

PII: S0017-9310(97)00073-2

Professor Dr.-Ing. Dr.-Ing.e.h. Ulrich Grigull on his 85th birthday



Ulrich Grigull, Professor emeritus, Technische Hochschule, München, 85 on 12 March 1997, is one of the grand old scientists of heat transfer. For more than 60 years he has devoted himself to this field and made it a scientific discipline by both his scientific work and his international activities. His curriculum is a history of heat transfer. After he had finished his studies of Mechanical Engineering in 1935, he joined Ernst Schmidt at the chair of Technische Wärmelehre of the Technische Hochschule Danzig. Danzig and Dresden were the hubs of heat transfer and thermodynamics, at that time in Germany, with Ernst Schmidt and Richard Mollier being the holders of chairs at these universities.

The Danzig laboratory enjoyed renown for heat transfer and also attracted students and young scientists from countries other than Germany. Ernst Eckert came from Prague to Danzig. There was no specialisation in a certain field of heat transfer in those days and Ulrich Grigull, the young assistant to Schmidt, had to tackle a great many problems. This early experience formed his later career. His interests have always been wide-spanned: heat conduction, natural convection, condensation, radiation and many detailed problems. He never specialised in a single field, but he became a specialist in many fields. For non-steady heat conduction, a graphical differential method was developed in Danzig, which allowed quick solutions of these complicated problems when

computers were not yet known. Even nowadays this method will beat a computer when a ready-made programme is not available. The sensorless Schatten- and Schlieren-methods were developed, dropwise condensation was investigated, properties of steam and radiation properties of surfaces were measured.

Ulrich Grigull became one of the first co-workers of Ernst Schmidt at the Deutsche Forschungsanstalt für Luftfahrt in Braunschweig, where Schmidt had moved in 1937. Grigull obtained his Doctor of Engineering degree at the Technische Hochschule Braunschweig with a theoretical thesis on turbulent film condensation. Here, he also published his first paper, together with E. Schmidt and E. Eckert, 'Wärmetransport durch Flüssigkeiten in der Nähe ihres kritischen Zustandes' (Heat transport by fluids near their critical state). This paper formed the basis of the 'Schmidt cooling' of gas-turbine blades, proposed in 1942, in a secret report (geheime Kommandosache, Schreiben 1055) to the German Academy of Aeronautics.

After World War II, this paper was considered so important that it was translated into English in an AAF translation no. 527, Air Material Command, Wright Field, Dayton. Nowadays these ideas find an application in wickless heat pipes. During the war, Grigull served as an officer and chief engineer in the Kriegsmarine on submarines and destroyers. After the war, which was a very difficult time in Germany as it

was all over Europe, Grigull worked as a consultant to a chemical and textile firm and became a director in a renowned firm which produces insulating materials. In 1953, he changed to the Farbenfabriken Bayer, A.G. in Leverkusen. During the years there, he was able to completely revise and extend the book by Gröber/Erk 'Grundgesetze der Wärmeübertragung' from 1933. This new book became the principal work in German literature of heat transfer and it was translated into English, Japanese, Russian, Spanish and Turkish.

In 1961, Ulrich Grigull became the successor to Ernst Schmidt as Professor and Director of the Institute for Thermodynamics at the Technische Hochschule, München. With his wide-spanned ideas, which he now activated in numerous theses, he was a deserving successor to this Chair, which had been held before by Carl von Linde, Moritz Schröter and Wilhelm Nusselt. Until his retirement in 1980, Ulrich Grigull supervised more than 40 scientists with their doctoral theses, he contributed to almost every aspect of heat transfer with about 120 scientific papers and more than 40 books and book contributions.

In the early 60s, Grigull founded, together with colleagues from France, Great Britain and the U.S.A., the *International Journal of Heat and Mass Transfer*. Some years later, he realized that a German journal was missing in the field and he founded the journal *Wärme- und Stoffübertragung* together with E. R. G. Eckert and P. Grassmann.

Science and university are his life. In 1972, he was elected Rektor and, in 1976, the President of the now Technische Universität, München. He held this office until his retirement. He retired from office, but never from activities. He was the President of the International Assembly for Heat Transfer Conferences, President of the International Center for Heat and Mass Transfer, President of the International Association for the Properties of Water and Steam and an

active member of the Bavarian Academy of Sciences, where he heads the commission for the publication of the papers of Johannes Kepler.

Just recently, in 1996, he published a booklet, '60 Jahre Kepler-Kommission' (60 years Kepler-Commission). This gives information on the unique effort of the Bavarian Academy of Sciences to publish all the extensive works of Johannes Kepler, the mathematician and astronomer.

Now, he was also able to enjoy his long postponed interests for technical history and he turned to the roots of thermodynamics. His paper, 'Fahrenheit, a Pioneer of Exact Thermometry', takes us into the world of the early 18th century when heat, enthalpy and temperature were all about the same which Isaac Newton called 'calor'. Ulrich Grigull visited libraries in Amsterdam, Florence and London and compiled a detailed mosaic of Daniel, Gabriel Fahrenheit's life and that of his contemporaries.

In 1979, he published a monography on 'Newton's Cooling Law. Remarks to a paper by Isaac Newton from 1701'. Presently Grigull has finished a biography of Wilhelm Nusselt and he is planning one on Ernst Schmidt.

Many honours and awards have been bestowed upon Ulrich Grigull. To name just a few: he is an Honorary Doctor of the University Stuttgart; the American Society of Mechanical Engineers and the American Institute of Chemical Engineers presented him with the Max Jakob Memorial Award and the State of Bavaria with the 'Order of Maximilian', the highest award for scientific merits in Bavaria.

All the colleagues and friends, the Editors of this journal and the world-wide community of heat transfer submit their best wishes to Professor Dr. Dr. e.h. Ulrich Grigull and his marvellous wife Lydia.

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