

## THE BRIEF CAREERS OF CHERRY, MARTINELLI AND MORRIN

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BOELTER's monument is found in the work of his students and associates. Important contributions of three whose lives were cut short is worthy of note here. Virgil Cherry, Ray Martinelli and Earl Morrin advanced the progress of much good work beyond that with which they are formally credited.

*Virgil Harold Cherry* was born in Hannibal, Missouri, 20 September 1906. Upon graduation at Berkeley in 1930, Cherry was appointed a Teaching Assistant in the Mechanical Laboratories, and in 1934 Instructor, earning the M.S. degree in 1934 and the Ph.D. in 1935. His dissertation for the doctorate was entitled "Pressure drop in non-isothermal viscous flow through a circular tube maintained at a constant and uniform temperature" [2]. The completion of this task involved the solution of the classical equations of hydrodynamics, with viscosity as a variable, by graphical and numerical means. Thirty-two years ago this approach to the analysis of convection was most unusual.

The results of Cherry's research activities appear in several technical papers, as well as in *Berkeley Heat Transfer Notes* [1] of which he was co-author. He was largely responsible for the development of several instruments which are of great engineering importance. One example was the mechanical shape factor integrator used in radiative heat transfer and the field of illumination; another was the plated thermopile that formed the basis of the Gier-Dunkle heat meter [5].

Cherry served as an inspiration to his students and to his colleagues until his death on 21 May 1939.

*Raymond Constantine Martinelli*, the son of Adele and Angelo Martinelli (Professor of Economics), was born in Lucca, Tuscany, Italy on 27 April 1914. At the age of 9, he came to the United States with his mother and brother. His formal education was obtained on the Berkeley campus of the University of California. In 1936, he received the baccalaureate in electrical engineering and was awarded the University Medal, the University of California's most distinguished undergraduate scholastic award. He took his graduate work in heat transfer under Boelter, and was awarded the M.S. degree in mechanical engineering in 1939 and the Ph.D. degree in 1941. His Ph.D. thesis was entitled "Analysis of the mechanism of heat transfer through a solid-fluid interface with applications to fluids flowing in pipes".

Except for brief periods in industrial research, he remained on the engineering staff of the University of California, progressing from teaching assistant to associate professor. He was to have been appointed professor in 1949, had not death intervened. He served on several committees of the Heat Transfer Division of the American Society of Mechanical Engineers. From 1946 to 1948 he also headed the heat-transfer group in early work on the nuclear powered submarine at the General Electric Company in Schenectady.

To students his name was synonymous with excellence in engineering and with an unusual capacity for clear analysis. Possessed of great ingenuity, he often fascinated his students with his ability to pick out the basic elements of problems which had seemed to them virtually insoluble. He had a talent for sensing a student's problems and for re-expressing them in such a way that he could establish a harmony of thinking between himself and the student.

In the field of research, he gained international recognition for his studies in heat transfer. In addition to co-authorship with Boelter and Johnson of the second edition of the Berkeley *Heat Transfer Notes* [1], he published twenty-six technical papers as sole or joint author. The papers which his co-authors agree contain contributions of particular merit include [3, 4, 6–10]. He was awarded the Melville Medal for his paper "Heat transfer from molten metals".

Martinelli was already well-known and honored for his achievements as an educator and authority in the field of heat transfer when on 9 January 1949, death took him prematurely at the age of 35.

*Earl Hamilton Morrin* was born in San Francisco on 19 February 1919. He received a B.S. degree in chemistry in 1940 at University of California, Berkeley. From 1940 to 1946 he was a graduate student in engineering at Berkeley. His devotion to research projects during World War II interfered with his degree work, though his colleagues agree he did the work of several theses and more than once rescued a Ph.D. candidate's thesis.

In March 1946, Morrin moved with Boelter to Los Angeles to aid in the work of the newly organized Department of Engineering. As at Berkeley, he taught and aided in the direction of research projects.

During his association with Boelter, Morrin contributed to many NACA reports (e.g. [5]) and other publications with colleagues in the UCLA Department of Engineering. He co-authored with Boelter, Martinelli, and others

an outstanding paper on two-phase flow of fluids in horizontal pipes [7].

For a full generation of students Morrin provided the interpretations and explanations which brought them to the level of the *Heat Transfer Notes*. It was a great loss to the Boelter group and to the engineering profession when he passed away on 18 June 1948.

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