Available online at www.sciencedirect.com
SCIENCE DIRECT®
International Journal of Heat and Mass Transfer 47 (2004) 1569–1571
International Journal of HEAT and MASS TRANSFER
www.elsevier.com/locate/ijhmt

In memoriam

Prof. Dr.-Ing., Dr.-Ing.e.h. Ulrich Grigull (1912–2003)

Ulrich Grigull, Professor emeritus of the Technische Universität München, one of the founding editors of this Journal and member of the Honorary Editorial Advisory Board, passed away on October 20.

Nationally and Internationally renowned, he was well known and esteemed in the Heat Transfer Community. He was a Grandseigneur of Heat Transfer, spiritus rector of many new developments. He has set standards in all of his numerous activities.

Born on March 12, 1912 in Gallingen in East Prussia, he lived an eventful life of almost a century; a life with world wars, post-war uncertainties, new orientations in work and living. But he also lived a blessed life with a happy family, filled with satisfaction, honours and health.

He grew up during the first world war in the small community Gallingen where his father held the position of the Minister. He went to the Gymnasium in Königsberg and studied Mechanical Engineering (1930–1935) at the Technical University in Danzig. As a Diplom-Ingenieur he became Assistant to Professor Dr. Ernst Schmidt who was the director of the Engine-Laboratory at the university. In these years, when Heat Transfer was still a relatively young academic discipline, a group of disciples had gathered in this laboratory doing inspiring work. Most likely, Ulrich Grigull received the scientific background, which became his guiding principle for his future life, in those days.

In 1937, E. Schmidt went to Braunschweig to organize and direct the Institute for Aircraft Engines of the Aeronautical Research Establishment. Grigull followed him to this new institute. Here he constructed a research apparatus to study natural convection heat transfer near the thermodynamic critical state. This work showed—for the first time—the large increase of the heat transfer coefficient in a near critical fluid. It resulted in the development of a new cooling method for high-temperature gas-turbines. For Grigull it was his first scientific publication, together with E. Schmidt and E. Eckert. A report, to the German Academy of Aeronautics, based on this publication and proposing the cooling method for gas-turbine blades became classified (Geheime Kommandosache 1055) and after World War II was considered so important to be translated into English (AAF translation no. 527).

He also performed a theoretical work on turbulent film condensation which was of such high quality that—though it was originally not intended for—it was accepted as Ph.D.-Theses by the Technical University Braunschweig. The title was "Wärmeübergang bei der Kondensation mit turbulenter Wasserhaut". Shortly afterwards he volunteered to join the Navy as chief engineer on submarines and destroyers. After the war—a very difficult time in Germany—especially when to care for the living of a family: his wife Lydia and his

doi:10.1016/j.ijheatmasstransfer.2003.11.004

daughter Barbara, born 1942, his other daughter Andrea was born 1953. Grigull worked as a consultant to various chemical and textile industries and became director of a renowned firm which produced insulating materials. In 1953, he changed to Farbenfabriken Bayer A.G. in Leverkusen.

During the years there, he was able to completely revise and extend the book by Gröber/Erk (1933) "Grundgesetze der Wärmeübertragung" (The Basic Laws of Thermodynamics) which had first appeared in 1921. It was the only book in Heat Transfer written in German in those days and it became a standard in the German literature of thermal engineering. It also received high appreciation in the international literature by being translated into five foreign languages—English, Japanese, Russian, Spanish and Turkish.

Grigull always kept his ties to heat transfer. In his various occupations in the post-war time he became familiar with a variety of heat transfer problems and he made his contributions to their solution. Seventeen papers which he published in the years 1950–1959 give evidence; e.g. "How to determine the most economical thickness for insulation", "Surface temperature and heat loss", "Heat and Mass transfer with and without chemical wall reaction" (titles translated!). He gave lectures at the Technical University Braunschweig on "Heat Transfer" filling a gap since E. Schmidt had left Braunschweig for Munich.

Together with A.J. Ede, C. Gazley, J.P. Hartnett, A.V. Luikov and D.B. Spalding he founded the "International Journal of Heat and Mass Transfer" in 1960 with Robert Maxwell being the Publisher with his Pergamon Press. This journal made apparent the worldwide interest in the field of heat and mass transfer.

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.

Professor Grigull continued in the tradition of the chair and added further to its high scientific standing. Optical methods using shadow-graph and Schlieren-methods as well as interferometry with a Mach-Zehnder interferometer were further developed. His scientific accomplishments are documented in more than 120 papers and 40 books and book contributions. He supervised more than 40 scientists with their doctoral theses from almost every aspect of heat transfer. As a teacher he led generations of students to an understanding of Thermodynamics and Heat—and Mass transfer. Ulrich Grigull, with all his profound experience in the field was an engaged advocate of heat transfer as an original discipline in education and research.

"The science of Heat and Mass Transfer is of great importance in many technical fields..." (translated) he wrote in the foreward to the first issue of the German Journal "Wärme- und Stoffübertragung". This he founded in 1968 together with E. Eckert and P. Grassmann. Further in this forward he stated "... this might have been the reason why problems in Heat and Mass Transfer are now studied in most technical countries highly intensively and with considerable expense...".

Grigull strongly advocated an International Heat Transfer. This became manifested when in Chicago in 1966, at the Third Conference a real internationalisation was discussed. The future "International Heat Transfer Conferences" should be held every four years and a committee "International Assembly for Heat Transfer Conferences" should be installed. This Assembly is in charge of selecting countries to organize Conferences; its members organize the selection of papers of theirs and adjoined countries. The Fourth Conference in Paris (1970) was organized jointly by France and Germany with presidents E.A. Brun (Paris) and U. Grigull (München). The Assembly provided a worldwide organisation which rendered a startling result: more than 700 manuscripts from all over the world were offered for this Conference. The three preceding conferences which had been primarily British and American had around 150 papers.

Grigull quite often experienced the responsibilities of a President: he was president of two International Heat Transfer Conferences, of the International Assembly, of the International Centre for Heat and Mass Transfer in Yugoslavia, of the International Association for the Properties of Water and Steam; he was elected Rektor and President of the Technische Universität München (former Hochschule). This office he held for eight years until his retirement in 1981.

He retired from office but never from activities. Now he was able to devote his time to subjects which he always was inclined to: history and especially that of technical accomplishments. His publications take us back 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 in order to go back to the roots. One of these roots was Isaac Newton. He had suggested a temperature scale already in 1692. Grigull found out that—considering facts that could not be known to Newton 300 years ago—his then measurement—results agree with nowadays results. Or that Newton's enthalpy-balance could well be written as a heat-transfer law in nowadays' sense. Thus this balance is the oldest quantitative evidence of a heat-transfer problem. It might be interesting to know that Grigull used the original writings of Newton which were not in English but in Latin. Another early pioneer of temperatures and its measurement caught Grigull's interest:

Daniel Gabriel Fahrenheit. Grigull studied his works and published a paper to Fahrenheit's 300th birthday, "Fahrenheit, a Pioneer of exact thermometry".

As a member of the Bavarian Academy of Sciences he headed the Commission for the Publication of the papers of Johannes Kepler and he published a booklet "60 years Kepler-Commission" (translated).

After three editions of his book, Grigull felt that the immensely increased knowledge in Heat Transfer could not be published in a single volume again, and decided for a Book Series on Heat and Mass Transfer. So far nine volumes have appeared on subjects as: Thermophysical Properties, Radiation (three volumes), Boiling and Condensation, Convection, Conduction, Mass Transfer and Optical Measurements.

Many honours and awards have been bestowed upon Ulrich Grigull. To name just a few: he is Honorary Doctor of the University Stuttgart; he was presented with the Max Jakob Memorial Award. The State of Bavaria honoured him with the "Order of Maximilian", the highest award for scientific merits in Bavaria.

Professor Grigull will be remembered as a great man and a true pioneer of the science of heat transfer. We all will miss him.

E. Hahne
Universitat Stuttgart
Institut fur Thermodynamik und Warmetecknik
Paffenwaldring 6
Stuttgart 70550, Germany
Tel.: +49-711-685-3538; fax: +49-711-685-35033
E-mail address: hahne@itw.uni-stuttgrat.de

J.P. Hartnett
F. Mayinger
W. Minkowycz
J. Straub