



Professor George Herrmann (1921 – 2007)

George Herrmann, professor emeritus of mechanical engineering, Stanford University, collapsed and died suddenly in a Zurich train station on January 7, 2007. He was 85.

Herrmann played a major role in the mechanics community in the latter half of the twentieth century, and his influence persists to the present day. Born in Moscow on April 21, 1921, he was brought to Switzerland in 1933 and was educated there. He attended the Swiss Federal Institute of Technology (ETH), where he received a bachelor's degree in 1945 and a doctorate in 1949, both in civil engineering. After a year as a postdoctoral fellow at École Polytechnique in Montreal, Canada, he became an associate professor of civil engineering at Columbia University in 1951, where he stayed until 1962. He then moved to Northwestern University, and finally, in 1970, to Stanford University. At Stanford, he served as chair of the Department of Applied Mechanics and then, when the department merged with the Department of Mechanical Engineering in 1975, as chair of the Division of Applied Mechanics. He held this post until his retirement from Stanford in 1984.

His research interests were broad, and touched on many of the major themes in mechanics over the last 60 years: plate and shell theory, stability theory, vibrations of elastic bodies, wave propagation, and fracture mechanics. He remained active in research following his retirement from Stanford, and, in later years, developed an interest in the mechanics of solids as viewed from an Eshelbean standpoint. He pursued this vigorously with longtime collaborator Reinhold Kienzler until his death in 2007. His work brought him wide recognition and a number of awards from various professional societies. These included election to the National Academy of Engineering, the Centennial Medal of the American Society of Mechanical Engineers, the von Karman Medal of the American Society of Civil Engineers, the Eringen Medal of the Society of Engineering Science and the American Academy of Mechanics Outstanding Service Award

His service to the mechanics community was equally important. He served on innumerable boards and committees, and was quite influential in the Applied Mechanics Division of the American Society of Mechanical Engineers. During an era in which important Soviet work in mechanics was largely unknown in the West, he began the English translation edition of PMM, the premier Russian language mechanics journal and served for many years as its translation editor. Perhaps most significantly, he founded the International Journal of Solids and Structures in 1965 and served as its editor until his retirement from Stanford, building it into one of the most reputable journals in the field.

On a personal level, George Herrmann was a man of great warmth and charm. His former students recall his kindness and consideration. Particularly impressive was his uncanny ability to find the best line of attack on a given research problem, where he was often able to obtain significant results with only a minimum of tools. His lectures were clear, focused, and well organized, and his courses were always popular with students. He was an accomplished linguist, and constantly amazed those around him by his ability to converse with the seminar speaker of the day in the speaker's native language. While at Stanford, he organized frequent outings, excursions, and dinners for students and faculty that did much to build a strong sense of camaraderie within the Department of Applied Mechanics, and later the Division of Applied Mechanics.

At the time of his death, Herrmann was living in Zurich, Switzerland, though he visited Stanford several times each year. Although retired from his professorship, he maintained much the same life that he had for years. He continued to publish papers, give talks, attend and organize conferences and collaborate on books. Herrmann was an extraordinary individual with an enthusiastic, creative spirit which was never diminished. Toward the end of his life, he was learning Spanish even though he was already fluent in English, German, French, Russian, Italian and Portuguese. He maintained a strong interest in the arts and humanities, and had the ability to converse about diverse topics.

By Rahul Kanakia, Peter Pinsky, David Barnett and Charles Steele

Selected Publications:

Kollbrunner, C.F. and Herrmann, G., "The stability of plates in the plastic range", Inst. f. Baust. a.d. E.T.H., Mitt. Nr. 20, Verlag Leemann, Zürich, 1947. (The theory of A.A. Ilyushin is compared with test results.)

Kollbrunner, C.F. and Herrmann, G., "Elastic stability of non-uniformly compressed plates", T.K.V.S.B., Mitt. Nr. 1, Verlag Leemann, Zürich, 1948

Kollbrunner, C.F. and Herrmann, G., "Elastic stability of rectangular plates under pure bending", T.K.V.S.B., Mitt. Nr. 2, Verlag Leemann, Zürich, 1949

Herrmann, G., and Mirsky, I., "On Vibrations of Conical Shells", JAS 25, 7, pp. 451-458, 1958.

G. Herrmann and A.E. Armenakas, "Dynamic behavior of cylindrical shells under initial stress", Proc. 4th U.S. National Congress of Applied Mechanics, Berkeley, California, Pergamon Prss, Vol. 1, 1962, pp. 203-213

Armenakas, A. E., and Herrmann, G., "Buckling of Thin Shells Under External Pressure", Journal of the Engineering Mechanics Division, American Society of Civil Engineers, Vol. 89, EM3, June 1963, pp. 131-146.

G. Herrmann and R.W. Bungay, "On the stability of elastic systems subjected to nonconservative forces", Journal of Applied Mechanics, Vol. 31, 1964, pp. 435-440

Herrmann G, Bungay RW. Shell buckling and nonconservative forces. AIAA Journal 1964;2(6):1165-6.

Michael J Forrestal, George Herrmann, "Buckling of a long cylindrical shell surrounded by an elastic medium", International Journal of Solids and Structures (1965, Vol. 1, No. 3, pp. 297-309, doi: 10.1016/0020-7683(65)90035-1

ABSTRACT: A long, thin, circular, cylindrical shell is subjected to uniform external pressure exerted by a surrounding elastic medium. The stability of equilibrium of the shell is examined by considering possible neighboring equilibrium states. The loading exerted by the elastic medium on the shell in the deformed state is found by solving an associated boundary value problem of the linearized theory of elasticity in the presence of initial stress. Expressions are derived which give the critical pressure for the cases of a bonded and a smooth interface.

Baker, E. H., and Herrmann, G., "Vibrations of Orthotropic Cylindrical Sandwich Shells Under Initial Stress," AIAA Journal, Vol. 4, No. 6, 1966, pp. 1063- 1070.

Budiansky, B., "Dynamic Buckling of Elastic Structures: Criteria and Estimates," Dynamic Stability of Structures, Proceedings of an International Conference, 1965, **edited by G. Herrmann**, Pergamon Press, New York, 1967, pp. 83-106

Armenakas, A. E.; Gazis, D. C.; Herrmann, G.: Free Vibrations of Circular Cylindrical Shells, Pergamon Press, Oxford 1969