine Wilmot states “When Dr. Blackwell came to UC Berkeley in 1954 after a decade at Howard University in Washington D.C., he became, we think, the first African American ladder rank faculty person systemwide.”4 However, in the interview itself, Blackwell states that he “wouldn’t be surprised” if Gier had beaten him to it. “He was certainly here when I came. And he had some kind of faculty position, there’s no doubt about that. You have to be careful when you talk about ‘firsts.’”5 It would be correct to say that David Blackwell was the first Black full professor at UC Berkeley. Gier became a full professor in 1958.

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2 “CAL Quiz,” Question 27 (p.88) & Answer (p.497). 2003 U.C. Berkeley General Catalog
4 Ibid. p. iii
5 Ibid. p. 131
Joe Gier was born in New Orleans on July 2, 1910, the third child of Joseph Thomas Sr., a porter, and Alice Genevieve Fazende, a dressmaker, both from Louisiana. His father died when he was 3 months old, and he and his sisters moved with their mother to Oakland where she took a job as a domestic. Joe grew up in Oakland and attended Roosevelt High School where he appears to have been an extremely well-rounded student. He was on the honor roll, sang with the Hilltop Harmonists (a “double quartette choir”), and was selected for membership in the Alpha Gatta club which provided leadership opportunities for "students who are outstanding in scholarship and citizenship." He was also the manager of the Christmas pageant and a letterman on both the Varsity basketball and baseball teams. Each high school graduate was summed up with a quote in the yearbook, and Gier's read: "In every thought so good and kind." After high school graduation in 1928, Gier worked briefly as a chauffeur and Pullman porter before being accepted to UC Berkeley in 1930. He was elected president of the University of California Alpha Epsilon Chapter of the Alpha Phi Alpha (APA) fraternity in 1932 and lived on Twenty-first Street Oakland. He earned his Bachelor of Science degree in Mechanical Engineering in 1933 and is thought to be the first Black student to earn a B.S. in ME from Berkeley.

When Gier graduated from college, he looked for work as an engineer but could only find employment as a designing draftsman for the Alameda High School system and as an “estimator and layout man” for

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6 He had two older sisters, Alice Josephine (b. 1899) and Gladys Camelia (b. 1903). Alice married Eugene Thrash and died before the age of 30. Eugene continued to live with the Gier family for a number of years after his wife’s death. Gladys became a high school teacher in El Centro and married an elementary school teacher, James Robinson. [various birth, marriage, and census records]
7 US City Directory, 1908, New Orleans, LA
8 New Orleans, Louisiana Birth Records Index, 1790-1899
9 1920 census
10 Biographical data submitted to the EECS department, October 10, 1957
11 1930 census
12 Oakland Tribune, 30-Jan-1928, p.B-5, "PTA News"
13 Oakland Tribune, 19-Aug-30, p. C-18, "Today in the High Schools"
14 The Lariat, Roosevelt High School yearbook, 1928 p. 24
17 Register of the University of California, 1928-29 v.2, p. 197
18 Register of the University of California, 1933-34 v.2, p. 230
19 Humphreys, Sheila. As yet untitled, unpublished monograph on Diversity in Engineering at Berkeley. 21-jun-2019
Dempsey Electrical, a private contractor. So, he returned to Berkeley in 1937 as a laboratory assistant and earned his Master’s degree in Engineering in 1940 (he was also likely the first African American student to earn this distinction). He stayed involved with APA and was elected chairman of the Chapter Program Committee in 1941. Gier married Kathryn Beatrice Catley of Los Angeles in 1939 and they had two sons, Ronald Joseph and Keith Donald.

Gier began his career at Berkeley in 1939 as a lab technician for the California Highway Patrol Illumination Laboratory, the agency that tested headlights, taillights, and signaling devices for the State of California Division of Motor Vehicles. He was promoted to Chief Engineer just two years later to fill the seat vacated by his mentor, the Associate Dean of Engineering Llewellyn Michael Kraus Boelter, who left Berkeley to found the College of Engineering at the University of California, Los Angeles (UCLA).

Gier formed a professional partnership with ME Prof. Robert Valentine Dunkle in 1943. He and Dunkle helped define the basic concept of the use of spectral selectivity for the efficient photothermal conversion of solar radiation, and they became world experts in the field of thermal and luminous radiation. Associates considered Gier’s reports on thermal radiation “basic references in the field” and his “method of measurement of reflectivity and emissivity over the complete range from 1.0 to 23 microns” became recognized as a standard method. It is notable that, although Dunkle was described by former Berkeley Chancellor and ME professor Chang-Lin Tien as “a famous radiation professor,” Gier’s name appears

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20 He was a designing draftsman for the “Voc. Educ. Dept., Alameda High, Alameda (Mr. C. W. Cox)” in 1935 and an "estimator and layout man for "Dempsey Electrical Contractor, 16th and San Pablo, Oakland” in 1936. Departmental bio-bibliography, 17-Oct-1952 – Revised
22 EECS biographical data, 1957
first on their joint inventions. They started a business together to produce their instruments\textsuperscript{27} and appear to have been good friends outside of work.\textsuperscript{28}

Gier was hired as a half-time lecturer in the EE Division in 1946 and was considered by many to be "the best laboratory instructor ever to teach in electrical engineering at Berkeley." "He did not try to dazzle his students with his erudition;" his colleagues said, "his goal was always imparting understanding."\textsuperscript{29} He had an office in 73 Cory Hall and spent the other half of his appointment as the supervisor of the Thermal Radiation Project for the Office of Naval Research (ONR) in the Institute of Engineering Research (IER).\textsuperscript{30} He was elected to full membership in the scientific honor society, Sigma Xi, in 1949\textsuperscript{31}—a recognition bestowed by invitation only to one who “has shown noteworthy achievement as an original investigator in a field of pure or applied science.”\textsuperscript{32} He was also a member of the American Association for the Advancement of Science, and a full member of both the Illuminating Engineering Society (IES) and the American Society of Refrigerating Engineering (ASRE).\textsuperscript{33}

Gier won the APA “Man of the Year” award in 1950\textsuperscript{34} and was put in charge of the Standards Laboratory in Cory Hall, which was used by “most Departments in the University and by scores of outside companies as a ‘West Coast Bureau of Standards.’”\textsuperscript{35} Aircraft industries requested numerous measurements from him for various materials used in jet engines and rocket-type missiles.\textsuperscript{36} The duel nature of Gier’s research interests, which straddled ME and EE, may have complicated his career trajectory.\textsuperscript{37} Nonetheless, he was promoted to Associate Professor of Electrical Engineering with tenure in 1952.\textsuperscript{38}

Gier was listed on eight patents filed between 1948 and 1960, six of which listed him as the primary contributor.\textsuperscript{39} Five of these instruments were co-created by Gier and Dunkle, including the Gier Dunkle Total Hemispherical Radiometer, which remained in widespread use for years throughout the world by


\textsuperscript{28} When they drove to a conference in Seattle, they shared a rental car instead of using a University-owned vehicle so they would be free to “drive to different points of interest on the trip.” Gier, Joseph T., Automobile Permit form, 24-Jun-1954

\textsuperscript{29} Op. cit. U.C. obituary, Joseph Thomas Gier


\textsuperscript{31} Op. cit. EECS biographical data, 1957

\textsuperscript{32}Sigma Xi: Becoming a Member https://www.sigmaxi.org/members/becoming-a-member Accessed 10/19/18

\textsuperscript{33} Op. cit. EECS biographical data, 1957

\textsuperscript{34} Op. cit. U.C. obituary, Joseph Thomas Gier

\textsuperscript{35} D.M. Finch, memo to John Whinnery, 03-Oct-1957

\textsuperscript{36} G. J. Maslach, memo to H.A. Schade, 17-Oct-1956

\textsuperscript{37} J. R. Whinnery, letter to M. P. O’Brien, 7-Oct-1957

\textsuperscript{38} Most references, including Gier’s obituary and the JBHE, list the date as 1952 although a few list it as 1953. The confusion may have arisen because, although his tenure was officially granted in 1952, the first semester he worked in his tenured position appears to have been 1953.

\textsuperscript{39}Google patents for gier, joseph. https://patents.google.com/?inventor=gier%2c+joseph&oq=gier%2c+joseph Accessed 2/14/19
scientists studying heat balances and heat transfer problems. The Gier Dunkle Black Body Reflectometer became standard equipment in America’s space laboratories where it was used to help select materials which could withstand the searing heat of the sun in outer space. Light and portable, it was often operated directly on a standing spacecraft for periodic preflight monitoring of coatings’ properties. It was also used to design equipment to harness solar energy on Earth. Both inventions generated revenue for U. C. Berkeley. Dunkle, who was a Quaker, left the university for Australia in 1959 because he did not want his research used for military purposes.

[Read more technical descriptions of a few Gier Dunkle Instruments.]

Gier was known for his patience, kindness, and compassion. He had a "friendly and unassuming manner," was an excellent listener, and took a deep personal interest in students. Edmund Bussey, the first Black student to graduate with a B.S. in Electrical Engineering from UC Berkeley, said that he "looked upon him as a role model" and one colleague described him as "integrity personified." The APA gave him a second award in 1956 for “Outstanding Service to the Community and Fraternity” and he was honored by the Los Angeles Urban League in 1960 "in appreciation of an outstanding contribution to the Urban League goal of improving living conditions for minority groups through inter-racial cooperation and action."

Gier was promoted to full professor in 1958 and transferred to UCLA at Boelter's invitation shortly afterwards. He had been suffering from high blood pressure and had hoped the move to southern California might improve his health. He finally succumbed to his illness on June 22, 1961 at age 50, at the height of his career. The Morrin-Gier-Martinelli Heat Transfer Memorial Laboratory at UCLA was

41 Ibid.
42 Karam, Robert D., “Satellite Thermal Control for Systems Engineers.” Progress in Astronautics and Aeronautics Chapter 3, Sec. IV.C (Paul Zarchan Editor-in-Chief, Volume 181) P. 62
44 D.M. Finch, letter to John Whinnery 3-Oct-1957
47 Op. cit. Humphreys, Sheila
49 Thomas McFarland letter to Kathryn Gier, 1961
partially named in his honor. (Gier’s co-honorees, Raymond C. Martinelli and Earl H. Morrin, both studied the thermodynamics of heat transfer and died from leukemia brought on by exposure to Beryllium while doing research on molten metals.\textsuperscript{55} The lab is still used today for “investigating single and two-phase convective heat transfer in energy applications, various aspects of radiation transfer in biological systems, and for material synthesis and characterization.”\textsuperscript{56}

Joseph Gier’s legacy lives on. He quietly inspired and influenced the lives of many people who, in turn, influenced the lives of others. By setting a precedent, he made it easier for those who followed him and enriched the academic and scientific landscape for everyone. Lasting change happens slowly and Gier, who believed in the inherent “goodness of man,”\textsuperscript{57} led by example.

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**HOW DID THE EECS DEPARTMENT LOSE TRACK OF JOSEPH GIER?**

Gier’s untimely death in 1961 at the age of 50 was probably the most significant obstacle to his lasting fame. His transfer from Berkeley to UCLA three years before he died, during which time he was only able to work intermittently, was also probably a contributing factor. Most of the students who knew him at Berkeley had left by 1961, and he had not yet had time to establish himself at his new campus.

In the larger cultural framework, the Black Power movement had not yet begun, and would not peak for 10 more years. Before the 1960’s, if people respected a Black colleague at their predominantly white institution, mentioning their colleague’s race was considered highly discourteous. These well-meaning people held the cherished philosophical notion that one’s race should not matter, but they also recognized the hard reality that it did: the more a person’s race was discussed, the greater a target for hatred they became. Gier’s achievements were so singular they appear to have predated a society prepared to openly recognize them.\textsuperscript{58}

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\textsuperscript{56} UCLA Samueli Mechanical & Aerospace Engineering Research Labs: Morrin-Gier-Martinelli Heat Transfer Memorial Laboratory (Pilon) \url{https://www.mae.ucla.edu/laboratories/#MGM}
\textsuperscript{57} Op. cit. U.C. obituary, Joseph Thomas Gier
\textsuperscript{58} Crowley, Magdalene L. “Reintroducing Joseph Thomas Gier,” EECS Department Newsletter, February 22, 2019. ©UC Regents \url{https://newsletter.eecs.berkeley.edu/2019/02/joseph-gier/}