

SYMPOSIUM REPORT

Psychoacoustics in Germany and its relations to Japan

August Schick

*Institute for Research Into Man-Environment-Relations
and Graduate College "Psychoacoustics"
University of Oldenburg,
P. O. Box 2503, 26111 Oldenburg, Germany*

In the 19th century Hermann von Helmholtz laid down the scientific basis for acoustical research in the most general terms. His assistant in Heidelberg, Wilhelm Wundt, founded the first psychological laboratory in the world in Leipzig and devoted himself to an intensive study of the measurement of loudness, drawing his inspirations to a great extent from the psychophysical ideas of his senior colleague, Gustav Theodor Fechner. Wundt's personal library has been located in the University Library of Sendai for 75 years. A few details of this transaction are described. Heinrich Barkhausen also had many followers in Japan to whom he lent his support through his lectures on his journeys to Japan. In recent years Eberhard Zwicker and Seichiro Namba have made an important contribution to German-Japanese cooperation.

Keywords: Helmholtz, Wundt, Barkhausen, Zwicker, Namba

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1. WILHELM WUNDT AND HERMANN HELMHOLTZ

In the 19th century Hermann von Helmholtz (Fig. 1) laid down the scientific basis for acoustical research in the most general terms. His assistant in Heidelberg, Wilhelm Wundt (Fig. 2), founded the first psychological laboratory in the world in Leipzig and devoted himself to an intensive study of the measurement of loudness (for example his fellows Luft and Tischer) and, drawing his inspirations to a great extent from the psychophysical ideas of his senior colleague, Gustav Theodor Fechner. Wundt's Laboratory developed worldwide into a Mecca for experimental psychology. Figure 3 shows the famous Falling Phonometers of Wundt, made by the famous mechanical engineer König.

During the world economic crisis of the 1920's the Wundt family offered to sell Wundt's personal library to the German Reich, but the government did not have the financial means to purchase it.

Anneros Meischner-Metge personally gave the following information about the reasons of the sale: the size of the collection exceeded the storage capacity which the daughter, Eleonore, was able to provide. After consulting her brother, Max Wundt, she therefore offered the books to a second-hand bookseller named Lorenz in Leipzig. Although the family ruled out selling the books abroad, they were, in fact sold to Japan. The books are, however, only those by other authors which Wundt had in his private library. The University of Leipzig is in possession of the important part of Wundt's estate. Due to mediation by one of Wundt's Japanese admirers the purchase was made by the Tohoku University in Sendai. That is why the whole of Wilhelm Wundt's estate has been in the University Library of Sendai for 75 years. Takahashi (1983) took stock of Wundt's Library. Kinuya Maruyama from the Psychological Institute in Sendai, with whose work on the intersensory coordination of sight and hearing we are familiar, devoted



Fig. 1 Helmholtz.



Fig. 2 Wundt.

himself in particular to the care of Wundt's experimental equipment.

According to Miyakawa (1980) Wundt's influence on Japanese psychology is surprisingly small. I must, however, mention an earlier admirer of Wundt, the English teacher, Iwae Irie from Sendai, who corresponded with Wundt and even named his eldest daughter, Sophia, after Mrs. Wundt.

Twenty years later, Wundt's follower, Yashizo Kuwata, gave lectures on Wundt's research work at the University of Tokyo between 1913 and 1943. Some time later, Torao Obonai devoted his attention to experimental psychology at the same university, thus following in the footsteps of Helmholtz and Wundt (Kaneko, 1969).

2. HEINRICH BARKHAUSEN

Heinrich Barkhausen (Fig. 4), the inventor of the first sound level meter, also had many followers in Japan to whom he lent his support through his lectures on his journeys to Japan (Fig. 5). The former Academy of Sciences of the GDR and the Technical University of Dresden even issued a Fest-

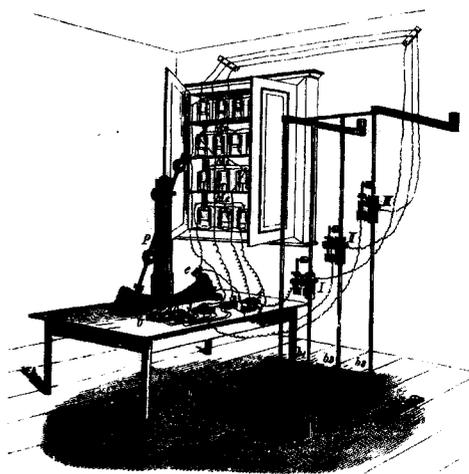


Fig. 3 Falling Phonometers of Wundt.

schrift in 1981 which was published by Klaus Lunze. It is this publication that has been the main source of my information.

The porcelain manufacturer, Meissen, even struck a commemorative coin for Barkhausen. Eberhard

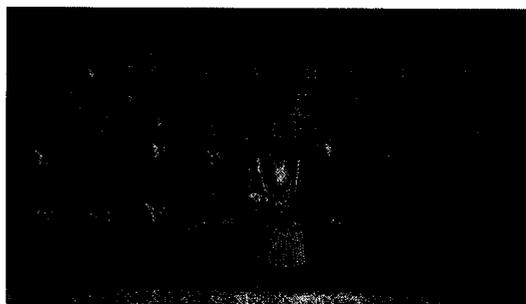


Fig. 4 Heinrich Barkhausen.

Zwicker named the bark after him. When Professor Namba came to Oldenburg as a visiting professor twenty years ago, the Neidhard family offered him and his family their house beside the "Tonkuhle Lake" in Oldenburg. It was a great surprise for all of us when Mrs. Neidhard began telling him about her uncle, Heinrich Barkhausen and showed him the photo albums. Let's have a little look at this album together! In Fig.6 you can see the birth place of Barkhausen, Kohlhöckerstraße 12 in Bremen.

Barkhausen felt in love with a sister of the well-known thermodynamicist, Mollier. Barkhausen's father was a jurist in Bremen. The family coat-of-arms can still be seen in the Townhall in Bremen. The Barkhausen and Mollier fathers worked at the Technical University in Dresden. Figure 7 shows the Mollier family's house which was built by Otto Riemerschmid. After the Reunification of Germany the Neidhard family presented it to the University of Dresden as an endowment.

Barkhausen was in Japan for two months in 1938 and gave many lectures there. For no less than two



(a)



(b)



(c)

Fig. 5 (a), (b), (c) Barkhausen with his Japanese hosts.

weeks he taught 30 engineers from the firm Kawaniishi in Kobe, who called him the father of Japanese communications technology. He reported on "band filters with and without feedback", making use, in part, of results provided by his daughter, Marlene. Yoji Ito (so written in the Festschrift for Barkhausen) translated the book entitled "Electron Tubes" and wrote the preface to it which is demon-

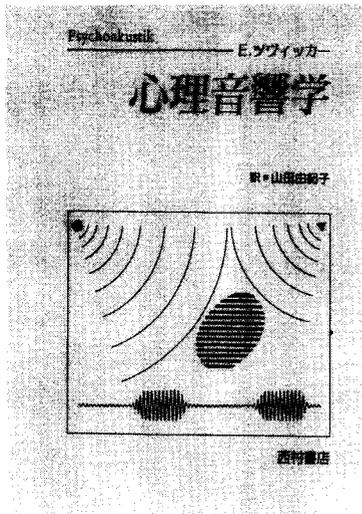


Fig. 9 Psychoacoustics of Eberhard Zwicker.

proud of its own links with the University of Osaka and our colleagues Seiichiro Namba and Sonoko Kuwano. The culmination of this twenty-year partnership was the Honorary Doctorate conferred upon Professor Namba by the University of Oldenburg in 1996 and the Cooperation Treaty agreed between the Departments of Physics and Psychology with the Faculty of Environmental Engineering of the University of Osaka.

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August Schick received 1966 his Diploma in Psychology 1969 and PhD in psychology from the University of Muenster, Germany 1969. In 1966 he joined the Teachers Training College in Osnabrueck, 1969 Univ. of Tuebingen, 1974 Univ. of Oldenburg, since 1984 director of the Institute for Research into Man-Environment-Relations, since 1991 member of the interdisciplinary Graduate School "Psychoacoustics". He received the Satoh prize (together with Kuwano and Namba) from the ASJ and the Japanese-German Research Award from The Japan Society for the Promotion of Science; he was a Guest Professor of Osaka University and is member of the faculty-partnership (Physics, Psychology and Environmental Engineering) between Osaka and Oldenburg University. His research interests include Psychoacoustics, Noise, Acoustics Design, Cross-Cultural Acoustics, History of Science. He is a member of the ASJ, ASA, cofounder of The Acoustical Society of Germany, Fellow of the IIAV, Honorary Doctor of the Baltic State Technical University in St. Petersburg. Some of his books are published in Russian and Korean.